SUSTAINABLE DEVELOPMENT

MANOEL COELHO, GABRIEL LONDE MEDEIROS E SUSANA BRISSOS

Lisbon School of Economics & Management
Universidade de Lisboa

Team:

Manuel Francisco Pacheco (Coordinator)

Gabriel Londe Medeiros
gabrielmedeiros@iseg.ulisboa.pt

Susana Brissos
sbrissos@iseg.ulisboa.pt

OBJECTIVES

- Determine and substantiate the criteria that should underlie the optimal exploitation of natural and environmental resources.
- Explain the behavior of agents regarding the production and use of resources, taking into account different market structures.
- Identify policies and institutional frameworks that encourage individual economic agents to pursue efficient management of natural resources and the environment.
- Maintain an approach that integrates the three fundamental pillars of Sustainable Development—Environment, Economy, and Society—into the analysis of problems.

Bibliography

Burgenmeier, B. (2009). Economia do Desenvolvimento Sustentável, Instituto Piaget, Lisboa.

Blewitt, J. (2018). Understanding Sustainable Development (3rd edition). Routledge: Abingdon.

Tietenberg, T. & Lewis, L. (2018). Environmental and Natural Resource Economics (11th edition). Routledge: Abingdon.

Assessment

The assessment consists of two alternative modalities (i) and (ii):

(i) Época normal - Continuous Assesment

a) Individual assignment (40% of the grade).

b) Group assignment: Presentation conducted in working groups of 5 students, lasting 20 minutes, on a topic related to the course syllabus (60% of the grade).

(ii) Avaliação em Época de Recurso

consists of an individual written exam, without consultation, lasting 1 hour and 30 minutes (100% of the final grade). Students who have not passed the regular period assessment will automatically be admitted to the resit period.

SUSTAINABLE DEVELOPMENT

Lisbon School
of Economics
& Management
Universidade de Lisboa

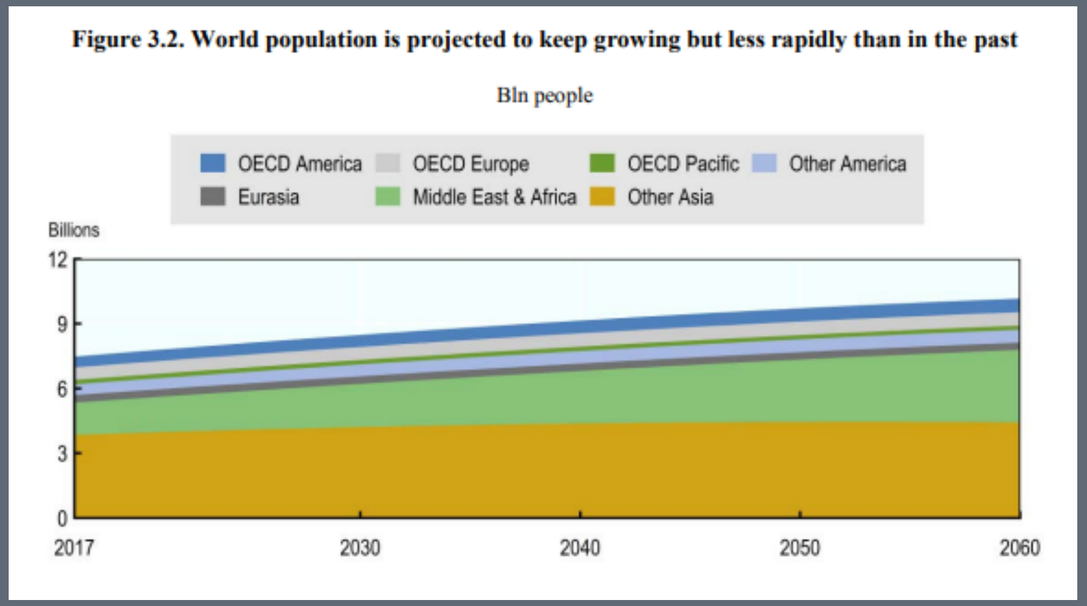
WHAT IS SUSTAINABLE DEVELOPMENT?

