



Bundesrepublik Deutschland
Finanzagentur GmbH

Federal Republic of Germany Green Bond Investor Presentation

April 2024

Executive Summary

Climate Policy

- Environmental and climate protection are a top priority in Germany. The Klimaschutzgesetz (**Climate Change Act**) sets a clear goal: achieving greenhouse gas (GHG) neutrality by 2045. Ambitious climate targets are set for all sectors.
- Since 1990, GHG emissions have been reduced by 46% (2023). The 2030 objective is to reduce GHG emissions by at least 65%, the 2045 objective is a **neutral GHG emission balance**.

Green Budget Expenditure

- Green Federal securities are part of Germany's sustainability strategy. They strengthen green financial markets and increase the **transparency for selected green budget items**.
- Indicative amount of eligible green expenditures for 2023 budget: **€ 18 - € 19 bn**, selected from five sectors: (1) transport; (2) international cooperation; (3) research, innovation and awareness raising; (4) energy and industry; (5) agriculture, forestry, natural landscapes and biodiversity.

Green Federal Securities

- Germany will continue to establish a **green yield curve in 2024** with a new 5-year Green Bobl. The green segment will be further expanded with a planned annual issuance volume of **€ 17-19 bn in 2024** (after € 17.25 bn in 2023 and € 14.5 bn in 2022).
- The innovative **twin bond concept** makes the 'greenium' transparent and has created a new benchmark in the green bond market.

1. Germany's Green Footprint

Climate Action Policy

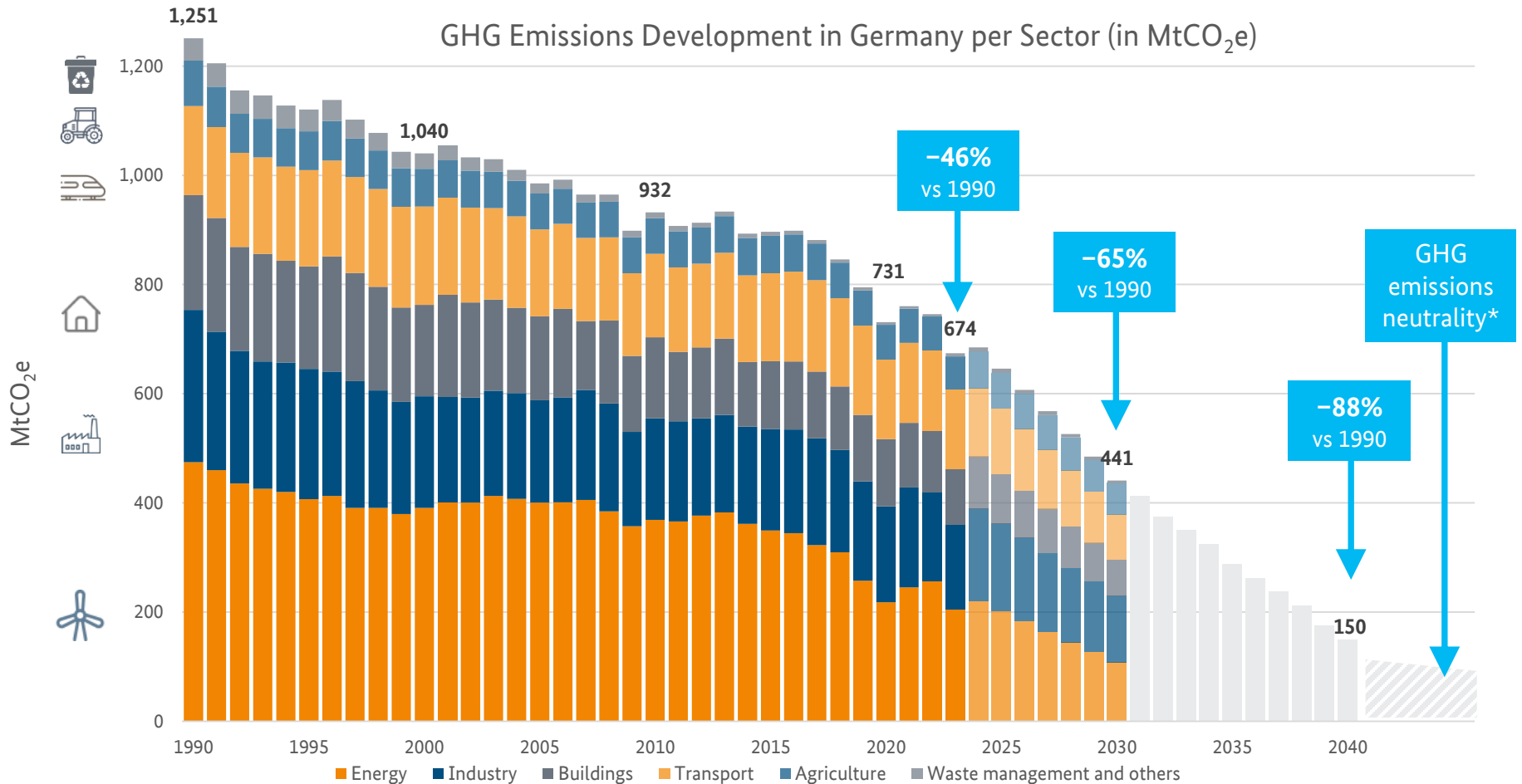
The Federal **Climate Change Act** is the legal basis for climate action policy in Germany and a key instrument to implement the Paris Climate Agreement.

