IAERE
Italian Association of Environmental and Resource Economists

Thirteenth IAERE Annual Conference

20-21 February 2025, Rome

Ground Floor, AULA Tesi

11:00 - 13:00 PARALLEL SESSIONS 1

Session 1.11 - Special session:
Markets and regulation in Italy
Contribution Title

Measuring the environmental sustainability of Italian companies: from non-financial reporting to financial reporting, initial analyses and emerging challenges

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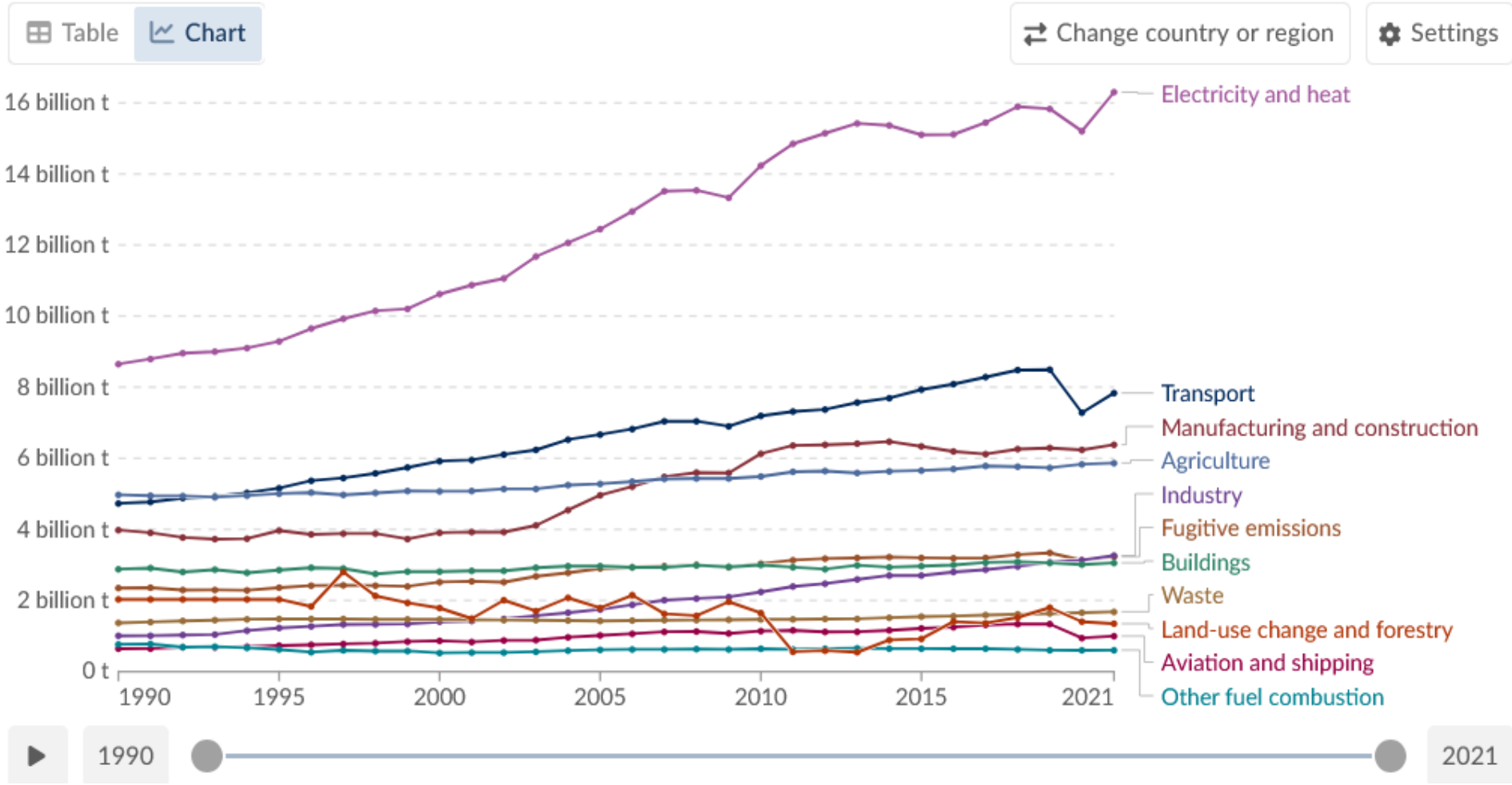
This presentation is organized as follows:

- **Greenhouse gas emissions by sector, World**
- **Greenhouse gas emissions in Europe**
- **Emissions CO2 by sector and households in Italy**
- **CO2 equivalent by industry in Italy**
- **The Non-Financial Declaration**
- **European Sustainability Reporting Standards (ESRS)**
- **European Sustainability Reporting Standards (ESRS) - Environmental thematic areas**
- **Taxonomy for sustainable finance**
- **Classification of six environmental objectives**
- **Taxonomy for sustainable finance to European Sustainability Reporting Standards (ESRS)**
- **First data on the Eco-sustainable Economic Activities of Large Italian Companies**
- **Italian proposal conceptual scheme**
- **Final report of economic activity – New indicator Eco-GDP**
- **Conclusions**

Introduction

- In the first part of the presentation, illustrate CO_2 emissions worldwide, in Europe, and in Italy, with a specific focus on emissions generated by businesses.
- In the second part of the presentation, European Sustainability Reporting Standards (ESRS) are introduced, characterized by complex and structured content.
- In the final section, reference is made to the European taxonomy regulation and the informational potential of the classification used for sustainable economic activities.
- Finally, particular attention is given to the new ECO-GDP indicator, which is essential for monitoring industries behavior in addressing climate change.

Greenhouse gas emissions by sector, World



This chart shows the breakdown of total greenhouse gases (the sum of all greenhouse gases, measured in tonnes of carbon dioxide equivalents) by sector.
Electricity and heat production are the largest contributors to global emissions. This is followed by transport, manufacturing, construction (largely cement and similar materials), and agriculture.

Data source: Climate Watch (2024)

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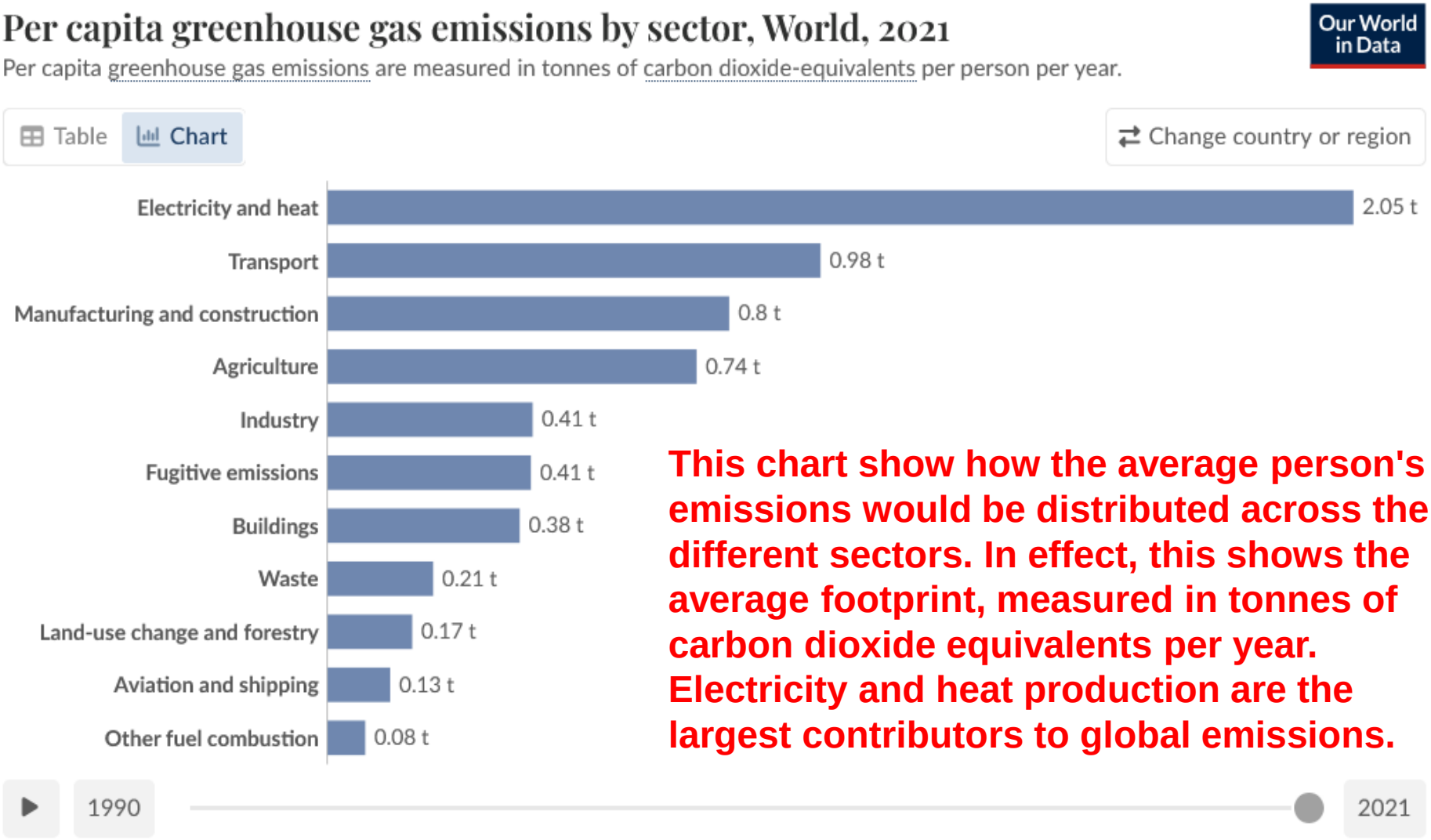
Greenhouse gas emissions by sector, World