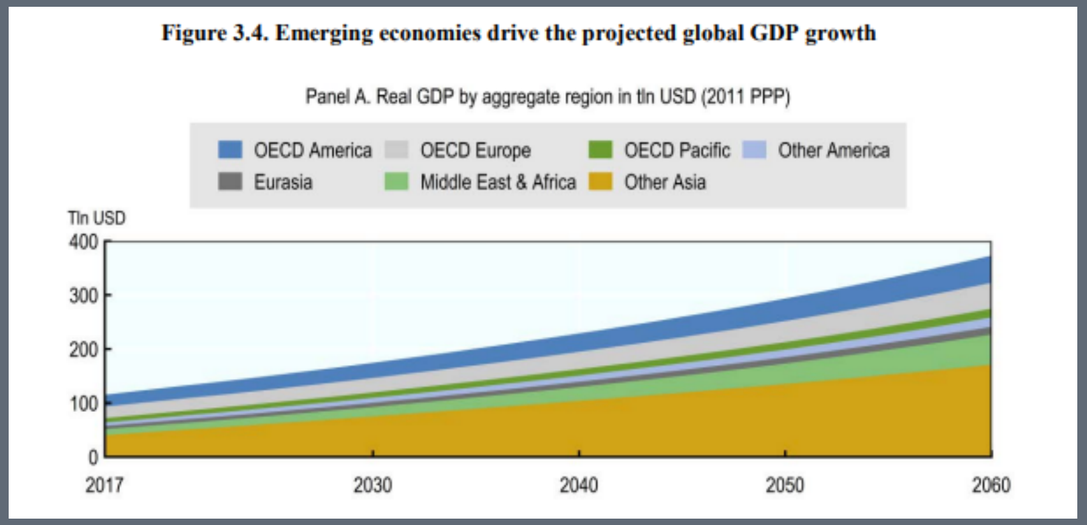
HOW DO ECONOMIC PRACTICES AFFECT THE ENVIRONMENT?

IN WHAT WAYS CAN THE ECONOMY CONTRIBUTE TO SUSTAINABLE DEVELOPMENT?

SUSTAINABLE DEVELOPMENT IS ECONOMICALLY, SOCIALLY, AND ENVIRONMENTALLY REALISTIC?

POPULATION GROWTH PROJECTION: 2017–2060





OECD (2019), Global Material Resources Outlook to 2060: Economic Drivers and Environmental Consequences, OECD Publishing, Paris,