- by 2030: a reduction of GHG emissions by at least 65% compared to 1990
- by 2040: a reduction of GHG emissions by at least 88% compared to 1990
- by 2045: net GHG neutrality
- The act ensures a high level of trust, as binding climate targets and procedural steps for monitoring and attaining the targets, including an adjustment mechanism, have been laid down.

In October 2023, the federal cabinet adopted the **2023 Climate Action Programme**, which

- reduces the emissions gap from 1100 Mt to 200 Mt of CO₂-emissions and
- contains measures to reduce GHG emissions in all sectors, cross-sectoral measures and activities to protect and expand natural sinks.
- A substantial proportion of the measures has already been adopted by the federal government.

Germany's Path to Decarbonisation



Sources: Federal Climate Change Act; Federal Ministry for Economic Affairs and Climate Action; *net zero anthropogenic GHG emissions from all sectors covering all GHG emissions, which means emissions from carbon dioxide as well as other GHG like methane

Current Projections

- Climate emissions to fall by 10.1% in 2023 - sharpest decline since 1990, due to:
 - Increased share of renewable energies (expansion of wind and solar power)
 - Decrease in fossil energy generation
 - Lower demand for energy from industry and consumers
- 2024 GHG projections show a reduction of almost 64% by 2030 compared to 1990 (target 65%)
- Measures such as the Federal Subsidy for Efficient Buildings (BEG), the Building Energy Act (GEG) and the increase in the HGV tolling scheme have helped to reduce the target gaps in the buildings and transport sectors.
- The measures taken to accelerate the expansion of renewable energies have an increasing impact.

Source: Federal Ministry for Economic Affairs and Climate Action; 15 March 2024



Share of GHG emissions	31% of all GHG emissions in Germany
2023 achievement	205 MtCO ₂ e (-57% vs 1990 level)
2030 target	108 MtCO ₂ e (-77% vs 1990 level)