This chart show how the average person's emissions would be distributed across the different sectors. In effect, this shows the average footprint, measured in tonnes of carbon dioxide equivalents per year. Electricity and heat production are the largest contributors to global emissions.

Why is it important to monitor the behaviour of economic actors?

Data source: Climate Watch (2024)

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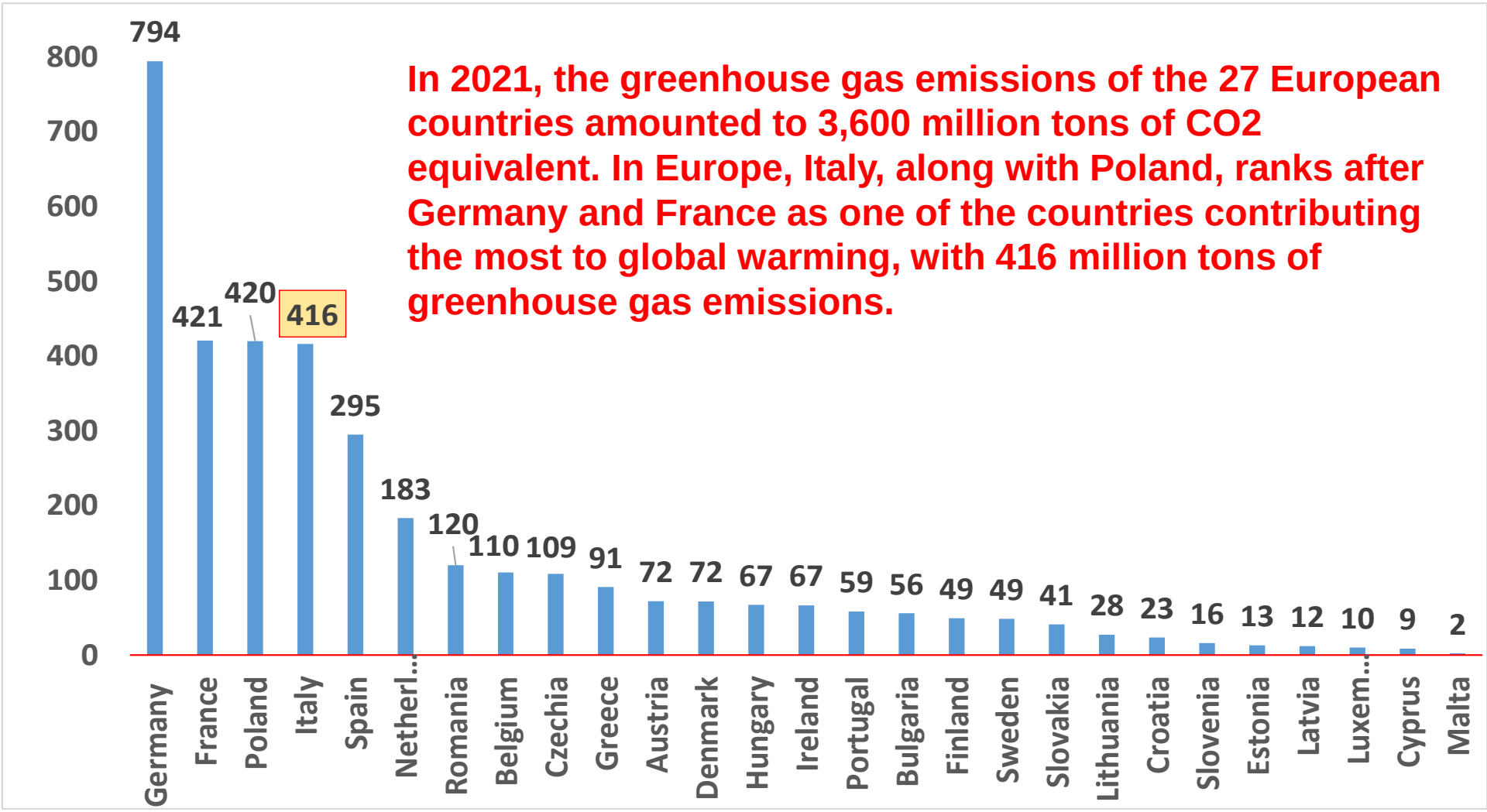
Greenhouse gas emissions in Europe