MÉDIA GLOBAL DA TEMPERATUDA DA TERRA: 1860–2020

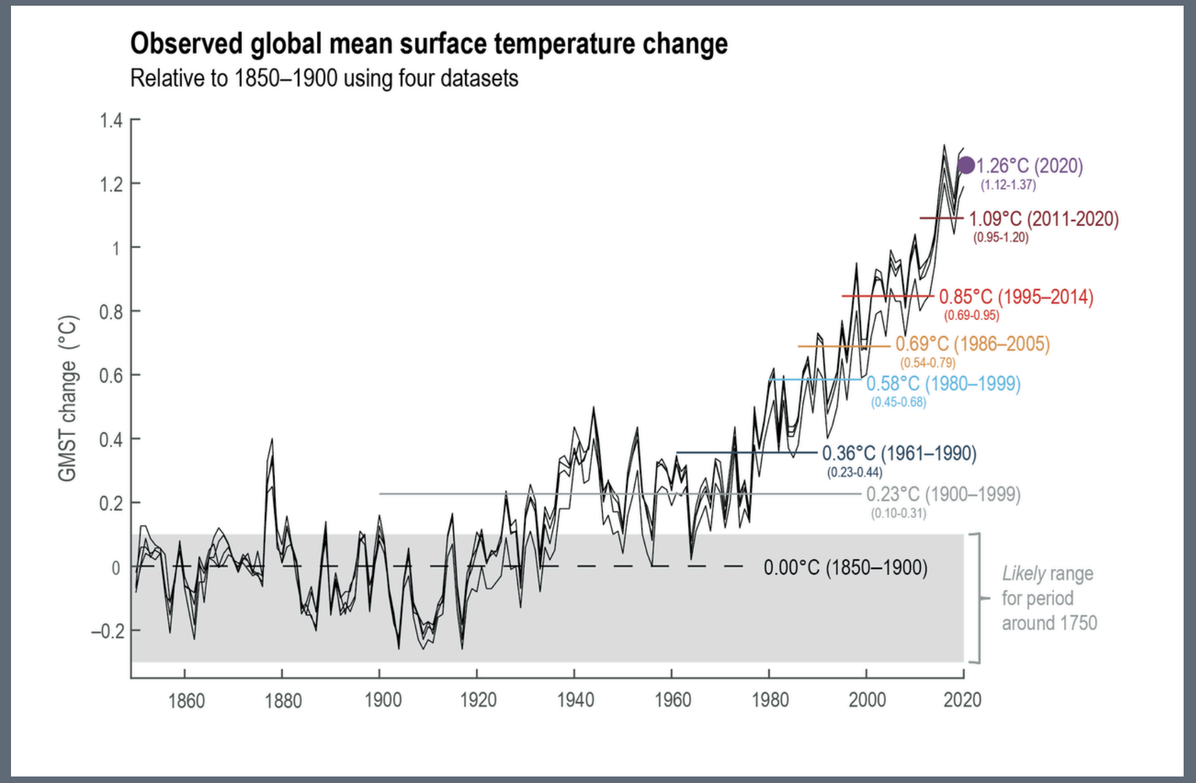
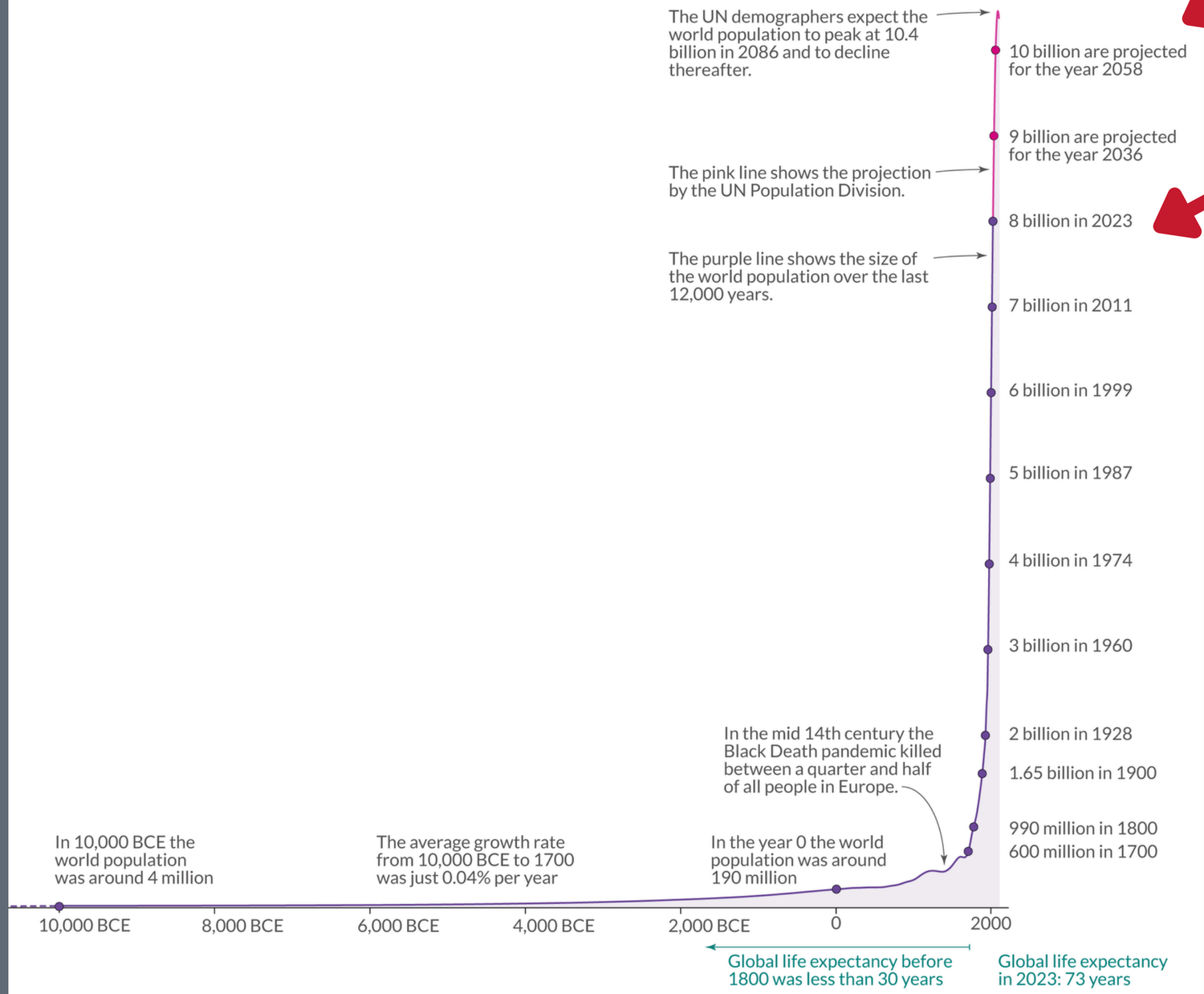


Figure 1.12 in IPCC, 2021: Chapter 1. In: Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change

The size of the world population over the long-run



Based on estimates by the History Database of the Global Environment (HYDE) and the United Nations.
This is a visualization from OurWorldinData.org.

What Earth in 2050 could look like - Shannon Odell

DEFINITIONS OF SUSTAINABLE DEVELOPMENT

Definitions are important because they provide the foundation for the strategies, policies, and mechanisms used to achieve sustainable development.

