Co-funded by the European Union

ACCOUNT 4Green Eco

Sustainability Accounting Learning Platform for a Green Economy

2022-1-ES01-KA220-HED-000089844

Deliverable 2.1

Materials and resources of Module 1

Sustainability accounting in the 21st century

CC BY NC

UNIVERSIDAD DE BURGOS
Centre for Sustainability Management
LEUPHANA UNIVERSITÄT LÜNEBURG
MBS since 1897 MONTPELLIER BUSINESS SCHOOL
gestionet Play Think Learn
UNIVERSITÀ DI TRENTO

Co-funded by
the European Union

The project 'Sustainability Accounting Learning Platform for a Green Economy' (Account4GreenEco) is co-funded by the European Union (Ref. 2022-1-ES01-KA220-HED-000089844). The opinions and views expressed in this deliverable are those of the authors (partners of the Account4GreenEco Project: University of Burgos, Università degli Studi di Trento, Leuphana University Lüneburg, MBS School of Business, and Gestionet) and do not necessarily reflect those of the European Union or the Spanish Service for the Internationalisation of Education (SEPIE). Neither the European Union nor the SEPIE National Agency can be held responsible for them.

Deliverable 2.1. Materials and resources of Module 1: Sustainability accounting in the 21st century © 2023 by the Sustainability Accounting Learning Platform for a Green Economy Project is licensed under CC BY-NC 4.0. To view a copy of this license, visit http://creativecommons.org/licenses/by-nc/4.0/

ACCOUNT 4 Green Eco

Executive summary

Work Package 2 (WP2) aims to produce high-quality and structured learning materials and resources on sustainability accounting. These materials and resources WP2 will be implemented in the online learning platform to populate the course syllabus on sustainability accounting. The materials are structured in three modules, each covering key sustainability accounting topics to train platform users on how to produce sustainability information effectively.

The goal of **Deliverable 2.1 (D2.1)** is to produce the materials and resources of Module 1. This module focuses on the role of **sustainability accounting in the 21st Century**. It will serve as an introduction to the relevance of accounting as an instrument that contributes to sustainable development and to the main corporate practices that exist nowadays in the field of sustainability reporting. Specifically, the two units that integrate Module 1 are:

- **Unit 1.1. Accounting and the Anthropocene**
- **Unit 1.2. The sustainability reporting landscape**

Each Unit consists of theoretical content, a set of small activities to foster users' engagement, two case studies, short video pills on key concepts, a final evaluation test, key references and additional materials for consultation. All materials are produced in English. Their design has been guided by the orientation provided in D3.1 to ensure their adequacy to be implemented in the online learning platform and to exploit the functionality it provides for the learning process.

Each Unit has been produced as independent, yet theoretically connected, learning items that lecturers can use separately outside the learning environment, should they wish. Therefore, each Unit is provided as an independent element after this executive summary.

Co-funded by
the European Union

ACCOUNT 4 Green Eco

Co-funded by the European Union

ACCOUNT 4 Green Eco

Module 1
Sustainability accounting in the 21st century

Unit 1.1
ACCOUNTING AND THE ANTHROPOCENE

Sustainability Accounting Learning Platform for a Green Economy

2022-1-ES01-KA220-HED-000089844

UNIVERSIDAD DE BURGOS

Centre for Sustainability Management

LEUPHANA UNIVERSITÄT LÜNEBURG

MBS since 1897 MONTPELLIER BUSINESS SCHOOL

gestionet Play Think Learn

UNIVERSITÀ DI TRENTO

Co-funded by
the European Union

Document information	
Unit title	Unit 1.1. Accounting and the Anthropocene
Deliverable	D2.1. Materials and resources of Module 1 (Unit 1.1)
Work package contributing to	WP2 - Comprehensive syllabus on sustainability accounting
Delivery date	October 31, 2023
Authors	Germán Gamero Igea, Carlos Larrinaga González & Nicolás García Torea (Universidad de Burgos) Juliette Senn (Montpellier Business School)
Type (Public/Private)	Public

Revision history		
Type	**Date**	**Authors**
First full draft	Jun 30, 2023	Germán Gamero Igea & Carlos Larrinaga González (Universidad de Burgos)
Internal feedback	Jul 7, 23	Stefan Schaltegger (University of Leuphana)
Internal feedback implementation	Jul 31, 23	Germán Gamero Igea (Universidad de Burgos)
External feedback	Sep 23	External reviewers from the associated partner
External feedback implementation	Sep 30, 23	Germán Gamero Igea & Nicolás García Torea (Universidad de Burgos)
TA1 participants' feedback implementation	Oct 31, 23	Germán Gamero Igea (Universidad de Burgos) & Juliette Senn (Montpellier Business School)
Final version	Oct 31, 23	Germán Gamero Igea & Carlos Larrinaga González (Universidad de Burgos)

Table of contents

LIST OF ACRONYMS IV
ABOUT THIS UNIT 1
INTENDED LEARNING OUTCOMES AND COMPETENCES. 2
1. A NEW GEOLOGICAL EPOCH: THE ANTHROPOCENE 3
1.1. Defining the Anthropocene 3
1.2. Facing the Anthropocene 8
2. ACCOUNTING AND THE EMERGENCE OF THE ANTHROPOCENE 12
2.1. Domination of nature and early modern accounting systems 12
2.2. Industrial Revolution and its accounting dimension 18
2.3. Colonialism, globalization, and the role of natural resources 22
3. NAVIGATING BACK TO A SAFE OPERATING SPACE FOR HUMANITY 25
3.1. Accounting and economic growth 25
3.2. Planetary Boundaries 27
3.3. Science-based targets 28
3.4. Degrowth 30
3.5. The Sustainable Development Goals 32
4. SUSTAINABILITY ACCOUNTING: WHAT IS NEXT? 35
REFERENCES 37
ADDITIONAL MATERIALS 40
ACTIVITIES 44
ROLE PLAY CASES 75

List of tables

Table 1. Anthropocene indicators. 5
Table 2. Analysis of ecological modernization discourse. 12
Table 3. The Sustainable Development Goals' definitions. 33

List of figures

Figure 1. Milestones in the Holocene. 4
Figure 2. Temperature variation during the Holocene. 4
Figure 3. The evolution of planetary temperature. 5
Figure 4. Stratigraphical analysis of the Anthropocene (Crawford Lake). 6
Figure 5. Biodiversity loss by region. 7
Figure 6.Living Planet Index 2022 Global Results. 7

Figure 7. Evolution of temperature in the last millennia. 13
Figure 8.Good creating the Earth & Vitruvius men..... 14
Figure 9. Tratado de Cuentas (Diego del Castillo)..... 15
Figure 10. Portraits of Luis XIV and Colbert. 16
Figure 11. Coats of arms of the East India Company. 17
Figure 12. Francisco de Goya: Lo merecía..... 18
Figure 13. Rudolf Ackermann, Inside view of the showrooms of Wedgwood & Byerley..... 19
Figure 14.Karl Anton Hickel: William Pitt addressing the House. 20
Figure 15. Conference of Berlin (caricature). 24
Figure 16. Planetary boundaries. 28
Figure 17. Degrowth framework..... 31
Figure 18. Sustainable Development Goals. 33

List of acronyms

- DEB – Double-entry bookkeeping
- GDP – Global Domestic Product
- LPI – Living Planet Index
- NGO – Non-governmental organisations
- PB – Planetary boundaries
- SBTi - Science-Based Targets Initiative
- SDGs – Sustainable Development Goals
- WW – World War

Co-funded by
the European Union

About this unit

This unit defines the key concepts and processes that have motivated the development of social and environmental accounting during the 21st century. The environmental crisis and the social inequalities of the past decades threaten our (i.e., western) way of living and, more generally, even the safe operating space for humanity on earth (Rockström et al., 2009). Accounting has too much to say in this regard. It is not only because those risks are based on economic development. It is also because accounting is not only an economic but a social discipline that can affect our society in very different ways.

To illustrate that, and the performative capacity of accounting in our society, this lesson explores the very basis of the situation. In this regard, Unit 1.1 starts by defining the **Anthropocene.** This word means much more than climate change. In the Anthropocene, human actions are one of the main, if not the most relevant, drivers of sustainability problems. This interaction between human actions and **ecological problems** points to **the social dimension** of anthropogenic issues. In the Anthropocene, it is impossible to separate the environmental from the social: the economisation of nature could only be possible through society's economisation. Both realities were built together, and if we want to face one of them, Humanity must take them into consideration jointly as both sides of a coin. In this regard, this unit will provide some historical notions to understand how **social inequality became conjoint with natural exploitation** after the Industrial Revolution, and specifically after the "Great Acceleration"**. Imperialism as a form to colonize territories, but also societies, would be the focus of the social dimension of the Anthropocene since we consider it the basis of many social inequalities (Wickberg, 2020).**

The conclusion of this Unit is that Accounting is not a neutral technique. It is (and has been) different from the natural form of understanding and managing business. It is a social construction that is constitutive of society itself and of the way we perceive (and act on) reality. It is part of our social and cultural heritage and has contributed, in some ways, to the current planetary crisis we are facing. However, for the same reason, it could be a helpful tool to change the dramatic social and ecological situation we currently live in.

If you are one of those who think that accounting can change the way we live, welcome, this is your course.

Intended learning outcomes and competences.

At the end of this unit, you will be able to:

- Understand the implications of human economic activity in the environment on a planetary scale.
- Classify the different phases in the evolution of the relationship between human (economic) behaviour and the environment.
- Appreciate the historical roots of social and environmental problems in the Anthropocene.
- Identify the role of accounting in constructing past and present relationships between humanity and its environment.
- Reflect on other economic rationalities and the role of accounting in their enactment.
- Describe the current initiatives and concepts that can help change the role of accounting to a more sustainable path.

1. A new geological epoch: the Anthropocene

This unit explores the concept of Anthropocene, discusses some alternative views, and examines the reasonings that allow us to speak about a new geological moment marked by human activity. The connection with accounting will be presented later in this unit by discussing the role of accounting in the economic and social evolution of Western societies, including Europe, that led to the Anthropocene. To conclude, we will explore how accounting can also be envisaged as a mechanism to face the Anthropocene and recover the path to take us back to the safe operating space for Humanity. Yet, before we get there, we must start understanding the Anthropocene.

1.1. Defining the Anthropocene

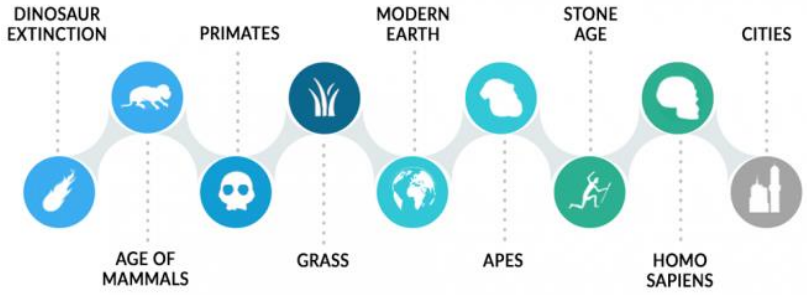
The Anthropocene as a geological epoch

The Anthropocene is the term used to refer to the geological moment in the history of planet Earth that is characterized by the influence on **human behaviour in its geological process**.

From a geological perspective, we live in the **Cenozoic** era, a sub-division of the planet's evolution that started **66 million years** ago. The previous era was the **Mesozoic** era, famous because of the division of the Pangea continent and the emergence of dinosaurs as the newest primary form of biological evolution. Also, the Mesozoic is famous in popular culture because of its end: the probable collision of an asteroid. This observation shows that geological eras are **not only influenced by internal factors**. Meteorites, the sun's activity, and other factors, such as human activity, have influenced the evolution of the Earth.

Different characteristics define the Cenozoic. One of them is the appearance of the current form of the continents. In a biological dimension, the first mammals emerged and populated the Earth. https://earthhow.com/Cold temperatures and glaciations have been the dominant rule of the Cenozoic, especially in its first epoch: the Pleistocene. The **Holocene**, **has been, until now, a warm period,** with no glaciations. This has been crucial for the history of humanity, since it have allowed to develop human life first, and especially human civilizations during this stable and warm period. The end of the glaciations, for example, implied the emergence of primates and homo sapiens, the extinction of big mammals, the rise of new vegetables and, at the very end the rise of agriculture.

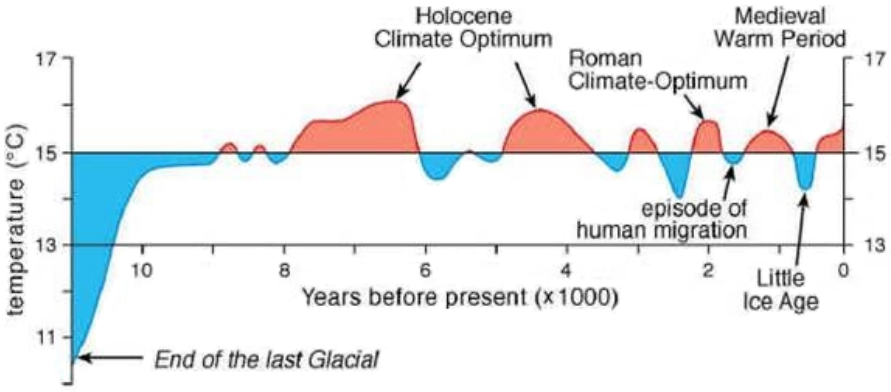
Figure 1. Milestones in the Holocene.



Source: https://earthhow.com/

Those elements are structural conditions of human life on Earth. But we have to to consider that the 'optima' (warmer conditions on Earth) of the Holocene are strictly related to some key moments of human history, particularly in Europe. As Figure 2 shows, the last two Holocene 'optima' corresponded with the development of Roman Empire and the Renaissance.

Figure 2. Temperature variation during the Holocene.



Average near-surface temperatures of the northern hemisphere during the past 11,000 years, compiled by David Archibald after Dansgaard et al. (1969) & Schönwiese (1995)

Source: Nurtaev & Nurtaev (2017, p. 80).

When we talk about the Anthropocene, one of the critical issues is time. The Earth's History is about 4.5 billion years and the Holocene accounts for only a tiny moment between different glaciations that started (approximately) 11.700 years ago. Although dating the start date of the Anthropocene is tricky (Bebbington et al., 2020), it is worth noting that all the changes that led to this epoch started to materialize only 500 years ago, and especially 50 years ago. **Changes** in a geological composition (and it implies biological changes) are **getting quicker**, and it is uncertain how ecological systems will face them since natural processes have a very long dimension. In the next section we

will explore some key elements that define what Anthropocene is, and the role of Humanity in driving the changes that led to it.

Characterizing the Anthropocene and its connection to Humanity

Geologic eras are usually defined, at least, by the changes in stratigraphy, the evolution of fauna and climate changes. Nowadays, we can find some changes in all those parameters. Table 1 summarises the main indicators used to demonstrate these changes and their impact on geological history.

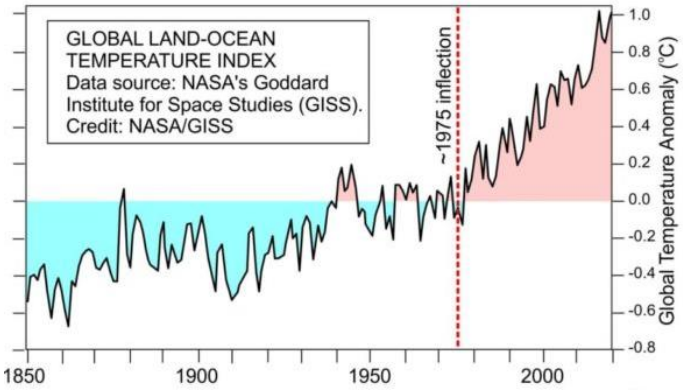
Table 1. Anthropocene indicators.

Indicator	Human activity
Temperature	The last time we know about an incrementation of 4ºC (an estimation in a possible scenario at the end of the 21st century) was 15 million years ago. We have not registered the gas induced by human activity since 1750 (555 petagrams of carbon) for 800.000 years. It will postpone the next glacial cycle for half a million years.
Stratigraphy	Regarding the implementation of atomic weapons since 1945, humanity has created a radioactive isotope stratum. Between 30% and 50% of the planetary surface has been modified by human actions, primarily related to agricultural activities.
Biodiversity	Around a million species of animals and plants are in danger of extinction due to direct or indirect (unsustainability agriculture, climate change) human behaviour. Transoceanic exchanges of animals and plants have no geological analogue.

Source: Own elaboration.

Regarding **temperature** and climate, one of the most relevant indexes is the **NASA Global Temperature Anomaly**, which provides, in a very syncretic way, a historical perspective of the evolution of temperature variations. Figure 3 shows that the rise in temperature started, at least in 1850, but its incrementation has been most noticeable since 1975.

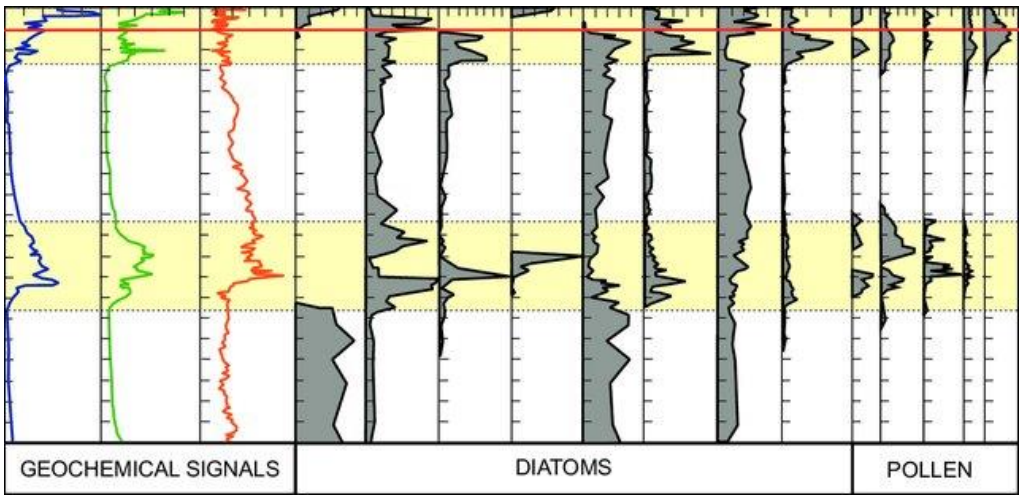
Figure 3. The evolution of planetary temperature.



Source: European Geosciences Union.

The second condition to delimitate a geological moment (an era or period, for example) is the modification of **stratigraphy** on the planet's surface. In this regard, the Working Group on the Anthropocene has provided **stratigraphical evidence** (Walters et al., 2013; Zalasiewicz et al., 2017a). This group has relied on artificial rocks (like concrete), plastic, urban stratigraphy (like the metro systems), biological and chemical human modifications of landscape, and technofossils to define a Global Stratigraphic Section and Point (GSSP) to the Anthropocene. Despite no consensus about what these elements take to define the new geological period, geologists have proven the possibility of dating stratus made by human action. For instance, Zalasiewicz et al. (2017b) proposed the analysis of Crawford Lake (Toronto) as an example of how different indicators (geochemical signals, diatoms, and pollen) prove human activity, especially in the second half of the 20th century.

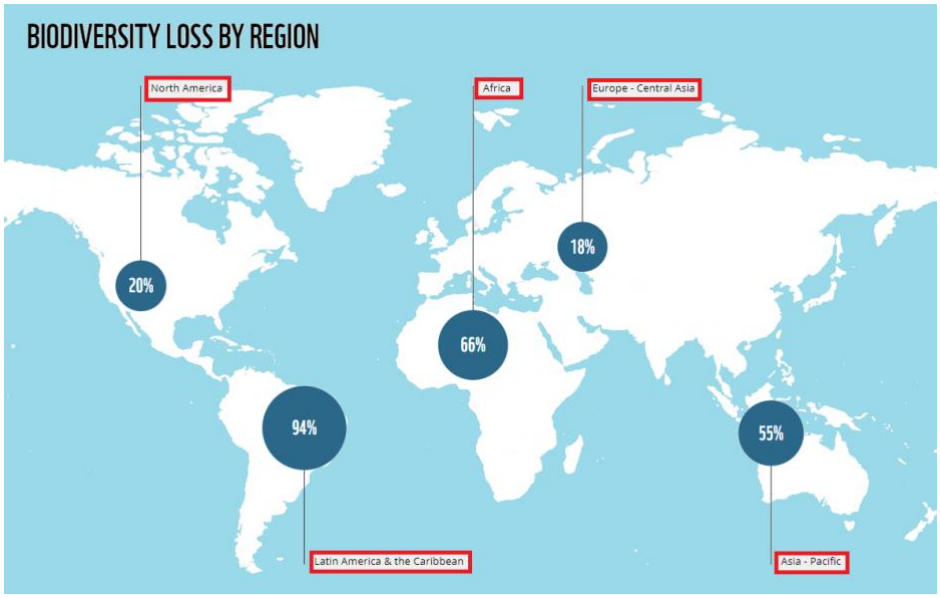
Figure 4. Stratigraphical analysis of the Anthropocene (Crawford Lake).



Source: Zalasiewicz et al. (2017b).

Finally, one of the most dramatic aspects of the Anthropocene, the so-called sixth massive extinction, has received considerable relevance from biologists, governments, and NGOs. We have lost approximately 50% of the vertebrate biodiversity in the past 50 years. A million different animal and plant species are in danger of extinction (especially corals). Some **causes** of this problem are (1) agriculture, (2) direct exploitation of animal/vegetal resources, (3) climate change, (4) pollution and (5) invasive species. One of the main indexes in this field is the **Biodiversity Intactness Index**, which is used to analyse biodiversity integrity on Earth. The Natural History Museum of London confections this index to study the integrity of ecosystems and its causes. This index also divides the operativity of an ecosystem between a limit of 90% to a resilient ecosystem and 30% to a risk of collapse into different regions.

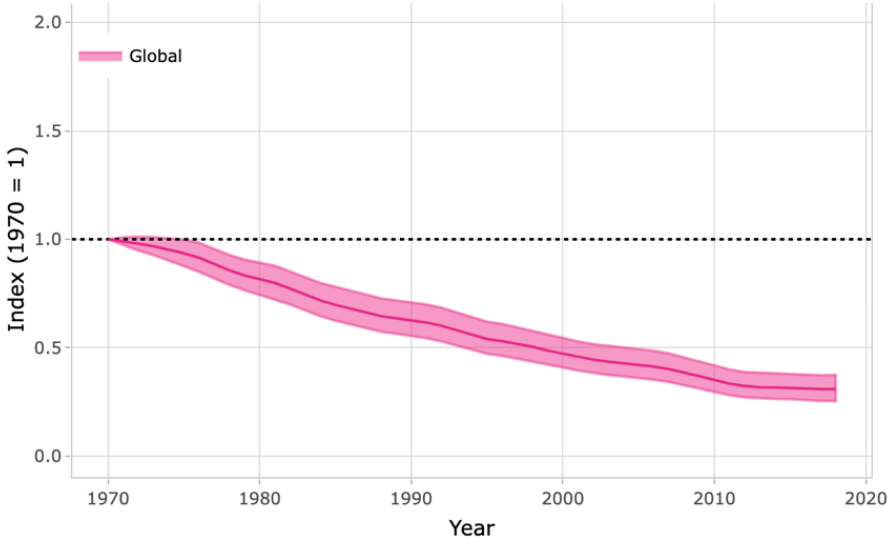
Figure 5. Biodiversity loss by region.



Source: Living Planet Report 2022.

Another relevant index is the **Living Planet Index**, produced annually by WWF since 1970. This index evaluates biodiversity trends on Earth and demonstrates the biodiverse loss. This initiative also publishes an annual report on the causes, motivations, description of biodiversity loss emergencies and some possible transformative changes.

Figure 6.Living Planet Index 2022 Global Results.



Source: Living Planet Index.

In conclusion, much scientific evidence of environmental change can be compared with other geological modifications over time to claim that we are now in a new geological epoch, using the same arguments that geology does for other historical moments in Earth's history. Once we have argued that we are in a different epoch of

geological evolution, we will discuss the Anthropocene in the next section. We will focus on the human and social dimensions of this new geological situation and how to face it.

Video: Living in the Anthropocene (Link)

1.2. Facing the Anthropocene

Definitions and causes of the Anthropocene: a starting point to value it.

The term **Anthropocene** only stresses the influence of human action on geological dynamics. In the previous section, we have pointed out how human activity has transformed the main pillars of geological evolution. The Great acceleration has changed the climate and temperatures; modern industry has modified the stratigraphy by artificial rocks and techno-fossils and agriculture, pollution, and human circulation of animal species have directly affected biodiversity.

However, this generic and neutral idea of Humanity has been criticized for disconnecting causes and consequences. It is not the generical presence of humanity in earth what causes the geological modifications. Trying to specify the motivations that caused this situation, academics have proposed alternative ways of naming this geological moment. Naming the geological epoch is a way to face the Anthropocene and, more importantly, to face the relevance of accounting in this causes and solutions. Some of those alternatives are:

- Some researchers have proposed using the expression **Capitalocene** rather than "Anthropocene" because the turning point started with the Industrial Revolution. The use of non-renewable sources of energy and raw materials have caused the environmental crisis.
- **Technocene** is also a term for this geological moment. In the same way of thinking, the Industrial Revolution and the fast development of technology are crucial. Technology can be analysed as an accumulation of capital and time. Yet the causes are very different from the Capitolocene. Technology is problematised as a "magic" tool. In other words, technology resolves current problems, but the real action is translating it into time or space. In doing so, the problem is not only our way of living but also **our rationality** and historical genealogies. We need to modify our consumption and understand our relationship with **progress** and technology differently.
- Despite not problematising the term, other authors talk about an accumulative impact of civilization and consider that we should consider the **Neolithic** era as the starting point of the Anthropocene (Syvitisky, 2012). The start of agricultural civilizations, sedentarism, domestication of animals, and social classification are the critical elements of the Anthropocene, and all started 5,000 years B.C.

- The **Androcene** represents a **feminist perspective**. Feminist movements stress Western society's structural problems by focusing on understanding the geological modifications. From a structural perspective (e.g.,., the connection between patriarchy, neolithic and private property) but specially in a circumstantial/present perspective (the connection between the patriarchy, bourgeoise and industrial revolution) eco-feminists focus on patriarchy and its derivate social forms that have been present historically, at least in Europe (e.g., inequality, hierarchy, and private property) to understand the causes the economic and social crisis. Consequently, **eco-feminist** answers are based on a relational and collaborative economy, a non-growth economy and a non-hierarchical social structure to resolve the consequences of capitalism.

Despite the diverse terms used based on different approaches to the Anthropocene, what is important is to understand **the social and environmental dimensions of the problems**. It is not about blaming someone or some collective. It is more about searching for the causes or circumstances that allowed this situation.

Activity: Do you understand the geological epochs and eras? (see "Unit 1.1 Activity 1")

Scientific proposals to face the Anthropocene.

Since socio-ecological changes have been a constant in human history, we can "historize the Anthropocene". In other words, in recent history (especially after 1800), we can find different reflexive testimonies focused on environmental issues and its connection with social behaviour.

The starting point is the Enlightenment philosophy and its intention to create a **Good Anthropocene**. This idea refers to the possibility for humanity to control the climate and improve their living standards because of the Enlightenment's emancipation ideal (i.e., the separation of Humanity from Nature). This perspective has changed nowadays. Some scientists defend the ability of human capacities and techniques to manage the geological situation developed by humanity. They are usually designed as **Prometheans**, and their proposals are related to geoengineering (Hamilton, 2013).

By contrast, some philosophers and personalities of the Enlightenment and the 19th century, such as American **politicians** like Benjamin Franklin and Thomas Jefferson, started to debate the **negative consequences** of human activity on Earth and, directly or indirectly, the relationship between Nature and Humanity. They were concerned about these situations in their new role as leaders of the new states that appeared after the American Revolution and the independence of the United States of America. Similarly, in the Metropolis, some politicians started to report the connection between forest and the water cycle (and its degradation due to the deforestation of Europe) as a

matter of concern in the 1820's. Also, **scientists and philosophers**, such as Georges-Louis Leclerc Buffon, Charles Fourier, Eugene Huzar, or Alexander von Humboldt, started to show their concern for the dependence of human survival on Nature. This line of thought is rising at present times, leading to a current way of thinking named eco-catastrophism. Aware of the critical situation of the planet Earth, they accepted the collapse of our civilization and expected a critical change in our way of relating with Nature.

Following a Promethean, eco-catastrophist, or a middle point position is perfectly acceptable to face the Anthropocene crisis. At this moment, it is essential to situate the **historical itinerary** of the ideas related to the Anthropocene and its **terminology**.

Activity: Can you remember some scientific proposals in the Anthropocene? (see "Unit 1.1 Activity 2")

Civic responses to the Anthropocene.

Some political, economic, and social responses have been proposed to face the Anthropocene problem. The discourses around these responses can be categorised into three groups (Dryzek, 2013):

- **Administrative Rationalism**. That is the rationality of the government, especially in the Anglo-Saxon arena. Top-down decisions are made, and the role of the **technocrats** is crucial in solving environmental problems. Governments establish environmental departments (like the Environmental Protection Agency in the United States) and scientific committees (or some collaborative networks) in its direction positions. Thanks to this, government actions are based on science, especially **scientific evidence**. **Cost-benefit analysis** is a critical element in this system. This analysis implies an economic valuation and the implementation of environmental impact assessments as governmental tools. State administration, more than an agent in society, has a special influence on changing the context of the population, but without forcing people directly. This way of acting is declining but has been very influential in Western societies in the last decades.
- **Democratic Pragmatism**. This discourse focuses on a **resolving-problem** perspective. Ideological or political components are less present in this discourse since various agents participate. Furthermore, it is a middle point between the strength of government and a decentralised way of acting. Initiatives are usually voluntary and cooperative; they do not have to be related to a unique government or territory. Science is also important in this discourse, but from a more methodological approach. In this discourse, problems are

conceived as (scientific) **experiments**. The provision of information to other partners or the public in general is a fundamental issue in this perspective. Here, accounting has many things to say. A remarkable way of formalising this democratic pragmatism is the concept of **stewardship**. An example is the SeaBOS initiative, which organises some of the the world's major fishing companies to manage fisheries sustainably. It is a collaborative network with ambitious proposals and a forum for scientists and companies to achieve sustainable goals. According to Dryzek (2013), this discourse is getting more attention in current times because the democratic participation of agents legitimates it.

- **Economic Rationality.** This discourse argues that the transition to a sustainable environment will be more economical and easier to accept by society if we employ market rationality. Some solutions are extremely popular today, such as the Paris Agreement. For example, Europe has developed a **carbon emission market** as a market-rationality solution to GHG emissions. Some other initiatives are the so-called "green taxes" or pollution quotas. Accounting is present in this discourse by measuring, creating new economic tools, and evaluating profits. Dryzek (2013, p. 165) calls this process the **ecological modernisation** of their economies (see table 2). This initiative started during the 1970s and 1980s, especially in Europe. Germany and the Dutch Republic are examples of implementing these policies. An argument for this leadership is that these territories have applied a **principle of prudence** in their decision-making. Contrary to the first discourse that based its decisions on scientific evidence, in economic rationality, governments and society are concerned about **scientific discussions** and are still waiting for results. According to this hybrid discourse, facing Anthropocene and the changes we need to make are not a matter of political parties but of recognising environmental care as an indicator of efficiency in their industries and agriculture. It also implies long-term policies and points of view and civil society participation, specifically NGOs.

Table 2. Analysis of ecological modernization discourse.