Greenhouse gas emissions (NAMEA) by member state, by total Nace Rev. 2 production activities, and by households
Year 2021 (million tons of CO2 equivalent)

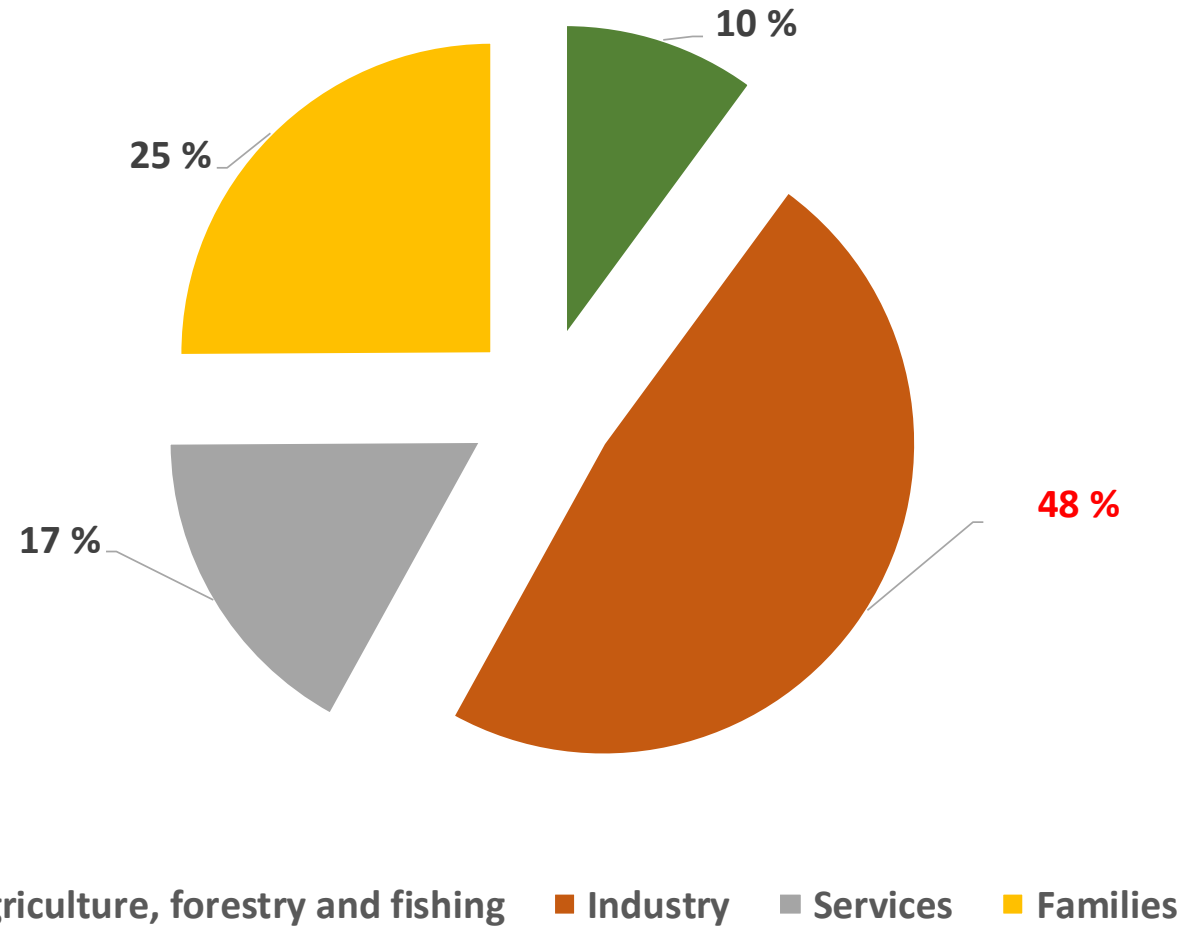


In 2021, the greenhouse gas emissions of the 27 European countries amounted to 3,600 million tons of CO2 equivalent. In Europe, Italy, along with Poland, ranks after Germany and France as one of the countries contributing the most to global warming, with 416 million tons of greenhouse gas emissions.