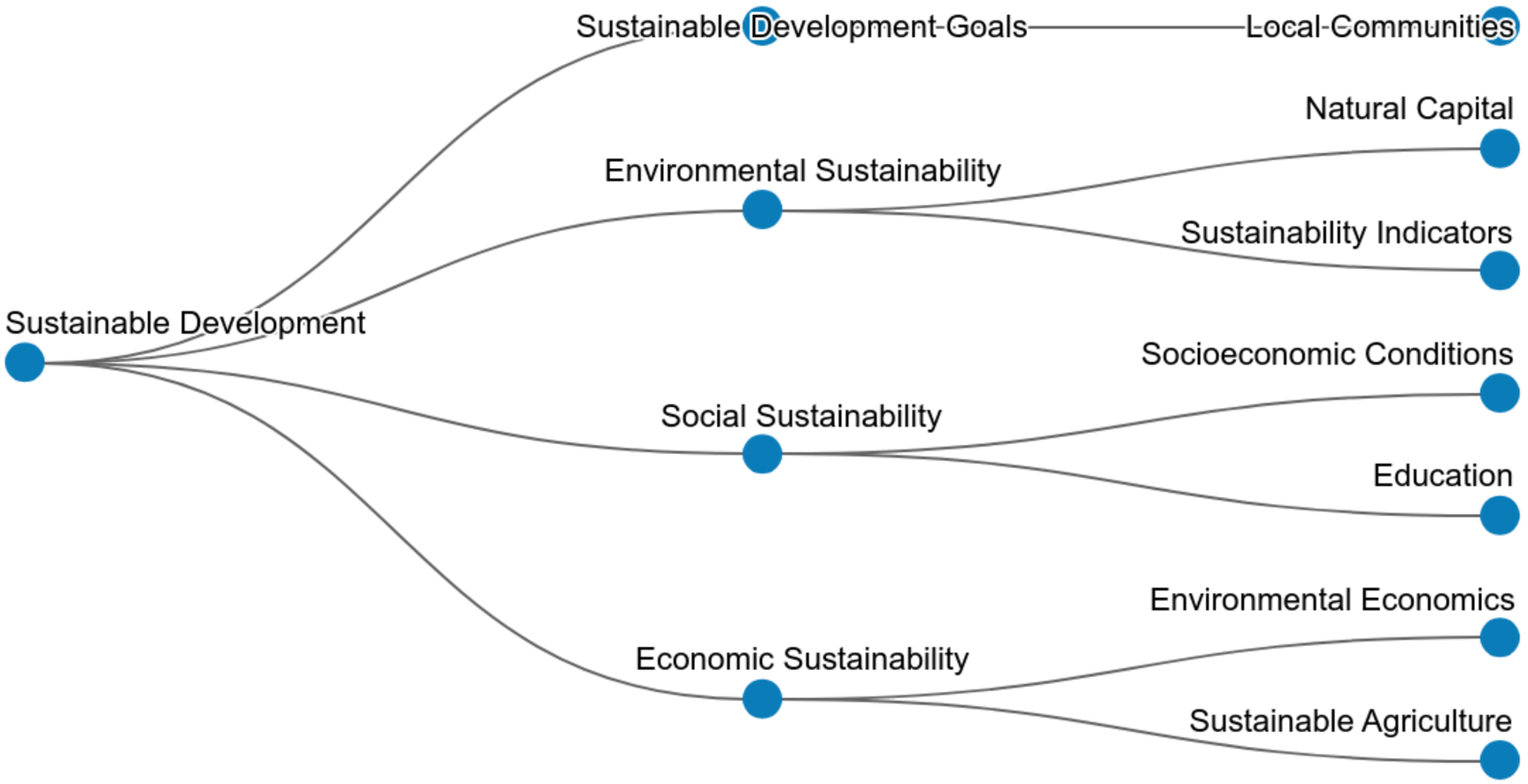
"In principle, the optimal (sustainable growth) policy seeks to maintain an 'acceptable' rate of growth in real per capita incomes without depleting the national stock of capital assets or the natural stock of environmental assets." (Turner, 1988: 12)

"A sustainable state exists when the stock of natural capital does not decrease over time" Pearce et al. (1989).

"Sustainable development cannot be measured on a per capita basis due to its evident appeal as a criterion of intergenerational equity." – World Bank (Pezzey, 1989)

"Sustainable development means improving the quality of life while respecting the limits of ecosystem capacity." – World Wildlife Fund (IUCN et al., 1991)

CONCEPTUAL MAP



SUSTAINABLE DEVELOPMENT

It is a contradictory concept due to the **impossibility of sustaining infinite economic growth** on a planet with **limited resources.**

The accumulated evidence of the negative environmental impacts of the Green Revolution in agriculture, industrial pollution, environmental disasters, and the way of life and urban growth has highlighted the risks involved in sustaining the logic of economic growth as a global development strategy.

"Internalization of the external effects of economic activities."

The term ‘development’ is associated with socio-economic issues, while the term ‘sustainability’ is linked to ecological objectives.

ENVIRONMENTAL DISASTERS

Between 1900 and 1990, the **most polluted rivers** in Europe were:

Western Europe:

- Rhine River: The Rhine River, which flows through six Western European countries, was one of the most polluted rivers in the world at that time. The main source of pollution was the discharge of untreated industrial and domestic effluents.
- Thames River: The Thames River, which flows through London, England, was also extremely polluted. The river was notorious for its black color and nauseating smell.
- Seine River: The Seine River, which flows through Paris, France, was also heavily polluted. The primary source of pollution was the discharge of sewage and waste into the river.