Category	Content
Basic entities recognized or constructed	Complex systems Nature as waste treatment plant Capitalist economy The state
Assumptions about natural relationships	Partnership encompassing government, business, environmentalists, scientists Subordination of nature Environmental protection
Agents and their motives	Partners; motivated by public good
Key metaphors and other rhetorical devices	Tidy household Connection to progress Reassurance

Source: Dryzek (2013, p. 177).

Activity: What are the main responses to the Anthropocene? (see "Unit 1.1 Activity 3")

2. Accounting and the emergence of the Anthropocene

To understand how we got into the current geological situation is key to considered that the Anthropocene is a consequence of the accumulation of minimal changes. The Industrial Revolution led to the upsurge of factories and other (economic) organisations, imposing a new way of understanding the connection between society and nature. Planet Earth became a machine, but it is not.

Accounting had a relevant role in the rising process of factories and, more generally, in the instauration of a rationality based on efficiency, profit and the mechanical view of life. **Making the planet Earth exploitable** was one of the causes of the rise of the Anthropocene.

2.1. Domination of nature and early modern accounting systems

Some philosophers and economic thinkers proposed that the turning point of the social and economic evolution to modernity was when humanity, especially European societies, started their efforts to **dominate Nature**. Fear passes from future salvation (Theology) to now (Science). Not only society but also Nature must be safe, which implies control and domination.

Strangely enough, it was in a **warm period** when this story began. Despite modernity referring to a kind of self-improvement, it started when nature showed its kindest face. Once again, remembering the connection between Nature and Humanity is essential.

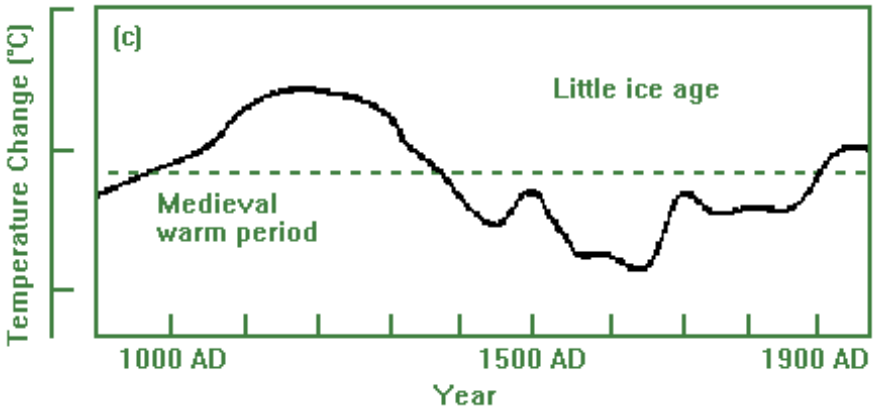
Some key aspects of European history should be analysed as a reaction to environmental factors: **Humanity and planet Earth are linked in a bidirectional way.**

Nature, History and Accounting.

Europe experienced in the Middle Ages a warm period that allowed a **more profitable relationship with Nature.** As far as we know, that warm period was motivated by natural dynamics. No human influence (as observable today) affected the planet's (specifically, European) climate. Nevertheless, **it did affect society.**

High temperatures promoted agricultural activity, which in turn allowed an increase in the population and, therefore, commerce and wealth. In the final Middle Ages (11th-15th centuries), despite some terrible situations, such as the black death epidemy or long wars (i.e., the Hundred Years' War), it was a period of **intensive economic growth**, supported (initially) by European resources.

Figure 7. Evolution of temperature in the last millennia.



Source: Jones et al. (2007).

The first symptom of the evolution from the Middle Ages was the rupture of the regional circuits of commerce. Similarly, the states started their transition into what is known as *the Early Modern State*. Europe became the **very first global system**, reduced to itself and ego-centred, but a system, nonetheless. The creation of markets on a large scale (fairs of Champagne, Lyon, North Italy, and at the end of the period, Spanish ones) demanded new instruments.

Bill of exchanges and credit solved some technical problems related to displacement, but they mainly addressed the **problem of (lack of) money**. We are not talking about the lack of precious metals, although they were equivalent terms. When American silver arrived in the 16th century, those instruments did not disappear but were perfectionated because society continued to demand more agile transactions. Many accounting methods tried to manage these quick exchanges by reinforcing reliability and trust and, eventually, creating the sense of control over business.

Last Medieval and Early Modern Society founded some of the main issues of our times: how to increase our security. **Accounting** was an essential tool for this endeavour.

The measurement became increasingly important in European lives. Medieval times made the first steps, but Renaissance Italian thinkers developed this idea. In a very confusing moment, during the black death and in the middle of a spiritual crisis, modern humanism and the Renaissance appeared with a new **idea of the power of Humanity over Nature.**

Luca Paccioli (c. 1445-1517) is an excellent example of the growing relevance of measurement, and hence, accounting, in business during that period. He was friends with Leonardo da Vinci (1452-1519). He knew the works of Fibonacci and was a mathematician interested in geometry, proportionality, and, not surprisingly, accounting. Paccioli is famous because he was the author of the first printed treatise describing the **Double Entry Bookkeeping** (DEB). For some authors, DEB allowed (or was a sign of) the transformations of business. The systematization of balances, the association principle and the capital account allowed individuals to start thinking **capitalistically**. Business' and businessperson's wealth were separated, and accounting through DEB became an information system for economic decisions.

Figure 8.Good creating the Earth & Vitruvius men.

Source: Bibliothèque National de France & Accademia delle Arti di Venezia

On the other hand, the development of modern state systems in Europe during the Middle Ages made the economic transactions more complex when the Europeans colonised America. It is essential to note that the connection between Europe, Africa and Asia before the Renaissance was managed by some trade networks and routes (i.e. the Silk Road) more than form a geopolitical force. Venice, or the Mongol empire, worked as a platform for connecting China and Europe, but there was no political force behind it.

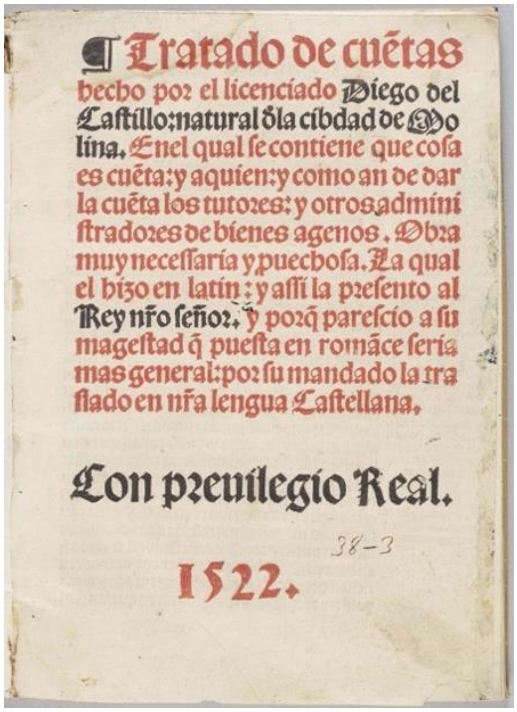
Activity: Do you understand how early modern accounting appeared? (see "Unit 1.1 Activity 4")

Accounting and Imperialism

Imperialism in the 16th and 17th centuries in Atlantic Europe was an partly achievement of accounting, especially merchant accounting. The enactment of economic mentalities during this period in different settings was supported by the development of accounting instruments that were designed to serve economic purposes.

The Spanish was the first commercial empire. During the 15th and 16th centuries, Spain developed a particular connection between **public affairs and accounting**. Since Spanish kings did not have big territorial states, they have to strengthen their royal power through taxes. This situation called for monitoring their population's wealth to organise tax systems. In this regard, accounting tools emerged as suitable instruments for that purpose. On the other hand, the **Escuela de Salamanca** provides some moral pillars to understand the relationship between profit and time (Gamero & Larrinaga, 2022). Without forgetting the medieval tradition of usury, authors like Martín de Azpilicueta and Tomás de Mercado took the first steps to understanding the market society in a very modern way. For example, Azpilicueta is considered the father of the quantitative theory of money. Broadly speaking, the Escuela de Salamanca reflects on free trade, credit, risk management, or the role of law in providing security to merchants.

Figure 9. Tratado de Cuentas (Diego del Castillo).


Tratado de cuẽtas
hecho poz el licenciado Diego del
Caſtillo;natural ỗla cibdad de Mo
lina. Enel qual ſe contiene que coſa
es cuẽta:y aquien:y como an de dar
la cuẽta los tutozes:y otrosadmini
ſtradozes de bienes agenos. Obza
muy neceſſaría y puechoſa. La qual
el bizo en latín:y aſſi la preſento al
Rey nſo ſeñoz. y pozq̃ pareſcio a ſu
mageſtad q̃ pueſta en romãce ſería
mas general:poz ſu mandado la tra
ſlado en nſa lengua Caſtellana.

Con preuilegio Real.

38-3

1522.

Source: www.salamanca.school

However, the most critical issue that affected this evolution was in the field of mentalities. Thanks to the connection with Muslims and Jews due to the Arab conquest

of the Iberia Peninsula, the Christian Spanish kings had more access to the Roman and humanist legacy in the Middle Ages. A key point in this situation was the consideration of monarchy as a **public ministry**. **Taxation** was a civic duty and tax evasion was a republican sin.

The 17th century was the moment of the most significant development of accounting in the French Monarchy (Miller, 1990). French entrepreneurs, especially during the **Colbert period** (1660-1680), collaborated with the royal power to establish a more efficient taxation system. The first treatises on public accounting appeared at this moment, and the dissemination of accounting knowledge was appreciable for a few generations. Furthermore, merchants showed the royal treasury how vital the **fluidity of communications** and the necessity of further information were. The time question and the security obsession were at the very end of this evolution, and accounting, once again, achieved a key position in solving these problems. Like the Spanish case, some of the most relevant contributions to accounting in this period were outside the accounting books.

Figure 10. Portraits of Luis XIV and Colbert.

Source: openverse.org

Despite the French political primacy in Europe, during the 17th and 18th centuries, Great Britain created a **solid trade empire overseas** that were rooted in financial and economic matters. The English merchants adopted some of the innovations of Northern Europe, like great trade companies or stock markets, and they developed spectacularly in the Dutch Republic. The political connection between these two territories allowed England to access the financial resources of its allies (the Dutch Republic was one of the most developed economies these days). The Bank of England arose, and this territory took off the financial business (both public and private debts).

This moment was when **capitalism** started as a variation of the mercantilism ideas. The specific situations of the English trade and agriculture drove the market as the leading economic force. In many cases, there was the only economic mechanism. In this sense, we have to consider the relevance of the consolidation of the gentry as a social and, afterwards, economic, and political group).

England and Britain developed peculiarities that drove the **new colonialist rationality** in the 19th century. It is essential to note the extraordinary development of joint-stock companies during the 16th and 17th centuries in the British Islands. Although the society of Northern Europe (especially the Dutch Republic) created this type of companies, in Britain, these companies endured for a long time. Thanks to this, they achieved an enormous capacity and became a central institution in business and the state. The better-known company in this regard was the **East India Company**. This company was the largest of its time (especially during the 18th century) and became a state under the English/British state. The company had its army and its territories. They also implemented a new economic logic to administrate the territories, and finally, it became a model for European territorial expansionism in the 19th century.

Figure 11. Coats of arms of the East India Company.

Source: openverse.org

To conclude, in this period of Britain's history the **accountability concept evolved**. An economic, social, and political dimension started to regulate the relationship between the king, his ministers, and the parliament after the Glorious Revolution at the end of the 17th century. This **public domain** of accountability and the consolidation of capitalism and market logic inside British society implied some innovation in the history of financial accounting. As we will see in the next section, the new public sphere also demanded information in the economic arena, and accounting practices must provide shareholders with enough evidence of the state of the business.

Activity: Can you connect accounting and imperialism? (see "Unit 1.1 Activity 5")

2.2. Industrial Revolution and its accounting dimension

The **Industrial Revolution** is considered a starting point or, at least, a milestone in the evolution of the human capacity as a geological force. As happens many times in long-term processes, it is not easy to establish a starting date for the Industrial Revolution. Nevertheless, the patent of the steam engine in 1769 could be symbolic. Of course, it was necessary for the economic evolution of the British Islands and the configuration of an economic system where capital accumulation and investment had a significant role. However, the spread of trade techniques and administration and the strength of the state had a crucial role, which was reinforced through accounting and, in the English case, accountability.

Some contingent aspects contributed to this evolution. One of them was the **Napoleonic Wars**. Since the 17th century, but especially the 18th century, wars became more aggressive in Europe. At this moment, the British Empire's situation helped to improve its economic and military power (Frankopan, 2023). On the other hand, the large campaigns against Napoleon's empire produced a long war (twenty years) that negatively impacted the population, impoverishing it, especially the lower classes, and drove economic transformations.

Figure 12. Francisco de Goya: Lo merecía.

Source: openverse.org.

This section analyses how all these factors, and the own development of the Industrial Revolution allowed a **new accounting system with a distinctive role in society**. This situation led to a new way to account for and measure the business reality. Additionally, the role of accounting in public and private spheres helps to understand more profoundly the reasons and repercussions of the Industrial Revolution and its role in the new geological moment.

Video: Accounting and the Industrial Revolution (Link)

Accounting in a new business world

New technology was vital in the Industrial Revolution. New machines increased the production system in a never-comparable way, and the demand for new raw materials stimulated colonialist dynamics. However, it is also interesting to see how **technology affected accounting**.

Factories started their history during the eighteenth century, especially in France, where the royal power developed some **manufactories** (the most important was the Gobelins Manufactory) to provide luxury products to a growing court. The model had great success around Europe. Spain, for example, was a very innovative system since, after the crisis of the 17th century, its economic situation worsened radically. Some accounting management changes in these factories started since the new system required new forms of control space, employees, and production.

During the Industrial Revolution, this evolution continued but more intensively due to the proliferation of factories and the dynamic of return on investment in the English model. As production capacity grew, **the attention focused on cost**, leading to the development of cost accounting (Hopwood, 1987). During an episodic economic crisis, Wedgwood Company reformulated its accounting system to influence economic activity by controlling costs and calculating expectable profits. Josiah Wedgwood created a new way to make the firm structure and problems visible to intervene in the factory to face the crisis (for example, analysing large-scale production profits) and change its marketing policy.

Figure 13. Rudolf Ackermann, Inside view of the showrooms of Wedgwood & Byerley.

Source: The British Library.

Accounting techniques were relevant to improving the factory system in Wedgwood's way of thinking, and, in general, in his time. The Wedgwood family renewed their bookkeeping techniques to establish new relationships between accountants and between them and the factory and the owner, which were crucial to develop the Industrial Revolution (Hopwood, 1987). A new idea of **scientific accounting** appeared, influenced by the Enlightenment and **English empiricism**.

Accounting in the form of cost accounting (i.e., the use of accounting to estimate production costs) acquired a new dimension. This example shows us how accounting helps translate some scientific (and even philosophical) ideas into the business world.

On the other hand, it shows **accounting's ability to become something new** when historical situations demand it. Accounting is more than a registration technique; it is an inventive one. As Paccioli said centuries ago, **accounting is a kind of imagination** that can create new forms of understanding business. It is an inspiring message in a moment that requires new solutions to new problems.

Activity: Can you tell us what you have learnt about accounting in this new business world? (see "Unit 1.1 Activity 6")

Accounting, policy, and society in the industrial world

The spread of accounting techniques, its new dimension, and its political role also affected social relationships. Calculative practices and numbers became increasingly popular in the **17th century** (Deringer, 2018). This period could be considered an agent of change in the public arena. In England, the Parliament achieved a new position in British policy due to the monarchical problem of the mid-17th century. Additionally, the monarchical dispute assisted the **polarization of society**. In political terms, it allowed the creation of political parties that put together very different agents around a common idea. Finally, the **spread of the print** as a mechanism to translate national and parliamentary debates (in a bidirectional way) is also considered a crucial point in this evolution.

Figure 14.Karl Anton Hickel: William Pitt addressing the House.

Source: National Portrait Gallery.

Quantitative arguments gained authority when the political debate entered the public sphere (Habermas, 1962). Accounting's capacity to reduce complex (national)

situations to numbers allowed it to become a source of arguments in public debates. Numbers and calculations became a way to objectify in political disputes that turned out to be more and more aggressive. Once again, there was a connection between the public and business accounting. At this moment, especially in England, public accounting started to be an argument in the House of Parliament on **topics** such as international trade, fiscal policy, or national debt. So, the economic situation, first with the Civil War and after that the South Sea Company bubble (in the 1720s) or the Napoleon Wars, were also important factors in this evolution. Since it was a matter of facts inside and outside the state administration, the financial revolution and banking also affected the role of accounting. However, the Industrial Revolution did not only affect how society understood accounting in the public sphere. Even private life experienced changes due to the new concepts of **work, class, and family.**

Religion led this historical evolution (Funnell & Williams, 2014). The new bourgeoise moral established new forms of spiritual accountability. That implied new forms of auto-control based on accounting. But also encouraged new domination strategies in society, especially in the private sphere (Hopwood, 1994; Carmona & Ezzamel, 2016). That has been specifically criticized by the feminist studies in accounting.

The intersection of a new economic scenario and the rise of the bourgeoise class in England and Europe affected the role of women in society (Uribe & García Sánchez 2023). We must also consider that accounting is not a neutral practice, but it is **gendered and gendering** (Carmona & Ezzamel, 2016) in its historical dimension. Specifically, in the 19th century, accounting was employed for male domination (Capelo et al., 2018). The role of the *other sphere*, the private one, is essential in this sense. Society rules usually kept women from participating in the public sphere as independent subjects. Due to the **modifications of the family and workplace notions**, women, especially in upper and middle classes, were marginated to a secondary place in the household.

In this context, men appeared as **food providers** and **supervisors of the family accounts**. However, what is more interesting is not only the social role of accounting in the direct domination but the transition to the public and masculine way of conceiving accounting in the domestic sphere. Firstly, accounting, as happened in the political sphere, appeared as a way to **dominate**. Agency relationship was essential in marriages. Men, especially bourgeoise and rich ones, hold the state's sovereignty (through their participation in the Parliament elections) and the family's private property.

Political debates became more focused on measurements, and accounting changed its role in business. Also, private control changed. Domestic engineering is a perfect example of this. We can observe the implementation of cost accounting in domestic households. In other words, a scientific version of accounting was implemented, and the spread of this knowledge through the press played a similar role as in the political dimension.

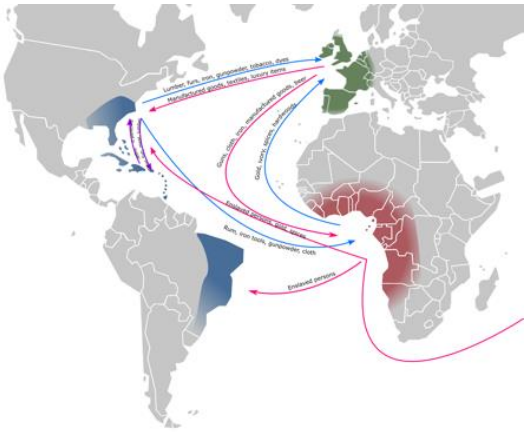
Activity: What do you know about the role of accounting in the Industrial Revolution? (see "Unit 1.1 Activity 7")

2.3. Colonialism, globalization, and the role of natural resources

The other side of the coin of the Industrial Revolution was the rise of European colonialism as a new way of imperialism and globalization. As previously stressed, Eurasian commerce was common in the Middle Ages. Global commerce started when Europeans conquered the Americas and developed the triangular model. During the Early Modern times an (unfair) equilibrium was achieved between the Americas, that provided raw materials; Europe, that provided manufactured goods; and Africa, that provided slave workforce.

Spain and Portugal, as classic imperial states, articulated their trade in a **monopolistic framework** (at least in theory, the state controlled these monopolies). Moreover, mercantilism was the main form of economic regime, and the control of the state in business was also significant in countries like France. Even the Dutch Republic can be considered one of the most developed examples of mercantilism. However, without the social, economic, and political conditions in England, this situation was impossible.

Figure 16. The Triangular trade scheme



Source: openverse.org

> More than a cause-consequence process, **the Industrial Revolution and colonialism** were two different situations that coexisted in time, and they complemented each other in a certain way.

The spread of new economic rationalities, which were mentioned before, influenced the way Britain faced the old imperialism and started a new way to spread its trade networks based on commercial colonies. Additionally, thanks partly to the Industrial Revolution, Britain could develop a political "free trade" based on individual proposals but with many political repercussions. It is what is usually named as the British "**informal empire**". Industrialized Britain had **no real economic competitors** at the very beginning of the Industrial Revolution. So, economic power was strong enough to control the different regions in which Britain was interested. The first space "invaded" by Britain's market was Latin America, especially after its independence from the

Spanish Empire. The same applies to India. Although British political domination of India is very well known in popular culture, the pillars of the British domination were previous and based on trade mechanisms and colonialism.

> The combination of the industrialization process and the economic, social, and demographic crisis in Europe drove a **new way of domination** based on a statal paradigm, people displacement and natural extraction. The metropolis-colony relationship became necessary to European industrialized countries and not only a possibility.

As the European metropolis started their industrialization process, the colonialist model started to change. Specifically, during the second half (or the third quarter, depending on territories) of the 19th century, free trade started to move into a revised version of mercantilism: protectionism. The non-European territories (and some European territories, too) assumed the role of internal trade for the metropolitan stock. **This stock was composed of people and products**. Citing Frankopan (2023, 468-p. 469), [the metropolis] "created a network that sent resources, commodities and goods in one direction, and people in the other". More generically, global trade created two different areas, a producer and a consumer, so **the population was affected by its location and social class**. For instance, the struggle situation in the Old Continent favoured the emigration of many Europeans.

The colonies became a destination for the lowest classes in Europe (e.g. the significant Irish emigration; at the end of the 1840s, Ireland lost almost 40% of its population, Frankopan, 2023). Nevertheless, also, non-occidental regions started to become exporting-population territories. At the same time, 50 million Chinese people abandoned their country to move to the European colonies in Asia, and Indian people were displaced inside or outside the British empire to satisfy economic necessities.

> The **British informal empire** was a starting point to dominate populations, resources, and territories thanks to the economic, not (at least primarily) political power. It implied a modern way of domination, which is currently active.

A vital aspect of this system was the reproduction of the metropolitan conditions in the colonies. The bourgeoise triumph in the 19th century also implied an **imposition of a unique** (the bourgeoise) **model of a way of living**. Although all European societies in early modern times already had this standardization tendency, especially after the Enlightenment, bourgeoise societies have the *égalité* (i.e. equality) of all citizens as a core concept. That did not imply absolute equality among the population, but a feeling of a unique way of organizing (to evaluate and categorize) individuals to achieve a pretended equality.

Colonialism not only established the metropolitan wills in the territories, but it also imposed to other spaces and nations the way the metropolis understood (in a very economical way) nature and society.

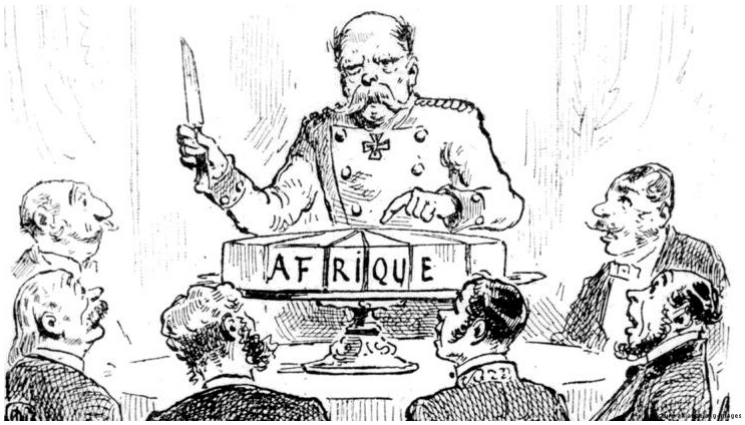
The technical development allowed the Europeans to consider that only their (economic) parameters could serve this objective. These dangerous combinations of ideas finally strengthened the practices and modes of thinking that Europeans had used since imperialism.

One of the examples of this process was the economical use of the way in which the population was organised. If cities have a very long historical tradition across the planet, a new concept of the city started: the megalopolis. It does not matter if we analyse the metropolis or the colonies. The colonial system inspired the creation of an **urban society,** and the creation of the biggest cities and territories could provide more efficiency in their economic purposes (manufacturing in the metropolis, extraction of raw materials and trade to the metropolis in the colonies).

The urban network and the development of transports allowed the colonial system to run global empires in a more uniform way. **Colonial trade became a national trade**, and competition between colonies started to incorporate the strength of their colonial systems, especially after the Berlin Conference (1884-1885), when European countries agreed to divide the African continent into different influential areas.

Colonialism tried to resolve the inherent European problems. But, with new spaces and markets, it only reduced the pressure in the metropolis. However, as the problems continued, they reappeared eventually.

Figure 15. Conference of Berlin (caricature).



Source: Journal L'Illustration.

This political and economic model exploded during World War (WW) I & II. The excessive competition between European nations in peaceful times and the pressure they imposed on their colonies during war blew up the political ties. In this moment European shown how the modifications of imperial model haven't resolved any political nor economical problem between the metropolis and the colonies. Political colonies -

and cities remarkably, only resolve the communication problems to obtain raw materials competently. Depending on the territory, emancipation was either a smooth or a bloody process. However, practically all colonies achieved political independence at the end of WWII.

We are living in the second explosive moment in current times. Since informal imperialism had deeper roots than formal power, it remains alive despite the colonies' political independence. We usually name this situation neo-colonialism. Nevertheless, the economic logic of appropriation is facing the situation that the planet cannot provide more space for economic growth, at least as we have historically conceived it. The next section examines the role of accounting in the current contest and how it can help us face the planetary crisis through the development of new accounting tools and techniques.

Case study: Imperialism case (see "Unit 1.1 Case Study 1")

3. Navigating back to a safe operating space for Humanity

3.1. Accounting and economic growth

As explained before, human action is the main driver of the Anthropocene. In this regard, corporations are one of the main actors contributing to increasing the human effect on ecological systems (Folke et al., 2019). The Anthropocene indicates that our current modes of living, particularly in developed economies, are demanding a huge number of resources that is beyond the Planet's capacity (Rockström et al., 2023). This situation is generating negative impacts on the environment, which in turn affects also social conditions. What is more dramatic, we are not only endangering the natural and social equilibrium, but also jeopardising the existence of Humanity, as we depend on the maintenance of Earth's conditions to live.

Firms' constant **search for increasing financial benefits and economic growth** has led to a situation in which the negative environmental and social impacts they create are so large that global human action is beyond the planet's capacity to absorb those impacts and maintain its state (Rockström et al., 2023).

As shown in the previous sections, **accounting, mainly in the form of instruments and logics that inform economic decision-making**, has played a significant role in supporting the predatory financial logic that puts Humanity at the brink of endangering our safe operating space to live (Lade et al. 2020). Nowadays, this accounting practice has its reflection in the form of **financial accounting**, which refers to the systematic procedure to record, classify, summarise, and analyse business economic transactions to produce financial statements.

> **Financial statements** are a structured representation of the financial position and financial performance of an entity. The objective of financial statements is to provide information about an entity's financial position, financial performance and cash flows that is useful to a wide range of users in making economic decisions. Financial statements also show the results of the management's stewardship of the resources entrusted to it. (IFRS, 2018, par. 9)

Basically, financial statements provide information about the following types of elements:

- The assets (rights and resources) and liabilities (debts) owned by firms.
- The profit or loss obtained by firms by comparing their income and expenses.

However, such information is targeted at supporting the decisions of providers of financial capitals, who are mostly interested in increasing the financial returns of their investments. Consequently, **financial statements overlook the social and environmental aspects**, both positive and negative, related to corporate activities. For example, employees' well-being or the availability of natural resources are not considered valuable items that should be recorded as assets. Similarly, the profit and loss account neglects the consumption of such resources or the pollution generated by corporate activities as long as they do not imply a financial cost for organisations. Sometimes, even if they imply a cost, the accounting procedure may hide the real impact of such pollution, as happens with the recording of carbon emission allowances (Garcia-Torea et al., 2022). On the other hand, when financial statements consider information on sustainability aspects, they are treated in a way that may drive decisions against environmental protection and social justice. For instance, the employees' salaries are classified as expenses that organisation may decide to minimise to increase their profits. Also, taxes are accounted for as expenses rather than considering them as a distribution of social value.

All these examples indicate that **accounting is not a technical and neutral device** capable of representing a unique and indisputable economic reality. Instead, accounting represents a political technology that is constitutive of how social actors perceive reality. As explained above, accounting prescribes what is to be considered as assets, liabilities, expenses, and income, thereby supporting a vision of reality in which economic and financial gains represent the underlying rationale that should be embedded in corporate decisions. The financial logic inherent to this view has contributed to promoting economic growth at the expense of the degradation of the planet's ecological and social conditions.

However, **alternative articulations of accounting** can be designed and deployed in a way that helps us navigate back to the safe operating space for humanity. For that purpose, **sustainability accounting** should rely on different foundations and principles that broaden the responsibilities of corporations and contribute to making them

accountable for their social and environmental impacts. Additionally, sustainability accounting should be grounded on a sound scientific base that promotes the production of information that is actually helpful in encouraging more genuine and sustainable corporate behavior. This form of conceiving accounting does not necessarily entail that economic prosperity cannot be achieved. Instead, it calls for understanding economic prosperity from a more distributive and sympathetic perspective that fosters the creation of collective value, not only for shareholders, but for society as a whole, without compromising the state of the planet to support our living, while incentivising social justice.

The following sections will cover some initiatives, concepts and ideas that provide a suitable bedrock for developing sustainability accounting. All these proposals are expected to spark change in the way in which corporations run their businesses, but also at a broader level, to encourage an in-depth reflection about our position as humans embedded in societies, which in turn operate within the ecological conditions of the planet.

Activity: How accounting supports economic growth? (see "Unit 1.1 Activity 8")

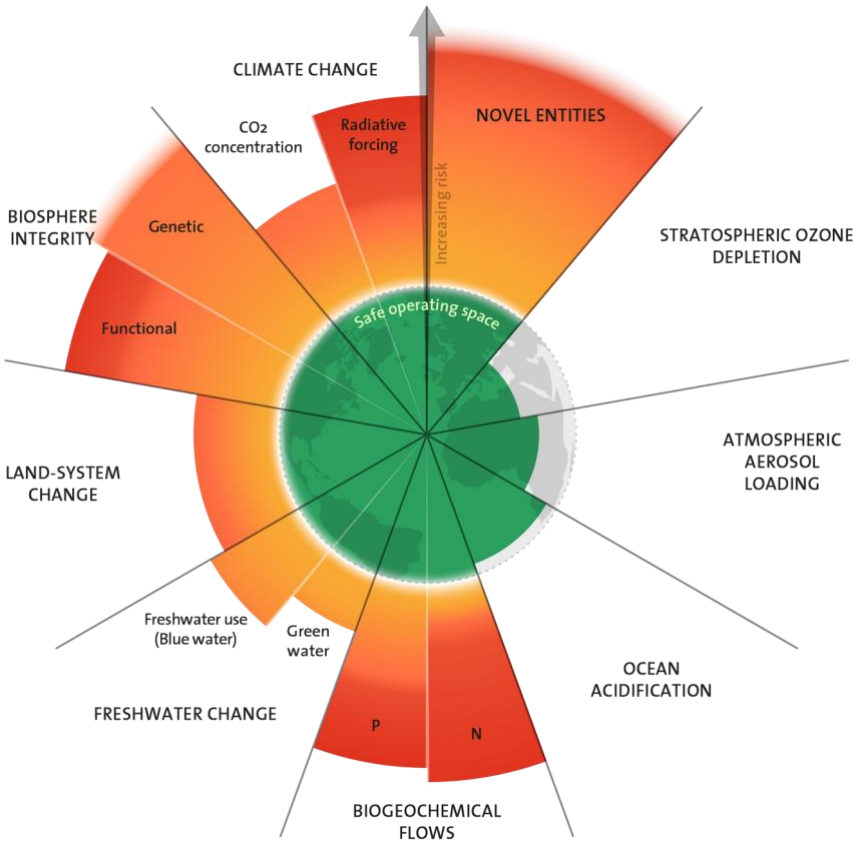
3.2. Planetary Boundaries

The **planetary boundaries (PB)** is **one of the most accepted and relevant frameworks** describing the status of Earth in the Anthropocene. This framework has been promoted and developed by the Stockholm Resilience Centre, led by Johan Rockström. At its core is a risk management system. It identifies and calculates the resilience levels of Earth to our current lifestyle. The PB distinguished **three levels of human perturbation**.