Overview

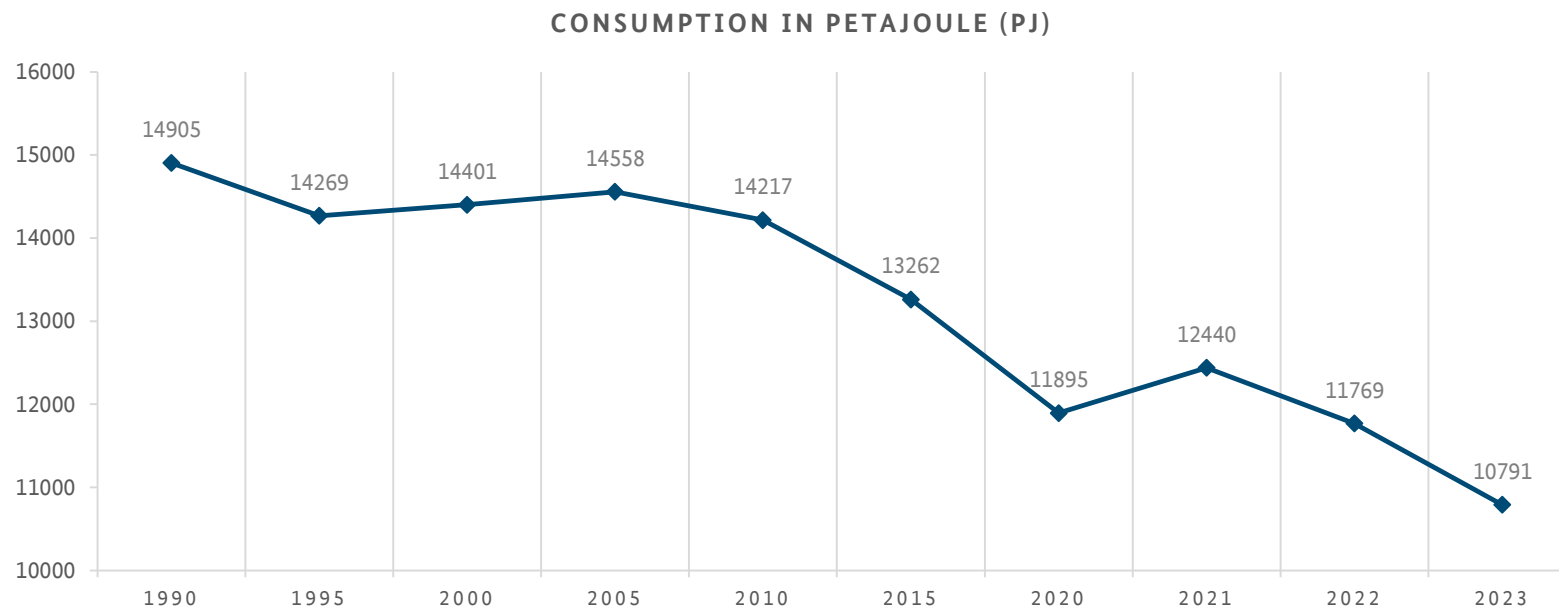
- Through ambitious targets and regulatory measures, such as the Renewable Energy Sources Act (EEG), GHG emissions in the energy sector have been reduced significantly.
- Full decarbonisation by 2045 through transformation of energy supply towards more renewable energies and energy efficiency.

Germany's path to the energy system of the future

- No more power from coal at the latest by 2038 (ideally by 2030)
- No nuclear power station in operation since 15 April 2023
- Renewables to generate 80% of Germany's power by 2030

Primary Energy Consumption in Germany (1)

