SUSTAINABLE FINANCING AS A DRIVER OF BETTER LIFE CONDITIONS

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Abstract

Environmental conditions are damaged by numerous factors that include unsustainable financing of economic development. Environmental conditions are increasingly important because they have a direct and indirect impact on the lives of people. Substantial sustainability is part of EU policies as part of the circular and bio-economy, climate and energy policies and sustainable financing. One of the ways of sustainable financing economy is related to carbon finance, carbon market and environmental portfolio. Carbon finances enable direct investment in the shares of companies that should benefit from the changed climatic conditions.

The goals of the research in the paper are:
1. Analysis of the development of the carbon market in terms of key performance and characteristics,
2. Analysis of the Climate Change Performance Index and
3. Indicators of quality of life from the aspect of environment: EU-SILC and EQLS.

Keywords: carbon market, environment, quality of life, sustainable finance

JEL Classification: Q01, Q54, Q56, I31

INTRODUCTION

One of the main challenges we face today is dealing with the consequences of climate change and the greenhouse gas effect (Luo & Wu, 2016). Because of this, it is becoming increasingly important carbon finance and carbon market. Carbon finance represents a trading and investment activity based on "carbon emission rights" and their derivatives, which differs from traditional financial activities (Li et. al, 2011).

Climate change is one of the key Sustainable Development Goals (SDGs), and financing solutions for SDGs are evolving, with significant attention being given to carbon markets and green bonds. Financial activity in the context of adverse climate changes plays a crucial role in mobilizing financial resources and allocating them effectively. In this regard, the role of the European Investment Bank (EIB) stands out, as it supports national economies in efforts to achieve the SDGs. The EIB provides financing and expertise to help tackle climate change and promote sustainable development across Europe and beyond, facilitating investments in green projects and initiatives that align with the global sustainability agenda.

A number of indicators have been developed to measure progress in achieving the climate transition. The Climate Change Performance Index (CCPI) shows progress in achieving four sub-indices: GHG emissions, Renewable energy, Energy use and Climate policy. The Index, also, highlights the gaps that arise in achieving climate goals and the opportunities to close them, emphasizing the role of researchers who are beginning to explore how urban green spaces affect human health. Green space may filter air, remove pollution, attenuate noise, cool temperatures, infiltrate storm water, and replenish groundwater (Escobedo et al., 2011). Studies on human health responses to urban green spaces, according to Kondo et al., encompass 68 analyses of the relationship between green space and health. Most studies

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used a vegetation index derived from satellite imagery, such as the Normalized Difference Vegetation Index to indicate amount of green space surrounding participant residences. In most studies, is emphasized the significance Geographic Information Systems (GIS) to measure accessibility to green space (Oh & Jeong, 2007). On the other hand, Eurostat has developed a statistical framework within which statistical indicators show the quality of life based on several different indicators, including climate conditions and the impact of greening on well-being.

1. ANALYSIS OF THE DEVELOPMENT OF THE CARBON MARKET

SDGs represent a framework for solving the most significant social, economic and environmental challenges until 2030. The carbon market is developing in the context of financial solutions and sources to promote the achievement of SDGs, as well as, investments in Climate Awareness Bonds and Sustainability Awareness Bonds.

1.1. Financing solutions for SDGs

The financing needed to achieve the SDGs will be raised from the large amounts of (mostly private) investable resources available globally. Financing solutions provide strategies and means to sources of finance toward realizing the SDGs (Financing for the Sustainable Development Goals (SDGs) and the Paris Climate Agreement: The UN Ecosystem of Initiatives on Private Sector Finance, 2024) (Table 1):

Table 1.

Financing solutions for SDGs

Financing solutions for SDGs	Meaning of financial solution for SDGs
Biodiversity offsets	Measurable conservation outcomes resulting from actions that compensate for significant residual adverse biodiversity impacts arising from development projects.
Bioprospecting	Systematic search for biochemical and genetic information in nature in order to develop commercially valuable products and applications.
Carbon markets	Carbon markets aim to reduce greenhouse gas emissions cost-effectively by setting limits on emissions and enabling the trading of emission units.
Climate credit mechanisms	Market mechanisms that enable entities, for which the cost of reducing emissions is high, to pay low-cost emitters for carbon credits that they can use to meet emission-reduction obligations.
Concessions (protected areas)	Concessions allow people to use land or property in a protected area or natural site for a specified purpose, usually in exchange for a fee.
Crowdfunding	Approach for projects, organizations, entrepreneurs, and start-ups to raise money for their causes from multiple individual donors or investors.
Debt for nature swaps	An agreement that reduces a developing country's debt stock or service in exchange for a commitment to protect nature.
Disaster risk insurance	Insurance schemes covering against a premium the costs incurred by the insured entity from extreme weather and natural disasters.
Ecological fiscal transfers	Integrating ecological services means making conservation indices (e.g., size of protected areas) part of the fiscal allocation formula to reward investments in conservation.
Enterprise challenge funds	Funding instrument that distributes grants to profit-seeking projects on a