- The first level is the **safe space**. Based on current scientific analysis, Earth's ecosystem could be resilient to these impacts below this level.
- The second level is that of uncertainty. This second level represents those situations that experts expect might be dangerous for the planetary ecosystem but with no definitive scientific evidence yet.
- The third level is where scientists could provide evidence that the Planet's ecosystem is not resilient beyond these values.

Scientists have determined **nine PBs** that influence Planet Earth as a safe operating space for humanity (see Figure 16), but not all of them are yet quantified. Each PB refers to key ecological processes that affect the maintenance of the Planet's ecosystem. PBs are **interrelated and have the same relevance to the system**. Nevertheless, science established two of them as "core boundaries" - climate change and biosphere integrity - since the two of them, on their own, could destabilize Earth's ecosystem.

Figure 16. Planetary boundaries.



Source: Richardson et al. (2023, p. 4)

Although PBs are determined at a global level, the different individuals populating the planet contribute to overpassing the threshold. In this regard, corporations are relevant players in driving the ecological issues assessed in PBs. Therefore, they must establish measures and actions to monitor and assess them through accounting techniques, to mitigate corporate impacts on driving ecological changes beyond PBs (Jabot, 2023). Accounting represents a relevant mechanism to mediate between the planetary level and the organizational one to operationalise and monitor companies' contributions to avoid trespassing the planetary boundaries.

Activity: Do you understand the planetary boundaries? (see "Unit 1.1 Activity 9")

3.3. Science-based targets

Navigating back to a safe operating space for humanity requires setting targets that help us manage the impacts of human actions to maintain them within the planetary boundaries. The definition of those targets should enable the deployment of global action. Their establishment implies a political negotiation influenced by the interests and power of different stakeholders (Maxwell et al., 2015). However, those **targets must be science-based**, which means that they should be grounded on sound and relevant scientific knowledge to be suited to address sustainability concerns.

Science-based targets are characterized by three elements (Andersen et al., 2021):

- They should be **theoretically achievable** in a specific timeframe.
- They should be **testable and subject to evaluation** to assess the extent to which they are achieved.
- They should be **reasonable** so that the level to be achieved is justified on analytically informed grounds.

The objective of **maintaining global climate change below 1.5 ºC**, as requested in the Paris Agreement, represents a science-based target supported by scientific evidence (Andersen et al. 2021). The establishment of science-based targets is a key tool to manage climate change and transition to a low-carbon economy through the alignment of actions among governments, organisations, companies and other relevant actors to achieve the so-called net-zero emissions (Bjørn et al., 2022), which refers to the situation in which "anthropogenic emissions of greenhouse gases to the atmosphere are balanced by anthropogenic removals over a specified period" (IPCC, 2018, p.555).

Science-based targets to address sustainability problems are established at a global level, given the systemic character of such issues. This global definition requires their disaggregation to make them manageable. This disaggregation involves the identification of the contribution of individual entities to the achievement of these targets. The process of **disaggregating science-based targets** and making them operational involves four different steps (Andersen et al., 2021):

1. A thorough and impartial evaluation and consolidation of the current scientific knowledge that informs the definition of the science-based target at a global level.
2. Discussions and negation among government, multilateral organisations and relevant stakeholders to establish universally accepted targets based on scientific evidence.
3. Implementation of methodologies for breaking down the global science-based targets into specific objectives, utilising relevant expertise at global, regional, and local levels.
4. Active involvement from all sectors of society to establish these specific science-based targets and ensure effective implementation of actions for their achievement.

Companies are vital in addressing climate change as they are significant producers of anthropogenic greenhouse gas (GHG) emissions. The **Science-Based Targets Initiative (SBTi)** was founded in 2015 to help them establish and manage science-based targets to achieve the global goal of maintaining climate change below 1.5ºC. SBTi is a partnership between the United Nations Global Compact, CDP, World Resources Institute, and the World Wide Fund for Nature.

The **Science-Based Targets Initiative (SBTi)** aims to support firms in reducing GHG emissions to mitigate the dramatic consequences of climate change. For that purpose, it provides companies with best practice examples, technical support and resources to set net-zero targets in accordance with climate science.

SBTi has witnessed tremendous expansion in the number of companies committing to its principles. It has successfully engaged firms that collectively account for over one-third of global market capitalization, motivating them to take significant actions to decrease their carbon emissions (Jespersen et al., 2022).

The firms that have embraced the SBTi have to go through a **5-step process to establish and validate science-based targets**:

1. **Commit:** Firms must submit a letter expressing their intention to establish a science-based target.
2. **Develop:** Firms must engage in an emissions reduction target that aligns with the criteria set by the SBTi.
3. **Submit:** Firms must describe their target to the SBTi so that its expert can validate it.
4. **Communicate:** Firms must publicly declare their target and communicate to their stakeholders.
5. **Disclose:** Firms must report annually on their company-wide emissions and regularly monitor the progress towards achieving the established target.

The role of accounting is clearly apparent in this 5-step process. On the one hand, accounting helps organisations develop indicators to evaluate and monitor their progress toward achieving their SBTs. On the other hand, accounting is also instrumental in producing disclosures to communicate and disseminate SBTs.

Activity: Do you know the steps of the Science-based Targets Initiative? (see "Unit 1.1 Activity 10")

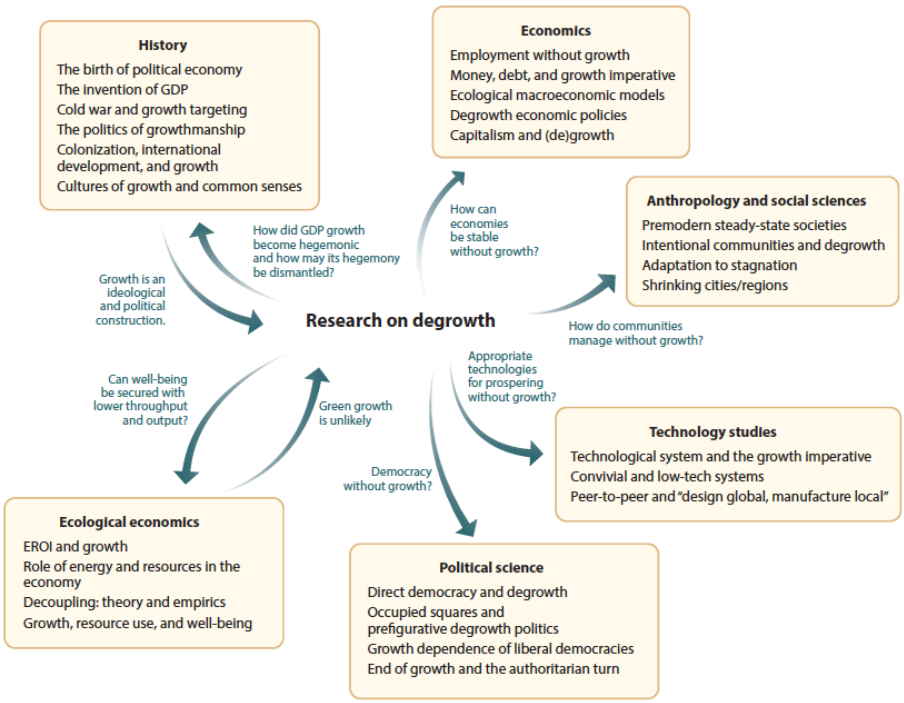
3.4. Degrowth

Economic degrowth is **one of the most critical frameworks** to manage the environmental crisis. According to ecological economists, degrowth is defined as "an equitable downscaling of throughput, with a concomitant securing of wellbeing" (Kallis et al., 2018, p. 297). One of the most exciting things about this framework is that it is not only based on scholars' research but is **also composed of multi-directional participation of ecological and economic activists and political stakeholders**. It is also a framework based on interdisciplinarity studies, and they defend a post-normal science to promote the involvement of communities.

> The **degrowth framework** is not equivalent to a negative GDP. It proposes an **alternative way to measure wealth** that assumes other realities to become sustainable.

A central issue in degrowth studies **is to criticise the existing paradigm of creating well-being because it focuses on the GDP**. Degrowth proposes some new metrics to achieve this ideal of well-being. To do so, degrowth thinkers first analyse the GDP concept and its political use in its created context (the Great Depression and WWII). For this framework, GDP is only the newest form of trust in accounting numbers that appeared at the beginning of the Modern Period, as pointed out in previous sections. Furthermore, degrowth explores the political role of GDP both in home and foreign policy after its creation in the USA. First, degrowth thinkers argue that GPD was modified and used as an ideological weapon during the Cold War. On the other hand, GPD has been used to measure growth and articulate society, social services, for instance. Finally, they conclude that "searching for alternative indicators is not just a technical question, but a political and cultural project that requires significant reorganisation" (Kallis et al., 2018, p. 295).

Figure 17. Degrowth framework.



Source: Kallis et al. (2018)

On the other hand, the degrowth framework revisits the identification between **this index and the notion of progress** to criticise the GDP. To do this, authors like D'Alisa et al. (2015), compare GDP with other indicators, such as the Genuine Progress Index or the Index of Sustainable Economic Welfare. In doing that, they confirm that the other two indexes become stagnant when a nation obtains a certain economic wealth level. A

required issue appeared because it is essential to reflect on **how & where this framework could be implemented.**

Degrowth theories appeared in industrialised Europe (especially in France first, Italy and Spain later). However, it is also true that their ideas do not only affect the **unsustainable way of living** of the privileged. Degrowth is also an attempt to decolonise the global rationality we all have inherited. As mentioned before, the urbanisation of society is an indispensable factor in our way of living. Because of that, the urban way of living is a target for degrowth thinkers. Urban societies are very dependent, for example, on the energy of food provision, two of the most critical problems in capitalism today.

Moreover, the degrowth logic is related to the **feminist dimension** of the economy, especially in the so-called care economy. It is a consistent option for a theoretical framework in search of welfare. Moreover, it is a productive sector that is usually unpriced in official statistics. Here, the role of gender appears subversive if we compare it with what we have seen in previous sections. In the 19th century, science, and masculine political ideas impregned the private sphere. Degrowth, in its approximation to feminist ideas, tries to resolve this situation by **pushing institutional pre-capitalistic logics into the public**. For example, we can stress their proposals to impulse the familiar logic and its social relationships of collaboration and reciprocity, whose implementation in the public arena and its indicators would create an innovative, more sustainable economy. In doing so, degrowth proposes quantifying wealth in material temporary and relational terms (Dengler & Strunk, 2018

The main economic proposals for degrowth are (Taibo, 2017):

- Promote the social against economic life.
- Creative and not commercialized leisure.
- Fair work and rents distribution.
- Reduction of the productive administrative and transport infrastructures.
- Local focus vs globalization.
- Slow and easy lives.

Activity: Testing your knowledge on degrowth (see file A4GE_U1.1_A11)

3.5. The Sustainable Development Goals

The **Sustainable Development Goals (SDGs)** are a group of 17 interrelated goals on social, environmental, economic and governance issues that were established by the United Nations in their report "Transforming Our World: The 2030 Agenda for Sustainable Development" (UN, 2015) to fight poverty, protect the planet, and foster justice, peace and prosperity.

Figure 18. Sustainable Development Goals.

Source: United Nations Sustainable Development Goals webpage.

Table 3 offers a brief description of the 17 SDGs. Based on the topic that each SDG targets, they can be grouped according to four dimensions:

- SDGs 1 to 7 are the **social goals** that aim to improve the conditions of people.
- SDGs 13 to 15 are the **environmental goals** that aim to ensure the ecological base for the planet and our modes of living.
- SDGs 8 to 12 are the **governance goals** that aim to promote the role of corporations in sustainable development to ensure a sustainable transformation of business processes.
- SDGs 16 to 17 are **transversal goals** that aim to ensure the right conditions to organise ourselves to achieve the other SDGs.

Table 3. The Sustainable Development Goals' definitions.

Sustainable Development Goals	**1. No poverty**	**2. Zero hunger**	**3. Good health and well-being**	**4. Quality education**	**5. Gender equality**
	End poverty in all its forms everywhere	End hunger, achieve food security and improved nutrition and promote sustainable agriculture	Ensure healthy lives and promote well-being for all at all ages	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	Achieve gender equality and empower all women and girls
6. Clean water and sanitation	**7. Affordable and clean energy**	**8. Decent work and economic growth**	**9. Industry, innovation and infrastructure**	**10. Reduced inequalities**	**11. Sustainable cities and communities**

Ensure availability and sustainable management of water and sanitation for all	Ensure access to affordable, reliable, sustainable and modern energy for all	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	Reduce income inequality within and among countries	Make cities and human settlements inclusive, safe, resilient and sustainable
12. Responsible consumption and production	**13. Climate action**	**14. Life below water**	**15. Life on land**	**16. Peace, justice and strong institutions**	**17. Partnerships for the goals**
Ensure sustainable consumption and production patterns	Take urgent action to combat climate change and its impacts by regulating emissions and promoting developments in renewable energy	Conserve and sustainably use the oceans, seas and marine resources for sustainable development	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable, inclusive institutions at all levels	Strengthen the means of implementation and revitalize the global partnership for sustainable development.

Source: Adapted from https://sdgs.un.org/goals.

The SDGs have become relevant for sustainability-related policymaking. Although initially established as intergovernmental commitments, the SDGs have gained significant momentum among various actors beyond the government of the 193 UN member states that support them, including public policy entities, non-governmental organisations, and numerous public and private sector organisations (Bebbington & Unerman, 2018). The achievement of the SDGs is based on a comprehensive framework for measurement and performance assessment, comprising a total of 169 targets and 232 indicators, which are determined at a global level. When analysing these targets, it is important to consider the trade-offs and interrelationships that exist among then due to the intrinsic interconnections between social, environmental, economic and governance issues.

The recognition of companies as key drivers of change at a planetary level points to their relevance in achieving the SDGs. As a consequence, firms are actively incorporating strategies and fostering collaborations with relevant stakeholders to implement the SDGs effectively. **Accounting** can prove to be a valuable tool in supporting corporations in establishing and monitoring their **contribution to the SDGs** (Bebbington & Unerman, 2018). Accounting can help organisations in three different ways:

1. The production of information, both quantitative and qualitative, to set individual objectives related to the SDGs. For example, accounting helps organizations define indicators to monitor the contribution to the SDSs.
2. Promoting transparency and accountability through the disclosure of information on how companies are implementing actions to achieve the SDGs. For instance, accounting supports organisations in producing disclosures on projects and actions they implement to contribute to the SDG.
3. Facilitating the translation between the global scale of the SDGs to the operational at the entity level. In this respect, accounting operates as a mediating instrument to translate the definition of the SDGs at a planetary into specific measures to assess organisations' contribution to the SDGs.

Activity: Do you know to what topics SDGs relate to? (see "Unit 1.1 Activity 12")

4. Sustainability accounting: What is next?

This unit has described the ecological and social problems we face as Humanity in the context of the Anthropocene. This situation has been historically driven by the way in which societies have developed, which has been partly supported by the role of accounting. However, accounting can also play a role in solving the challenges that emerge from the Anthropocene in alternative articulations that are developed that are informed by sustainability-infused ideas.

In the next units of this course, we will explore different ways in which sustainability accounting can be deployed, as well as other elements that can help reconnect society and nature through accounting.

The second unit of Module 1 will cover how sustainability reporting is implemented in corporate practices. A special focus will be given to the role of materiality in this process and on how it connects with the most widespread frameworks European corporations apply today when producing sustainability reports.

After that, module 2 will explore sustainability accounting regulations. More and more businesses and corporations are forced to present their sustainability report, especially in the European Union. So, in the third module, you will get familiar with the EFRAG standards, European Taxonomy, and some other regulative frameworks such as CSRD and SFDR. Sustainability accounting assurance will be the second unit in this module, and you will discover some guidelines, processes, and levels of environmental assurance.

Finally, Module 3 will explore management accounting, its key concepts, and some tools organisations use today to manage sustainability internally. The final unit of this course will be the internal control for sustainability information and all the processes corporations apply to guarantee the quality of their reporting.

Case study: Environmental frameworks (see “Unit 1.1 Case Study 2”)

Activity: Final test (see “Unit 1.1 Activity 13”)

References

Andersen, I., Ishii, N., Brooks, T., Cummis, C., Fonseca, G., Hillers, A., ... & Zimm, C. (2021). Defining 'science-based targets'. *National Science Review, 8*(7), nwaa186. https://doi.org/10.1093/nsr/nwaa186

Bebbington, J., Österblom, H., Crona, B., Jouffray, J. B., Larrinaga, C., Russell, S., & Scholtens, B. (2020). Accounting and accountability in the Anthropocene. *Accounting, Auditing & Accountability Journal, 33*(1), 152-177. https://doi.org/10.1108/AAAJ-11-2018-3745

Bebbington, J., & Unerman, J. (2018). Achieving the United Nations Sustainable Development Goals: An enabling role for accounting research", *Accounting, Auditing & Accountability Journal, 31*(1), 2-24. https://doi.org/10.1108/AAAJ-05-2017-2929

Bjørn, A., Tilsted, J.P., Addas, A. et al. Can Science-Based Targets Make the Private Sector Paris-Aligned? A Review of the Emerging Evidence. *Curr Clim Change Rep 8*, 53–69 (2022). https://doi.org/10.1007/s40641-022-00182-w

Capelo Bernal, M.D, Pinzón Araújo, P. & Funnell, W. (2018). Accounting for the male domination through legislative empowerment of upper-middle class women in the early nineteenth century Spain. *Accounting, Auditing & Accountability Journal*, *31*(4), 1174-1198. https://doi.org/10.1108/AAAJ-04-2014-1664

Carmona, S. & Ezzamel, M. (2016). Accounting and lived experience in the gendered workplace. *Accounting, Organizations and Society*, *49,* 1-8. https://doi.org/10.1016/j.aos.2015.11.004

D' Alisa, G. Demaría, F. & Kallis, G. (2015). *Degrowth. A vocabulary for a new era*. Routledge.

Dengler, C. & Strunk, B. (2018). The monetized economy versus care and the environment: degrowth perspectives on reconciling an antagonism. *Feminist Economics*, 24 (3), 160-183.

Deringer, W. (2018). *Calculated Values. Finance, Politics and the Quantitative Age*. Harvard Universy Press.

Dryzek, John, S. (2013). *The Politics of the Earth*, Oxford University Press.

Folke, C., Österblom, H., Jouffray, J. B., Lambin, E. F., Adger, W. N., Scheffer, M., ... & de Zeeuw, A. (2019). Transnational corporations and the challenge of biosphere stewardship. *Nature Ecology & Evolution, 3*(10), 1396-1403. https://doi.org/10.1038/s41559-019-0978-z

Frankopan, P. (2023). The Earth transformed. An Untold History. Oxford University Press.

Funell, W. & Williams, R. (2014). The religious imperative of cost accounting in the early Industrial Revolution. *Accounting, Auditing & Accountability Journal*, *27*(2), 357-381. https://doi.org/10.1108/AAAJ-03-2013-1269

Gamero Igea, G. y Larrinaga, C. (2022). *Un contador para el Imperio. Diego del Castillo y el pensamiento contable del siglo XVI castellano.* Silex Ediciones.

Garcia-Torea, N., Giordano-Spring, S., Larrinaga, C., & Rivière-Giordano, G. (2022). Accounting for Carbon Emission Allowances: An Empirical Analysis in the EU ETS Phase 3. *Social and Environmental Accountability Journal, 42*(1-2), 93-115. https://doi.org/10.1080/0969160X.2021.2012496

IPCC. (2018). Global Warming of 1.5°C. *An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty*. Available at: https://www.ipcc.ch/sr15/

Hamilton, C., Bonnueuil, C., & Gemenne, F. (eds.). 2015. *The Anthropocene and the Global Environmental Crisis. Rethinking modernity in a new epoch*. Routledge.

Hopwood, A. G. (1987). The archeology of accouting systems. *Accounting Organizations & Society*, *12*(3), 207-234. https://doi.org/10.1016/0361-3682(87)90038-9

Hopwood, A. G. (1994). Accounting and everyday life: an introduction. *Accounting, Organizations and Society*, 19/3, 299-301. https://doi.org/10.1016/0361-3682(94)90037-X

Jabot, R. (2023). For an accounting translation of the Anthropocene: fuelling the debate on planetary boundaries. *Sustainability Accounting, Management and Policy Journal, 14*(1), 21-48. https://doi.org/10.1108/SAMPJ-09-2021-0390

Jespersen, K., Bär, M., & Henningsson, O. (2022). *Environmentally Sound and Financially Rewarding? Key Findings From an Exploratory Study on the Science Based Targets Initiative (SBTi)*. Available at: https://bos.cbs.dk/environmentally-sound-and-financially-rewarding-key-findings-from-an-exploratory-study-on-the-science-based-targets-initiative-sbti/

Jones, D. Watkins, A., Braganza, K. & Coughlan, M. (2007). The Great Global Warming Swindle: a critique. *Bulletin of the Australian Meteorological and Oceanographic Society*, *20*(3), 63-72.

Kallis, G., Kostakis, V., Lange, S., Muraca, B., Paulson, S., & Schmelzer, M. (2018). Research on degrowth. *Annual Review of Environment and Resources*, *43*, 291-316. https://doi.org/10.1146/annurev-environ-102017-025941

Lade, S.J., Steffen, W., de Vries, W. et al. Human impacts on planetary boundaries amplified by Earth system interactions. *Nat Sustain 3*, 119–128 (2020). https://doi.org/10.1038/s41893-019-0454-4

Latour, Bruno. *Facing Gaia: Eight Lectures on the New Climatic Regime*. Polity Press.

Lewis, Simon, L. & Mark A. Maslin. (2015). Defining the Anthropocene. *Nature*, 519, 171-180.

Maxwell, S. L., Milner-Gulland, E. J., Jones, J. P., Knight, A. T., Bunnefeld, N., Nuno, A., ... & Rhodes, J. R. (2015). Being smart about SMART environmental targets. Science, 347(6226), 1075-1076. https://doi.org/10.1126/science.aaa1451

Meiksins Wood, E. (2017). *The Origin of Capitalism.* A Longer View. Verso.

Miller, P. (1990). On the interrelations between accounting and the state. *Accounting Organizations and Society*, *15*(4), 315-338. https://doi.org/10.1016/0361-3682(90)90022-M

Mishra, R., *A business of State. Commerce, Politics and the Birth of the East India Company*. Harvard University Press.

Nurtaev, B. S., & Nurtaev, L. (2017). Long Term Trends in Climate Variability of Caucasus Region. *Journals of Georgian Geophysical Society*, *19*(22).

Richardson et al (2023). Earth beyond six of nine planetary boundaries. *Science Advances,* 9/37. https://doi.org/10.1126/sciadv.adh2458

Rockström, J., Gupta, J., Qin, D. et al. (2023). Safe and just Earth system boundaries. *Nature*. https://doi.org/10.1038/s41586-023-06083-8

Syvitski, J. (2012). Anthropocene: An Epoch of our making. IGBP's Global *Change Magazine, 78*, 12-15.

Taibo, C. (2017). *En defensa del decrecimiento: sobre capitalismo, ciriss y barbarie*. Los libros de la Catarata.

Uribe, M. V. & García Sánchez, I. M (2023). Women in accounting. A historical review of ostacles and drivers on a patriarcal and classist path. *Spanish Accounting Review*, *25* (2), 241-254-

Vuillerod, J-B. (2021). The Antropocene is and Androcene: three narratives. *Nouvelles questions Féministes, 40*(2), 18-34.

Walters. C. N. et. al. (2014). Evidence for a Stratigraphic Basis for the Anthropocene. In: Rocha, R., Pais, J., Kullberg, J., Finney, S. (eds) *STRATI 2013*. Springer Geology. Springer, Cham. https://doi.org/10.1007/978-3-319-04364-7_187

Wickberg, A. (2002). Reconfiguring Temporality in the Anthropocene: Coloniality and the Political ecocrisis. *Resilience:* a *Journal of the Environmental Humanities, 8/1*, 37-59. https://doi.org/10.1353/res.2020.0036

Zalasiewicz, J., et. al. (2017a). The working group on the Anthropocene: Summary of evidence and interim recommendations. *Anthropocene, 19*, 55-60. https://doi.org/10.1016/j.ancene.2017.09.001

Zalasiewicz, J., et. al. (2017b). Making the case for a formal Anthropocene Epoch: An analysis of ongoing critiques. *Newsletters on Stratigraphy, 50*(2), 205-226. https://doi.org//10.1007/978-3-319-04364-7_187

Additional materials

1.1. Defining the Anthropocene

- Video: Johan Rockström explains the Anthropocene.
  https://www.youtube.com/watch?v=V9ETiSaxyfk

1.2. Scientific positions and evidence for the geological inflection

- Link: Living Planet Index.
- https://www.livingplanetindex.org/
- Link: FAO studies on biodiversity.
  https://www.fao.org/news/story/en/item/1180463/icode/
- Link: Biodiversity Intactness Index.
  https://www.nhm.ac.uk/our-science/data/biodiversity-indicators.html
- Link: Living Planet IndexI report 2022.
  https://wwflpr.awsassets.panda.org/downloads/lpr_2022_full_report.pdf
- Webpage: United Nations Conference on Sustainable Development, Rio+20.
  https://sustainabledevelopment.un.org/rio20
- Webpage: SeaBOS inititiave.
  https://seabos.org/
- Link: Paris Agreement.
  https://www.un.org/en/climatechange/paris-agreement
- Link: Kyoto Protocol.
  https://digitallibrary.un.org/record/250111?ln=en

2.1. Early Modern Accounting systems

- Video: Lucca Paccioli introduction.
  https://www.youtube.com/watch?v=OoTc3wLTqkk&t=501s
- Video: The History of the Silk road.
  https://www.youtube.com/watch?v=nXptcteCegg
- Video: the triangular trade.
  https://www.youtube.com/watch?v=LnqhdNxqmpc
- Video: The English East India Company.
  https://www.youtube.com/watch?v=irAJcGwMb2I

2.2. Industrial Revolution and its accounting dimension

- Video: Why the Industrial Revolution started in Britain?
  https://www.youtube.com/watch?v=oZESBullhOQ
- Video: the fists steps on the Industrial Revolution.
  https://www.youtube.com/watch?v=9xf1Lsy4CZ8

2.3. Colonialisms, globalization and the role of natural resources

- Video: Colonialism and Industrial Revolution: https://www.youtube.com/watch?v=fUDwPz9VmL0

3.1. Accounting and economic growth

- Video: Financial statements basics https://www.youtube.com/watch?v=Fi1wkUczuyk

3.2. Planetary Boundaries

- Video: Johan Rockström define what we are in a climate crisis in Planetary boundaries framework. https://www.youtube.com/watch?v=8Sl28fkrozE
- Link: Stockholm Resilience Centre. https://www.stockholmresilience.org/

3.3. Science-based targets

- Webpage: Science-based Targets Initiative. https://sciencebasedtargets.org/
- Link: Science-based Targets Initiative's criteria for setting targets. https://sciencebasedtargets.org/resources/files/SBTi-criteria.pdf
- Link: Science-based Targets Initiative's target validation protocol. https://sciencebasedtargets.org/resources/files/Target-Validation-Protocol.pdf
- Webpage: CDP Carbon Disclosure Project. https://www.cdp.net/en

3.4. Degrowth

- Video: Defining degrowth https://www.youtube.com/watch?v=Ia8u5P0KbPQ
- Video: What Is Degrowth? https://www.youtube.com/watch?v=alp2ZJnvwW8
- Video: Roundtable about Degrowth vs. Green growth https://www.youtube.com/watch?v=YxJrBR0lg6s

3.5. Sustainable Development Goals

- Webpage: Sustainable Development Goals https://unfoundation.org/what-we-do/issues/sustainable-development-goals/
- Video: TED Talk on 3-steps to achieving SDGs

https://www.ted.com/talks/linda_midgley_3_steps_to_achieving_the_sdgs

Co-funded by
the European Union

Unit 1.1
Accounting and the Anthropocene

ACTIVITIES

Co-funded by
the European Union

UNIT 1.1

ACTIVITY 1

HIDDEN WORD

Sustainability Accounting Learning Platform
for a Green Economy

2022-1-ES01-KA220-HED-000089844

Title	Do you understand geological epochs and eras?
Module	Module 1. Sustainability accounting in the 21st century
Unit	Unit 1.1. Accounting and the Anthropocene
Heading/subheading after which it should appear	1. A new geological epoch: the Anthropocene / 1.2 Facing the Anthropocene / Definitions and causes of the Anthropocene: a starting point to value it.

Activity 1

- The user must select the letters that he/she believes make up the word that answers the question asked.

Question 1

What is the name of the geological epoch characterized by its relative stability?

Holocene

Question 2

What was the previous geological era before the Cenozoic?

Mesozoic

Co-funded by
the European Union

UNIT 1.1

ACTIVITY 2

GUESS

Sustainability Accounting Learning Platform for a Green Economy

2022-1-ES01-KA220-HED-000089844

Title	Can you remember some scientific proposals in the Anthropocene?
Module	Module 1. Sustainability accounting in the 21st century
Unit	Unit 1.1. Accounting and the Anthropocene
Heading/subheading after which it should appear	1. A new geological epoch: the Anthropocene / 1.2. Facing the Anthropocene / Scientific proposals to face the Anthropocene

Activity 2

- The user has to guess a blurry image considering the question that is made.

Question 1

***Image*:** Show an image representing the water cycle

***Question/sentence*:** Cycle linked to first detected anthropogenic problem

Water

Question 2

***Image*:** Show an image of Benjamin Franklin

***Question/sentence*:** American politician committed to Anthropocene changes

Franklin

Co-funded by
the European Union

UNIT 1.1

ACTIVITY 3

COMPLETE THE PHRASES

Sustainability Accounting Learning Platform for a Green Economy

2022-1-ES01-KA220-HED-000089844

Title	What are the main responses to the Anthropocene?
Module	Module 1. Sustainability accounting in the 21st century
Unit	Unit 1.1. Accounting and the Anthropocene
Heading/subheading after which it should appear	1. A new geological epoch: the Anthropocene / 1.2. Facing the Anthropocene / Civic responses in the Anthropocene

Activity 3

- The user has to select the correct words to complete the phrases correctly.

Text

Provide the text below, indicating the words you want to appear as blank space in green bold font (with up to 6 blank spaces)

There are different proposals to face the Anthropocene.

Democratic pragmatism follows the **scientific** method. Experimentation is considered a research tool to solve the problem. It is a proposal with high **legitimizing** content in decision-making.

Administrative rationalism is based on the presence of technocrats and scientific **evidence**. The State and administrative apparatus is the main agent. **Cost-benefit** analysis is crucial.