Eastern Europe:

- Danube River: The Danube River, the second-largest river in Europe, was highly polluted by industrial and agricultural effluents.
- Vistula River: The Vistula River, in Poland, was polluted by industrial and domestic effluents.
- Dnieper River: The Dnieper River, in Ukraine, was polluted by industrial and agricultural effluents.

T**he Great Smog of London,** also known as "The Great Smog," was a severe air pollution event that occurred in London, England, between December 5 and 9, **1952.**

Aral Sea Desiccation: The Aral Sea, located in Central Asia, was once the fourth-largest lake in the world. However, decades of intensive water use for agricultural irrigation have caused the lake to nearly dry up completely, leading to ecological and socio-economic disasters in the region.

Exxon Valdez Oil Spill (1989): The Exxon Valdez oil tanker spilled approximately 42 million liters of crude oil off the coast of Alaska, causing a massive oil spill that devastated local wildlife and the ecosystem. The impact of the spill is still felt today.

Dieselgate," erupted in 2015 when the U.S. Environmental Protection Agency (EPA) discovered that Volkswagen had installed defeat devices in millions of its diesel vehicles worldwide. These software devices allowed the cars to pass emissions tests by reducing emissions only under testing conditions, while in real-world driving, they emitted up to 40 times the legal limits of nitrogen oxides (NOx)

> To understand my work, it is necessary to **deactivate** the **thought patterns** ingrained in your brains and taken for granted for so many years.
>
> – Japanese mathematician, Shinichi Mochizuki.

Traditional economic models prioritize unlimited growth, resource exploitation,and short-term gains. However, **sustainable development** demands a departure from these entrenched ideas, embracing circular economies, regenerative practices, and long-term well-being over immediate profit.

Just as **understanding Mochizuki's groundbreaking work** requires dismantling **deeply rooted** intellectual habits, achieving sustainable development demands a **willingness to question**, **rethink, and transform the status quo**.

Embracing sustainability is not merely an extension of existing frameworks but a **profound reconfiguration** of how we define progress, prosperity, and the future of humanity on a finite planet.

HISTORY OF SUSTAINABLE DEVELOPMENT

A BRIEF HISTORY OF MODERN SUSTAINABILITY

MODERNISATION THESIS - 'GROW NOW, CLEAN UP LATER` | THE LOST DECADE OF THE 1980´S | GROWTH WITH EQUITY

1969

15 December 1969, **UN Resolution 2581 (XXEV):**

It should be the main purpose of the **Conference to serve as a practical means to encourage and to provide guidelines for action by Governments and international organizations** designed to protect and improve the human environment and to remedy and prevent its impairment, by means of international cooperation, bearing in mind the particular importance of enabling the developing countries to forestall the occurrence of such problems.— Resolution 2581(XXEV), UN General Assembly, 15 December 1969

APRIL 1970

1º EARTH DAY, April, 22

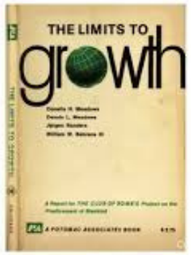

The New York Times

Millions Join Earth Day Observances Across the Nation

1971

Club of Rome - an informal group of individuals who met frequently to better understand global problems

Considered a classic in the sustainability movement, The Limits to Growth was the **first study** to question the viability of continued growth in the human ecological footprint.



1972

Stockholm Conference
It was the UN's first major Conference on **International Environmental Issues**, and marked a turning point in the development of international environmental politics.

131 Nations

Photo:Yutaka Nagata

1987

Our Common Future
Brundtland Report
A Report of the World Commission on Environment and Development

Create a Definition:
"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs".

1992 /1994

Earth Summit - RIO92
The international community adopted Agenda 21, the Rio Declaration on Environment and Development, and the Statement of principles for the Sustainable Management of Forests

171 Nations signed

In 1994 the **United Nations Framework Convention on Climate Change (UNFCCC)** was adopted.

DEVELOPMENT OF SOUTH AND NORTH

EVERY COUNTRY IS IN A PROCESS OF DEVELOPMENT

2000

Millenium Development Goals
commits world leaders to combat poverty, hunger, disease, illiteracy, environmental degradation, and discrimination against women

191 Nations signed

"A global mobilisation to achieve a set of important social priorities worldwide".

2006

Principles for Responsible Investment (PRI)
A landmark moment that effectively "invented" the concept of ESG (Environmental, Social, and Governance) as a mainstream financial tool.

2015

End of Millenium Agenda
Great achieves in the areas addressed

Paris Agreement - COP21
The first time that brings all nations into a common cause to undertake ambitious efforts to combat climate change

175 Nations signed

PARIS2015
UN CLIMATE CHANGE CONFERENCE
COP21·CMP11

2015

Agenda 2030 Development Sustainable Goals

193 Nations signed

SUSTAINABLE DEVELOPMENT GOALS

2019

European Green Deal
The European Green Deal is a plan to make the EU's economy sustainable, by turning climate and environmental challenges into opportunities, and making the transition just and inclusive for all.