	competitive basis.
Entrance and activity fees	Tourists pay fees for access to a protected area.
Environmental trust funds	Legal entity and investment vehicle to help mobilizing, blending, and overseeing the collection and allocation of financial resources for environmental purposes.
Green bonds	Bonds where proceeds are invested exclusively in projects that generate climate or other environmental benefits.
Impact investment	Investments made with the intention of generating a measurable social and environmental impact alongside a financial return.
Lotteries	Governments and civil society use lotteries to raise funds for benevolent purposes such as education, health, and nature conservation.
Payments for ecosystem services	Payments for ecosystem services occur when a beneficiary or user of an ecosystem service makes a direct or indirect payment to the provider of that service.
Public guarantees	Guarantees can mobilize and leverage commercial financing by mitigating and/or protecting risks, notably commercial default or political risks.
Remittances	Private unrequited transfers sent from abroad to families and communities in a worker's country of origin.
Social and development impact bonds	A public-private partnership that allows private (impact) investors to upfront capital for public projects that deliver social and environmental outcomes in exchange for a financial interest
Taxes on fuel	The sale tax any individual or firm who purchases fuel for his/her automobile or home heating pays.
Taxes on pesticides and chemical fertilizers	Taxes on certain pesticides and chemical fertilizers can mobilize fiscal revenues while mitigating the negative effects associated with pesticide/fertilizer application and promoting sustainable agriculture practices.
Taxes on renewable natural capital	Any fee, charge, or tax charged on the extraction and/or use of renewable natural capital (e.g., timber or water).
Taxes on tobacco	Excise taxes on tobacco products can raise fiscal revenues, improve health and well-being, and address market failures.
Voluntary standards (finance)	Standards applicable to the financial sector that capture good practices and encourage the achievement and monitoring of social and environmental outcomes.

The role of the EIB in achieving the SDGs

The EIB is responsible for financial stability is understood as “a condition in which the financial system which comprises financial intermediaries, markets and market infrastructures is capable of withstanding shocks and the unravelling of financial imbalances” (ECB, 2021), but seeks to contribute greening the financial system.

The EIB Group has been tracking and reporting how its investments contribute to the SDGs since 2016. The EIB Group’s activities have a particular impact on the SDGs related to climate and the environment. The table contains several indicators from EIB-only projects signed in 2022 and how their impact is expected to contribute to specific SDGs (Table 2).

Table 2.

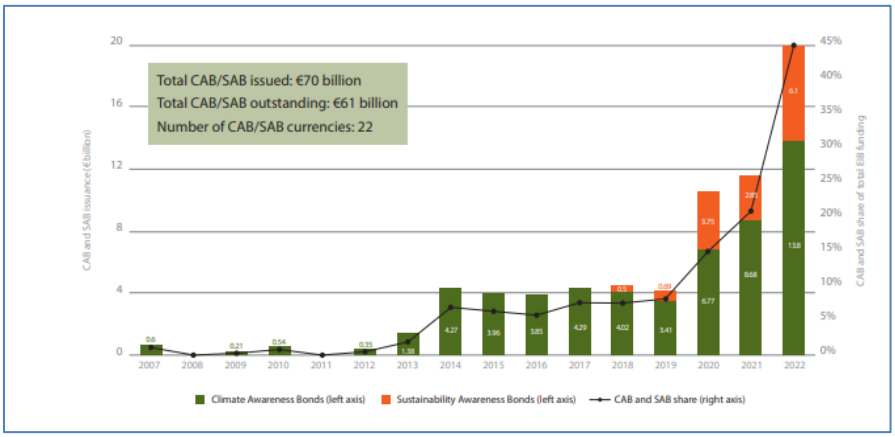
Contribution EIB SDG in 2022 (Excerpt)

Selected project indicator	EU + non-EU	SDGs
Number of SMEs/mid-caps supported	430 000	SDG 8 SDG 10
Number of jobs sustained in SMEs/mid-caps	5.3 million	SDG 8

		SDG 10
Annual energy savings expected	2 million MWh	SDG 7
Electricity generation capacity from renewable energy sources	15 800 MW	SDG 7 SDG 9
Electricity produced from renewable energy sources	31 300 GWh	SDG 7 SDG 9
Power lines installed/upgraded	28 300 km	SDG 7 SDG 9

Source: EIB, 2023.