Economic rationality has the **market** as its central point. One of the problems where it is being applied is **carbon.**

Co-funded by
the European Union

UNIT 1.1

ACTIVITY 4

ENIGMA

Sustainability Accounting Learning Platform for a Green Economy

2022-1-ES01-KA220-HED-000089844

Title	Do you understand how early modern accounting appeared?
Module	Module 1. Sustainability accounting in the 21st century
Unit	Unit 1.1. Accounting and the Anthropocene
Heading/subheading after which it should appear	2. Accounting and the emergence of the Anthropocene / 2.1. Domination of nature and early modern accounting systems / Nature, History and Accounting

Activity 4

- The user has to come up with the letters of the word that answers the question.

Question 1

History ages with the last warm period before the Anthropocene

Middle

Question 2

Instrument created for long-distance trade in the Middle Ages

Fairs

Question 3

Main problem that accounting solved before the 16th century

Credit

Co-funded by
the European Union

UNIT 1.1

ACTIVITY 5

RELATIONSHIP BETWEEN IMAGE AND CONCEPT

Sustainability Accounting Learning Platform for a Green Economy

2022-1-ES01-KA220-HED-000089844

Title	Can you connect accounting and imperialism?
Module	Module 1. Sustainability accounting in the 21st century
Unit	Accounting and the Anthropocene
Heading/subheading after which it should appear	2. Accounting and the emergence of the Anthropocene / 2.1. Domination of nature and early modern accounting systems / Accounting and Imperialism

Activity 5

- The user has to select if the image corresponds to the concept or not, during a determined period of time.

Concept 1

Indicate the concept: Luca Paccioli

Image: Show a picture of Julio Cesar

Indicate the options **(correct answer in bold green)**.

a. Yes
b. No

Concept 2

Indicate the concept: Jean Baptiste Colbert

Image: Show a picture of Jean Baptiste Colber

Indicate the options **(correct answer in bold green)**.

a. Yes
b. No

Concept 3

Indicate the concept: West India Company

Image: Show a picture of the United Kingdom flag

Indicate the options **(correct answer in bold green)**.

a. Yes
b. No

Co-funded by
the European Union

UNIT 1.1

ACTIVITY 6

SORT LETTERS

Sustainability Accounting Learning Platform for a Green Economy

2022-1-ES01-KA220-HED-000089844

Title	Can you tell us what you have learnt about accounting in this new business world?
Module	Module 1. Sustainability accounting in the 21st century
Unit	Unit 1.1. Accounting and the Anthropocene
Heading/subheading after which it should appear	2. Accounting and the emergence of the Anthropocene / 2.2. Industrial Revolution and its accounting dimension / Accounting in a new business world

Activity 6

- The user has to order the letters that build the word that answers each question.

Question 1

English philosophy linked to accounting changes in the 18th century.

Empiricism

Question 2

Country in which the first manufacturers appeared.

France

Question 3

Country in which cost accounting emerged.

England

Co-funded by
the European Union

UNIT 1.1

ACTIVITY 7

DOUBLE OR NOTHING

Sustainability Accounting Learning Platform
for a Green Economy

2022-1-ES01-KA220-HED-000089844

Title	What do you know about the role of accounting in the Industrial Revolution?
Module	Module 1. Sustainability accounting in the 21st century
Unit	Unit 1.1. Accounting and the Anthropocene
Heading/subheading where it should appear	2. Accounting and the emergence of the Anthropocene / 2.2. Industrial Revolution and its accounting dimension / Accounting, policy, and society in the industrial world

Activity 7

- The user has to answer the questions correctly.

Question 1

One circumstantial cause of the implementation Industrial Revolution in Britain is:

c. Demography crisis in England
d. Napoleonic Wars
e. French Revolution
f. Development of Colonialism

Question 2

Big manufactories were developed firstly in:

a. England
b. France
c. Dutch Republic
d. Spain

Question 3

Which of these factors did not support the rise of accounting in the public sphere?

a. Polarization of society
b. Economic growth
c. Print press
d. Rise of parlamentarism

Question 4

The role of accountability in the early Industrial Revolution in England was based on:

a. Business sphere
b. All the society
c. Public sphere
d. Private sphere

Question 5

The role of accounting in the private sphere was especially influenced by:

a. Financial sphere
b. Scientificism

c. **Religion**
d. Business

Co-funded by
the European Union

UNIT 1.1

ACTIVITY 8

SORT LETTERS

Sustainability Accounting Learning Platform for a Green Economy

2022-1-ES01-KA220-HED-000089844

Title	How accounting supports economic growth?
Module	Module 1. Sustainability accounting in the 21st century
Unit	Unit 1.1. Accounting and the Anthropocene
Heading/subheading after which it should appear	3. Navigating back to a safe operating space for Humanity / 3.1. Accounting and economic growth

Activity 8

- The user has to order the letter that build the word that answers each question..

Question 1

Form of accounting that provides a systematic process to record economic transactions.

Financial

Maximum time to solve the question: 30 seconds

Question 2

Aspects that financial statements tend to overlook.

Social

Maximum time to solve the question: 30 seconds

Question 3

Rights and resources owned by a company.

Assets

Maximum time to solve the question: 30 seconds

Co-funded by
the European Union

UNIT 1.1

ACTIVITY 9

PUZZLE

Sustainability Accounting Learning Platform for a Green Economy

2022-1-ES01-KA220-HED-000089844

Title	Do you understand the planetary boundaries?
Module	Module 1. Sustainability accounting in the 21st century
Unit	Unit 1.1. Accounting and the Anthropocene
Heading/subheading where it should appear	3. Navigating back to a safe operating space for Humanity / 3.2. Planetary boundaries

Activity 9

- The user's goal is to complete the puzzle in the shortest possible time. Pay attention to the image that will appear for a few seconds, which will then be divided into pieces. By clicking on each of the pieces you can rotate them to find the correct position. Throughout the game you will have the opportunity to get more time by answering different questions that will appear automatically. The final score will depend on how fast you complete the task and the time bonus you get.

Image: Show an image of the planetary boundaries framework

Question 1 (correct answer in bold green)

The planetary boundaries framework has been developed by:

a. International Science Council
b. Stockholm Resilience Centre
c. United Nations

Question 2

The planetary boundary evaluates:

a. Human population
b. Geographical spaces
c. Risk of irreversible changes

Question 3

A planetary boundary that is currently exceeded is:

a. Ozone depletion
b. Biosphere integrity
c. Freshwater use

Co-funded by
the European Union

UNIT 1.1

ACTIVITY 10

FROM HIGHEST TO LOWEST

Sustainability Accounting Learning Platform
for a Green Economy

2022-1-ES01-KA220-HED-000089844

Title	Do you know the steps of the Science-based Targets Initiative?
Module	Module 1. Sustainability accounting in the 21st century
Unit	Unit 1.1. Accounting and the Anthropocene
Heading/subheading after which it should appear	3. Navigating back to a safe operating space for Humanity / 3.3. Science-based targets

Activity 10

Question

Order the steps to set and validate science-based targets according to the Science-Based Targets Initiative (Highest is the first, lowest is the last).

Provide the list of the elements in the correct order from the highest to the lowest according to the question.

The correct order is:

1. Commit
2. Develop
3. Submit
4. Communicate
5. Disclose

Co-funded by
the European Union

UNIT 1.1

ACTIVITY 11

ROULETTE

Sustainability Accounting Learning Platform for a Green Economy

2022-1-ES01-KA220-HED-000089844

Title	What do you know about degrowth?
Module	Module 1. Sustainability accounting in the 21st century
Unit	Unit 1.1. Accounting and the Anthropocene
Heading/subheading where it should appear	3. Navigating back to a safe operating space for Humanity / 3.4. Degrowth

Activity 11

- The user has to answer correctly and needs to respond three questions correctly to pass the activity.

Question 1

Degrowth focuses specifically on:

a. **Manage the environmental crisis.**
b. Reduce the GDP.
c. Supporting the current economic paradigm.
d. Reinforcing capitalism.

Question 2

Degrowth usually relates to:

a. Planetary boundaries.
b. **Ecofeminism.**
c. Science-based target objectives.
d. Communism.

Question 3

Degrowth proposals especially focus on:

a. Avoid neo-imperialism consequences.
b. **Modify urban way of living.**
c. Calm down fossil fuel repercussions.
d. Resolve social inequalities.

Question 4

Degrowth originated in:

a. South America.
b. **Industrialised Europe.**
c. North America.
d. Asia.

Question 5

The economic proposals for degrowth are based on:

a. The economic proposals of degrowth are based on:

b. Developing an alternative concept of wealth.

c. Maintaining the metrics for GDP.

d. Work less hours.

Co-funded by
the European Union

UNIT 1.1

ACTIVITY 12

SORT LETTERS

Sustainability Accounting Learning Platform for a Green Economy

2022-1-ES01-KA220-HED-000089844

Title	Do you know to what topics SDGs relate to?
Module	Module 1. Sustainability accounting in the 21st century
Unit	Unit 1.1. Accounting and the Anthropocene
Heading/subheading after which it should appear	3. Navigating back to a safe operating space for Humanity / 3.5. The Sustainable Development Goals

Activity 12

- The user has to order the letter to build the word that answers the question.

Question 1

To what elements do SDGs 13 to 15 relate?

nature

Maximum time to solve the question: 30 seconds

Question 2

Which type of goals are SDGs 1 to 7, dealing with issues related to hunger or poverty?

social

Maximum time to solve the question: 30 seconds

Question 3

Which type of goals are SDGs 8 to 12, dealing with issues related to industries, or economic growth?

governance

Maximum time to solve the question: 30 seconds

Co-funded by
the European Union

UNIT 1.1

ACTIVITY 13

QUIZZ

Sustainability Accounting Learning Platform for a Green Economy

2022-1-ES01-KA220-HED-000089844

Title	Final test
Module	Module 1. Sustainability accounting in the 21st century
Unit	1.1. Accounting and the Anthropocene
Heading/subheading after which it should appear	4. Sustainability accounting: What is next?

Activity 13

- The user will have 60 seconds to answer all the questions. The score you get depends on the number of correct answers and the time you have left once you have answered all the questions in the quiz. Therefore, the goal is to choose the correct option as quickly as possible.

Question 1

We speak about the Anthropocene because humanity impacts on:

a. Sun.
b. Geological processes.
c. Social conditions.
d. Democracy.

Question 2

The Holocene has been characterized by:

a. Climate stability.
b. The reduction of temperature.
c. The creation of large glaciers.
d. Economic degrowth.

Question 3

The current global warming period:

a. It is the first recorded in the history of the planet.
b. It is one of the lowest recorded in the history of the planet.
c. It is one of the fastest recorded in the history of the planet.
d. It has been common and similar in previous periods of the planet.

Question 4

One of the main thermoregulatory agents on the planet are:

a. Forests.
b. Oceans.
c. Clouds.
d. Deserts.

Question 5

Which of the following terms is used as a synonym for Anthropocene?

a. Humancene.
b. Capitalocene.

c. Westernocene.
d. Firstocene.

Question 6

The concern of human impact on planet Earth on a geological scale:

a. Has its precedents in the 19th century.
b. Is something very recent (1980s).
c. Appeared during the Cold War.
d. Is a consequence of WWI.

Question 7

The role of experimentation in solving Anthropocene problems is especially valued in which civic response?

a. **Democratic pragmatism**.
b. Administrative rationalism.
c. Economic rationality.
d. Human pragmatism.

Question 8

One of the fundamental principles in the Ecological Modernization is:

a. Principle of relative importance.
b. Principle of prudence.
c. Principle of objectivity.
d. Principle of reliability.

Question 9

What is the expected scenario for global warming if we do not face it:

a. The temperature will rise 1 degree.
b. The temperature will rise 2 degrees.
c. The temperature will rise 3 degrees.
d. The temperature will rise 4 degrees.

Question 10

What is threshold the Biodiversity Intactness Index established to measure the risk of ecosystem collapse?

a. 20%
b. 30%
c. 40%
d. 50%

Question 11

The period of sustained economic growth in medieval times was due to:

a. **Gradual increase of temperature.**
b. Long periods of peace in Europe.
c. Steady population growth.
d. Concentration of power.

Question 12

One of the leading financial inventions in the European Middle Ages was:

a. Credit.
b. Cost accounting.
c. **Bill of exchange.**
d. Coin

Question 13

One of the most developed accounting concepts in England at the end of the 18th Century was:

a. Ownership.
b. Double-entry bookkeeping.
c. **Accountability.**
d. Profit.

Question 14

Manufacturing factories first appeared in:

a. Spain.
b. **France.**
c. England.
d. Germany

Question 15

Which of the options refers to a cause of the British Industrial Revolution?

a. The implementation of double-entry bookkeeping.
b. **The development of Empiricism.**
c. The demographic increase.
d. The development of trade fairs.

Question 16

The relevance of accounting during the British Industrial Revolution was due to:

a. Its focus on economics.
b. Its focus on environmental aspects.
c. Its application to very different social fields.
d. Its importance for supporting social conditions.

Question 17

Which of the following accounting fields was particularly developed during the Industrial Revolution?

a. Financial accounting.
b. Cost accounting.
c. Sustainability accounting.
d. Public accounting.

Question 18

Which of these economic purposes were not supported by the colonial system?

a. Population growth.
b. Extraction of raw materials.
c. Trade to the metropolis.
d. Manufacturing in the metropolis.

Question 19

Historically, one of the tools of the colonizing process was:

a. Urbanization and the establishment of city networks.
b. The development of the railway.
c. Control over population movement.
d. The implementation of the modern state.

Question 20

Which of the following statements about financial accounting is wrong?

a. It supports economic growth.
b. It is a neutral technique.
c. It provides information on the firm's assets and liabilities.
d. It is used to produce financial statements.

Question 21

The planetary boundaries framework:

a. **Studies the resilience of the planet.**
b. Focuses on global economic growth.
c. Analyses the environmental aspects as independent from each other.
d. Has been developed by the United Nations.

Question 22

The planetary boundary of biochemical fluxes:

a. It is not currently exceeded.
b. It is in the uncertainty zone.
c. **It is vastly exceeded.**
d. It is overlooked by the planetary boundaries framework.

Question 23

Which is the critical environmental problem that is addressed by the Science-based Targets Initiative?

a. Deforestation.
b. Animal extinction.
c. Biodiversity.
d. **Climate change.**

Question 24

Which of the following actors is targeted by the Science-based Targets Initiative?

a. **Companies.**
b. Civic society.
c. Governments.
d. NGOs.

Question 25

Which of these three characteristics is not related to the science-based targets?

a. They should be theoretically achievable.
b. **They should be based on the hypothetical deductive method.**
c. They should be testable and subject to evaluation.
d. They should be reasonable.

Question 26

The degrowth framework is related to other critical proposals for addressing the Anthropocene, such as:

a. Marxism.
b. Imperialism.
c. Neoliberalism.
d. Feminism.

Question 27

The degrowth framework focuses on:

a. Strategies to reduce pollution.
b. Alternative ways to measure GPD.
c. Labour exploitation.
d. Environmental boundaries.

Question 28

How can accounting help companies meet Sustainable Development Goals (SDGs)?

a. Producing information and fostering transparency.
b. Creating new types of companies.
c. Reformulating business balance sheets.
d. Accounting is unsuited to support SDGs.

Co-funded by
the European Union

ACCOUNT 4Green Eco

Unit 1.1
Accounting and the Anthropocene

ROLE PLAY CASES

Co-funded by
the European Union

ACCOUNT 4Green Eco

Colonialism & Industrial Revolution

Case Study 1.1.1

Module 1

Unit 1.1. Facing the Anthropocene

UNIVERSIDAD DE BURGOS

Centre for Sustainability Management

LEUPHANA UNIVERSITÄT LÜNEBURG

MBS since 1897 MONTPELLIER BUSINESS SCHOOL

gestionet Play Think Learn

UNIVERSITÀ DI TRENTO

ROLE PLAY

Title: Imperialism and Intrustrial Revolution

Context: Hi! In your role as an enlightened monarch in this new century, you have the mission to follow the steps of England and become an international power both economically and politically. Your citizens are becoming more worried because they can not compete with the English merchants, and your political allies are becoming closer and closer to England, not respecting your diplomatic agreements. What are you going to do?

Scenario: The cabinet of a king/queen of the 19th century full of riches.

Character: A middle-age noble men in the 19th century.

Scene 1

What are your first steps, your majesty?

Response 1: Impulse royal monopolies, as the Frenchs have done during the past century

Go to:
Scene 1. (You cannot compite with England with past ideas!)

Response 2: Promulgue some laws to develope the internal market

Go to:
Scene 2

Scene 2

Congratulations on your initiative. It is a wise decision. But, your majesty, how can we improve the national trade?

Response 1: Let's incentivize the railway to improve our communications.	**Go to:** Scene 2 (wrong! This business is not profitable at this stage of your economic development)
Response 2: Let's give credits to create a lot of small industries.	**Go to:** Scene 2 (Sorry! This was a non-profitable decision, as transport costs are so high)
Response 3: Let's promote big private factories and the concentration of the population	**Go to:** Scene 3

Scene 3

Fantastic! We already have big factories like England. But how can we make them profitable?

Response 1: Develop cost accounting

Go to:
Scene 4

Response 2: Establish double-entry bookkeeping

Go to:
Scene 3 (that is not very useful yet, England is more competitive than you)

Scene 4

Thanks to cost accounting and the new production system, your business people are wealthier, and you have more money thanks to taxes. What do you want to do with this money?

Response 1: Declare military war on Britain.

Go to:
Scene 4 (sorry, it's too early, you lost agaist the primary power in the world)

Response 2: Create a powerful navy and search for new places to spread our trade networks

Go to:
Scene 5

Response 3: Declare econonomic war on Britain.

Go to:
Scene 4 (sorry, it's too early, you lost agains the primary economimc power in the world)

Scene 5

Thanks for your collaboration, your business people are getting more benefits. Congratulations! They support you and are even more prone to pay more taxes. What can we do with all this money?

Response 1: Built an extensive territorial empire.

Go to:
Scene 5 (Calm down! It is too much for your citizens. You don't have enough money)

Response 2: Built our own city overseas.

Go to:
Scene 7

Response 3: Invest in our navy again and reinforce our trade networks.

Go to:
Scene 6

Scene 6

Fortune favours the brave! England and other competitors have seen you could be more ambitious, so they started to attack your overseas possessions. What can we do?

Response 1: Declare war on our enemies.

Go to:
Scene 6 (We are only one state against all of Europe. Maybe we should be more realistic)

Response 2: Go to another place and built a new city.

Go to:
Scene 7

Scene 7

Congratulations, our city is getting bigger! Its relevance on a regional and international scale is growing very fast. What should be our next step?

Response 1: Let’s collaborate with the local elites. They will make our trade easier

Go to:
Scene 8

Response 2: We also need help here in the capital. It would be better if some of our workers would travel to the colony to enrich themselves.

Go to:
Scene 9

Scene 8

Our collaboration with local elites is very profitable. These are good news. However, local elites are also aware of that and are starting to be less friendly with us…

Response 1: We also need help here in the capital. It would be better if some of our workers would travel to the colony enrich themselves as burocrats

Go to:
Scene 9

Response 2: It’s hazardous. Let’s send the army.

Go to:
Scene 10

Scene 9

Congratulations, more people implies more trade, more institutionalization of our power, and more security against natives. But we don't consider that these European citizens would also demand political participation and autonomy. What can we do?

Response 1: It's time for the army.

Go to:
Scene 10

Response 2: It's something logical. Let's give them some autonomy. But remember to control the economic resources perfectly.

Go to:
Scene 11

Scene 10

More military and administrative presence has achieved stability. Nevertheless, nowadays, colonies are pretty similar to our beloved country. It's time to make a political step.

Response 1: I believe it is time to recognise them as a political institution, but always under our control.	**Go to:** Scene 13
Response 2: It's something logical. Let's give them some autonomy. But remember to control the economic resources perfectly.	**Go to:** Scene 11
Response 3: We can not do that!	**Go to:** Scene 10 (Your colones started a revolution)

Scene 11

Congratulations, we still have some control of these territories. Still, a problem appeared: they are very new republics, and our common enemies started to attack them. What should we do?

Response 1: It is not our business. They are new independent countries.

Go to:
Scene 11 (The population organizes a revolt against you)

Response 2: We should help them. They are our families and the source of our raw materials!

Go to:
Scene 13

Scene 12

Perfect! We have recovered some stability. More people are coming to our colony; we have more raw materials, and the economy is growing.

Response 1: Perfect! It’s time to atack our enemies.

Go to:
Scene 13

Response 2: Finally, my citizens are prosperous. I can rest a little.

Go to:
Scene 14

Scene 13

Is time to conquer our enemies! But we didn't expect that they have grown so much. It is one of the worst wars ever!

Response 1: Colonies and metropolis must make an effort.

Go to:
Scene 15

Response 2: We surrender!

Go to:
Scene 13 (we are not cowards!)

Response 3: We should negociate the peace.

Go to:
Scene 13 (we are not cowards!)

Scene 14

The enemies is attacking us your majesty, your majesty. Trade is becoming more risky every day, and profits are decreasing. We should do something…

Response 1: It's time to go to war!

Go to:
Scene 13

Response 2: We can negociate a beneficial treaty.

Go to:
Scene 15

Scene 15

Finally, this exhausting war has finished, but our actions have some political consequences. Colonies are incredibly angry with the metropolis. What should be our next step?

Response 1: Our army is nowadays idle. We can send it to the colonies.

Go to:
Scene 16

Response 2: It’s something logical. Let’s give them some autonomy. But remember to continue controlling the economic resources perfectly.

Go to:
Scene 15 (That worked in the past, but not now.)

Scene 16

Your Majesty, this decision would be optimal other times, but our enemies are attacking us again. People in the metropolis and the colonies collaborated in the past, but now, we must do something different.

Response 1: I agree, they have their right to be independent. But remember to control the economic resources perfectly.

Go to:
Scene 17

Response 2: It is unbelievable! In our worst moment, colonies abandoned us. I will not allow that.

Go to:
Scene 16 (you cause a civil war and/or a rebellion against the metropolis)

Scene 17

Congratulations, you have passed the test and built an empire. But at what cost? The logic you have developed, the usual in European countries in the past centuries, has triggered a socio-ecological crisis without precedents. The imperial competition and the individualist way of thinking of the states-empires have an enormous externality that modified the socio-ecological dynamics. We cannot change the past, but historical information could help us make better decisions for a sustainable and inclusive future. Will you be able to do that?.

Co-funded by
the European Union

ACCOUNT 4Green Eco

Environmental Frameworks

Case Study 1.1.2

Module 1

Unit 1.1. Facing the Anthropocene

UNIVERSIDAD DE BURGOS

Centre for Sustainability Management
LEUPHANA UNIVERSITÄT LÜNEBURG

MBS since 1897 MONTPELLIER BUSINESS SCHOOL

gestionet Play Think Learn

UNIVERSITÀ DI TRENTO

ROLE PLAY

Title: Environmental frameworks

Context: Hi! You finally arrived! The rest of the environmental experts are waiting for you. We have to finish today the guidelines for the report that the UN has asked us to face the Anthropocene. There is no time to waste. We can count on your advice. May we start?

Scenario: A modern office in a Western/occidental style. Some plants, glass walls and a big table with some people (the experts) sitting around it.

Character: A middle-class character (men/women depending on the avatar) with a semi-formal outfit.

Scene 1

First, we must decide what perspective we will follow in the report. Can you suggest the most pertinent perspective from your view?

Response 1: Due to the current situation and the few initiatives in progress, I suggest an ecocatastrophic framework.

Go to:
Scene 2

Response 2: It is crucial to always stay positive. This report must have a possibilist framework.

Go to:
Scene 3

Scene 2

Are you sure? I’m not sure politicians will expect that. Despite the extreme situation, something can be done, if not to stop ecosystem dysfunctions nowadays, at least to attenuate them in the future.

Response 1: Yes, I am sure. The most relevant thing we can do is to offer some degrowth proposals to affect future times.

Go to:
Scene 4

Response 2: Yes, I am sure. The first thing we must do is to make clear the limits we are overcoming. Only by doing so can we support the measures we will propose.

Go to:
Scene 5

Response 3: I’m not sure.

Go to:
Scene 1

Scene 3

I like this position! We could find some human actions that directly affect Earth's ecosystem. Couldn’t we?

Response 1: Sure, we can rely on the Planetary Boundaries framework.

Go to:
Scene 8

Response 2: Sure, we can rely on the Science-based Target Initiative.

Go to:
Scene 9

Scene 4

So, what proposals should we focus on? Please, be schematic. We don’t have too much time to talk in the UN General Assembly

Response 1: We must create new ways to make politics for different values and data.

Go to:
Scene 6

Response 2: We need to stop work immediately.

Go to:
Scene 4 (Are you crazy? We cannot do that!)

Response 3: We must let scientists act in any conditions.

Go to:
Scene 4 (That’s not possible! We have different procedures around the world. It is not so simple)

Scene 5

It makes sense. But how can we measure these limits in Earth's ecosystem?

Response 1: Employing the Planet Boundaries framework, which analyze the resilience of Earth's ecosystem to human behaviours

Go to:
Scene 8

Response 2: Developing a strategy in our corporation based on science-based targets.

Go to:
Scene 5 (try again)

Scene 6

That might convince our leaders, but offering them efficient ideas to resolve this problem as soon as possible is essential. Any idea?

Response 1: The critical issue is to think of the relationship between humanity and nature as a flow in scientific terms.

Go to:
Scene 7

Response 2: That is not possible! In these conditions, we should try to control (once again) the planet Earth, which is risky.

Go to:
Scene 3

Scene 7

That could be an interesting point. It links the environmental problem with the social one. Nevertheless, it is more complicated to explain it to laypeople. To whom should we give this responsibility?

Response 1: We should let experts manage this situation.

Go to:
Scene 12

Response 2: We should explain it to society and then accept a democratic consensus.

Go to:
Scene 13

Response 3: We should trust corporations and apply a market rationality.

Go to:
Scene 14

Scene 8

It seems reasonable to me. Is there any boundary we should stress in our speech to look more confident and direct to the UN General Assembly?

Response 1: You should stress the role of biodiversity in the Earth's ecosystem.	**Go to:** Scene 10
Response 2: You should stress the role of climate change in the Earth's ecosystem.	**Go to:** Scene 11
Response 3: You should stress the role of sea level in the Earth's ecosystem.	**Go to:** Scene 8 (are you sure about that? It doesn't seem so crucial to me)

Scene 9

This framework could suit. Its objectives are concrete and focus on one of the current main environmental problems: climate change. What should be our main argument using science-based targets?

Response 1: Science's relevance for decision-making

Go to:
Scene 9 (try again)

Response 2: The role of corporations in driving climate change.

Go to:
Scene 14

Scene 10

No doubt, biodiversity is a crucial issue. It regulates the Earth in many different ways. How can we explain it to our leaders?

Response 1: Animals are really beautiful.

Go to:
Scene 10 (That is not even an argument!)

Response 2: We need biodiversity to feed humanity.

Go to:
Scene 10 (that's is not an argument for the planet ecosystem)

Response 3: Biodiversity, through biological patterns, helps us to understand the energy and material flux that ordinate the biosphere.

Go to:
Scene 14

Scene 11

Sure! Everyone is talking today about climate change. A solid argument to defend it more consistently could be a good idea.

Response 1: It affects our way of living and consuming. It is a vicious cycle.

Go to:
Scene 11 (try again)

Response 2: The climate affect directly to the energy flux in the ecosystem, and indirectly too since it affects to the biomass

Go to:
Scene 7

Scene 12

Sure. Experts could inform politicians in the decisions process. But maybe it could be a little unpopular, couldn’t it?

Response 1: I don’t think so. People usually trust science and politics.

Go to:
Scene 12 (try it again)

Response 2: Maybe, perhaps we should search for a hybrid situation to allow the population to participate in the decision process

Go to:
Scene 15

Scene 13

It will be the most popular and legitime position. But, it couldn't be a bit risky due to the complexity of the environmental problem.

Response 1: No, people instinctively know what is better for them.

Go to:
Scene 13 (try it again)

Response 2: Maybe we should have some support, without despising this position.

Go to:
Scene 15

Scene 14

It makes sense. Corporations are the most consuming energy agents in our economy and the significant agents in the environmental crisis. Nevertheless, could they be regulated by themselves?

Response 1: Sure, the natural logic is similar to the economic one.

Go to:
Scene 14 (Think again)

Response 2: Maybe we could ask some help to other social agents.

Go to:
Scene 15

Scene 15

Perfect. A hybrid system will be the best option. However, how should we organize it?

Response 1: Science should propose solutions. The political parties should administrate the solutions. Finally, the population should confirm or dismiss the process.

Go to:
Scene 16

Response 2: Science must not influence the solutions. The political parties should administrate the solutions. Finally, the population should confirm or dismiss the process

Go to:
Scene 15 (try it again)

Scene 16

I totally agree. Just only one more question. We have said corporations are a crucial element in the Anthropocene problem. How could we integrate them into this system?

Response 1: We should oblige corporations to follow the order designated to science, political parties and population.

Go to:
Scene 16 (I'm not sure that is a good approach)

Response 2: We should propose the "economic modernization" concept, which implies environmental care as an efficiency index.

Go to:
Scene 17

Scene 17

Thank you, your collaboration has been precious. Now, we have more precise ideas to convince governments, society, and corporations to engage in environmental frameworks. Furthermore, we now have more critical skills to propose this or other approaches to sustainability politics that may be implemented in other contexts. Nevertheless, you should improve your practical skills and reinforce your knowledge about how these ideas could be implemented in corporations and society. Let's see how sustainability accounting can help you for that purpose.