The biggest change in terms of Economy in the last years.

2020

World Economic Forum - Davos

Vanessa Nakate, Isabelle Axelsson , Greta Thunberg, Luisa Neubauer, Loukina Tille

75th UN General Assembly - Covid 19
"We need to build a strong recovery, based on the 2030 Agenda and the Paris Agreement, while continuing the Assembly's work across the full range of global challenges ahead".

NEW ERA OF REGULATION REGARDING SUSTAINABLE DEVELOPMENT

2021

COP26 - Achievements
The Global Methane Pledge;

Establishing a new International Sustainability Standards Board (ISSB);

Regulation of Article 6 of the #ParisAgreement. The carbon market was regulated.

2022

Stockholm+50: a healthy planet for the prosperity of all – our responsibility, our opportunity

2023

EU Taxonomy.
is a classification system, establishing a list of environmentally sustainable economic activities Entry into Force in 2020. Full reporting starts in **2023** for participants under the NFRD (Non-Financial Reporting Directive).

On 5 January 2023 the **Corporate Sustainability Reporting Directive (CSRD)** entered into force. This new directive modernises and strengthens the rules about the social and environmental information that companies have to report.

2030

End of **Agenda 2030 - SDGs**

2050

End of **Paris Agreement**

End of **European Green Deal**

2100

???

References

Henriksen, H. Z., Thapa, D., & Elbanna, A. (2021). Sustainable Development Goals in IS Research: Opening the agenda beyond developing countries' research. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85127431299&partnerID=40&md5=a7537c5e9a3ddeabf595058f3d4e71da

Shaik, S., Kuruppuarachchi, L. N., & Franchetti, M. J. (2022). Push and Pull: Sustainability Education for 21st Century Engineers. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85165113952&partnerID=40&md5=ed91860f61a155ac88c9402ed0fca75c

Popa, G., Stegaroiu, I., Robescu, V.-O., Barbu, I., & Ilie, V. (2010). Sustainable development strategy: The key of environmental and organizational management. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-79952635181&partnerID=40&md5=f939070b8ba44ab91e0a71900ccb9075

Bhandari, M. P. (2024). Environmentalism: Pathways to life for humanity and sustainability. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85214186731&partnerID=40&md5=4a9362b9b4b72225666baa10741119bc

Christmas, S. K., & Aminah. (2019). The Principles of Environmental Based Development in International Law and Sustainable Development Goals. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85143842836&doi=10.26555%2fnovelty.v10i2.a13910&partnerID=40&md5=180d394c6af81f7bed809ea05e9cde15

Sharifi, A. (2024). Environmental Sustainability and Resilience—Policies and Practices. Retrieved from https://www.scopus.com/inward/record.uri?eid=2-s2.0-85205020631&doi=10.1007%2f978-981-97-6639-0_1&partnerID=40&md5=f5cabff122ba8904dc0ff4129aa05b4a

EUROPEAN GREEN DEAL

Pacto Ecológico Europeu ou Pacto Verde

It is a set of policies and strategies aimed at addressing climate change and environmental degradation.