Source: Eurostat, data processing

Emissions CO2 by sector and households in Italy

Italy – Emissions of production activity by sector and households causing the greenhouse effect (thousands of tons of CO^2 equivalent)
Year 2021
393 million tons of CO2 equivalent



Source: Italian Institute of statistics, data processing

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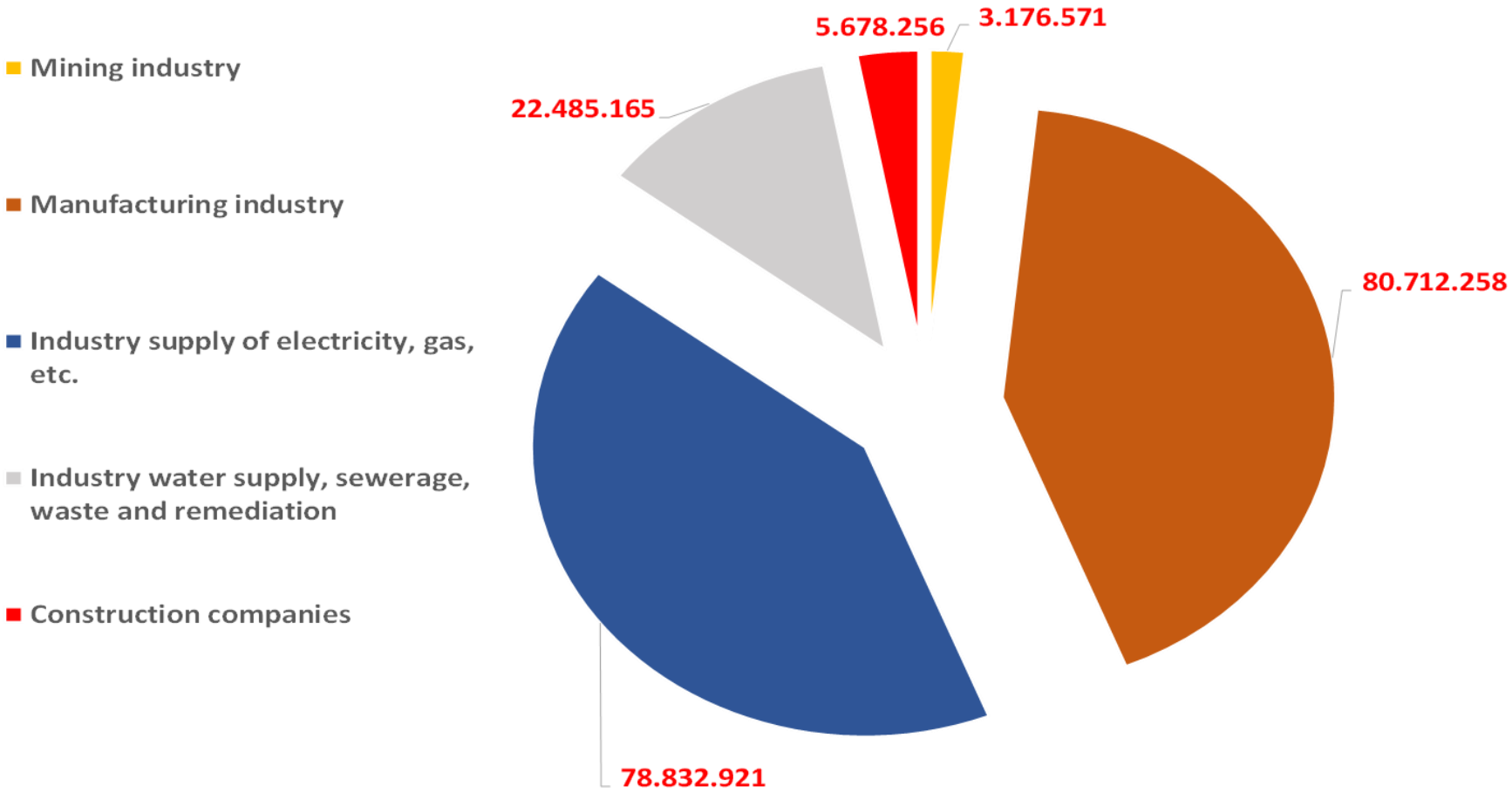
Greenhouse effect produced by industries
Tons of CO2 eq Year 2021



The manufacturing and energy sectors are the primary contributors to greenhouse gas emissions, together absorbing about 159 million tons of CO_2, or 80% of emissions from the entire production system. This evidence underscores the urgency of intervening in these key sectors to reduce emissions and achieve climate targets.

Source: Italian Institute of statistics, data processing

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The Non-Financial Declaration

With the entry into force of EU Directive 2014/95 and Legislative Decree No. 254/2016, companies are required to prepare a Non-Financial Declaration (NFD), aimed at providing transparency on environmental, social, governance, and human rights issues.