Co-funded by the European Union

ACCOUNT 4 Green Eco

Module 1
Sustainability accounting in the 21st century

Unit 1.2
THE SUSTAINABILITY REPORTING LANDSCAPE

Sustainability Accounting Learning Platform for a Green Economy

2022-1-ES01-KA220-HED-000089844

UNIVERSIDAD DE BURGOS
Centre for Sustainability Management
LEUPHANA UNIVERSITÄT LÜNEBURG
MBS since 1897 MONTPELLIER BUSINESS SCHOOL
gestionet Play Think Learn
UNIVERSITÀ DI TRENTO

Co-funded by
the European Union

Document information	
Unit title	Unit 1.2. The sustainability reporting landscape
Deliverable	D2.1. Materials and resources of Module 1 (Unit 1.2)
Work package contributing to	WP2 - Comprehensive syllabus on sustainability accounting
Delivery date	October 31, 2023
Authors	Nicolás García Torea & Clara Pérez Cornejo (Universidad de Burgos)
Type (Public/Private)	Public

Revision history		
Type	**Date**	**Authors**
First full draft	May 31, 23	Nicolás García Torea & Clara Pérez Cornejo (Universidad de Burgos)
Internal feedback	Jun 6, 23	Juliette Senn (Montpellier Business School)
Internal feedback implementation	Jun 30, 23	Nicolás García Torea Universidad de Burgos)
External feedback	Sep 23	External reviewers from the associated partner
External feedback implementation	Sep 30, 23	Nicolás García Torea Universidad de Burgos)
TA1 participants' feedback implementation	Oct 31, 23	Nicolás García Torea & Clara Pérez Cornejo (Universidad de Burgos)
Final version	Oct 31, 23	Nicolás García Torea & Clara Pérez Cornejo (Universidad de Burgos)

Table of contents

LIST OF ACRONYMS IV
ABOUT THIS UNIT 1
INTENDED LEARNING OUTCOMES AND COMPETENCES 2
1. SUSTAINABILITY REPORTING AS CORPORATE PRACTICE 3
1.1. DEFINING SUSTAINABILITY REPORTING 3
1.2. THE STATE OF SUSTAINABILITY REPORTING 7
2. MATERIALITY IN SUSTAINABILITY REPORTING 11
2.1. THE CONCEPT OF MATERIALITY 11
2.2. THE MATERIALITY ASSESSMENT PROCESS 16
3. FRAMEWORKS FOR PRODUCING SUSTAINABILITY REPORTS 22
3.1. THE LANDSCAPE OF SUSTAINABILITY REPORTING FRAMEWORK 22
3.2. THE GLOBAL REPORTING INITIATIVE 24
3.3. THE INTERNATIONAL SUSTAINABILITY STANDARDS BOARD 29
3.4. THE SUSTAINABILITY ACCOUNTING STANDARDS BOARD 31
3.5. THE INTEGRATED REPORTING FRAMEWORK 32
3.6. THE TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES 35
3.7. THE SUSTAINABLE DEVELOPMENT GOALS DISCLOSURE RECOMMENDATIONS 37
4. CONCLUDING NOTES 39
REFERENCES 40
ADDITIONAL MATERIALS 43
ACTIVITIES 46
ROLE PLAY CASES 82

List of tables

Table 1. GRI sustainability reporting principles. 27
Table 2. Content of SASB standards. 31
Table 3. The <IR> Framework guiding principles. 33
Table 4. The <IR> Framework content elements. 33
Table 5. TCFD core elements, recommendations and recommended disclosures. 35
Table 6. SDG Recommendations fundamental concepts. 38

List of figures

Figure 1. Sustainability reporting boundaries. 7
Figure 2. Approaches to materiality in sustainability reporting. 12

Figure 3. Materiality assessment process. 17
Figure 4.Sustainability reporting frameworks landscape 23
Figure 5. Sustainability reporting frameworks and materiality. 24
Figure 6. GRI Guidelines and Standards. 25
Figure 7. Structure of the GRI Standards. 26

List of acronyms

- CERES – Coalition of Economies Responsible for the Environment
- CDP – Carbon Disclosure Project
- CDSB – Climate Disclosure Standards Board
- CSRD – Corporate Sustainability Reporting Directive
- EFRAG – European Financial Reporting Advisory Board
- ESRS – European Sustainability Reporting Standards
- EU – European Union
- GRI – Global Reporting Initiative
- IFRS – International Financial Reporting Standards
- IPCC – Intergovernmental Panel on Climate Change
- IR – Integrated reporting
- <IR> Framework – Integrated Reporting (IR) Framework
- IRRC – International Integrated Reporting Council
- ISSB – International Sustainability Standards Board
- NFRD – Non-Financial Reporting Directive
- NGO – Non-governmental organisation
- SASB – Sustainability Accounting Standards Board
- SDGs – Sustainable Development Goals
- SDGD Recommendations – Sustainable Development Goals Disclosure Recommendations
- TCFD – Task-Force on Climate Related Financial Disclosures
- UNEP – United Nations Environment Programme
- VRF – Value Reporting Foundation

About this unit

Unit 1.1 explored the current dramatic ecological and social conditions of the planet that have been substantially driven by human action that resulted in a new geological epoch, the Anthropocene. Although accounting has contributed to generating such effects by supporting increasing unsustainable economic growth, Unit 1.1 reflected on the role that alternative forms of accounts, namely **sustainability accounting**, can have in redirecting human activities towards a more sustainable path that could help us to navigate back to a safe operating space for humanity. Sustainability accounting is still in experimentation: it is yet unclear what the best form of accounting is to support sustainable transition or whether it will be in a constant state of flux as the interaction between society and nature is in continuous development.

Sustainability accounting has emerged and evolved during the last quarter of the 20th century as a corporate reporting practice. **Sustainability reporting,** understood as the production of reports that try to make organisations accountable for the environmental and social impacts by informing stakeholders how they manage the actions leading to those effects and mitigating them, has become the most common form of sustainability accounting.

This unit focuses on sustainability reporting as the main sustainability accounting practice nowadays to understand:

- What **sustainability reporting** is and the main features characterizing its current state.
- The importance of **materiality** in determining the coverage of sustainability reporting.
- The role of **sustainability reporting frameworks** in helping organisations produce their sustainability reports.

Intended learning outcomes and competences

At the end of this unit students should be able to:

- Conceptualise sustainability reporting as a key organisational practice nowadays.
- Understand the different purposes and audiences that are assigned to sustainability reporting.
- Understand the concept of materiality and distinguish the different approaches to it in the field of sustainability reporting.
- Know the key recommendations and prescriptions of sustainability reporting frameworks.
- Evaluate and reflect on the sustainability information produced by organisations.

1. Sustainability reporting as corporate practice

1.1. Defining sustainability reporting

The emergence of sustainability reporting

Traditionally, companies have produced financial statements to provide information on their financial performance to their shareholders and investors. This practice reflects what is considered the most widespread conception of accounting as financial accounting. However, the growing **societal concern for the impacts of corporations on the environment and society** has increased the pressure on them to report also on how they are managing and mitigating those environmental and social impacts (Gray, 2006). This situation recognizes that firms, and organisations in general, should be held accountable not only to their providers of financial capital but also to those stakeholders to which they relate (Gray et al., 1996).

Due to this recognition, some organisations have published reports covering aspects of their social and environmental impacts for almost five decades. However, the **form and content of these reports have evolved significantly** during this period. In the 1970s, firms published social reports that provided information on how they managed certain social issues. The practice changed into environmental reports at the end of the 1980s and beginning of the 1990s driven by the dramatic environmental disasters that happened around this time (such as the 1984 Bhopal disaster in India, or the 1989 Exxon Valdez spill in Alaska), which increased society's spotlight on environmental impacts. Since the late 1990s and the beginning of the 2000s, corporate reports have broadened their coverage to inform about the social, environmental, and economic impacts of business (the understanding of the economy in these reports goes beyond financial performance, as they consider how companies broadly affect the economies in which they operate, for instance by creating jobs, paying taxes, or supporting infrastructure development). This form of reporting is the most common nowadays and is usually known as sustainability reporting.

> **Sustainability reporting** refers to the practice of producing reports that explain how organisations manage the social, environmental, and economic dimensions of their businesses, as well as their corporate governance arrangements set for that purpose, by informing about their priorities, policies, and actions, as well as the impacts, both positive and negative, of their operations on those dimensions.

It is important to differentiate between reporting and communication. Communication is considered a broad instrument that could be used as a marketing tool. By contrast, reporting must be conceived as an instrument to promote transparency through which organisations offer information that allows the audience to assess their interaction with sustainability issues. In this respect, sustainability reporting involves the provision of information of varied nature (qualitative, quantitative, and in some cases

monetary) that covers multiple sustainability topics (e.g., climate change, pollution, water, employees, supply chain, health and safety, tax, corruption, etc.) to a broader stakeholder audience than in traditional financial reporting, which is mainly addressing the needs of shareholders. The variety that characterises sustainability reporting makes it a complex task as it requires a high level of coordination and the adaptation of internal control systems to produce the necessary data.

The main outcome of sustainability reporting is known as **sustainability report**. However, other labels may also be used to refer to these reports, such as corporate social responsibility report, CSR report, corporate citizenship report, non-financial report, among others. Usually, these are stand-alone reports that are published independently from the financial statements and accounts, although it is usual that both documents refer to the same reporting period (Tregidga & Laine, 2021).

Sustainability reporting should be understood as a flexible practice that shall be adapted to the specificities of the company that produces sustainability reports. For example, due to the extent of their impacts and the resources they have available, the reporting practices of SMEs are simpler than those of large companies. Also, the industry in which a company operates shapes how it approaches sustainability reporting.

Although sustainability reporting emerged as a voluntary practice, the recent regulatory focus on this phenomenon is promoting a greater alignment between sustainability and financial reporting. The different regulations enacted worldwide, especially in Europe, are promoting the role of sustainability reporting to be considered as of equal importance to financial reporting. Furthermore, regulation is also recognizing the interconnectivity between both reporting pillars. The regulatory requirements, which will be detailly covered in Module 2, are in some cases even mandating that the sustainability report should be provided as an element of annual reports.

Video: What is sustainability reporting? (Link)

The purpose of sustainability reporting

Usually, sustainability reporting has been understood as a tool through which organisations are made accountable to their stakeholders for their impacts (Tregidga & Laine, 2021). However, the increasing awareness of financial capital providers about the potential effect of sustainability on firms' financial performance has determined other objectives that sustainability reporting may support. Therefore, broadly speaking, sustainability reporting may serve **three primary purposes**: accountability, valuation, and stewardship (Cooper & Michelon, 2022).

Purposes of sustainability reporting

- From an **accountability perspective**, sustainability reporting aims to provide an organisation's stakeholders with information that allows them to assess how it manages the social and environmental impacts that its business generates.
- From a **valuation perspective**, sustainability reporting aims to provide financial capital providers – namely, shareholders and investors – with information that allows them to evaluate their investments' future value.
- From a **stewardship perspective**, sustainability reporting aims to provide financial capital providers with information that allows them to assess the use of the capital they provide to the organisation.

The three different purposes ascribe different **levels of organisational responsibility**. The accountability perspective conceives organisational responsibility broadly. An organisation is not only expected to be responsible to those stakeholders providing financial capital but also to all to all of them suffering from the impacts that its activity creates. Therefore, this approach recognizes that organisations relate to a variety of stakeholders, with different views and needs, that must be acknowledged and considered in the production of sustainability reports.

By contrast, the valuation and stewardship perspectives narrow the scope of sustainability reporting as it assumes that organisations are solely responsible to the providers of financial capital. Consequently, sustainability reports shall only cover information that is relevant for investment decision-making by focusing on those sustainability issues that are expected to impact the financials of corporations and ignoring those aspects that may be highly affected by organisations if they do not have an evident influence on their financial position.

Regarding the stewardship perspective, the notion of stewardship is also applied in the field of sustainability to refer to how we should engage with nature through a socio-ecological system perspective (Enqvist et al., 2018). Although this conceptualization of stewardship is promising to develop future forms of accounting to guide organisational action in the Anthropocene, this is yet an area that should be further explored. Therefore, the stewardship purpose of sustainability reporting explained above is limited to the one that plays in current corporate practice (Cooper & Michelon, 2022).

Activity: What is the purpose of sustainability reporting? (see "Unit 1.2 Activity 1")

Boundaries in sustainability reporting

The purpose that is assigned to sustainability reporting further determines two key concepts for elaborating sustainability reports, **materiality and reporting boundaries.** These two concepts are essential for defining the scope of what comes to be reported

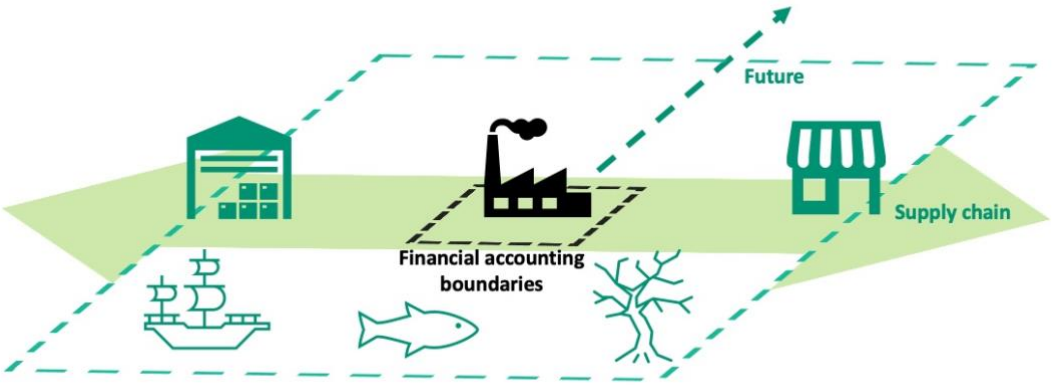
in sustainability reports (Tregidga & Laine, 2021). In simple terms, materiality relates to the identification of the topics that are considered relevant to be included in the report. This concept will be covered in more detail later in this unit.

> **Reporting boundaries** refer to the delimitation of the operations that are included in a report by determining the entities, transactions, activities and impacts that are covered.

In the field of sustainability reporting, the **definition of boundaries is problematic** as the scope of social and environmental impacts goes beyond the perimeter of the reporting entities. This aspect poses both conceptual and technical problems, especially for organisation with global value chains. On the one hand, environmental and social impacts may happen in other parts of the value chain. For example, a factory's employees in the upstream of the value chain may work in unsafe conditions. Similarly, the disposal of a product after its use (downstream) may create environmental harm if not properly managed. This issue poses the question of what level of the value chain impacts organisations should consider. The scrutiny of upstream and downstream levels of the value chain implies difficulties in monitoring and collecting data about the extent and management of impacts.

On the other hand, the impact created by corporate activities may take place in a geographical space different from its source, or even may unfold in the future. For instance, the impact of a factory's polluting leakages to a river may affect species and eco-systems in areas located away from it. Also, the effect of carbon emissions generated in production processes may be suffered by nature and people in the future as a consequence of climate change. This aspect calls for greater integration of geographical spaces and time horizons. Nonetheless, how to assess those impacts may prove unfeasible from a technical perspective.

Figure 1. Sustainability reporting boundaries.



Source: Own elaboration.

Activity: Look for a sustainability report (see "Unit 1.2 Activity 2")

1.2. The state of sustainability reporting

From a voluntary to a mandatory practice

Although in its origin the publication of sustainability reports started as a **voluntary practice** that was undertaken by very few organisations, nowadays it has become a common practice, particularly among large corporations. As the KPMG Survey of Sustainability Reporting 2022 shows, around 96% of the 250 top firms by revenue worldwide and 79% of the 100 largest companies in 58 countries issue sustainability information. Interestingly, while the first percentage has remained more or less constant since 2012, the second has been increasing significantly since the beginning of the 2000s, indicating that more companies have started to engage in sustainability reporting. The survey also shows some differences in how this practice is spread among countries. While companies from Europe and the Asia-Pacific regions have the highest reporting rates, the practice is less developed in other geographies, such as the Americas or the Middle East and Africa.

The emergence of sustainability reporting as a voluntary practice was driven, to a large extent, by an increasing social scrutiny of the social and environmental impacts of companies. This social demand, together with other factors, such as the development of common patterns at the industry level or the appearance of initiatives promoting the publication of sustainability reports, explains why more and more companies have begun to publish these documents.

In the last decades, a growing number of states have **started to regulate the disclosure of sustainability information** by some firms, notably listed and large corporations, creating an additional push that increases the number of sustainability reporters.

The regulatory pressure may come from different sources, such as stock exchange listing requirements, financial market regulators, or business and industry bodies; yet the most common obligation stems from governmental bodies that enact legislation mandating sustainability reporting (van den Wijs & van der Lugt, 2020).

The most paradigmatic case is the case of the **European Union (EU)**. In 2014, the EU passed Directive 95/2014 on Non-Financial Reporting (NFRD), that requires country members to adjust their legislation to mandate public-interest entities with more than 500 employees to report sustainability information every year as part of their annual accounts. Overall estimates indicate that more than 11,000 EU firms are under the scope of the NFRD. However, despite the increase in reporting entities, regulation does not necessarily improve the quality of that information that is being reported (Christensen et al., 2021).

The EU noted that the Directive failed to ensure the needs of the information users were met as it still has limited comparability and reliability (European Union, 2021). To address this issue, the EU has approved the new Corporate Sustainability Reporting Directive (CSRD) in 2022. This Directive will expand the scope of companies mandated to report to (1) all large firms, (2) SMEs considered public-interest entities, and (3) companies from outside the EU that generate a significant turnover within the EU. Consequently, once transposed to the national legislation of member states, the CSRD is expected to mandate more than 49,000 firms to publish a sustainability report. In parallel to the CSRD, the EU has also issued other regulations that are establishing mechanisms to foster the green transition of its economy that will create a spill-over effect on non-mandate firms. The impact of the EU regulation on sustainability reporting will be covered in more detail in Unit 2.1 of Module 2.

Notwithstanding the significant impact of regulation, it is important to recognise that some companies are still providing sustainability reports voluntarily. These cases are specially interesting as they could be the setting in which new and disruptive reporting practices may emerge.

The role of sustainability reporting frameworks and standards

To help firms produce sustainability reports, there is a great variety of **reporting frameworks and guidelines** that provide suggestions and prescriptions of how firms should prepare sustainability information. Most of these frameworks are voluntary, and companies are free to decide whether they want to follow them (Tregidga & Laine, 2021). The diversity of existing alternatives differs in their approach to sustainability

reporting and the topics they focus on. For instance, the **Global Reporting Initiative (GRI) Standards** are the most widely used framework guiding the sustainability reporting process of many firms worldwide since the beginning of the 2000s (KPMG, 2022). The standards produced by GRI pay attention to the impacts generated by corporate activities on a wide range of social, environmental, and economic topics for a wide range of stakeholders. Another initiative that has become highly influential in sustainability reporting is the **Sustainable Development Goals (SDGs).** Although it is not a reporting framework per se, the SDGs significantly influence how firms report on sustainability by guiding the structure of reports and the information provided.

By contrast, other frameworks have a more investor-focused perspective. For example, the **Task-Force on Climate Related Financial Disclosures (TCFD)** provide recommendations that are expected to lead to the publication of financially relevant information on climate change. Similarly, the standards produced by the **Sustainability Accounting Standards Board (SASB)** aimed at producing relevant information for financial capital providers along a set of social, environmental, and governance topics.

The emergence of sustainability reporting regulation has also fostered the development of mandatory standards. The EU provides the most significant example, where the CSRD will obligate companies to prepare their sustainability reports following the requirements set out by the **European Sustainability Reporting Standards (ESRS)**. The ESRS consider that sustainability reporting should target a broad audience, including both financial and non-financial stakeholders, providing them with relevant disclosures on a broad range of social, environmental and governance issues, including detection of corruption, bribery, political influence, lobbying, and payment practices.

In parallel with the development of the ESRS, the International Financial Reporting Standards (IFRS) Foundation has rolled out its own sustainability reporting standards. The IFRS Foundation is a private organisation that issues international standards on financial accounting. However, regardless of its private nature, it has gained major relevance and legitimacy worldwide because its financial reporting standards have been adopted by more than 150 countries that require some of their firms to produce their financial statements following their prescriptions. The IFRS Foundation created the **International Sustainability Standards Board (ISSB)** in 2021 to produce its sustainability reporting standards. As of now, these standards, which focus on climate change aspects relevant from an investor perspective, have not yet been formally endorsed by any country, but they may end up being mandated, at least, for listed companies in many jurisdictions.

Section 3 of this unit covers these reporting frameworks more extensively, with the exception of the ESRS which will be explained in detail in Unit 2.1.

The assurance of sustainability reporting

> **Assurance** consists of a service in which an independent provider gathers evidence to express an opinion on the sustainability report to promote their credibility and reliability.

Although, at first, they may seem similar, there are significant **differences between sustainability reporting assurance and financial reporting audit** regarding the level of the revision made by the provider and their regulatory status (Tregidga & Laine, 2021). On the one hand, sustainability reports are mostly subject to limited assurance, in which the provider merely states whether mistakes or errors were found in the report. By contrast, a financial reporting audit provides a reasonable level of assurance, in which the provider performs a thorough revision of all the content to express whether the information has been produced correctly or not. On the other hand, the development of audit is heavily regulated: providers must comply with certain requirements and are requested to follow specific procedures and assume responsibility for their assessment. In sustainability reporting, there are no specific requirements, with the service offered by different types of providers (e.g. audit firms, consultancy firms, or certification entities) that are not strictly mandated to apply specific procedures.

As with sustainability reporting, assurance started as a voluntary practice due to stakeholders' concerns about the reliability of corporate disclosures. Initially, only very few firms hired these services, yet it has grown in importance, with more than 60% of the largest companies in the world having their sustainability reporting assured in 2021 (KPMG, 2022). The number of firms assuring their reports is expected to increase even more in the future because more states are enacting mandatory assurance, at least for large and listed companies. In the EU, three countries (Spain, Italy, and France) have already included that obligation, but all member states will have to incorporate it when the transposition of the CSRD. The practice of assurance and its development is covered in Unit 2.2.

One important element that supports the sustainability reporting process and its assurance is the **internal control system**, i.e. the set of rules, mechanisms, and procedures that ensure the integrity of the reported information. These systems are defined to trace and retrieve the data required to elaborate the disclosures included in sustainability reports and inform companies' internal decision-making process for sustainable management. Module 3 will cover the fundamentals of sustainability management accounting (Unit 3.1) and internal controls for sustainability information (Unit 3.2).

Activity: What is the state of sustainability reporting? (see "Unit 1.2 Activity 3")

2. Materiality in sustainability reporting

2.1. The concept of materiality

The concept of **materiality** is fundamental in the field of sustainability reporting, as it allows companies to identify the most relevant issues regarding their sustainability impacts and performance. Therefore, materiality represents the starting point for producing sustainability reports (KPMG, 2022) because it defines the topics that should be disclosed in sustainability reports (Cooper & Michelon 2022).

In the **financial reporting** arena, the materiality principle is clearly defined. Information is deemed material "if omitting, misstating or obscuring it could reasonably be expected to influence decisions that the primary users of financial statements make on the basis of those financial statements, which provide financial information about a specific reporting entity" (IFRS, 2022, p. A979).

However, its definition in the field of sustainability reporting is still **ambiguous and contested** (Puroila & Mäkelä, 2019; Reimsbach et al., 2020). Generally speaking, materiality is understood as follows:

> A **sustainability issue** is considered **material** when it is likely to influence the stakeholders' decision-making process.

The direct connection between materiality and users makes it **amenable to the different purposes** assigned to sustainability reporting. The identification of material sustainability issues rests on the stakeholders that are considered the targeted audience of sustainability reporting. For instance, how materiality is conceived depends on whether financial or non-financial stakeholders are regarded as the key users of sustainability reports because the information needed to inform the decisions of environmental non-governmental organisations (NGOs) varies completely from that required by investors for their decision-making process. The distinction between financial and non-financial stakeholders as primary users of sustainability information and their specific connection to specific reporting purposes leads to two different conceptions of materiality that coexist in the field of sustainability reporting (Cooper & Michelon, 2022).

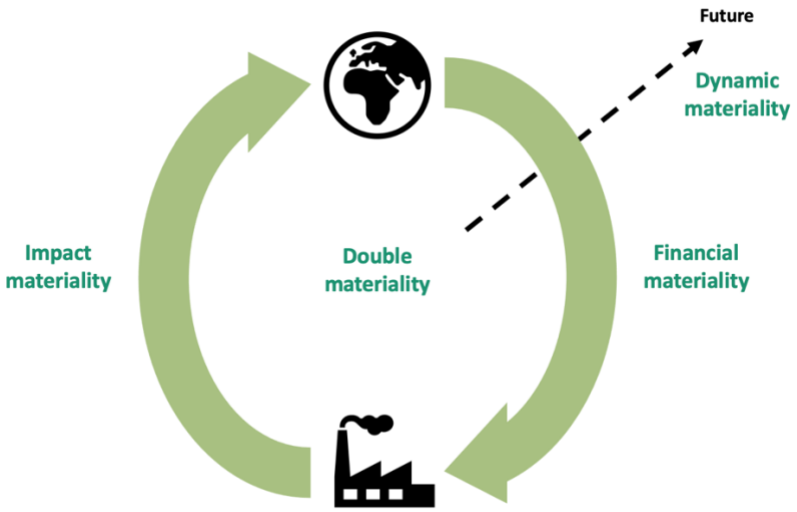
On the one hand, the accountability purpose of sustainability reporting calls for considering a broad base of stakeholders interested in evaluating how corporate activities affect society and the environment. Consequently, sustainability reporting should offer relevant information that allows stakeholders to understand the social and environmental (positive and negative) impacts of organisations and the actions taken to manage those impacts and mitigate negative ones. Under this approach, materiality is known as **impact materiality**.

On the other hand, the valuation and stewardship purposes of sustainability reporting rely on the consideration of financial stakeholders as the key users of sustainability information. As providers of financial capital, these stakeholders are

interested in assessing how social and environmental conditions affect the financial prospects of companies. Therefore, sustainability reporting should provide information that is relevant to understand the extent to which organisations depend on social and environmental aspects, and how those aspects may eventually translate into financial opportunities and risks for business. Under this perspective, materiality is known as **financial materiality**.

The combination of both impact and financial materiality leads to what is known as double materiality, the approach that is required in the CSRD. Additionally, the integration of time into the assessment of double materiality calls for the consideration of dynamic materiality. We cover the different approaches of materiality that stem from this distinction in following sections of this unit.

Figure 2. Approaches to materiality in sustainability reporting.



Source: Own elaboration.

Video: What does materiality mean in sustainability reporting? (Link)

Impact materiality

As explained in the previous section, impact materiality is rooted in the accountability purpose of sustainability reporting and the recognition that organisations should render accounts that inform a wide range of stakeholders about their sustainability impacts. Therefore, according to the ESRS1 (EFRAG, 2022, p. 11), impact materiality is defined as follows:

> A sustainability matter is **material from an impact perspective** when it pertains to the undertaking's material actual or potential, **positive or negative impacts on people or the environment** over the short-, medium- and long-term **time horizons**. Impacts include those caused or contributed to by the undertaking and those which are **directly** linked to the undertaking's own operations, products, or services through its **business relationships**. Business relationships include the undertaking's upstream and downstream value chain and are not limited to direct contractual relationships.

Impact materiality is also referred to as the **inside-out** perspective as it focuses on informing about how organisations' activities (the inside) affect nature and society (the outside). It is worth noting that, from an impact materiality perspective, the outside element is understood broadly because companies should be held accountable not only for the impacts on sustainability issues they generate directly but also for those that happen across their value chain. Additionally, impact materiality acknowledges the importance of assessing the time horizons in which sustainability impacts unfold.

Inherent to impact materiality is the notion of **externalities** (Cooper & Michelon, 2022). This economic term refers to the "social, environmental and broader economic impacts arising from the activities of an entity that are borne by others and do not feedback directly into short-term financial consequences for the entity" (Unerman et al., 2018, p. 498). Externalities are excluded from the contours of financial reporting as they do not have direct financial implications for firms in the short run. By recognizing the need to inform about externalities, impact materiality encompasses that sustainability reporting should be understood as a form of accounting for externalities.

In addition to improving transparency by allowing stakeholders to appreciate corporate impacts broadly, the application of an impact materiality perspective in sustainability reporting generates additional positive outcomes (Adams et al., 2021). For example, it can assist organisations in defining their sustainability agenda and strategy by facilitating the identification of sustainability issues they should focus on. Moreover, it can foster societal awareness about companies' ecological and social role in driving sustainable transition.

Financial materiality

In contrast to impact materiality, financial materiality relates to the stewardship and valuation purposes of sustainability reporting. As happened with financial reporting, this perspective considers that the providers of financial capital are the main audience of sustainability reports. Hence, these documents should provide them with information for their investment decision-making process. According to the ESRS1 (EFRAG, 2022, p. 12), financial materiality is defined as follows:

> A sustainability matter is **material from a financial perspective** if it triggers or may trigger material **financial effects** on the undertaking. This is the case when it generates or may generate **risks or opportunities** that have a material influence (or are likely to have a material influence) on the undertaking's cash flows, development, performance, position, cost of capital or access to finance in the short-, medium- and long-term **time horizons**.

Financial materiality is also referred to as the **outside-in** perspective as it focuses on informing about how sustainability issues (the outside) may affect organisations' financial position. As stated in the definition of materiality, the impact on the inside element is not only direct and shorter. An organisation should consider that its value may be affected by risks and opportunities that could stem from past or future events that may influence the assets and liabilities accounted for in financial reporting or other elements that do not meet the definition to be accounted for in financial reporting but that may affect the generation of future cash-flows and value creation. In this respect, financial materiality implies that organisations should also consider elements that can affect their financials but that are outside their scope of control (Jørgensen et al., 2022).

Consequent to this approach to materiality is the view that organisations should not only account for their externalities that may eventually represent a financial risk (although the probability of those risks may be low for many externalities) but also, and perhaps more importantly, for their **dependencies** (Cooper & Michelon, 2022). Dependencies refer to the functionality of social and environmental issues in supporting an organisation in performing its operations, in the sense that the organisation's activity is contingent on the availability of natural and social resources. For example, a company that relies heavily on natural resources may be affected by water scarcity or soil degradation, which could affect its production and profitability in the long run. Therefore, the problems affecting the current functioning of socio-ecological processes may end up representing a source of financial risks for companies as they may be unable to carry on with their activity as usual. One example could be that in a carbon-constrained future, fossil fuel companies may be unable to exploit their oil reserves, which are currently accounted for as assets in their financial statements, leading to their recording as stranded assets (Bebbington et al., 2020).

Although originally impact materiality was the main approach to materiality applied in sustainability reporting, invertors' growing awareness of the effect of sustainability issues on their investments' value has increased the demand for relevant sustainability information from a financial materiality perspective (Jørgensen et al., 2022). Indeed, more than 60% of the 250 largest companies recognize that climate change represents a source of risks for their operations, while almost 50% of these firms also acknowledge that social issues can also pose a risk to their business (KPMG, 2022).

Double materiality

As shown by the impact and financial materiality approaches, sustainability information could be relevant to different users depending on the purpose they assign to sustainability reporting. Considering that sustainability information could be useful for both financial and non-financial users, a further approach to materiality has recently emerged that seeks to combine both perspectives: **double materiality**.

Double materiality is the materiality approach that EU companies must apply when producing their sustainability reports. According to the CSRD (which will be covered more extensively in Unit 2.1), double materiality should be understood as follows:

> **Double materiality** refers to the need to consider both the impacts that companies have on society and the environment (impact materiality) and the impacts that society and the environment have on companies (financial materiality).

This approach calls then for considering the impacts (i.e. externalities) of the organisation (the "inside-out" perspective), as well as the risks, opportunities, and dependencies stemming from sustainability issues to the organisations ("outside-in" perspective).

By combining both perspectives, double materiality should guide the production of sustainability reports that offer a **more holistic view** of sustainability by informing about topics that are relevant for both stakeholders at large and providers of financial capital (Jørgensen et al., 2022). In so doing, sustainability reports should be capable of fulfilling the information needs of a wide variety of constituencies with different views on how sustainability information should be used.

Implementing double materiality can be complex from a practical perspective. The way in which organisations apply it may affect the result of the topics that end up being covered in sustainability reports. In this regard, the order in which the impact and financial materiality approaches that are embedded in it are assessed can lead to incomplete accounts of how companies actually impact sustainability issues. **Impact materiality should be assessed first** to avoid this issue and produce a report that provide a comprehensive picture of the connection between the organisation and sustainability. Then, the relevant impacts that have been identified must be evaluated to determine which of them may also be material from a financial perspective (Adams et al., 2021). In this order, sustainability reports will cover relevant matters from both perspectives. If, instead, financial materiality is assessed first, the organisation may end up excluding topics that are material as they generate substantial social and/or environmental impacts but were overlooked because they were not considered to have a significant potential or actual effect on the organisations' financial position.

Dynamic materiality

Dynamic materiality is the latest approach to materiality in the field of sustainability reporting. This perspective considers that certain sustainability issues that are relevant from an impact materiality perspective may not be relevant from a financial perspective today, but they could have a potential effect on the value of the organisation in the future. This perspective was introduced by the World Economic Forum (2020).

> **Dynamic materiality** refers to the importance of considering the process through which certain impact material topics that are financially immaterial to an organisation today can become financially material in the future, or vice versa, sustainability issues can cease to be financially materiality if companies successfully adapt their business models to face them.

By recognizing the time dimensions of materiality, dynamic materiality recognizes that some sustainability issues are "pre-financial" (GRI, 2022). This concept also highlights that assessing materiality is not a static process, as the relevance of sustainability issues is constantly evolving (Jørgensen et al., 2022). Despite the interest in this approach, dynamic materiality is a novel concept that has not been put into practice yet due to the uncertainties that it encompasses.

Activity: Do you understand the different approaches to materiality? (see "Unit 1.2 Activity 4")

2.2. Materiality assessment

> The **materiality assessment** refers to the process that organisations follow to identify, prioritise and validate the sustainability topics that are considered material to be included in sustainability reports.