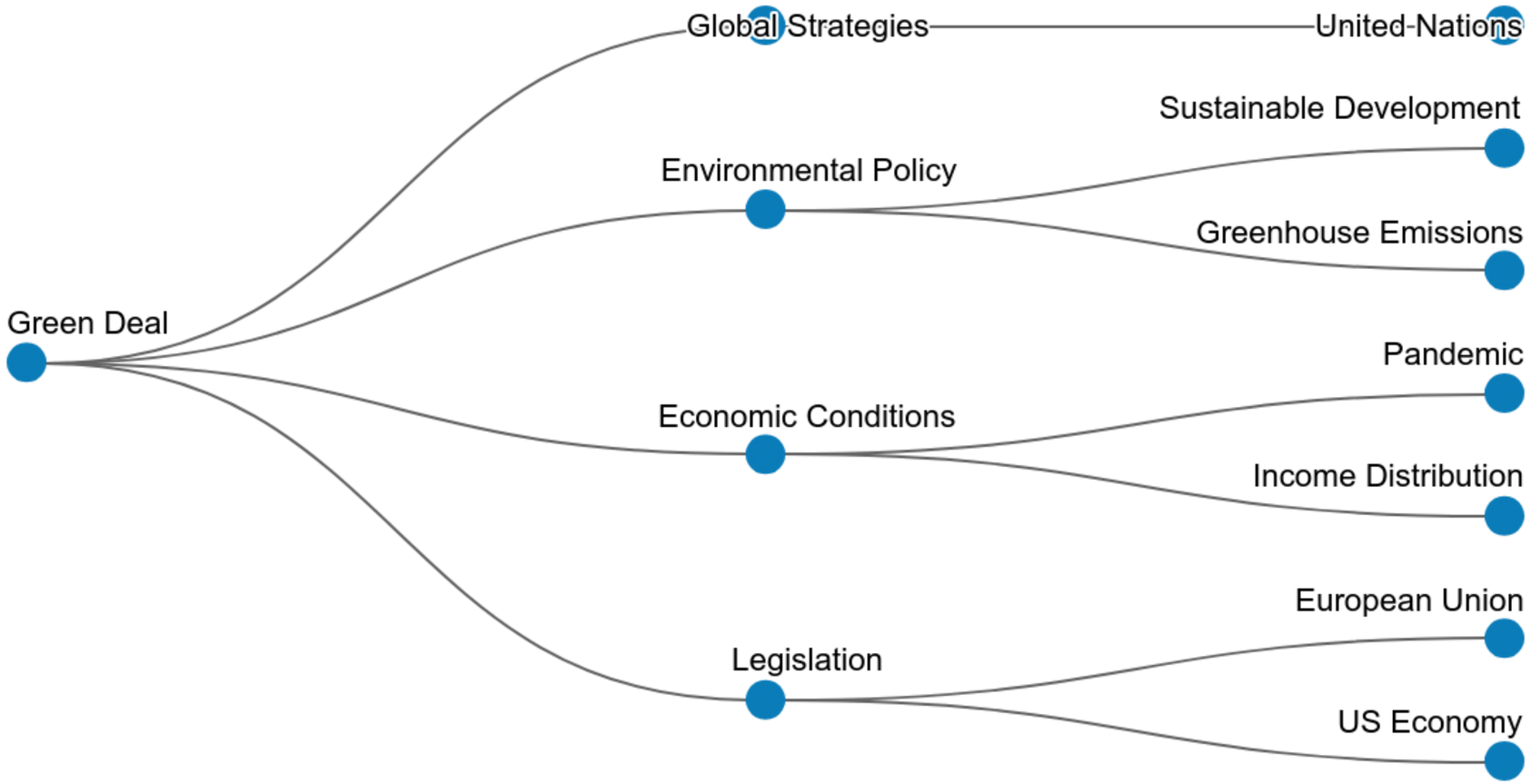
Introduced by the European Commission, the Green Deal was launched in **December 2019,** its primary objective is to make the **EU climate-neutral** in terms of greenhouse gas emissions by **2050**, promote sustainable economic growth, and ensure that no person or region is left behind.

The European Green Deal covers various areas such as **climate, energy, transport, taxation, circular economy, energy efficiency, and sustainable mobility, among others**. It aims to drive the transition to a modern, resource-efficient, and competitive economy while promoting an improved quality of life and nature protection.

The key objectives of the European Green Deal are:

- Achieving net-zero greenhouse gas emissions by 2050.
- This means that Europe must eliminate greenhouse gas emissions and offset any remaining emissions through measures such as reforestation.
- Protecting and restoring Europe's biodiversity and natural capital.
- This includes measures to safeguard forests, oceans, and other natural areas, as well as efforts to combat pollution.
- Creating a circular and resource-efficient economy.
- This involves reducing resource consumption, increasing reuse and recycling, and minimizing waste.
- Ensuring a just and inclusive transition for all.
- This means that no one should be left behind in the transition to a sustainable economy.
- European Climate Law: Establishes the framework to achieve climate neutrality by 2050.

CONCEPTUAL MAP - GREEN DEAL



EU TAXONOMY

Taxonomia da União Européia

The EU Taxonomy is a **classification system** that defines **which economic activities** can be considered environmentally sustainable. It was created to help investors and companies direct capital toward activities that contribute to the EU's climate and environmental objectives.

The EU Taxonomy is based on six environmental objectives:

1. **Climate change mitigation:** Reducing greenhouse gas emissions.
2. **Climate change adaptation:** Making Europe more resilient to the impacts of climate change.
3. **Protection and restoration of biodiversity and ecosystems:** Safeguarding Europe's nature and natural resources.
4. **Pollution prevention and control**: Reducing air, water, and soil pollution.
5. **Efficient resource use and circular economy:** Reducing resource consumption and increasing reuse and recycling.
6. **A just transition to a sustainable economy:** Ensuring that no one is left behind in the transition to a sustainable economy.

The technical criteria are based on **scientific data** and are **regularly updated**. Companies and investors can use the EU Taxonomy to assess whether their **economic activities are environmentally sustainable.**

The EU Taxonomy is a key tool for the European Commission to achieve its climate and environmental objectives. It helps direct capital towards sustainable activities and promotes transparency in the financial market.

EU TAXONOMY

Taxonomia da União Européia

Key Features and Objectives

- C**lassification System:** The taxonomy provides a **common language** to categorize **eco-sustainable initiatives, infrastructures, and economic activities**. It sets criteria to guide investors and financial institutions in identifying activities that contribute to environmental sustainability.