The EIB is committed to playing a key role in further shaping the green bond market and to fostering its development by supporting market liquidity. In 2022, the EIB issued €20 billion (or 45% of its funding program) of Climate Awareness Bonds and Sustainability Awareness Bonds. The EIB has issued €70 billion worth of Climate and Sustainability Awareness Bonds since 2007 (across 22 currencies) (EIB, 2023) (Graph 1).



Graph 1. A growing share of EIB funding comes from Climate and Sustainablity Awareness Bonds

Source: EIB, 2023. p. 41.

1.2. Characteristics of green bonds in the EU

Green bonds are loans provided by an investor to a borrower which are used to fund projects or activities that promote climate change mitigation or adaptation or other environmental objectives. Two of the most widely accepted standards for green bonds are (Climate Bond Initiative, 2025):

1. International Capital Market Association (ICMA) Green Bond Principles (GBP): These are voluntary guidelines that establish a framework for the issuance of green bonds. The core components of the ICMA GBP include:
   - Use of Proceeds: The funds raised through green bonds must be allocated exclusively to projects that contribute to environmental objectives.
   - Process for Project Evaluation and Selection: Issuers must have a transparent process for selecting projects that meet environmental criteria.
   - Management of Proceeds: The funds raised from the bonds must be tracked and allocated to eligible projects.
   - Reporting: Issuers are required to provide regular reports on the use of proceeds and the environmental impact of the financed projects.
2. Climate Bonds Initiative (CBI) Certification: The CBI provides a certification scheme that ensures the bond aligns with specific climate-related criteria. Certified bonds must

demonstrate that the proceeds will finance projects that contribute to climate change mitigation or adaptation.
Rate of adoption of green bonds captures the pace of growth in sustainable finance and is calculated by taking the gross issuance of green bonds as a percentage of the potential net issuance, which is represented by the change in debt.

At the end of 2022, the overall face value stock of green bonds issued by EU general governments was €266 billion, equivalent to 1.7% of EU GDP. This compares to €85 billion (0.6% of EU GDP) at the end of 2019. France and Germany had the highest end-2022 stocks of green bonds, at €94.7 billion and €63.1 billion, representing 59.2% of the total amounts outstanding of EU governments. Spain (€22.9 billion), Belgium (€22.2 billion), Italy (€21.5 billion) and the Netherlands (€15.7 billion) followed, with these six Members States representing 90% of EU outstanding amounts of green bonds (Eurostat, 2023a).

Over the period 2019-2022, the highest rate of adoption of green bonds as a percentage of the change in total debt is observed for Sweden (42.5 %), followed by Luxembourg (22.5%), Denmark (21.5%), the Netherlands (21.1%), Ireland (20.4%), and Belgium (14.5%) (Eurostat, 2023b) (Table 3).

Table 3.

New issuance of green bonds, cumulated 2019-2022

Country	Issuance of green bonds as a % of change in gross debt	Issuance of green bonds as a % of change in stock of debt securities
Sweden	42.5	-10.7
Luxembourg	22.5	20.0
Denmark	21.5	20.1
Netherlands	21.1	27.4
Ireland	20.4	21.7
Belgium	14.5	17.4
Slovenia	13.8	15.8
Germany	11.9	15.7
Latvia	11.6	11.5
France	11.0	12.3
Hungary	9.1	9.8
Austria	7.7	9.5
Spain	7.2	7.5
Italy	5.7	6.9
Poland	2.1	3.2
Lithuania	0.5	0.6

Source: Eurostat, 2023b.

2. ANALYSIS OF THE CLIMATE CHANGE PERFORMANCE INDEX

The Climate Change Perfomance Index (CCPI) compares the climate change mitigation efforts of 63 countries and the EU (account for over 90% of the world's GHG emissions). The

table shows the overall ranking and performance in the four Index categories: GHG emissions, Renewable energy, Energy use and Climate policy (Table 4). From EU countries Denmark remains the top-ranked country but falls short of an overall very high rating. Sixteen EU countries are among the high and medium performers, with Denmark (4th) and the Netherlands (5th) leading the overall ranking. Finland plunges 11 spots to 37th, mainly due to its poorer showing in Climate Policy (Table 4).