The identification of material sustainability issues is **not a simple technical process**. On the one hand, defining what topics are material is context-specific because what is material to one company may not be material to another. Additionally, materiality may depend on stakeholder expectations, varying by industry, region, and culture. Furthermore, materiality assessments also incorporate a certain degree of subjectivity introduced by the stakeholders consulted to pinpoint what sustainability issues are deemed material, as well as by managers that make the final decisions about what actually comes to be reported.

Overall, assessing materiality provides **benefits** to companies in terms of:

- Obtaining essential data that could foster the connection between the areas of sustainability and financial reporting.
- Identifying risks and opportunities for the business.
- Recognising the concerns and expectations of stakeholders to improve reputation.

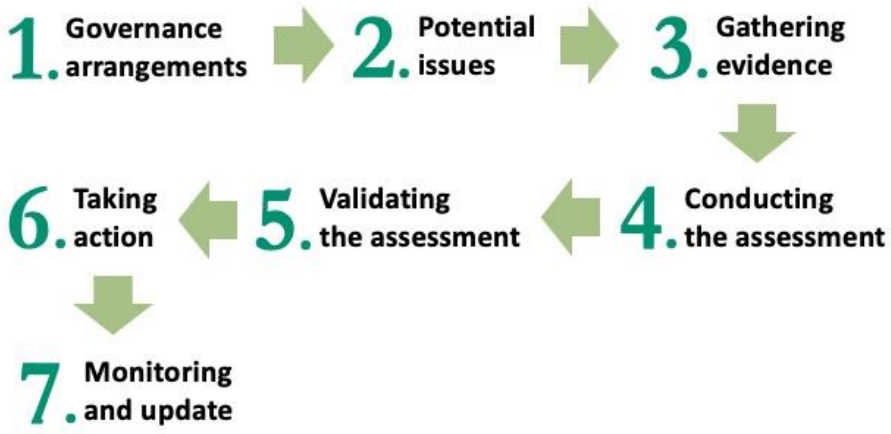
Regardless of the perspective from which materiality is approached, its assessment should rely on a **rigorous process** (Adams et al., 2021). If an organisation fails to follow an adequate materiality assessment, it may end up in producing sustainability reports that offer an incomplete and biased representation of its sustainability impacts and dependencies, that are ill-suited to meet the needs of information users.

According to Datamaran (2023), a rigorous materiality assessment:

- Be conducted every year before the sustainability report preparation.
- Rely on evidence.
- Be systematic.
- Incorporate the organisation's governance body.

The materiality assessment process usually consists of a 7-step process (see Figure 3). However, this process must be adjusted to the specific conditions of companies depending on their size, sector, or relevant stakeholders. Additionally, it should be recognised that assessing materiality is, to some extent, a subjective exercise that depends on the decisions made and sources of data consulted during the process.

Figure 3. Materiality assessment process.



Source: Own elaboration, based on Datamaran (2023)

Activity: What are the steps for a materiality assessment? (see "Unit 1.2 Activity 5")

2.3. The materiality assessment process

Step 1. Setting the organisation's governance arrangements

A rigorous materiality assessment process should be supported by and embedded into the **organisation's governance structure**. Materiality assessment involves the need to gather and consult members from different departments. Therefore, a **specific inter-departmental body** should be established to lead and coordinate the materiality assessment process. This body should also ensure that the results of the materiality

assessment are communicated internally to different departments and externally to relevant stakeholders to validate and ensure that the key sustainability issues have been identified from an "inside-out" and an "outside-in" perspectives.

Furthermore, materiality assessment should consist not only of a bottom-up approach in which stakeholders provide input to the process but also of a **top-down approach** that calls for the engagement with top organisational bodies. Therefore, boards of directors (or other bodies if the organisation lacks a board) should participate in materiality assessments to oversight the process and results. Furthermore, the involvement of top organisational bodies contributes to highlighting the relevance of materiality assessment and facilitates the allocation of resources for their development.

Step 2. Identifying the potential sustainability issues that could be material

The materiality assessment process should start with an exhaustive **compilation of the potential sustainability issues** that could be material for the organisation. This starting list should be as broad as possible to ensure that all potential matters that could be material are considered.

The organisation should rely on **multiple sources** to produce this starting list, such as:

- The matters required by sustainability reporting regulation or other related mandates (which will be covered in Unit 2.1).
- The matters listed in the different sustainability reporting frameworks and standards (especially the most important ones that are studied later in this unit).
- The matters covered by other similar organisations.
- The matters suggested by industry associations or in industry reports.

The list produced by consulting these sources needs to be revised and refined to avoid duplicities among sources. The organisation should also consider the characteristics of its **business model** to evaluate whether it should include topics that could be unique and specific for the organisation or whether some matters should be excluded as they could not be relevant considering the organisation's activity.

Step 3. Gathering evidence for the materiality assessment

The range of sustainability topics that could be related to an organisation could be very broad, and covering all of them in the sustainability report could lead to the production of an overwhelming document that could be of little usefulness to its audience, especially as not sustainability issues may not be all of the same importance. So, once the initial list of potential sustainability issues has been produced, organisations need to obtain evidence to evaluate the relevance of those matters to shortlist those that must eventually be covered in the report.

To guarantee the robustness of the process to filter the initial matters, organisations should rely on multiple sources of evidence, both external and internal, to identify material topics.

For **external sources of evidence**, organisations should:

- Engage with **external stakeholders** to evaluate their views on the importance they attach to the organisations' impact on sustainability issues. To do so, organisations should first map their external stakeholders (such as, NGOs, public administration, customers, suppliers, etc.) to identify those that are more relevant to engage with for the materiality assessment. The form in which the engagement should take place may vary depending on the stakeholder type. For instance, organisations could use surveys, workshops, interviews, or focus group. It is important to choose correctly the people the company will consult to avoid bias and misunderstandings, especially when using surveys, where it is not possible to ask directly. When designing the form of engagement, organisations should foster the bidirectionality of the process, so that the information and feedback flow in both directions to discuss the relevance of sustainability issues.
- Consult **additional data and scientific evidence** to corroborate and improve the feedback from the engagement. In this regard, organisations should consult reports and other documents published by relevant bodies, regulatory requirements, scientific studies, or experts. These sources of data are especially useful for incorporating the view of "silent" stakeholders, such as nature.

For **internal sources of evidence**, organisations should:

- Engage with **internal stakeholders** and gather the viewpoint of the organisations to further evaluate the impact of the organisation on sustainability matter, but also to evaluate how those matters impact its financial value creation. To do so, the organisation could engage with employees to identify what sustainability issues they consider useful. It should also obtain feedback from top management bodies and investors to incorporate the strategic position and vision of the organisation to evaluate the extent to which sustainability issues can be relevant from a financial perspective.

Step 4. Conducting the assessment to identify material sustainability issues

The evidence gathered in step 3 is the basis for assessing the extent to which the sustainability issues included in the initial list are relevant enough to be included in the reports. As mentioned before, impact materiality (inside-out perspective) should be assessed first when applying a double materiality.

To **assess impact materiality**, the collected evidence should allow the organisation to evaluate the following criteria:

- The **scale** refers to the magnitude of the impact on society and the environment (i.e. the gravity of negative impacts or the benefit of positive impacts).
- The **scope** refers to the extensiveness of the impact, such as the geographical area affected by environmental impacts or the number of people affected by social ones.
- The **irremediability** refers to whether or not the impact could be remediated by restoring the environment or the people affected to their original state.

Based on the assessment of these characteristics, the organisation should **determine a threshold** to prioritise sustainability topics and identify those that are material enough to be included in the report from an impact materiality perspective based on stakeholders' expectations. The definition of this threshold does not necessarily need to be quantitative, given that importance of sustainability issues is not always amenable to be rated with scores. The critical requirement to define the threshold is to guarantee that sustainability issues that are heavily impacted by the organisation are accounted for. Therefore, the organisation needs to validate this threshold with the stakeholders consulted in step 3 and with the highest governance body of the organisations to corroborate that all relevant aspects are finally considered.

To assess **financial materiality**, the organisation should start from those material matters from an impact perspective. Based on the information that was gathered, these matters should be:

- Classified either as **risks or opportunities**, considering whether they may result in negative or positive divergence in future cash flows or capitals recorded in financial statements.
- Assessed considering the **likelihood of their occurrence** and the **size of their financial effect**.

Similar to impact materiality, evaluating these features should lead to **determining a threshold** to identify what matters are financially material to be reported. In contrast to impact materiality, the threshold could be defined in quantitative terms considering that it is sometimes possible to estimate the expected impact in monetary terms.

The highest organisational body (usually the board of directors), with the support of management and the interdepartmental body integrated into the governance structure, should oversee the whole assessment process and determine the threshold that is applied for both impact and financial materiality. To take this decision, these actors should be able to consult all the evidence and analysis made during the materiality assessment process. If the organisation does not have a board of directors, a senior manager or group of senior managers should monitor the process and review and approve the identified material matters.

Step 5. Validating the results of the assessment

The identification of material sustainability issues resulting from the assessment must be validated to ensure that it actually covers those topics that are the most

relevant for stakeholders. This validation requires **consulting again the stakeholders** that were engaged in step 3, using similar tools (e.g. surveys, workshops, interviews, meetings). At this point, the organisation should also explain to the consulted stakeholders the process followed in the materiality assessment so that they can judge its effectiveness and objectivity.

Step 6. Taking actions based on the assessment

The validated results of the materiality assessment process determine the topics that should be covered; hence, **informing the preparation of sustainability reports** to ensure that they meet the information needs of external and internal users.

Once the material topics are identified from an impact and materiality perspectives, the organisation needs to **determine the specific disclosures** that shall be provided to inform about them adequately. In this regard, the organisation could consult the suggested topical disclosures suggested in the different sustainability reporting frameworks available (the most relevant frameworks are studied in section 3 of this unit).

The organisation should also **disclose information on the materiality assessment process** that it followed in the sustainability report. For instance, it should identify the stakeholders that were consulted, the methodologies and instruments used, how thresholds were define, and the results of the materiality assessment. To adequately describe this process, the organisation should prepare an audit trail of its materiality assessment that records all the steps that were taken.

The results of the materiality assessment have been traditionally disclosed by using a **materiality matrix**. If double materiality is applied, one of the matrix axes evaluates the relevance of a sustainability matter considering the impact of the organisation on the society and the environment (impact materiality), while the other axis assesses the relevance of a sustainability matter for the organisations' financial value (financial materiality). The elements that are close to the origin are not material from either of the perspectives, while those that are situated in the up-right quadrant are the most material from both impact and financial materiality perspectives. Although no reporting framework currently suggests the disclosure of a materiality matrix, it is still a widely used tool among organisations.

Although they are normally typically to produce sustainability reports, **materiality assessments are also helpful for internal purposes**. Material assessment helps organisations identify the most relevant sustainability issues for their business model, pointing to sustainability priorities that should be embedded in their strategies. Additionally, the output of the materiality assessment could be used to set goals and priorities, planning, budget allocation, or remuneration policies.

Step 7. Monitor and update the materiality assessment

The organisation should **monitor and update its materiality assessment periodically** to ensure that it is adapted to the evolution of the internal and external factors that shape the context in which it operates, as well as to changes in its stakeholders' needs. Companies should update their materiality analysis at least every year to guarantee that it is updated to prepare the annual sustainability report. However, organisations should ideally monitor their materiality assessment during the reporting period as it would help them better adjust to unexpected changes, as well as to anticipate for the sustainability reporting production process.

Case study: Materiality process (see "Unit 1.2 Case Study 1")

3. Frameworks for sustainability reporting

3.1. The landscape of sustainability reporting frameworks

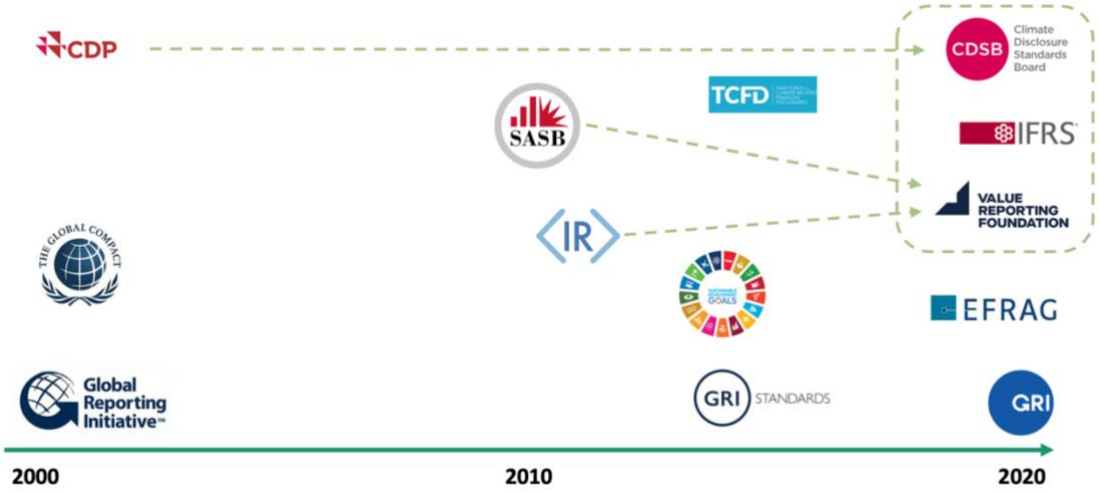
A **sustainability reporting framework** consists of a set of prescriptions that seek to help companies produce sustainability reports. To do so, sustainability reporting frameworks provide indications on how organisations should elaborate their sustainability information, define principles that must be applied, and propose disclosures and indicators to report on sustainability topics in sustainability reports.

As outlined before, a great variety of sustainability reporting frameworks are available. However, this was not always the case. When sustainability reporting started to emerge as a corporate practice at the end of the 1990s and the early, the **Global Reporting Initiative (GRI)** was the only relevant initiative at that moment. As it will be explained later, GRI has evolved over the last two decades, being always at the edge of sustainability reporting and becoming the most widely used framework (KPMG, 2022). At the time of the emergence of GRI, other sustainability initiatives came out, such as the Carbon Disclosure Project (CDP) or the Global Compact. Although they were not particularly focused on the production of a specific report on sustainability issues, they provided some guidance that was influential in elaborating these documents.

However, since 2010, the number of existing reporting frameworks has increased rapidly, leading to what is known as the "alphabet soup" due to the letters that comprise the acronym of the different sustainability reporting standards that exist. At the beginning of that decade, the **Integrated Reporting Framework (<IR> Framework)** and the standards developed by the **Sustainability Accounting Standards Board (SASB)** appeared. These two initiatives have been influential in certain settings. While South-African listed companies widely apply the <IR> Framework, SASB has a significant impact on the sustainability reporting practices of US companies. In parallel to these frameworks, other more specific initiatives also came on stage, such as **the Task Force**

on Climate-related Financial Disclosures (TCFD), or the **Sustainable Development Goals (SDGs)**.

Figure 4.Sustainability reporting frameworks landscape.

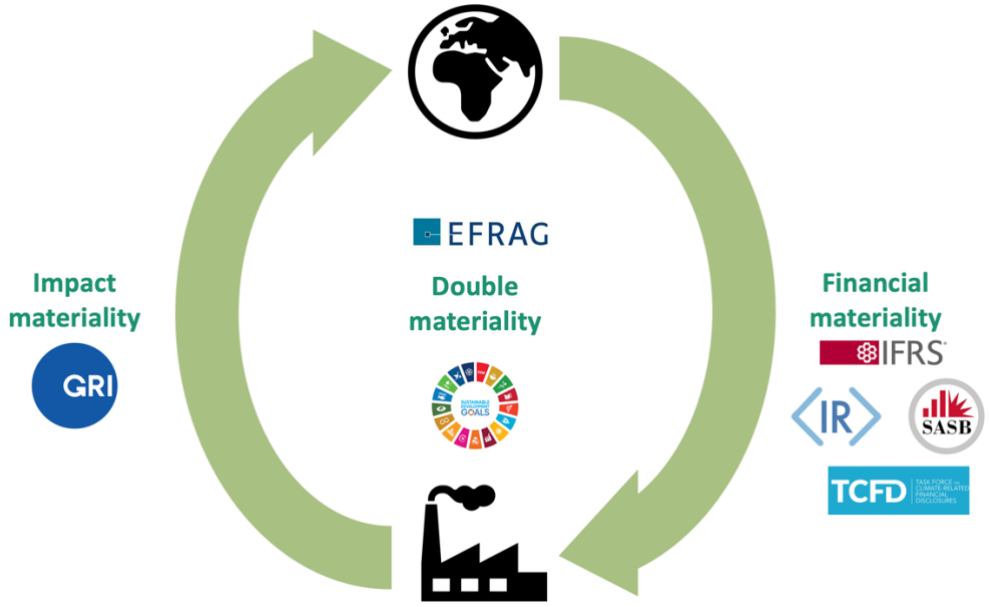


Source: Own elaboration.

In the early 2020s, the framework landscape has evolved significantly. The <IR> Framework and SABS merged into the **Value Reporting Foundation (VRF)**. The IFRS Foundation, the organisation responsible for producing the International Financial Reporting Standards (IFRS), created the **International Sustainability Standards Board (ISSB)**, that develops international standards for sustainability information. Additionally, the European Union also announced the development of the **European Sustainability Reporting Standards (ESRSs)**, prepared by the European Financial Reporting Advisory Board (EFRAG), which application will be mandatory for companies under the scope of the CSRD.

The different sustainability reporting frameworks that exist nowadays differ regarding the purpose they assign to sustainability reporting and the type of audience considered to be the recipients of sustainability information. These divergencies make **the materiality approach supported by each framework different**. Impact materiality lies at the core of GRI, as this framework focuses on disclosing information that allows a broad range of stakeholders to evaluate how corporate activities affect social and environmental matters. By contrast, the ISSB proposal, gathering the <IR> Framework and SASB, relies on financial materiality, suggesting disclosures that are expected to inform investors' decision-making processes. The TCFD advocates a similar approach to materiality. Finally, the ESRSs are grounded on double-materiality, seeking to address the information needs of financial and non-financial stakeholders. This approach to materiality is also aligned with the Sustainable Development Goals Disclosure (SDGD) Recommendations.

Figure 5. Sustainability reporting frameworks and materiality.



Source: Own elaboration.

The following sections cover the main features and disclosure requirements of GRI, ISSB (including the <IR> Framework and SASB), TCFD, and SDGD Recommendations. Given the mandatory nature of the ESRSs, these standards will be studied in Unit 2.1 about sustainability reporting regulation in the EU.

Video: What differentiates sustainability reporting frameworks? (Link)

Activity: What do you know about the landscape of sustainability reporting frameworks? (see "Unit 1.2 Activity 6")

3.2. The Global Reporting Initiative

The origin of the GRI Standards

The **Global Reporting Initiative (GRI)** is a private non-profit organisation that seeks to increase the quality and standardization of sustainability information to provide a better account of the impact of organisations on society and the environment and foster the engagement of organisations with sustainability reporting in order to promote transparency and contribute to the development of more sustainable organisational behaviours.

Founded in 1997 by CERES (Coalition of Economies Responsible for the Environment) and UNEP (United Nations Environment Programme), GRI has been a pioneering initiative in sustainability reporting since its creation. This organisation has

developed a voluntary sustainability reporting framework that provides companies with guidance on how to produce sustainability reports. GRI elaborates its framework through a stakeholder consultation process by creating workgroups for specific sustainability topics to gather the perspectives of relevant constituencies, such as business organisations, investors, audit firms, academics, and government representatives. The stakeholders represented in the workgroup dialogue provide their viewpoints on what should be the relevant disclosures that organisations shall report and that GRI should provide guidance for their production.

Since the release of its first guidelines in 2000, GRI has produced **different versions of its framework**, which have been refined and improved to facilitate the preparation of sustainability reports.

Figure 6. GRI Guidelines and Standards.

Source: Own elaboration.

The GRI Standards are the most widespread sustainability reporting framework across the globe. According to KPMG (2022), more than 75% of the 250 largest corporations worldwide and more than 65% of 100 largest companies in 58 countries follow the GRI Standards when producing their sustainability reports. Despite their voluntary nature, the GRI Standards are referenced in many legislations and advocated by stock exchange monitoring bodies and financial market regulators in more than 60 countries (Van der Lugt & Van de Wijs, 2020).

Regardless of its position as the de-facto norm for sustainability reporting (Larrinaga & Bebbington), it is important to monitor the position of GRI in the future. The emergence and merge of other frameworks (e.g. the ISSB gathering the <IR> Framework and SASB), some of which are mandatory (e.g. the ERSS), may threaten the leadership of GRI, having significant implications for sustainability reporting practice.

Materiality in GRI

The GRI framework defines a set of principles that organisations should apply to guarantee the quality and adequate presentation of sustainability reports. Traditionally, GRI included materiality as one of its principles. Specifically, the **GRI materiality principle** established that material topics should be assessed against two criteria: (i) the significance of the organisation's economic, environmental, and social impacts, and (ii) the substantive influence of sustainability issues on stakeholders' assessments and decisions.

In the latest update of its Universal Standards, GRI has revised how materiality should be understood in the context of its frameworks. This revision has led to two significant differences compared to its previous conceptualisation of materiality. First, materiality ceased to be a principle and is now considered a **higher fundamental concept** that guides the overall reporting process. Second, the **definition of materiality** was modified to emphasize that the focus of GRI is on providing information that allows the evaluation of how organisations affect sustainability issues (GRI, 2023, p. 100).

> **Material topics** represent the organisation's most significant impacts on the economy, environment, and people, including impacts on their human rights.

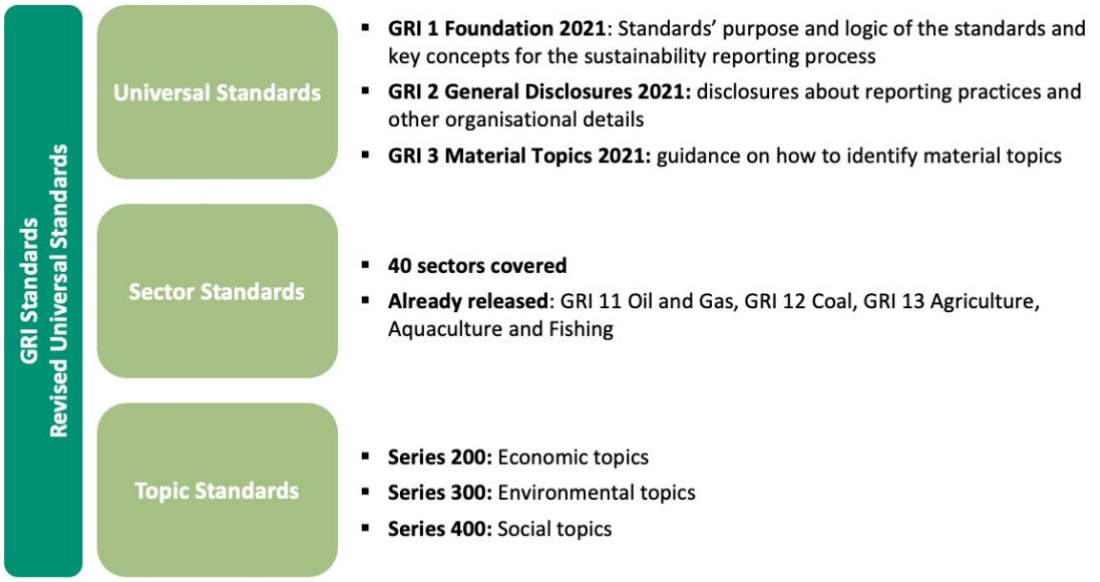
This definition of materiality highlights GRI alignment with the inside-out perspective embedded in **impact materiality** (Adams et al., 2021). Yet, although GRI focuses on sustainability issues regardless of their potential financial implications, the organisation recognises that some impact material topics may also be relevant for providers of financial capital (Cooper & Michelon, 2022).

The GRI Standards and updated Universal Standards

The GRI Standards are the latest version of the GRI framework. They are compulsory if an organisation wants to be recognized as a GRI-reporter. The GRI Standards follow a **modular structure** consisting of:

- **GRI Universal Standards**, which are applicable to all organisations.
- **GRI Sector Standards**, which are applicable for organisations that operate in specific industries.
- **GRI Topic Standards**, which are applicable depending on the identified material topics of organisations.

Figure 7. Structure of the GRI Standards.



Source: Own elaboration, based on GRI (2023)

The standards in each module differentiate **three types of content**. **Requirements**, which must be complied with by the organisations, are written in bold and introduced by the word "shall". The requirements also included guidance that help their applications. **Recommendations**, which are possibilities and options that organisations can choose to follow, are introduced by the word "should". Finally, **defined terms** provide a definition of the Standards' key concepts that organisations must apply.

The **Universal Standards**, which were updated in 2021, are structured into three standards that define the key concepts for the sustainability reporting production, prescribe general disclosures that must be provided in the reports and provide guidance for the identification of material topics.

- **GRI 1 Foundation 2021** describes the purpose and logic of the standards and explains key concepts for the sustainability reporting process. It also defines the requirements and reporting principles that organisations must comply with to report in accordance with the GRI Standards. The box below provides the definition of the GRI principles as stated in GRI 1.
- **GRI 2 General Disclosures 2021** defines disclosures about organisations' reporting practices and other organisational details, such as activities, governance, and policies. This information helps appreciate organisations' profiles and scale and helps stakeholders understand the context of the organisation's impacts.
- **GRI 3 Material Topics 2021** offers guidance on how to identify material topics. It also provides disclosures about an organisation's process to determine material topics, the list of material topics, and how it manages each topic.

Table 1. GRI sustainability reporting principles.

Principle	Definition
Accuracy	The organisation shall report information that is correct and sufficiently detailed to allow an assessment of the organisation's impacts.
Balance	The organisation shall report information in an unbiased way and provide a fair representation of the organisation's negative and positive impacts.
Clarity	The organisation shall present information in a way that is accessible and understandable.
Comparability	The organisation shall select, compile, and report information consistently to enable an analysis of changes in the organisation's impacts over time and an analysis of these impacts relative to those of other organisations.
Completeness	The organisation shall provide sufficient information to enable an assessment of the organisation's impacts during the reporting period.
Sustainability context	The organisation shall report information about its impacts in the wider context of sustainable development.
Timeliness	The organisation shall report information on a regular schedule and make it available in time for information users to make decisions.

Verifiability	The organisation shall gather, record, compile, and analyse information in such a way that the information can be examined to establish its quality.

Source: GRI (2023)

The **Sector Standards** offer information on likely material topics for organisations depending on the sector in which they operate. Each sector standard describes the sustainability context for its specific case, defines material sustainability topics and suggests disclosures relevant for organisations in the sector to provide in their sustainability reports. GRI plans to elaborate standards for 40 sectors. As of May 2023, GRI has issued the following sector standards:

- **GRI 11 Oil and Gas**
- **GRI 12 Coal**
- **GRI 13 Agriculture, Aquaculture and Fishing**

The **Topic Standards** suggest disclosures on particular sustainability topics that organisations can report based on their identification of material sustainability issues based on the application of GRI 3. Topic Standards are structured in three series, each covering specific topics:

- **Series 200 covers economic topics**, such as economic performance (GRI 201), market presence (GRI 202), indirect economic impacts (GRI 203), procurement practices (GRI 204), anti-corruption (GRI 205), anti-competitive behaviour (GRI 206), and tax (GRI 207).
- **Series 300 covers environmental topics**, such as materials (GRI 301), energy (GRI 302), water and effluents (GRI 303), biodiversity (GRI 304), emissions (GRI 305), effluents and waste (GRI 306), and supplier environmental assessment (GRI 308).
- **Series 400 covers social topics**, such as employment (GRI 401), labour/management relations (GRI 402), occupational health and safety (GRI 403), training and education (GRI 404), diversity and equal opportunities (GRI 405), non-discrimination (GRI 406), freedom and association of collective bargaining (GRI 407), child labour (GRI 408), forced and compulsory labour (GRI 409), security practices (GRI 410), rights of indigenous people (GRI 411), local communities (GRI 413), supplier social assessment (GRI 414), public policy (GRI 415), customer health and safety (GRI 416), marketing and labelling (GRI 417), and customer privacy (GRI 418).

Activity: What is the materiality perspective of the Global Reporting Initiative? (see "Unit 1.2 Activity 7")

Activity: What are the GRI principles? (see "Unit 1.2 Activity 8")

3.3. The International Sustainability Standards Board

The **International Financial Reporting Standards (IFRS) Foundation** is a non-profit organisation that aims to increase transparency and enhance the dynamics of capital markets. Since it was created in 1973 as the International Accounting Standards Committee Foundation (it converted into the IFRS Foundation in 2001), this entity has focused on developing the International Financial Reporting Standards. These standards, which prescribe how companies should elaborate their financial statements, are produced by International Accounting Standards Board (IASB), a body that depends on the IFRS Foundation. Although the IFRS Foundation is a private organisation with no regulatory power, its financial standards are endorsed by more than 150 countries.

Despite its inherent interest in financial reporting, the IFRS Foundation launched in 2020 a consultation paper on sustainability reporting that proposed the creation of a new board within the Foundation to start producing standards on sustainability reporting. The paper raised concerns about the multiple frameworks and standards available to produce sustainability information and presented itself as the prominent organisation to harmonise the situation. In this respect, the IFRS Foundation was trying to use its legitimacy in the financial reporting arena to advocate its suitability to enter the sustainability reporting field, regardless of the fact that it overlooked sustainability information during the two previous decades. In 2021, the IFRS Foundation announced the creation of the **International Sustainability Standards Board (ISSB)**.

> The **International Sustainability Standards Boards (ISSB)** aims to develop global standards for sustainability reporting to help organisations produce comprehensive disclosure for capital markets and satisfy the investors' information needs and facilitate interoperability with disclosures that are jurisdiction-specific and/or aimed at broader stakeholder groups.

As stated by the ISSB in its definition, its sustainability standards are clearly rooted in a **financial materiality approach**. The ISSB is producing these standards to elaborate financially relevant sustainability information for investors gradually. In this regard, the IFRS Foundation started focusing on climate change, the sustainability matter with the greatest financial implications nowadays, hence reinforcing the view that its standards are anchored on financial materiality. Therefore, the ISSB is clearly aligned with the valuation and stewardship purposes of sustainability reporting, in contrast to the accountability purpose advocated by GRI.

In 2023, the ISSB has issued two standards, which will be effective for reports covering the period starting after January 1, 2024.

- **IFRS S1 General Sustainability-related Disclosures.** This standard requires organisations to report information about significant sustainability-related risks and opportunities that help assess corporate value to inform investor decision-making. IFRS S1 also defines the principles that shall be applied when producing

sustainability information, which are very much aligned with those defined by the IASB for financial reporting, including the materiality principle.

> **Sustainability-related financial information** is **material** if omitting, misstating or obscuring that information could reasonably be expected to influence decisions that the primary users of general purpose financial reporting make on the basis of that reporting, which provides information about a specific reporting entity.

- **IFRS S2 Climate-related Disclosures.** This standard specifies disclosures about companies' exposure to significant climate-related risks and opportunities that can affect their corporate value, about their use of resources and actions to manage climate-related risks and opportunities, and their capacity to adapt to climate-related risks and opportunities.

Due to its intention to harmonise the sustainability reporting field, the ISSB has consolidated sustainability reporting frameworks that are grounded on financial materiality under its auspice: The Value Reporting Foundation and the Climate Disclosure Standards Board. These organisations have shaped sustainability disclosures during the last decades and are influential, especially in specific settings, which can help the ISSB benefit from their status.