- **Sustainability Goals:** The primary goal is to reorient **capital flows towards sustainable investments,** thereby supporting the EU's climate and environmental objectives. This includes reducing greenhouse gas emissions, promoting resource efficiency, and fostering innovation in green technologies .

- **Regulatory Framework:** The taxonomy is **directly applicable across EU member** states without the need for national implementation, ensuring uniformity in its application.

References:
Disaggregating confusion? The EU Taxonomy and its relation to ESG rating
M., Dumrose, Maurice,S., Rink, Sebastian,J., Eckert, Julia. Finance Research Letters, 2022

Environmental assessments and sustainable finance frameworks: will the EU Taxonomy change the mindset over the contribution of EIA to sustainable development?
J., Dusík, Jiri,A.J., Bond, Alan J. Impact Assessment and Project Appraisal, 2022.

EU TAXONOMY

Taxonomia da União Européia

Challenges and Considerations

- **Complexity and Clarity:** There are concerns about the complexity and clarity of the taxonomy, which can lead to uncertainty and ambiguity in its implementation. This has impacted how firms perceive and respond to the taxonomy.

- **Potential for Greenwashing:** The taxonomy aims to prevent greenwashing by providing clear criteria for what constitutes a sustainable activity. However, there are risks that **firms might exploit loopholes or ambiguities in the regulation to appear more sustainable** than they are.

- **Sectoral Impact:** The taxonomy significantly impacts various sectors, including waste management, energy, and forestry. It guides investments in activities such as waste collection, anaerobic digestion, and material recovery, while currently excluding energy recovery.

References:
The European Union (EU) green taxonomy: codifying sustainability to provide certainty to the markets
Tettamanzi, P.,Gotti Tedeschi, R.,Murgolo, M. ***Environment, Development and Sustainability***, 2024.

EU DIRECTIVES

Diretivas da União Européia

The implementation of an EU directive by the member states follows a specific process:

1. **Adoption by the European Commission:**
   - The European Commission proposes the directive to the European Parliament and the Council of the European Union.
   - Once approved by both institutions, the directive is published in the Official Journal of the European Union.
2. **Transposition into national law:**
   - Each Member State has a deadline to transpose the directive into its national legislation.
   - The deadline varies depending on the complexity of the directive, but it is generally between 18 and 24 months.
   - Member States must inform the European Commission of the national transposition measures.
   - This can be done through legislative changes, such as the enactment of laws, administrative regulations, or even the issuance of instructions or guidelines to ensure the directive's implementation.
3. **Monitoring and enforcement:**
   - The European Commission monitors the transposition and application of directives by Member States.
   - If a Member State fails to transpose the directive within the given deadline, the European Commission may initiate an infringement procedure.
   - The infringement procedure may result in legal action against the Member State before the Court of Justice of the European Union.

LATEST DIRECTIVES ON CLIMATE AND SUSTAINABILITY

- **CORPORATE SUSTAINABILITY REPORTING DIRECTIVE (CSRD)**

Objective: Require companies to disclose information about their environmental and social **impact.**
Application: From 2024 for large companies, 2026 for medium-sized companies, and 2028 for small companies.
Impact: Greater transparency and comparability of companies' sustainability performance.

- **CORPORATE DUE DILIGENCE ON SUSTAINABILITY (CSDDD):**

Objective: Require companies to identify, prevent, and mitigate the negative impacts of their business on human rights and the environment.
Application: From 2025 for large companies, 2026 for medium-sized companies, and 2028 for small companies.
Impact: Increased corporate responsibility for their impacts throughout the value chain.

- **EUROPEAN CLIMATE LAW:**

Objective: Make the EU's goal of achieving climate neutrality by 2050 legally binding.
Measures: Establish intermediate emission reduction targets for 2030 and 2040.
Impact: Greater predictability and confidence for investors and companies in the transition to a climate-neutral economy.

DIRECTIVE (EU) 2019/904

The Single-Use Plastics Directive (Directive (EU) 2019/904) was adopted by the European Parliament and the Council on June 5, 2019.

This directive aims to reduce the environmental impact of single-use plastic products, particularly in aquatic environments, and to promote the transition to a circular economy.

The main objectives of the Directive are:

- **Ban the sale of certain single-use plastic products:**
  - Plates, cutlery, cups, straws, cotton buds, balloon sticks, and food and beverage containers made of expanded polystyrene.
- **Reduce the consumption of other single-use plastic products:**
  - Plastic beverage bottles, with the introduction of a deposit and return system.
  - Plastic packaging for food and beverages, with a target to reduce consumption by 25% by 2025.
  - From 2025, beverage bottles listed in Part F of the Annex made with polyethylene terephthalate (PET) as the main component must contain at least 25% recycled plastic.
- **Increase the collection and recycling of single-use plastic products:**
  - Plastic beverage bottles must be collected separately and recycled at a rate of 90% by 2029.
  - Other single-use plastic products must be collected separately and recycled at a rate of 50% by 2025.