Table 4.

Climate Change Performance Index 2025 in EU countries

Rank	Country	GHG emissions (40% weighting)	Renewable energy (20% weighting)	Energy use (20% weighting)	Climate Policy (20% weighting)	Rating
4	Denmark	29.09	15.73	13.69	19.86	High
5	Netherlands	27.29	12.12	12.91	17.28	High
11	Sweden	31.79	15.89	11.41	8.52	High
13	Luxembourg	34.13	9.61	13.58	9.97	High
14	Estonia	29.90	11.56	15.81	9.51	High
15	Portugal	28.11	9.50	14.80	14.19	High
16	Germany	26.81	8.24	14.14	15.71	Medium
18	Lithuania	25.83	11.29	15.30	10.62	Medium
19	Spain	26.02	8.44	14.22	12.90	Medium
22	Greece	25.15	9.86	14.65	9.74	Medium
23	Austria	24.25	9.13	11.24	14.78	Medium
25	France	26.34	7.83	13.90	11.11	Medium
29	Ireland	21.92	8.81	13.22	13.22	Medium
30	Slovenia	25.58	6.72	12.35	12.51	Medium
32	Romania	27.26	5.47	15.38	8.34	Medium
34	Malta	25.80	4.92	15.01	10.05	Medium
35	Belgium	26.03	5.92	11.59	11.35	Low
36	Latvia	16.35	13.87	13.85	10.28	Low
37	Finland	25.90	13.59	6.93	7.82	Low
40	Croatia	21.14	11.14	12.46	7.09	Low
43	Italy	23.34	6.98	13.46	6.04	Low
44	Cyprus	23.35	7.49	14.34	4.28	Low
45	Hungary	24.48	6.80	12.64	4.52	Low
46	Slovakia	26.89	4.00	12.94	4.62	Low
47	Poland	21.58	6.32	12.46	7.50	Low
49	Czech Republic	22.32	5.56	11.81	7.88	Low
50	Bulgaria	19.29	8.68	11.07	8.09	Low

Source: CCPI, 2025.

Analysis CCPI based on the four Index categories:

1)GHG emissions
Luxembourg is the best performing EU country, at 5th, though Sweden, Estonia, Denmark, Portugal, the Netherlands, Romania, and Slovakia also rate high. Latvia is the only EU country receiving a very low in this category.

2)Renewable energy
Norway receives a very high in this category, but for the first time, Sweden and Denmark receive a very high as well, but Malta and Slovakia perform very low.

3)Energy use
Estonia, Romania, Lithuania, and Malta are the only EU countries performing high, while Belgium, Sweden, Austria, Bulgaria, and Finland receive a very low.

4)Climate policy
Denmark leads the Climate Policy ranking, nineteen EU countries receive a low or very low but Slovakia, Hungary, and Cyprus are the countries with a very low performance.

The CCPI identifies two critical factors: implementation gaps and ambition gaps reductions in global greenhouse gas (GHG) emissions (CCPI, 2025a). Implementation gaps: CCPI countries have emissions that exceed the Paris temperature target. In EU countries, CCPI does not exceeding the Paris temperature goal. The Renewable Energy rating results therefore indicate substantial room for more greatly mitigating emissions by more rapidly deploying renewable energy. Ambition gaps: EU's climate goal of reducing GHG emissions by 55%+ by 2030 compared with 1990 levels (Fit for 55 package) trought increasing renewable energy and pushing for more energy efficiency. Current climate targets and their implementation cannot contain global warming within 1.5°C.

The international system of trade in emission units of harmful gases in the EU operates on the principle of "cap and trade", where cap is the total amount of certain gases that give the greenhouse effect and are emitted by factories, power plants and other economic entities.

Companies get allowances that they can trade with each other. When a company reduces its annual emissions, it has the right to keep the rest and use the remaining units to meet future needs or sell them. In this way, the aim is to achieve zero carbon dioxide emissions. The money paid by the emitter in this way is sent back to the organization or the government that manages the ecosystem, in order to preserve it and leave it protected.