This obligation primarily applies to large companies that meet specific size requirements, such as exceeding thresholds in revenue or number of employees. The Non-Financial Declaration includes information on policies and results related to various areas:

- **Environment:** energy and water resource consumption, pollutant emissions, management of renewable sources.
- **Social and personnel:** gender equality policies, occupational health and safety, respect for workers' rights.
- **Human rights:** preventive measures against human rights violations.
- **Corruption:** mechanisms to prevent and combat corruption.
- **Business model:** management and organizational structure of the company.

European Sustainability Reporting Standards (ESRS)

1. Cross-cutting standards (ESRS 1 and ESRS 2): these provide general guidelines on how companies should structure their sustainability reporting, including both forward-looking and retrospective data. Specifically, ESRS 1 focuses on general reporting and how to interpret the requirements, while ESRS 2 is dedicated to the disclosure of essential company information (structure, governance, risks, and opportunities).
2. Thematic environmental, social, and governance standards (E1-E5, S1-S4, G1):
    - **Environmental standards (E1-E5) address critical topics such as climate change, water resource management, biodiversity, and the circular economy;**
    - Social standards (S1-S4) cover workforce management, the value chain, affected communities, and consumers;
    - Governance standard (G1) focuses on corporate conduct and sustainability-related risk management.
3. Sector-specific standards: still under development, these standards will address the specific sustainability needs of various economic sectors, recognizing that reporting requirements may vary by industry.

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European Sustainability Reporting Standards (ESRS)

Environmental thematic areas

The ESRS are divided into five environmental thematic areas:

- **ESRS E1 - Climate change:** companies must report their greenhouse gas emissions (Scope 1, 2, and 3) and their strategies for mitigating and adapting to climate change.
- **ESRS E2 - Pollution:** this includes information on a company's impact on air, water, soil, and biodiversity, with particular attention to the use of hazardous substances.
- **ESRS E3 - Water and marine resources:** it covers the sustainable management of water and marine resources, including water consumption and discharge measurement.
- **ESRS E4 - Biodiversity and ecosystems:** companies must report on the impact of their activities on ecosystems and biodiversity, including species loss.
- **ESRS E5 - Circular economy:** this focuses on waste management, resource reuse, and the adoption of circular economy models.

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Taxonomy for sustainable finance

- The European regulation 852/2020 "*Taxonomy for sustainable finance*" introduces the obligation for industries to indicate the share of their activities in line with the taxonomy, to determine which activities make a substantial contribution to the objectives of the Green Deal.

- To estimate the production and added value of economic activities which comply with the technical screening criteria established pursuant to regulation, and should qualify as environmentally sustainable it is necessary to immediately collect information from the side of industries to identify the new key indicators for the activities considered "eco-sustainable" (environmentally sustainable economic activities).

- As necessary to measure the economic level of green projects shall by industries in terms of turnover which invest in eco-sustainable economic activity and contribute to one or more of the six objectives environmental conditions foreseen by the new European taxonomy.

- We must remember that the energy sector accounts for around 75% of the European Union's greenhouse gas emissions and therefore plays a key role in mitigating climate change.

Source: regulation 852/2020 "Taxonomy for sustainable finance"

Classification of six environmental objectives

Goal 9 SDGs (Industry, innovation and infrastructure)

The adoption of production processes based on the efficiency and sustainable use of natural resources and responsible consumption models.

The European taxonomy has introduced the classification of six environmental objectives to which an economic activity by the industries shall qualify to connect such as:

1. **the mitigation of climate change (starting from 1 January 2022);**
2. **adaptation to climate change (starting from 1 January 2022);**
3. **sustainable use and protection of water and marine resources (starting from 1 January 2023);**
4. **the transition to a circular economy (starting from 1 January 2023);**
5. **the prevention and reduction of pollution (starting from 1 January 2023);**
6. **the protection and restoration of biodiversity and ecosystems (starting from 1 January 2023).**

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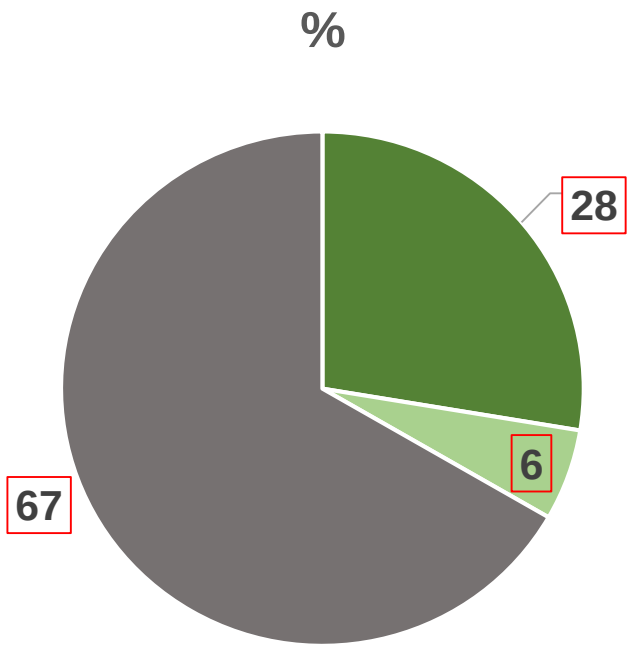
Taxonomy for sustainable finance to European Sustainability Reporting Standards (ESRS)