- **The Value Reporting Foundation (VRF)** is an organisation that resulted from the merger of two organisations that issued significant sustainability reporting frameworks: The Sustainability Accounting Standards Board (SASB) and the Integrated Reporting (IR) Framework. Both frameworks have an investor-oriented focus.
- **The Climate Disclosure Standards Board (CDSB)** gathers a group of business and environmental NGOs that highlight the financial relevance of climate-related disclosures. This organisation published the CDSB Framework, which provided the basis for the Task Force on Climate-Related Financial Disclosures (TCFD) that provide recommendations for organisations to produce information on risks and opportunities stemming from climate change**.** Since 2024, the ISSB is responsible for monitoring companies' application of the TCFD framework.

Although both organisations are now consolidated under the ISSB, their related frameworks (SASB, <IR> Framework, and TCFD) still have on their own a significant impact on sustainability reporting practices. Therefore, the next section will cover them in more detail.

Activity: What is the ISSB's materiality approach? (see "Unit 1.2 Activity 9")

3.4. The Sustainability Accounting Standards Board

The **Sustainability Accounting Standards Board (SASB)** is a non-profit organisation that was founded in 2011 with the objective of developing sustainability accounting standards that guide firms in reporting information on environmental, social, and governance material topics for the providers of financial capital in a specific industry.

Two notable features characterize the SASB standards. First, SASB has a financial materiality approach, as the standards cover sustainability issues that may end up having **financial implications** for firms. Second, SASB highlights the importance of evaluating sustainability issues at the **industry level**. As a matter of fact, SASB standards are structured considering what sustainability issues are financially material for each industry. This characteristic seeks to reduce the burden of firms in assessing materiality from a financial perspective: if a firm operates in an industry covered by SASB, the standard already identifies the sustainability topics that are deemed material in its activity.

SASB has produced standards for **material topics in 77 industries**. SASB identifies material topics for each industry by analysing: their potential impacts on firm's value by affecting revenues and costs, assets and liabilities or cost of capital, their relevance for investors, their importance for firms in the industry, and the extent to which the impact are subject to the control of firms. This process suggests that providers of financial capital are only preoccupied with financial aspects and ignore aspects that may be relevant from a broader sustainability perspective if they are financially irrelevant, hence overlooking that there are investors that engage in shareholder activism because they are interested in sustainability issues broadly speaking (Cooper & Michelon, 2022).

As a result of its analysis, SASB created its **materiality map**, an interactive tool that shows a matrix that lists a set of sustainability issues identifying the industries in which they are relevant. Although initially the materiality map was publicly accessible, SASB has recently decided to restrict its access only to eligible organisations.

Once firms identify their material topics based on the materiality map, they obtain the standards produced by SASB to report on them. **SASB standards** cover four different aspects that prescribe how information must be produced.

Table 2. Content of SASB standards.

Content	Description
Disclosure topics	Minimum set of disclosures on industry-specific topics that are considered to be material, accompanied by a short description explaining why they are financially relevant.
Accounting metrics	Set of quantitative and/or qualitative accounting metrics to measure performance on each disclosure topic.
Technical protocols	Guidance on definitions, implementation, compilation, scope, and presentation related to each accounting metric.

Activity metrics	Set of metrics that complement accounting metrics to normalize data and enable their comparison by assessing the scale of a firm's activity.

Source: SASB (2018)

Companies can omit disclosure topics or specific metrics, as well as modify metrics, but need to disclose and justify the omissions and changes made.

Concerning **reporting format**, SASB highlights the importance and guaranteeing consistency between the data provided in sustainability disclosures and those included in financial statements. Also, organisations should ensure that the reported sustainability data refers to the firm's fiscal year and describe the uncertainty that may affect the reported data. Finally, SASB suggests that, when elaborating sustainability disclosures, firms should consider the same boundaries that are applied when producing financial statements.

SASB is an initiative that focuses on influencing sustainability disclosures of US listed companies. In this respect, the organisations lobbies to try to get the SEC to consider its standards in the production of corporate mandatory fillings. According to KPMG (2022), SASB standards are applied by almost half of the 250 largest firms worldwide and one-third of the 100 largest companies in the 58 countries of its survey, being the US and Canada the highest country adopters.

Activity: What is the content of SASB? (see "Unit 1.2 Activity 10")

3.5. The Integrated Reporting Framework

The **Integrated Reporting Framework (<IR> Framework)** was produced by the International Integrated Reporting Council (IIRC), an organisation that was founded in 2010 with the aim of fostering the publication of integrated reports. According to the <IR> Framework, this type of reporting can be defined as follows.

> An **integrated report** is a concise communication about how an organisation's strategy, governance, performance and prospects, in the context of its external environment, lead to the creation, preservation or erosion of value over the short, medium and long term.

The idea behind IR is that sustainability information is relevant for and interconnected to financial information, and reports should aim at trying to represent the linkages between them. In this respect, the International Integrated Reporting Council highlights that organisation should embed integrated thinking into their strategy and vision. To help organisations produce integrated reports, the International Integrated Reporting Council, launched the first version of the <IR> Framework in 2013, which has been subsequently updated, being the 2021 version the most recent one, which was issued with the following objective IIRC, 2021, p. 10).

The **<IR> Framework** establishes Guiding Principles and Content Elements that govern the overall content of an integrated report and explains the fundamental concepts that underpin them.

The <IR> Framework requires companies to disclose information in their integrated reports about the extent to which their activities affect six types of capital: financial, manufactured, intellectual, human, social and relational, and natural. The guiding principles and the content elements provide prescriptions on how to do it.

- The seven **guiding principles** defined in the framework are expected to set the basis for the preparation and presentation of an integrated report, leading to the definition of the report content and how information is disclosed.

Table 3. The <IR> Framework guiding principles.

Principle	Definition
Strategic focus and future orientation	An integrated report should provide insight into the organisation's strategy, and how it relates to the organisation's ability to create value in the short, medium and long term, and to its use of and effects on the capitals
Connectivity of information	An integrated report should show a holistic picture of the combination, interrelatedness and dependencies between the factors that affect the organisation's ability to create value over time.
Stakeholder relationships	An integrated report should provide insight into the nature and quality of the organisation's relationships with its key stakeholders, including how and to what extent the organisation understands, takes into account and responds to their legitimate needs and interests.
Materiality	An integrated report should disclose information about matters that substantively affect the organisation's ability to create value over the short, medium and long term.
Conciseness	An integrated report should be concise.
Reliability and completeness	An integrated report should include all material matters, both positive and negative, in a balanced way and without material error.
Consistency and comparability	The information in an integrated report should be presented: (a) on a basis that is consistent over time; and (b) in a way that enables comparison with other organisations to the extent it is material to the organisation's own ability to create value over time.

Source: IIRC (2021, p. 7)

- The eight **content elements** that are defined in the framework are interrelated and are not mutually exclusive.

Table 4. The <IR> Framework content elements.

Content element	Description

Organisational overview and external environment	What does the organisation do and what are the circumstances under which it operates?
Governance	How does the organisation's governance structure support its ability to create value in the short, medium and long term?
Business model	What is the organisation's business model?
Risks and opportunities	What are the specific risks and opportunities that affect the organisation's ability to create value over the short, medium and long term, and how is the organisation dealing with them?
Strategy and resource allocation	Where does the organisation want to go and how does it intend to get there?
Performance	To what extent has the organisation achieved its strategic objectives for the period and what are its outcomes in terms of effects on the capitals?
Outlook	What challenges and uncertainties is the organisation likely to encounter in pursuing its strategy, and what are the potential implications for its business model and future performance?
Basis of presentation	How does the organisation determine what matters to include in the integrated report and how are such matters quantified or evaluated?

Source: IIRC (2021, p. 8)

Although the <IR> Framework states that the information contained in integrated reports can be of interest to different stakeholders, it acknowledges that the providers of financial capital are the main audiences of these documents. Additionally, despite having a similar name to those of GRI, the principles are fundamentally different between both frameworks, as those in the <IR> Framework are defined to meet the information users of providers of financial capital (Cooper & Michelon, 2022). Therefore, as with SASB, the <IR> Framework is aligned with a **financial materiality** approach. The Guiding Principle of materiality recognises this aspect by highlighting that organisations should cover "matters that substantively affect the organisation's ability to create value over the short, medium and long term" (<IR> Framework, 2021, p. 7). In this respect, it is important to note that when the <IR> Framework uses the term value, it refers to financial value. Nonetheless, the <IR> Framework has a broad perspective as it aims to cover sustainability issues that may be out of the organisation's scope of control if they have financial implications for its value creation process.

In its origins, the <IR> Framework was ambitious and sought to replace corporate practice and enact the publication of single and concise report. In this regard, the framework considers that applying the materiality principle shall lead to the production of a report that will focus only on what matters to investors. However, this objective was never entirely achieved because most companies claiming to produce and integrated report are merely attaching their sustainability report to their financial statements and annual report, providing a long and overwhelming report that is far from integrated and concise.

Activity: What do you know about integrated reporting? (see "Unit 1.2 Activity 11")

3.6. The Task Force on Climate-related Financial Disclosures

The **Task Force on Climate-related Financial Disclosures (TCFD)** is an industry-led task force created by the Financial Stability Board in 2015 that seeks to help identify the information needed by investors, lenders, and insurance underwriters to appropriately assess and price climate-related risks and opportunities.

The TCFD has 32 members that represent different financial actors, such as banks, asset managers, insurance companies, pension funds, large non-financial companies, accounting companies, and credit rating agencies. The TCFD produced its framework by relying on the expertise of its members as well as on a stakeholder engagement process and the monitoring of other climate-related initiatives. Additionally, the TCFD also draws on scientific evidence provided by the Intergovernmental Panel on Climate Change (IPCC) (Bastien & Giordano Spring, 2022).

Financial materiality is the approach embedded in the disclosures suggested by the TCFD based on the purpose and audience that it considers for the sustainability information produced under its framework (Bastien & Giordano Spring, 2022; Cooper & Michelon, 2022). On the one hand, sustainability reporting is expected to serve a valuation purpose by allowing the forecast of the potential financial implications of climate change to organisations. On the other hand, the TCFD Framework clearly states that the information aims to fulfil the information needs of financial stakeholders for their decision-making process. It is noteworthy that the TCFD emphasises in the current setting climate change is likely to be a financial material topic for most industries and warns organisation about underscoring its relevance for their business (Cooper & Michelon, 2022).

The TCFD framework is structured around **four overarching recommendations** that cover four core elements of organisations: (1) governance, (2) strategy, (3) risk management, and (4) metrics and targets. To cover each core element, the framework defines a set of **recommended disclosures** that will explain to information users how organisations manage their climate-related financial risks and opportunities.

Table 5. TCFD core elements, recommendations and recommended disclosures.

Core Element	Recommendation	Recommended disclosures
Governance	Disclose the organisation's governance around climate- related risks and opportunities	▪ Describe the board's oversight of climate-related risks and opportunities. ▪ Describe management's role in assessing and managing climate-related risks and opportunities.

Strategy	Disclose the actual and potential impacts of climate-related risks and opportunities on the organisation's businesses, strategy, and financial planning where such information is material.	▪ Describe the climate-related risks and opportunities the organisation has identified over the short, medium, and long term. ▪ Describe the impact of climate- related risks and opportunities on the organisation's businesses, strategy, and financial planning. ▪ Describe the resilience of the organisation's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.
Risk management	Disclose how the organisation identifies, assesses, and manages climate-related risks.	▪ Describe the organisation's processes for identifying and assessing climate-related risks. ▪ Describe the organisation's processes for managing climate-related risks. ▪ Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organisation's overall risk management.
Metrics and targets	Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.	▪ Disclose the metrics used by the organisation to assess climate- related risks and opportunities in line with its strategy and risk management process. ▪ Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks. ▪ Describe the targets used by the organisation to manage climate-related risks and opportunities and performance against targets.

Source: TCFD (2017, p. 14)

In addition to its recommendations and recommended disclosures, the TCFD also defines seven **principles** that organisations should apply to produce effective disclosures (TCFD, 2017, p. 18):

- Disclosures should represent relevant information.
- Disclosures should be specific and complete.
- Disclosures should be clear, balanced, and understandable.
- Disclosures should be consistent over time.
- Disclosures should be comparable among companies within a sector, industry, or portfolio.
- Disclosures should be reliable, verifiable, and objective.
- Disclosures should be provided on a timely basis.

Despite its recent emergence, a growing number of companies are adopting the TCFD to produce sustainability information. The latest KPMG survey of sustainability reporting shows that more than 60% of the 250 largest firms worldwide and around one-third of the 100 largest companies in the 58 countries analysed follow the TCFD recommendations (KPMG, 2022).

Although it started as an independent initiative, the ISSB has taken over the monitoring and reporting duties of the Financial Stability Board regarding the TCFD since 2023.

It is worth mentioning that, although the TCFD specifically focuses on climate issues, its core elements and disclosure recommendations have informed the development of other frameworks, such as the ISSB, or the Sustainable Development Goals Disclosure Recommendations that we will explore in the next section.

Activity: What do you know about the TCFD? (see "Unit 1.2 Activity 12")

3.7. The Sustainable Development Goals Disclosure Recommendations

As explained in Unit 1.1, the **Sustainable Development Goals (SDGs)** are a group of 17 interrelated goals on social and environmental issues that were established by the United Nations to fight poverty, protect the planet, and foster justice, peace and prosperity. Although the SDGs are a global initiative that is not specifically directed to prescribing how organisations should publish sustainability information, the emphasis on the role of organisations in contributing to the achievement of the goals has fostered their relevance as a framework to benchmark organisational sustainability ambitions. This importance has translated into the SDGs as a backbone and reference around which organisations structure and design their sustainability reports. As a consequence of this growing functionality of SDGs in sustainability reporting, different accounting organisations (the International Integrated Reporting Council, the Association of Chartered Certified Accountants (ACCA), the Institute of Chartered Accountants of Scotland (ICAS), the Chartered Accountants Australia and New Zealand, and the International Federation of Accountants (IFAC)) have jointly collaborated to produce the **Sustainable Development Goals Disclosure (SDGD) Recommendations**, that are aligned with other relevant sustainability reporting frameworks: GRI, the <IR> Framework, and the TCFD (Adams et al., 2020).

> The **Sustainable Development Goal Disclosure (SDGD) Recommendations** provide guidance on how organisations can identify material sustainability risks and opportunities that affect the long-term value creation for organisations and society, on how they can change to contribute to the SDGs, and on how they can communicate their implications for and impact on the achievement of the SDGs.

The SDGS Recommendations make suggestions that help the production of disclosures around **four overarching themes** (Adams et al., 2020, p. 6):

- **Governance:** the involvement of the board in assessing sustainability risks and opportunities and its oversight of the processes implemented to embed sustainability into the organisation.

- **Strategy:** the redefinition of what business is and how it is done to maximise long term value creation for the organisation and society and positively contribute to achieving the SDGs.
- **Management approach:** the management's approach to integrating sustainability risks and opportunities into all organisation's aspects on.
- **Performance and targets:** qualitative and quantitative approaches to communicating performance and targets.

To report on those themes, the SDG Recommendations define **three fundamental concepts** organisations should consider when preparing sustainability information.

Table 6. SDG Recommendations fundamental concepts.

Concept	Definition
Long-term value creation for the organisation and society	Organisations create (or destroy) value for their providers of finance through the value they create (or destroy) for the organisation and society. Through the process of creating (or destroying) value, organisations have an impact (positive or negative) on the achievement of the SDGs. The achievement of the SDGs is critical to creating long term value for providers of finance.
Sustainable development context and relevance	SDG Disclosures should reflect the sustainable development context of the organisation and its industry/sector and be relevant to that context. Information on targets should be placed in the context of the targets underpinning the SDGs. An organisation's presentation of sustainable development issues should include, but go beyond, their relationship to both positive and negative performance to consider their implications for what business is done – and how business is done.
Materiality	Material sustainable development information is any information that is reasonably capable of making a difference to the conclusions drawn by: ▪ Stakeholders concerning the positive and negative impacts of the organisation on global achievement of the SDGs, and; ▪ Providers of finance concerning the ability of the organisation to create long term value for the organisation and society.

Source: Adams et al. (2020, p. 9)

As indicated, materiality is one of the fundamental concepts that should guide the production of sustainability disclosures on the SDGs. The conceptualisation of materiality included in the SDGD Recommendations is aligned with a **double materiality** approach as it recognises that disclosures should be relevant for stakeholders to evaluate the contribution of organisations to the SDGs as well as to the providers of financial capital to assess how they relate to the long-term value creation of organisations.

Additionally, the SDGD Recommendations define **eight principles** for SDG disclosure (Adams et al. 2020, p. 10), which are quite in line with the GRI principles for sustainability reporting and the <IR> Framework (Cooper & Michelon, 2022):

- **Strategic focus and future orientation**
- **Stakeholder inclusiveness**
- **Conciseness**

- **Connectivity of information**
- **Consistency and comparability**
- **Completeness, balance, understandability**
- **Reliability and verifiability**
- **Timeliness**

The impact of the SDGs on sustainability disclosures is demonstrated by the increasing number of companies that refer to them in their sustainability reports, with more than 70% of the 250 largest firms worldwide and of the 100 largest companies in 58 countries discussing SDGs in these documents (KPMG, 2022). In this respect, it is important that disclosures on the SDGs stem from a true commitment to achieving the goals, instead of being used as a checklist to create the impression of being sustainable by using sustainability reporting opportunistically.

Case study: Sustainability reporting framework (see "Unit 1.2 Case Study 2")

4. Concluding notes

Sustainability reporting has become an essential element of organisational practices worldwide. This Unit has covered the different ways in which sustainability reporting can be understood depending on the **purpose** and **audience** it is expected to serve. These two aspects of sustainability reporting are paramount as they characterize the key fundamental concept that guide the content and usefulness of sustainability reports: **materiality**.

By reflecting on the diverse approaches to materiality that exist nowadays (impact, financial, double, and dynamic), this Unit revisits the most relevant **sustainability reporting frameworks** that are available that provide guidance that organisations can follow to produce sustainability information: the GRI Standards, the ISSB standards, the <IR> Framework, the SASB standards, the TCFD and the SDGD Recommendations. These frameworks define a set of concepts, principles, and recommendations, as well as suggest disclosures and indicators that organisations can apply and elaborate when producing their sustainability reports.

To harmonise the requirements among these frameworks, we are witnessing the consolidation among them (as in the case of the SASB Standards, the <IR> Framework, and the TCFD under the umbrella of the ISSB) as well as collaborating together to foster their **interoperability** (as we will discuss in the following unit when exploring the development of the ESRS).

Activity: Final test (see "Unit 1.2 Activity 13")

References

Adams, C. A., Druckman, P. B., & Picot, R. C. (2020) *Sustainable Development Goal Disclosure (SDGD) Recommendations*. ACCA, Chartered Accountants ANZ, ICAS, IFAC, IIRC and WBA.

Adams, C. A., Alhamood, A., He, X., Tian, J., Wang, L., & Wang, Y. (2021). *The double-materiality concept: application and issues*. Global Reporting Initiative.

David, B., & Giordano-Spring, S. (2022). Climate reporting related to the TCFD framework: An exploration of the air transport sector. *Social and Environmental Accountability Journal, 42*(1-2), 18-37. https://doi.org/10.1080/0969160X.2021.2007784

Bebbington, J., Schneider, T., Stevenson, L., & Fox, A. (2020). Fossil fuel reserves and resources reporting and unburnable carbon: Investigating conflicting accounts. *Critical Perspectives on Accounting, 66*, 102083. https://doi.org/10.1016/j.cpa.2019.04.004

Christensen, H. B., Hail, L., & Leuz, C. (2021). Mandatory CSR and sustainability reporting: Economic analysis and literature review. *Review of Accounting Studies, 26*(3), 1176-1248. https://doi.org/10.1007/s11142-021-09609-5

Cooper, S., & Michelon, G. (2022). Conceptions of materiality in sustainability reporting frameworks: Commonalities, differences and possibilities. In C. Adams (Ed.), *Handbook of Accounting and Sustainability* (pp. 44-66). Edward Elgar Publishing. https://doi.org/10.4337/9781800373518.00010

Datamaran (2023). *The ultimate guide to ESG materiality*. Available at: https://www.datamaran.com/materiality-definition

EFRAG (2022). *Draft of ESRS 1 General requirements*. Available at: https://www.efrag.org/Assets/Download?assetUrl=%2Fsites%2Fwebpublishing%2FSiteAssets%2F06%2520Draft%2520ESRS%25201%2520General%2520requirements%2520November%25202022.pdf

Enqvist, J. P., West, S., Masterson, V. A., Haider, L. J., Svedin, U., & Tengö, M. (2018). Stewardship as a boundary object for sustainability research: Linking care, knowledge and agency. *Landscape and Urban Planning, 179*, 17-37. https://doi.org/10.1016/j.landurbplan.2018.07.005

European Union (2021). *Proposal for a DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL amending Directive 2013/34/EU, Directive 2004/109/EC, Directive 2006/43/EC and Regulation (EU) No 537/2014, as regards corporate sustainability reporting.* Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021PC0189

Gray, R. (2006). Does sustainability reporting improve corporate behaviour?: Wrong question? Right time?. *Accounting and business research, 36*(sup1), 65-88. https://doi.org/10.1080/00014788.2006.9730048

Gray, R., Owen, D., & Adams, C. (1996). *Accounting and Accountability: Changes and Challenges in Corporate Social and Environmental Reporting*. Prentice Hall.

GRI. (2022). *The materiality madness: why definitions matter*. Available at: https://www.globalreporting.org/media/r2oojx53/gri-perspective-the-materiality-madness.pdf

GRI. (2023). *GRI Consolidated set of standards*. Global Reporting Initiative. Available at: https://www.globalreporting.org/how-to-use-the-gri-standards/gri-standards-english-language/

KPMG. (2022). *Big shifts, small steps. Survey of Sustainability Reporting 2022*. KPMG. Available at: https://kpmg.com/xx/en/home/insights/2022/09/survey-of-sustainability-reporting-2022.html

IFRS. (2022). IAS1 Presentation of financial statements. IFRS Foundation. Available at: https://www.ifrs.org/content/dam/ifrs/publications/pdf-standards/english/2022/issued/part-a/ias-1-presentation-of-financial-statements.pdf?bypass=on

IIRC. (2021). The <IR> Framework. IIRC. Available at: https://www.integratedreporting.org/wp-content/uploads/2021/01/InternationalIntegratedReportingFramework.pdf

Jørgensen, S., Mjøs, A., & Pedersen, L. J. T. (2022). Sustainability reporting and approaches to materiality: Tensions and potential resolutions. *Sustainability Accounting, Management and Policy Journal, 13*(2), 341-361. https://doi.org/10.1108/SAMPJ-01-2021-0009

Puroila, J., & Mäkelä, H. (2019). Matter of opinion: Exploring the socio-political nature of materiality disclosures in sustainability reporting. *Accounting, Auditing & Accountability Journal, 32*(4), 1043-1072. https://doi.org/10.1108/AAAJ-11-2016-2788

SASB. (2018). SASB Standards. SASB. Available at: https://www.sasb.org/standards/download/

Reimsbach, D., Schiemann, F., Hahn, R., & Schmiedchen, E. (2020). In the eyes of the beholder: Experimental evidence on the contested nature of materiality in sustainability reporting. *Organization & Environment, 33*(4), 624-651. https://doi.org/10.1177/1086026619875436

Tregidga, H., & Laine, M. (2021). Stand-alone and integrated reporting. In J. Bebbington, C. Larrinaga, B. O'Dwyer, & I. Thomson (Eds.), *Routledge Handbook of Environmental Accounting* (pp. 108-124). Routledge.

Unerman, J., Bebbington, J., & O'dwyer, B. (2018). Corporate reporting and accounting for externalities. *Accounting and Business Research, 48*(5), 497-522. https://doi.org/10.1080/00014788.2018.1470155

van der Lugt, C., van de Wijs, P. P., & Petrovics, D. (2020). *Carrots & Sticks: Sustainability Reporting Policy: Global trends in disclosure as the ESG agenda goes mainstream*.

Global Reporting Initiative (GRI) and the University of Stellenbosch Business School (USB).

World Economic Forum (2020). *Embracing the New Age of Materiality Harnessing the Pace of Change in ESG. WEF*. Available at: https://www3.weforum.org/docs/WEF_Embracing_the_New_Age_of_Materiality_2020.pdf

Additional materials

1.1. Defining sustainability reporting

- Video: Interview with Steven Starbuck, leader of EY, explaining discussing sustainability reporting.
  https://www.youtube.com/watch?v=k5DvW2j3WBs

1.2. The state of sustainability reporting

- Resource: KPMG 2022 Survey of sustainability reporting
  https://assets.kpmg.com/content/dam/kpmg/sg/pdf/2022/10/ssr-small-steps-big-shifts.pdf

2.1. The concept of materiality

- Video: Professor Robert G. Eccles presents the different notions of materiality in sustainability reporting
  https://www.youtube.com/watch?v=SqOYbJvLY4E

2.2. The materiality assessment process

- Resource: Nestlé's materiality assessment process explained.
  https://www.nestle.com/sustainability/responsible-business/materiality

3.1. The landscape of sustainability reporting framework

- Resource: Unpuzzling the Sustainability Reporting Alphabet Soup, by H. Blomme & J. Basha.
  https://www.accountancyeurope.eu/wp-content/uploads/Unpuzzling-the-Sustainability-Reporting-Alphabet-Soup.pdf

3.2. The Global Reporting Initiative

- Video: GRI presents its Sustainability Reporting Standards
  https://www.youtube.com/watch?v=6LkrhalWIMc
- Resource: GRI Standards
  https://www.globalreporting.org/standards/
- Webpage: Global Reporting Initiative
  https://www.globalreporting.org/

3.3. The International Sustainability Standards Board

- Video: In this Bloomberg interview, Emmanuel Faber, Chair of the ISSB, introduces the first standards produced by the board.

https://www.youtube.com/watch?v=Klw1LWRz1lU

- Webpage: International Sustainability Standards Board
  https://www.ifrs.org/groups/international-sustainability-standards-board/
- Webpage: IFRS Foundation
  https://www.ifrs.org/
- Webpage: Climate Disclosure Standards Board
  https://www.cdsb.net/
- Webpage: Value Reporting Foundation
  https://www.valuereportingfoundation.org/
- Resource: IFRS S1 General Sustainability-related Disclosures
  https://www.ifrs.org/projects/work-plan/general-sustainability-related-disclosures/#published-documents
- Resource: IFRS S2 Climate-related Disclosures
  https://www.ifrs.org/projects/work-plan/general-sustainability-related-disclosures/#published-documents

3.4. The Sustainability Accounting Standards Board

- Resource: SASB Standards
  https://www.sasb.org/standards/download/
- Resource: Extract from SASB materiality map
  https://www.sasb.org/wp-content/uploads/2021/11/MMap-2021.png
- Webpage: Sustainability Accounting Standards Board
  https://www.sasb.org/

3.5. The Integrated Reporting Framework

- Resource: The <IR> Framework
  https://www.integratedreporting.org/wp-content/uploads/2021/01/InternationalIntegratedReportingFramework.pdf
- Webpage: The <IR> Framework
  https://www.integratedreporting.org/

3.6. The Task Force on Climate-related Financial Disclosures

- Resource: The Recommendations of the Task Force on Climate-related Financial Disclosures
  https://www.fsb-tcfd.org/recommendations/
- Webpage: Task Force on Climate-related Financial Disclosures
  https://www.fsb-tcfd.org/

3.7. The Sustainable Development Goals Disclosure Recommendations

- Resource: Sustainable Development Goals Disclosure Recommendations https://www.ifac.org/knowledge-gateway/contributing-global-economy/publications/sustainable-development-goals-disclosure-sdgd-recommendations
- Webpage: Sustainable Development Goals https://unfoundation.org/what-we-do/issues/sustainable-development-goals/

Co-funded by
the European Union

Unit 1.2
The sustainability reporting landscape

ACTIVITIES

Co-funded by
the European Union

UNIT 1.2

ACTIVITY 1

COMPLETE THE PHRASES

Sustainability Accounting Learning Platform for a Green Economy

2022-1-ES01-KA220-HED-000089844

Title	What is the purpose of sustainability reporting?
Module	Module 1. Sustainability accounting in the 21st century
Unit	Unit 1.2. The sustainability reporting landscape
Heading/subheading where it should appear	1. Sustainability reporting as corporate practice / 1.1. Defining sustainability reporting / The purpose of sustainability reporting

Activity 1

- The user has to select the correct words to complete the phrases correctly.

Text

Provide the text below, indicating the words you want to appear as blank space in green bold font (with up to 6 blank spaces)

Sustainability reporting can serve **three** different purposes. Under the **accountability** perspective, sustainability reporting is expected to serve the information interests of stakeholders. By contrast, the other perspectives highlight the functionality of sustainability reporting for **investors**. While the **stewardship** perspective considers that sustainability reporting is relevant for evaluating how organisations use the financial capital provided to them, the **valuation** perspective assumes that sustainability reporting is helpful for investment decision-making.

Co-funded by
the European Union

UNIT 1.2

ACTIVITY 2

REFLEXIVE ACTIVITY

Sustainability Accounting Learning Platform for a Green Economy

2022-1-ES01-KA220-HED-000089844

Title	Look for a sustainability report
Module	Module 1. Sustainability accounting in the 21st century
Unit	Unit 1.2. The sustainability reporting landscape
Heading/subheading where it should appear	1. Sustainability reporting as corporate practice / 1.1 Defining sustainability reporting / Boundaries in sustainability reporting

Activity 2

Look for the sustainability report and the financial statements of a firm on its webpage. Take a quick look at their content and format to answer the following questions:

- What are the three main differences that you can highlight between them?
- In the case of the sustainability report, which purpose do you think it is designed for? Why?
- Do you think the firm has considered different boundaries in each of the documents? Why?

Co-funded by
the European Union

UNIT 1.2

ACTIVITY 3

DOUBLE OR NOTHING

Sustainability Accounting Learning Platform
for a Green Economy

2022-1-ES01-KA220-HED-000089844

Title	What do you know about the state of sustainability reporting?
Module	Module 1. Sustainability accounting in the 21st century
Unit	Unit 1.2. The sustainability reporting landscape
Heading/subheading after which it should appear	1. Sustainability reporting as corporate practice / 1.2. The state of sustainability reporting / The assurance of sustainability reporting

Activity 3

- The user has to respond the questions.

Question 1

In which region sustainability reporting regulation is more developed?

a. North America
b. European Union (EU)
c. Asia-Pacific

Question 2

Which is the name of the latest development in sustainability reporting regulation in the EU?

a. Sustainability Disclosure Regulation
b. Non-Financial Reporting Directive
c. Corporate Sustainability Reporting Directive

Question 3

Which of the following companies are not subject to the obligation set by the Corporate Sustainability Reporting Directive?

a. All SMEs
b. All listed companies
c. All large companies

Question 4

What is the name of the standard that will be mandatory for companies that must publish a sustainability report in Europe?

a. European Sustainability Reporting Standards
b. Global Reporting Initiative
c. Task-Force on Climate Related Financial Disclosures

Question 5

Which is the name of the independent service that expresses an opinion on sustainability reports to increase their credibility and reliability?

a. Internal control system
b. Financial audit
c. Assurance

Co-funded by
the European Union

UNIT 1.2

ACTIVITY 4

FIND THE WORD

Sustainability Accounting Learning Platform
for a Green Economy

2022-1-ES01-KA220-HED-000089844

Title	Do you understand the different approaches to materiality?
Module	Module 1. Sustainability accounting in the 21st century
Unit	Unit 1.2. The sustainability reporting landscape
Heading/subheading after which it should appear	2. Materiality in sustainability reporting / 2.1. The concept of materiality / Dynamic materiality

Activity 4

- The user must read the description of the concept and indicate the word behind the concept. To do so, the user must select the letters that make up the word before the time runs out.