3. INDICATORS OF QUALITY OF LIFE FROM ASPECT OF ENVIRONMENT: EU-SILC and EQLS

The quality of life can be defined as the general well-being of people living in society which encompasses a number of dimensions, both objective factors (material resources, health, working status, living conditions and so on) and the population's subjective perceptions (Eurostat, 2023c).

Eurostat provides a framework for measuring the quality of life in cities. The conceptual basis of EU-SILC and EQLS measurement is established by defining the Urban Agenda. The Urban Agenda was launched in 2016 with the Pact of Amsterdam to promotes cooperation between EU countries, the EC, cities and other stakeholders to

stimulate growth (Urban Agenda, 2016). The Urban Agenda has defined 14 partnerships, covering areas: air quality, the circular economy, climate adaptation, culture and cultural heritage, the digital transition, the energy transition, housing, the inclusion of migrants and refugees, innovative and responsible public procurement, jobs and skills in the local

economy, sustainable use of land and nature-based solutions, urban mobility, urban poverty and security in public spaces. In November 2020, the New Leipzig Charter on the transformative power of cities for the common good was adopted, it provides a framework for integrated urban development following: Sustainable Development Goal 11, the Paris Agreement, the European Green Deal and the Urban Agenda.

In addition, Agenda 2030, which contains 17 SDGs, represents a global policy framework for sustainable, inclusive and equitable development (UN, 2015). Within the framework of the SDGs, attention is, also, paid to cities, urban and rural areas that have a crucial role for many policy areas underlying the SDGs such as eradicating poverty and hunger, housing, transport, infrastructure, land use or climate change.

Cities may be simultaneously the source of many of today's economic, social and environmental challenges but they face a range of social and environmental challenges.

Therefore, the quality of life in cities is affected by the presence of green spaces because they have environmental benefits, facilitating climate change adaptation or mitigation, supporting the conservation of biodiversity and improve physical and mental health. Access to green spaces makes urban residents more satisfied with their city green spaces in cities have a great potential to boost human health and well-being.

Open public spaces in urban areas foster inclusive cities but only 44 per cent of urban residents have an open public space conveniently located within a 400-metre walk, according to 2020 data from 1,365 cities across 187 countries (The SDG Report, 2024).

In the Malmö, 91.7% of the population was rather satisfied or very satisfied with the green spaces in their city. High shares were also recorded in München (90.8%) and Hamburg (88.8%), Helsinki (89.4%) and Groningen (89.3%) (Urban-rural Europe-quality of life in cities, 2024).

According to the survey on quality of life in European cities in 2023, around 76 % of European urban residents were satisfied with green spaces available within their city. Geneva, Malmö, Oslo and Munich received the highest scores from their residents, with more than 90 % of the people surveyed in these cities stating satisfaction with their green spaces. Among the Member States, southern countries showed lower than average satisfaction with green spaces, with rates below 60 % (Eurostat, SDG 11 - Sustainable cities and communities, 2024).

CONCLUSION

Sustainable economic development has become the essence of the development of modern economies. In order to monitor progress in its realization, Agenda 2030 and SDGs represent the framework for EU development policy. Although emissions of air pollutants have fallen, almost 20 percent of the EU's urban population lives in areas where the concentration of air pollutants is above at least one EU air quality standard. It is therefore necessary to involve different policies and actors in order to enable systemic changes in production, consumption, and lifestyle, as well as, the implementation of policies at EU and national level. One of the ways of sustainable financing is related to carbon finance and carbon market.

Carbon finances enable direct investment in the shares of companies that should benefit from the changed climatic conditions. There are several indicators in this area that point to the efforts of society and individuals to reduce the impact of climate change on the environment.

However, researchers are increasingly pointing to a more pronounced gap between subjective and objective indicators that describe society, which is why it is necessary to measure quality of life issues. Eurostat provides an overview of quality of life indicators related to the functional capabilities that citizens should have in order to effectively achieve personal well-being. Environmental conditions have a direct and indirect impact on an individual's life. Urban residents in Europe with greater access to green spaces tend to be more satisfied with the cities they live in. Universal accessibility to these green spaces that are safe, inclusive and open is thus essential for personal well-being and progress in achieving the SDG 11.

The paper emphasizes the importance and role of financial instruments for encouraging the achievement of the SDGs. Among them, green bonds play an important role as funds for the mobilization of funds and then for their allocation. Sustainable financing is a necessity for establishing a framework for the sustainable development of national economies and cities that are increasingly turning to greening.

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