- The ESRS are sustainability reporting standards, divided into different environmental thematic areas. They define what information companies must report regarding their environmental impact, from greenhouse gas emissions to the management of natural resources and the promotion of circular economy models. The information that companies are required to report on environmental factors is qualitative and quantitative, **not financial**.

- The Taxonomy focuses on defining activities that are truly sustainable, establishing a classification to determine which contribute to the sustainability goals of the Green Deal and providing financial data in terms of revenue, costs, and investments. The information that companies are required to report is the share of turnover, the share of capital expenditure and the share of operating expenditure from products or services associated with economic activities aligned to the Taxonomy.

First data on the Eco-sustainable Economic Activities of Large Italian Companies

The Database-Pisa-Observatory contains over 200 sustainability reports. However, among the extracted information, key performance indicators (KPIs) are missing, despite a dedicated column in the Excel file indicating their presence. If all data related to the share of turnover, the share of capital expenditure, and the share of operating expenditure had been extracted, it would have been possible to conduct more in-depth analyses and potentially calculate a three-year time series. This would have allowed for an initial assessment of the sustainability of companies' economic activities.



Percentage breakdown of revenue from eligible and sustainable economic activities aligned with the taxonomy and not eligible by taxonomy, year 2022.

Source: Database-Observatory of Non-Financial Reporting and Sustainable Practices, except for errors and omissions, Pisa Observatory.

Italian proposal conceptual scheme

Environmental Objectives
monitor the achievement of environmental objectives in agriculture, forestry, and fisheries, as well as in industries and services through actions (as indicated in Figure 3):

1. *climate change mitigation;*
2. *climate change adaptation;*
3. *the sustainable use and protection of water and marine resources;*
4. *the transition to a circular economy;*
5. *pollution prevention and control;*
6. *the protection and restoration of biodiversity and ecosystems.*

Economic activity NACE				
Agriculture, forestry and fishing	Wholesale and retail trade; repair of motor vehicles and motorcycles	Financial and insurance activities and M: Professional, scientific and technical activities	Public administration and defence; compulsory social security	Activities of households as employers; Undifferentiated goods- and services-producing activities of households for own use
NACE 1 - 2	NACE ...	NACE ...	NACE ...	NACE ...

How?

Reclassifying the production of agriculture, forestry, and fisheries, as well as industries and services, based on the share of their revenue derived from products or services associated with economic activities considered eco-sustainable as follows:

A. **"Eco-sustainable economic activity"**: an economic activity that meets the criteria qualifying it as environmentally sustainable;
B. **"Transitional economic activity"**: activities that substantially contribute to climate change mitigation;
C. **"Enabling economic activity"**: activities that substantially contribute to one or more environmental objectives;
D. **"Taxonomy-eligible economic activity"**: activities described in the delegated acts by the European Commission;
E. **"Non-eco-sustainable economic activity - not taxonomy-eligible"**: activities not described in the documents that cause significant harm to the environment.

This tool would allow the collection of data on actions implemented by companies to achieve environmental goals, facilitating the connection between five-digit classified economic activities and the eco-sustainable classification, as described in Annex 1 of the Taxonomy Regulation.

Source: IAERE 2023, Poster Session.