Word 1

Approach to materiality that integrates “inside-out” and “inside-in” perspectives.

Double

Word 2

Approach to materiality that focuses on sustainability matters that have relevant implications for the financial position of a firm.

Financial

Word 3

Approach to materiality that focuses on sustainability matters that are significantly affected by corporate activities

Impact

Co-funded by
the European Union

UNIT 1.2

ACTIVITY 5

FROM HIGHEST TO LOWEST

Sustainability Accounting Learning Platform
for a Green Economy

2022-1-ES01-KA220-HED-000089844

Title	What are the steps for a materiality assessment?
Module	Module 1. Sustainability accounting in the 21st century
Unit	Unit 1.2. The sustainability reporting landscape
Heading/subheading after which it should appear	2. Materiality in sustainability reporting / 2.2. Materiality assessment

Activity 5

Question

Can you order the steps of the materiality assessment process from the first (highest) to the last one (lowest)?

The correct order is:

1. Governance
2. List
3. Evidence
4. Assessment
5. Validation
6. Action
7. Monitoring

Co-funded by
the European Union

UNIT 1.2

ACTIVITY 6

QUIZZ

Sustainability Accounting Learning Platform for a Green Economy

2022-1-ES01-KA220-HED-000089844

Title	What do you know about the landscape of sustainability reporting frameworks?
Module	Module 1. Sustainability accounting in the 21st century
Unit	Unit 1.2. The sustainability reporting landscape
Heading/subheading after which it should appear	3. Frameworks for sustainability reporting / 3.1. The landscape of sustainability reporting frameworks

Activity 6

- The user will to answer all the questions. The score you get depends on the number of correct answers and the time you have left once you have answered all the questions in the quiz. Therefore, the goal is to choose the correct option as quickly as possible.

Question 1 (correct answer in bold green)

Which is the most widely applied sustainability reporting framework?

d. Global Reporting Initiative Standards
e. Integrated Reporting Framework
f. Task Force on Climate-related Financial Disclosures

Question 2 (correct answer in bold green)

Which of the following sustainability reporting frameworks emerged during the 2010s?

a. Global Reporting Initiative
b. Integrated Reporting Framework
c. International Sustainability Standards Board

Question 3 (correct answer in bold green)

Which sustainability reporting initiative emerged as a consequence of the merger between the Integrated Reporting Framework and the Sustainability Accounting Standards Board?

a. Global Reporting Initiative Standards
b. Value Reporting Foundation
c. International Sustainability Standards Board

Co-funded by
the European Union

UNIT 1.2

ACTIVITY 7

ENIGMA

Sustainability Accounting Learning Platform for a Green Economy

2022-1-ES01-KA220-HED-000089844

Title	What is the materiality perspective of the Global Reporting Initiative?
Module	Module 1. Sustainability accounting in the 21st century
Unit	Unit 1.2. The sustainability reporting landscape
Heading/subheading after which it should appear	3. Frameworks for sustainability reporting / 3.2 The Global Reporting Initiative / The GRI Standards and updated Universal Standards

Activity 7

- The user has to order the guess the letters of the word that answers the question.

Question 1

Which materiality approach is aligned with GRI's materiality definition?

Impact

Co-funded by
the European Union

UNIT 1.2

ACTIVITY 8

PAIRS

Sustainability Accounting Learning Platform for a Green Economy

2022-1-ES01-KA220-HED-000089844

Title	What are the GRI principles?
Module	Module 1. Sustainability accounting in the 21st century
Unit	Unit 1.2. The sustainability reporting landscape
Heading/subheading after which it should appear	3. Frameworks for sustainability reporting / 3.2. The Global Reporting Initiative / The GRI Standards and updated Universal Standards

Activity 8

- The user has to match the pairs that relate to the same concept. In the online platform, the activity will be supported by images to help identify the pairs.

Pair 1

Word: Accuracy

Time**:** 15 seconds

Pair 2

Word: Balance

Time**:** 15 seconds

Pair 3

Word: Clarity

Time**:** 15 seconds

Pair 4

Word: Comparability

Time**:** 15 seconds

Pair 5

Word: Sustainability context

Time**:** 15 seconds

Pair 6

Word: Timeliness

Time**:** 15 seconds

Pair 7

Word: Completeness

Time**:** 15 seconds

Pair 8

Time**:** 15 seconds

Co-funded by
the European Union

UNIT 1.2

ACTIVITY 9

SORT LETTERS

Sustainability Accounting Learning Platform for a Green Economy

2022-1-ES01-KA220-HED-000089844

Title	What is the ISSB's materiality approach?
Module	Module 1. Sustainability accounting in the 21st century
Unit	Unit 1.2. The sustainability reporting landscape
Heading/subheading after which it should appear	3. Frameworks for sustainability reporting / 3.3. The International Sustainability Standards Board

Activity 9

- The user has to order the letters to build the word that answers each question.

Question 1

What is materiality approach embedded in the ISSB standards?

Financial

Maximum time to solve the question: 30 seconds

Question 2

For which stakeholders is that materiality relevant?

Investors

Maximum time to solve the question: 30 seconds

Question 3

What topic is covered by the ISSB standards as of now?

Climate

Maximum time to solve the question: 30 seconds

Co-funded by
the European Union

UNIT 1.2

ACTIVITY 10

HIDDEN WORD

Sustainability Accounting Learning Platform for a Green Economy

2022-1-ES01-KA220-HED-000089844

Title	What is the content of SASB?
Module	Module 1. Sustainability accounting in the 21st century
Unit	Unit 1.2. The sustainability reporting landscape
Heading/subheading after which it should appear	3. Frameworks for sustainability reporting / 3.4. The Sustainability Accounting Standards Board

Activity 10

- The user must select the letters that he/she believes make up the word that answers the question asked.

Question 1

Which metrics of the SASB standards complement accounting metrics to measure performance on each disclosure topic?

Accounting

Question 2

Which protocol of the SASB standards provide guidance on definitions, implementation, compilation, scope, and presentation?

Technical

Question 3

Which metrics of the SASB standards complement accounting metrics to normalize data and enable comparisons?

Activity

Co-funded by
the European Union

UNIT 1.2

ACTIVITY 11

COMPLETE THE PHRASES

Sustainability Accounting Learning Platform for a Green Economy

2022-1-ES01-KA220-HED-000089844

Title	What do you know about integrated reporting?
Module	Module 1. Sustainability accounting in the 21st century
Unit	Unit 1.2. The sustainability reporting landscape
Heading/subheading after which it should appear	3. Frameworks for sustainability reporting / 3.5. The Integrated Reporting Framework

Activity 11

- The user has to select the correct words to complete the phrases correctly.

Provide the text below, indicating the words you want to appear as blank space in green bold font (with up to 6 blank spaces)

An integrated report is a **concise** communication about how an organisation's strategy, governance, performance and prospects, in the context of its external environment, lead to the creation, preservation or erosion of **value** over the short, medium and long term. The <IR> **Framework** establishes **seven** Guiding Principles and eight **content** Elements that govern the overall content of an integrated report and explains the fundamental concepts that underpin them.

Co-funded by
the European Union

UNIT 1.2

ACTIVITY 12

DOUBLE OR NOTHING

Sustainability Accounting Learning Platform
for a Green Economy

2022-1-ES01-KA220-HED-000089844

Title	What do you know about the TCFD?
Module	Module 1. Sustainability accounting in the 21st century
Unit	Unit 1.2. The sustainability reporting landscape
Heading/subheading after which it should appear	3. Frameworks for sustainability reporting / 3.6. The Task Force on Climate-related Financial Disclosures

Activity 12

- The user has to answer the questions correctly.

Question 1 (correct answer in bold green)

Which materiality approach is supported by the TCFD?

a. Double
b. Impact
c. Financial
d. Accountability

Question 2 (correct answer in bold green)

Which of the options does not refer to one of the TCFD's overarching recommendations?

g. Governance
h. Strategy
i. Climate change
j. Metrics and targets

Question 3 (correct answer in bold green)

How many principles should companies apply according to the TCFD?

a. Six
b. Seven
c. Eight
d. None

Question 4 (correct answer in bold green)

To which of the following stakeholders is the TCFD information not directed?

a. Investors
b. Lenders
c. Environmentalists
d. Insurance underwriters

Question 5 (correct answer in bold green)

Which options does not refer to one of element on which the TCFD is grounded?

a. Scientific evidence
b. Stakeholder engagement
c. Firms' feedback

d. TCFD members' expertise

Co-funded by
the European Union

UNIT 1.2

ACTIVITY 13

QUIZZ

Sustainability Accounting Learning Platform for a Green Economy

2022-1-ES01-KA220-HED-000089844

Title	Final test
Module	Module 1. Sustainability accounting in the 21st century
Unit	Unit 1.2. The sustainability reporting landscape
Heading/subheading where it should appear	4. Concluding notes

Activity 13

- The user will have 60 seconds to answer all the questions. The score you get depends on the number of correct answers and the time you have left once you have answered all the questions in the quiz. Therefore, the goal is to choose the correct option as quickly as possible.

Question 1

Which of the following statements about the emergence of sustainability reporting is false?

k. In the 1970s, sustainability reporting was concerned with social issues.
l. In the 1980s and beginning of the 1990s, sustainability reporting was concerned with environmental issues.
m. Since the 2000s, sustainability reporting was concerned with social, environmental, and economic issues.
n. The form and content of sustainability reports have not changed since their emergence.

Question 2

According to the accountability perspective, the purpose of sustainability reporting is to:

a. Provide financial capital providers with information that allows them to evaluate their investments' future value.
b. Provide stakeholders with information that allows them to assess how it manages the social and environmental impacts that its business generates.
c. Provide financial capital providers with information that allows them to assess the use of the capital they provide to the organisation.
d. Provide stakeholder with information that allows them to evaluate the financial value of the organizations in the future.

Question 3

Which of the following elements are less relevant to determine boundaries in sustainability reporting?

a. The supply chain.
b. The geographical space.
c. The ownership structure.
d. The time horizon.

Question 4

Which of the following options refers to one of the key characteristics that defines the current sustainability reporting landscape?

a. **The increasing number of countries that are regulating the disclosure of sustainability information.**
b. The importance of the United States as the leader in terms of sustainability reporting regulation.
c. SMEs are the main type of companies that are subject to mandatory sustainability disclosure requirements.
d. The European Union has regulated sustainability reporting since the 1980s.

Question 5

Which of the following options refers to one of the key characteristics that defines the development of sustainability reporting frameworks?

a. All sustainability reporting frameworks are investor-focused.
b. The harmonization of sustainability reporting frameworks to end up having only one applicable to all organizations worldwide.
c. **The Global Reporting Initiative is the most widely applied sustainability reporting framework worldwide.**
d. The European Sustainability Reporting Standards is a voluntary sustainability reporting framework that can be used by companies within the scope of the Corporate Sustainability Reporting Directive.

Question 6

Which of the following options about the assurance of sustainability reporting is false?

a. The sustainability reporting assurance service is provided by a firm's employee.
b. **Sustainability reports are mostly subject to limited assurance.**
c. The level of sustainability reporting assurance is similar to the auditing of financial reporting.
d. Sustainability reporting assurance has been always mandatory for firms.

Question 7

Which of the following statements about materiality in the field of sustainability reporting is false?

a. It allows companies to identify the most relevant issues regarding their sustainability impacts and performance.
b. It defines the topics that should be disclosed in sustainability reports.
c. It represents the starting point for producing sustainability reports.

d. **It is not subject to different approaches.**

Question 8

Under the accountability purpose of sustainability reporting, materiality is conceived as:

a. **Impact materiality.**
b. Financial materiality.
c. Accountable materiality.
d. The conception of materiality does not depend on the purpose that is assigned to sustainability reporting.

Question 9

Under the valuation purpose of sustainability reporting, materiality is conceived as:

a. Impact materiality.
b. **Financial materiality.**
c. Accountable materiality.
d. The conception of materiality does not depend on the purpose that is assigned to sustainability reporting.

Question 10

A sustainability matter is material from an impact materiality perspective when:

a. It triggers or may trigger material financial effects on the undertaking.
b. **It pertains to the undertaking's material actual or potential, positive or negative impacts on people or the environment.**
c. It relates to the impacts that companies have on society and the environment and the impacts that society and the environment have on companies.
d. It is immaterial to an organisation today can become material in the future, or vice versa.

Question 11

A sustainability matter is material from a financial materiality perspective when:

a. **It triggers or may trigger material financial effects on the undertaking.**
b. It pertains to the undertaking's material actual or potential, positive or negative impacts on people or the environment.
c. It relates to the impacts that companies have on society and the environment and the impacts that society and the environment have on companies.
d. It is immaterial to an organisation today can become material in the future, or vice versa.

Question 12

A sustainability matter is material from a double materiality perspective when:

a. It triggers or may trigger material financial effects on the undertaking.
b. It pertains to the undertaking's material actual or potential, positive or negative impacts on people or the environment.
c. **It relates to the impacts that companies have on society and the environment and the impacts that society and the environment have on companies.**
d. It is immaterial to an organisation today can become material in the future, or vice versa.

Question 13

Which of the following sources of evidence should organizations use to gather evidence for their materiality assessment?

a. **External and internal sources of evidence, as they enable a robust process to filter the initial list of potential issues.**
b. Only external sources, as it enables an unbiased analysis.
c. Only internal sources, as it allows a more in-depth understanding of the organization.
d. External and internal sources of evidence, but overlooking the view of "silent" stakeholders, as they are difficult to obtain.

Question 14

In which of the steps of the materiality assessment process organizations must produce an exhaustive compilation of the potentially material sustainability issues?

a. Step 2. Gathering evidence for materiality assessment.
b. **Step 2. Identifying the potential sustainability issues that could be material.**
c. Step 3. Gathering evidence for materiality assessment.
d. Step 3. Identifying the potential sustainability issues that could be material.

Question 15

Which of the following criteria is not relevant to analyse impact materiality?

a. The scale of the impact.
b. The scope of the impact.
c. **The size of the financial effect of the impact.**
d. The irremediability of the impact.

Question 16

Which materiality approach is related to the GRI standards?

a. **Impact materiality**
b. Financial materiality
c. Double materiality
d. Dynamic materiality

Question 17

Which option does not refer to one of the types of the standards that comprise the GRI Standards modular structure?

a. GRI Universal Standards
b. **GRI Specific Standards**
c. GRI Sector Standards
d. GRI Topic Standards

Question 18

The GRI principle of Accuracy implies that:

a. The organisation shall report information in an unbiased way and provide a fair representation of the organisation's negative and positive impacts.
b. The organisation shall provide sufficient information to enable an assessment of the organisation's impacts during the reporting period.
c. **The organisation shall report information that is correct and sufficiently detailed to allow an assessment of the organisation's impacts.**
d. The organisation shall gather, record, compile, and analyse information in such a way that the information can be examined to establish its quality.

Question 19

Which GRI Universal Standard defines the requirements and reporting principles that organisations must comply with?

a. **GRI 1 Foundation 2021**
b. GRI 2 General Disclosures 2021
c. GRI 3 Material Topics 2021
d. GRI 4 Reporting Principles 2021

Question 20

Which type of topic does the GRI Series 400 cover?

a. Economic topics.
b. Environmental topics.
c. **Social topics.**
d. Governance topics.

Question 21

Which of the options does not refer to a GRI principle?

a. Balance.
b. Clarity.
c. Materiality.
d. Verifiability.

Question 22

Which of the following framework is developed by the IFRS Foundation?

a. GRI Standards.
b. International Sustainability Standards.
c. Sustainable Development Goals Disclosure Recommendations.
d. European Sustainability Reporting Standards.

Question 23

Which of the following frameworks has not been integrated into the International Sustainability Standards Board?

a. Value Reporting Foundation.
b. Climate Disclosure Standards Board.
c. GRI Standards.
d. Task Force on Climate-related Financial Disclosures.

Question 24

Which environmental topic is the only one covered by the standards produced by the International Sustainability Standards Board as of 2022?

a. Biodiversity.
b. Climate change.
c. Water scarcity.
d. Circular economy.

Question 25

What is the name of the interactive tool created by the Sustainability Accounting Standards Board that identifies material matters for each industry?

a. Materiality map.
b. Materiality matrix.
c. Materiality graphic.
d. Materiality toolbox.

Question 26

Which of the following options does not refer to one Guiding Principle of the <IR> Framework?

a. Materiality.
b. Governance.
c. Conciseness.
d. Stakeholder relationships.

Question 27

Which materiality approach is embedded in the <IR> Framework?

a. Double materiality.
b. Impact materiality.
c. Financial materiality.
d. Dynamic materiality.

Question 28

How many overarching recommendations form the structure of the TCFD framework?

a. Three.
b. Four.
c. Five.
d. Six.

Question 29

What type of value creation process is supported by the fundamental concepts of the Sustainable Development Goal Disclosure (SDGD) Recommendations?

a. Short-term value creation.
b. Medium-term value creation.
c. Long-term value creation.
d. The SDGD Recommendations do not seek to support the value creation process.

Question 30

Which of the following options does not refer to a principle for SDG disclosure according to the Sustainable Development Goal Disclosure (SDGD) Recommendations?

a. Conciseness.
b. Connectivity of information.
c. Timeliness.
d. Business model.

Co-funded by
the European Union

ACCOUNT 4Green Eco

Unit 1.2
The sustainability reporting landscape

ROLE PLAY CASES

Co-funded by the European Union

ACCOUNT 4Green Eco

Materiality assessment process

Case Study 1.2.1

Module 1

Unit 1.2. The Sustainability Reporting Landscape

UNIVERSIDAD DE BURGOS

Centre for Sustainability Management

LEUPHANA UNIVERSITÄT LÜNEBURG

MBS since 1897 MONTPELLIER BUSINESS SCHOOL

gestionet Play Think Learn

UNIVERSITÀ DI TRENTO

ROLE PLAY

Title: Materiality assessment process.

Context: Hi Name of the user! Congratulations for your new appointment as the sustainability reporting manager in our food and beberage company "Food4Everyone, Ltd.", listed in CAC40. My name is Jeanne Dupont, CEO of the company. In your new role, you are responsible of organising the process to produce our first sustainability report. As you know, the starting point is to design the assessent process to identify the material topics that we should covered in our first sustainability report. To do that, we want you to analyse the reports of other leading firms in our industry. The company Nestlé provides a good description of the materiality process in its suitanability report. You can find the report attached on the above. Could you take a look at it and then we can have chat on what is your view?

Scenario: The hall of a modern office building (cristal walls, functional furniture, plants) with some poster with food (e.g. yogurt, chocolate, or something similar). Office

Character: A middle-age black woman in business suit that looks very professional.

Scene 1

The first thing we need to decide is the materiality approach that we want to consider. What type of materiality is Nestlé applying in its report?

Response 1: Impact materiality	**Go to:** Scene 2
Response 2: Financial materiliaty	**Go to:** Scene 3
Response 3: Double materiality	**Go to:** Scene 5

Scene 2

Please, take a look at the materiality matrix of the company. In which axis the topic of “packaging lifecyle management” is classified as with major impact?

Response 1: Impact of Nestlé on the environment

Go to:
Scene 4

Response 2: Importance and impact on Nestlé’s business sucess

Go to:
Scene 2 (Are you sure?)

Scene 3

Please, take a look at the materiality matrix of the company. In which axis the topic of “water management” is classified as with a major impact?

Response 1: Impact of Nestlé on the environment

Go to:
Scene 3 (repeated)

Response 2: Importance and impact on Nestlé business sucess

Go to:
Scene 4

Scene 4

After considering the previous topic, do you think that Nestlé applies double materiality in its report?

Response 1: Yes	**Go to:** Scene 5
Response 2: No	**Go to:** Scene 4 (repeated)

Scene 5

There are multiple topics that we can consider material for our activity, both from an outside-in and an inside-out perspectives. We need to rely on a source or standard that could provide us with a potential list of issues that could be material for our company. Which source does Nesté consider in its report?

Response 1: The GRI Standards	**Go to:** Scene 5 (Let's look at it again!)
Response 2: The SASB Standards	**Go to:** Scene 6
Response 3: The SDGD Recommendations	**Go to:** Scene 5 (Let's look at it again!)

Scene 6

What materiality approach is embedded in the SASB Standards?

Response 1: Impact materiality

Go to:
Scene 6 (repeated)

Response 2: Financial materiliaty

Go to:
Scene 7

Response 3: Double materiality

Go to:
Scene 6 (repeated)

Scene 7

Do you think that relying only on SASB is a good starting point if we want to apply a double materiality approach? Why?

Response 1: Yes

Go to:
Scene 9

Response 2: No

Go to:
Scene 8

Scene 8

What other sustainability reporting framework you would consider if we want to complement the SASB list of issues to apply double materiality?

Response 1: The GRI	**Go to:** Scene 9
Response 2: The ISSB Standards	**Go to:** Scene 8 (Is this impact materiality?)
Response 3: The TCFD	**Go to:** Scene 8 (Is this impact materiality?)

Scene 9

To filter the list of potential issues, we have to engage with our stakeholders to identify their interests. Which of the stakeholders Nestlé engaged with do you think is most important for our food and beberage company?

Response 1: Employees

Go to:
Scene 10

Response 2: Investors and analysts

Go to:
Scene 11

Response 3: Consumers

Go to:
Scene 12

Scene 10

What tools has Nestlé used to engage with its employees?

Response 1: Forums and panel events

Go to:
Scene 13

Response 2: Periodic roundtables with the Chairman

Go to:
Scene 10 (Take a more careful look at the report!)

Response 3: Site visits

Go to:
Scene 10 (Take a more careful look at the report!)

Scene 11

What tools has Nestlé used to engage with its investors and analysts?

Response 1: Forums and panel events	**Go to:** Scene 11 (Take a more careful look at the report!)
Response 2: Periodic roundtables with the Chairman	**Go to:** Scene 13
Response 3: Site visits	**Go to:** Scene 11 (Take a more careful look at the report!)

Scene 12

What tools has Nestlé used to engage with its consumers?

Response 1: Forums and panel events

Go to:
Scene 12 (Take a more careful look at the report!)

Response 2: Periodic roundtables with the Chairman

Go to:
Scene 12 (Take a more careful look at the report!)

Response 3: Site visits

Go to:
Scene 13

Scene 13

Is there any other stakeholders that Nestlé should have considered in its engagement process?

Response 1: The environment	**Go to:** Scene 14
Response 2: The Government	**Go to:** Scene 15
Response 3: No. I think the stakeholder selection is perfect.	**Go to:** Scene 16

Scene 14

What tools you would use to engage with this type of stakeholder?

Response 1: Analysis of scientific reports

Go to:
Scene 16

Response 2: Meetings with NGOs

Go to:
Scene 16

Response 3: Meeting with political parties

Go to:
Scene 14 (I'm not sure this would be useful)

Scene 15

What tools you would use to engage with this type of stakeholder?

Response 1: Analysis of scientific reports

Go to:
Scene 15 (I'm not sure this would be useful)

Response 2: Meetings with NGOs

Go to:
Scene 15 (I'm not sure this would be useful)

Response 3: Meeting with political parties

Go to:
Scene 16

Scene 16

We have now a clear idea of the materiality approach we want to apply, the initial sources for compilling the list of potential issues, and the stakeholder we want to engage with. The final thing we need to define at this stage is what criteria we are going to use to conduct the assessment. For the impact materiality perspective, what criteria do you think we should apply?

Response 1: The occurence and size of the financial impact related to the issues.	**Go to:** Scene 16 (I'm talking about impact materiality.)
Response 2: The risks and opportunities related to the issues.	**Go to:** Scene 16 (I'm talking about impact materiality.)
Response 3: The scale, scope and irremediability of the impact related to the issues.	**Go to:** Scene 18

Scene 17

And for the financial materiality perspective, what criteria should we apply?

Response 1: The occurence and size of the financial impact related to the issues.

Go to:
Scene 18

Response 2: The inside-out impact related to the issues.

Go to:
Scene 17 (I'm talking about financial materiality.)

Response 3: The scale, scope and irremediability of the impact related to the issues.

Go to:
Scene 17 (I'm talking about financial materiality.)

Scene 18

Thank you, Name of the user. I think that we can start organising the materiality assessment process. We will meet again in a few days to discuss the reporting frameworks that we will apply and other things that wee need to determine for producing our first sustainability report. Goobye!

Co-funded by the European Union

ACCOUNT 4Green Eco

Sustainability reporting frameworks

Case Study 1.2.2

Module 1

Unit 1.2. The Sustainability Reporting Landscape

UNIVERSIDAD DE BURGOS

Centre for Sustainability Management

LEUPHANA UNIVERSITÄT LÜNEBURG

MBS since 1897 MONTPELLIER BUSINESS SCHOOL

gestionet Play Think Learn

UNIVERSITÀ DI TRENTO

ROLE PLAY

Title: Sustainability reporting frameworks

Context: Hi! Lovely to see you again. I hope you have enjoyed your first days working at “Food4Everyone, Ltd”. In our previous meeting, we decided that we want to apply a double materiality approach and also discussed about the materiality assessment process that will follow to produce our first sustainability report. Now, I want to discuss with you some aspects to start the production of the report. We have to prepare a plan for the Board of Directors to have its green like to elaborate the report. As we did with the materiality assessment, we should rely on Nestlé’s sustainability report as it is a useful referent for us. We can also take a look at the content index of their report. You can find the report above. You can access its GRI content index in the link on p. 63.

Scenario: An executive meeting room with a long table with chairs in a modern environment.

Character: A middle-age black woman in business suit that looks very professional.

Scene 1

The first thing we need to discuss is the reporting framework we want to rely on to produce the sustainability report. Which framework has Nestlé applied in its report?

Response 1: The GRI and the European Sustainability Reporting Standards	**Go to:** Scene 1 (I don't think so. Check again!)
Response 2: The GRI and the SASB Standards	**Go to:** Scene 2
Response 3: Only the GRI Standards	**Go to:** Scene 1 (I don't think so. Check again!)

Scene 2

As we discussed in our last meeting, Nestlé relied on SASB to create the initial list of potential issues for the materiality assessment process. Do you think it creates a missmatch with the other framework, GRI, the firm is applying?

Response 1: Yes

Go to:
Scene 3

Response 2: No

Go to:
Scene 6

Scene 3

How would you solve that missmatch?

Response 1: By also using the GRI Standards to create the initial list of potential issues for the materiality assessment process.

Go to:
Scene 6

Response 2: By not applying the GRI Standards to produce the sustainability report.

Go to:
Scene 4

Scene 4

But, wouldn’t that solution be against the application of double materiality in the report?

Response 1: Yes

Go to:
Scene 5

Response 2: No

Go to:
Scene 4 (If GRI is removed, there is no framework supporting the inside-out perspective of double materiality in the report.)

Scene 5

So, how would you solve that missmatch?

Response 1: By also using the GRI Standards to create the initial list of potential issues for the materiality assessment process.

Go to:
Scene 6

Response 2: By not applying the GRI Standards in producing the sustainability report.

Go to:
Scene 4

Scene 6

Reporting boundaries are key in determining the coverage of our sustainability report. In general terms, what boundaries has Nestlé considered for the production of its report?

Response 1: Global operations, with data referred to wholly owned companies, subsidiaries and suppliers.	**Go to:** Scene 6 (I don't think the coverage is so comprehensive.)
Response 2: Global operations, with data referred to wholly owned companies and subsidiaries, but not to suppliers.	**Go to:** Scene 7
Response 3: Global operations, with data referred to Nestlé parente company, but not to owned companies, subsidiaries, and suppliers.	**Go to:** Scene 6 (I don't think the coverage is so limited.)

Scene 7

Do you think we should consider the same reporting boundaries in our report?

Response 1: Yes

Go to:
Scene 9

Response 2: No

Go to:
Scene 8

Scene 8

What other elements would you include?

Response 1: Supply chain upstream (i.e. suppliers).

Go to:
Scene 9

Response 2: Supply chain downstream (i.e. distribution).

Go to:
Scene 9

Response 3: Supply chain upstream and downstream.

Go to:
Scene 9

Scene 9

Nestlé's sustainability report has an assurance statement that indicates that its content has been assured by a third-part. Which GRI principle does assurance contribute to apply?

Response 1: Accuracy.

Go to:
Scene 9 (You should study the GRI principles)

Response 2: Comparability.

Go to:
Scene 9 (You should study the GRI principles)

Response 3: Verifiability.

Go to:
Scene 10

Scene 10

Now, let's analyse the content of the report. Perhaps, we can take a look at the sustainability content index of Nestlé's sustainability report. Is the firm disclosing information related to all the GRI topic standards?

Response 1: Yes.

Go to:
Scene 11

Response 2: No.

Go to:
Scene 12

Scene 11

Regarding economic topics, does Nestlé provided information covering all GRI disclosures on this matter?

Response 1: Yes.

Go to:
Scene 11 (Are you sure?)

Response 2: No.

Go to:
Scene 12

Scene 12

Which of the following GRI economic standards is not considered by Nestlé?

Response 1: GRI 203 Indirect economic impacts.	**Go to:** Scene 12 (repeated)
Response 2: GRI 204 Procurement practices.	**Go to:** Scene 13
Response 2: GRI 205 Anti-corruption.	**Go to:** Scene 12 (repeated)

Scene 13

We try to purchase raw materials to supppliers close to our factory. Do you think we should cover that topic standard?

Response 1: Yes.

Go to:
Scene 14

Response 2: No.

Go to:
Scene 14

Scene 14

Regarding social topics, does Nestlé provide information covering all GRI disclosures on this matter?

Response 1: Yes.

Go to:
Scene 14 (repeated)

Response 2: No.

Go to:
Scene 15

Scene 15

Which of the following GRI social standards is not considered by Nestlé?

Response 1: GRI 402 Labor/management relations.	**Go to:** Scene 16
Response 2: GRI 404 Training and education.	**Go to:** Scene 15 (repeated)
Response 2: GRI 409 Forced or compulsory labor.	**Go to:** Scene 15 (repeated)

Scene 16

This year we have negotiated a new collective bargaining agreement in the company. Do you think we should cover that topic standard?

Response 1: Yes.

Go to:
Scene 17

Response 2: No.

Go to:
Scene 17

Scene 17

Nestlé has considered all GRI environmental topic standards. Our industry generates signficant negative environmental impacts. We are quite intensive in carbon emissions. Can you identify the largest source of emissions in our industry according to Nestlé's report? We need to make sure that we cover it in our sustainability report.

Response 1: Air travelling.	**Go to:** Scene 17 (That is not particularly relevant for us.)
Response 2: Electricity.	**Go to:** Scene 17 (That is not particularly relevant for us.)
Response 2: Dairy and livestock.	**Go to:** Scene 18

Scene 18

It’s amazing livestock generates so much CO2. It’s understandable that more people are becoming vegan to fight climate changes. We need to make sure that we reduce our emissions. This can also help in achieving the Sustainable Development Goals. Perhaps we can also explain in our report to what SDGs we are contributing by reducing emissions. Does Nestlé indicate what SDGs relate to carbon emissions?

Response 1: No, it doesn’t.	**Go to:** Scene 18 (I think you are missing something.)
Response 2: Yes: SDG 7(affordable and clean energy), SDG 11 (sustainable cities and communities), SDG 13 (climate action), SDG 14 (life below water), and SDG 15 (life on land).	**Go to:** Scene 19
Response 3: Yes: SDG 9 (industry, innovation and infrastructure) SDG 11 (sustainable cities and communities), SDG 13 (climate action), SDG 14 (life below water), and SDG 15 (life on land).	**Go to:** Scene 18 (repeated)

Scene 19

Well. I think this conversation has been very productive. We certainly need to apply the GRI Standards and ensure that we provide information on all relevant issues for our organisation. Additionally, we should try to connect those disclosures with the SDGs. And of course, get the report assured! Let’s start write the report now and prepare the pitch for the board meeting.