Final report of economic activity – New indicator Eco-GDP

New classification ECO - codification of eco-sustainable economic activity qualifies as environmentally sustainable	Economic activity NACE REV.2			Production	Costs	Added value at market prices
	A: Agriculture, forestry and fishing	BTF: mining, manufacturing, supply of electricity, gas, steam and air conditioning, water, sewage, waste treatment and remediation, construction	GTU: service			
	NACE 1 - 2	NACE 1 - 2	NACE ...			
A. "eco-sustainable economic activity" that respects criteria an economic activity qualifies as environmentally sustainable;						
1. the mitigation of climate change			X	X	X	X
OAMCC 1.1						
OAMCC 1.1.1 improving energy efficiency etc.						
2. adaptation to climate change		X		X	X	X
3. sustainable use and protection of water and marine resources				X	X	X
4. the transition to a circular economy		X		X	X	X
5. the prevention and reduction of pollution		X		X	X	X
6. the protection and restoration of biodiversity and ecosystems				X	X	X
B. "transitional economic activities" which contribute substantially to the mitigation of climate change;				X		X
C. "enabling economic activity" which contributes substantially to one or more of the environmental objectives;						
D. "economic activity eligible for taxonomy" described in the acts delegated by the European Commission;		X		X		X
E. "non-eco-sustainable economic activity - not eligible for taxonomy" not described in documents, that which causes significant damage to the environment.	X	X	X	X		X
Tot A		X	X	ECO PROD (28%)	X	ECO GDP (X%)
Tot B-D		X	X	TRANSITION PROD (6%)	X	TRANSITION PROD (X%)
Tot E	X	X	X	No ECO PROD (67%)	X	No ECO PROD (X%)
Total economy						GDP (Year 2022- 1.997.055)

Source: Elaboration data. Poster session 11th Italian Association of Environmental and Resource Economists conference: IAERE, February 24, 2023.

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EU Taxonomy Regulation: some critical issues

- The first year of implementation of the EU Taxonomy Regulation highlighted some critical issues that need to be addressed to improve transparency and the effectiveness of corporate reporting. In particular, the lack of uniformity in calculation methods and the lack of clarity on environmental KPIs require the adoption of clearer and more defined standards. This will ensure more accurate disclosure of sustainable activities, an essential element for industrial sustainability policies and investments.
- The EU Taxonomy provides a regulatory framework that allows companies, investors, and governments to speak a common language in terms of sustainability, facilitating the recognition and support of activities that contribute to greener growth. However, not all sectors, such as agriculture, have been fully included in the regulation, leaving room for improvement in aligning sectoral policies with sustainability goals.
- The introduction of Delegated Regulation EU 2023/2772 and the European Sustainability Reporting Standards (ESRS) represents an important step towards more transparent and responsible corporate governance, thanks to the comparability of non-financial information and its integration with the sustainability objectives of the European Union. This standard will improve the ability to monitor and compare companies' environmental performance, promoting a better allocation of financial resources towards sustainable practices.
- The regulation requires all companies subject to the obligation to publish non-financial information to include information on their environmentally sustainable activities in their Non-Financial Statement (DNF).

Introducing Eco-GDP becomes crucial

- Although many companies have verified the compliance of their activities with the EU Taxonomy, non-financial statements (NFS) do not always provide sufficient details, particularly regarding NACE codes, the technical criteria demonstrating contribution to the specific environmental objective, and the measures that prevent significant harm to other environmental objectives. This highlights the need to improve guidelines for more comprehensive and transparent reporting.
- Currently, the environmental dimension represents an average of 11% of NFS, with data mainly covering CO2 emissions, energy and water consumption, and recycling practices. However, the fact that many companies prepare these statements separately from financial statements underscores the importance of integrating sustainability into overall reporting, as required by European Regulation 2020/852.
- In this context, the introduction of the Eco-GDP becomes crucial. It represents a new tool that not only monitors the added value produced by companies in terms of sustainability but also provides policymakers and investors with a clear and reliable measure of actions taken to benefit the environment. Eco-GDP allows the identification of companies that are effectively investing in sustainable practices, facilitating more targeted resource allocation and reliable measure of a country's actions in favor of the environment.

Conclusions: new indicator Eco-GDP

The Eco-GDP could represent:

- Support tool for environmental policies: the Eco-GDP provides policymakers with a clear and quantifiable measure of the actions taken by companies to reduce environmental impact, facilitating a more targeted allocation of public and private resources toward eco-sustainable sectors and economic activities.
- Measurement of the real impact of companies: with the Eco-GDP, it is possible to link companies' economic performance to their contribution to reducing greenhouse gas emissions and adopting resilient, low-impact environmental practices, offering a transparent tool to monitor progress in sustainability.
- Strengthening of Goal 9 of the 2030 Agenda: the Eco-GDP complements the goal of promoting inclusive and sustainable industrialization by adding an economic dimension to the existing sustainability indicators, such as CO2 emission intensity.
- Effective communication tool: in addition to its monitoring function, the Eco-GDP becomes a powerful means of communicating to stakeholders, in a simple and intuitive way, the progress of economies towards sustainability, facilitating dialogue between institutions, companies, and citizens.
- In conclusion, leveraging non-traditional data sources how consolidation of the EU Taxonomy and the introduction of innovative tools like Eco-GDP are key steps in strengthening Europe's commitment to a greener, more resilient, and sustainability-oriented economy.

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Thank you!

This work solely reflects the author's views and does not represent any official position of the Institute of statistics.