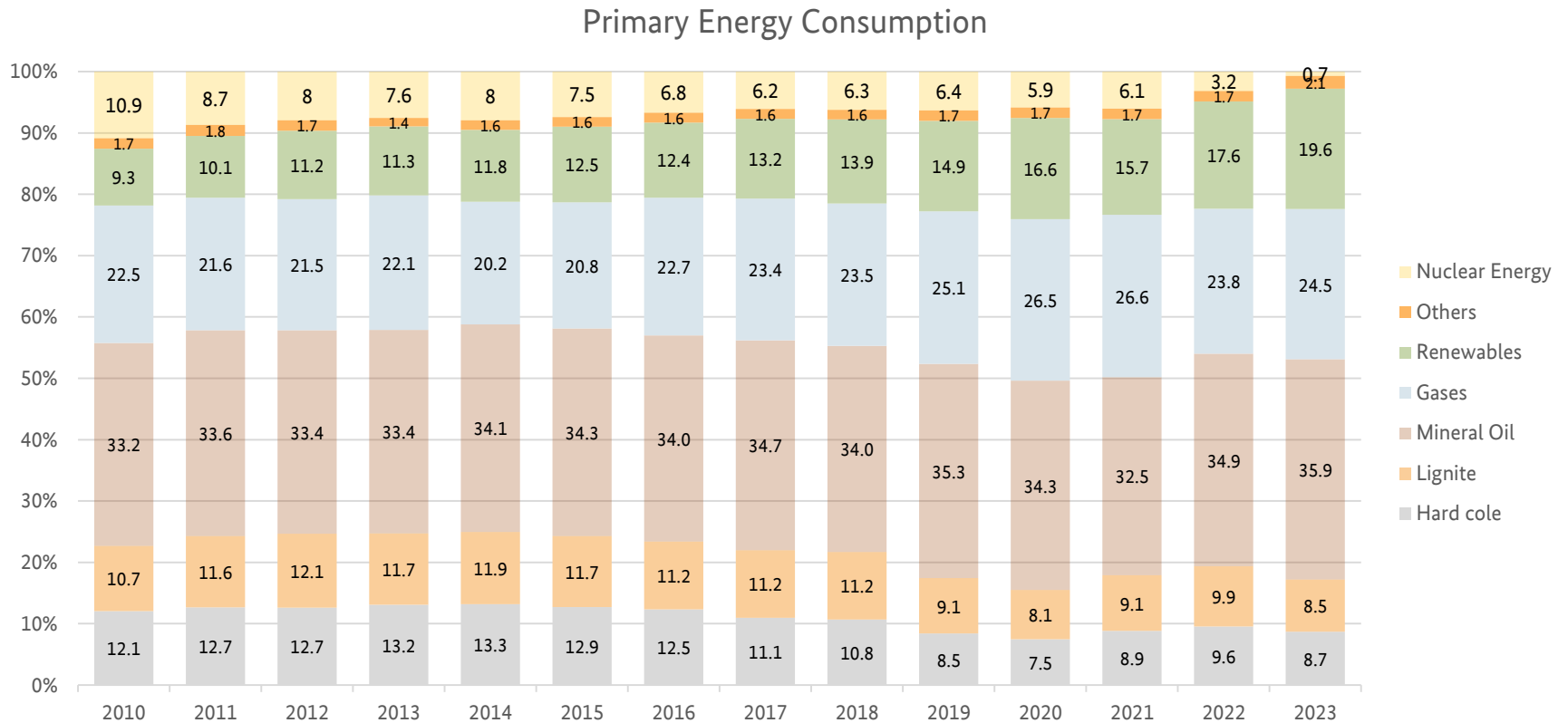
Development of Primary Energy Consumption in Germany since 1990



➤ In 2023, the consumption of primary energy recorded a reduction of 7.9 % compared to the previous year and fell to the lowest level since 1990.

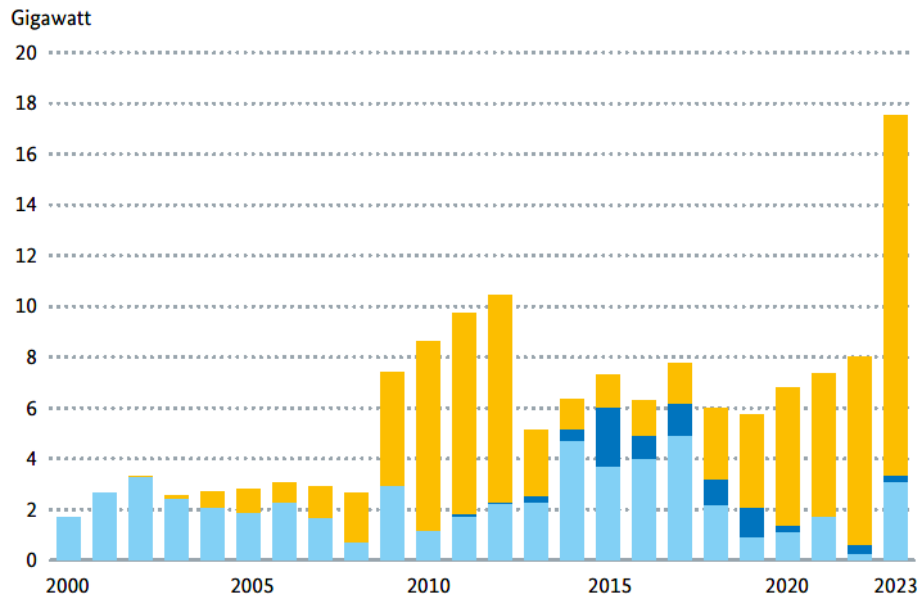
Source: *Arbeitsgemeinschaft Energiebilanzen (12/2023); comparison 2022 + 2023 provisional data*

Primary Energy Consumption in Germany (2)



Source: Arbeitsgemeinschaft Energiebilanzen (12/2023); net import of electricity not included

Increase in Installed Capacity for Electricity Generation from Wind and Photovoltaics



- Onshore wind energy
- Wind energy at sea
- Photovoltaics

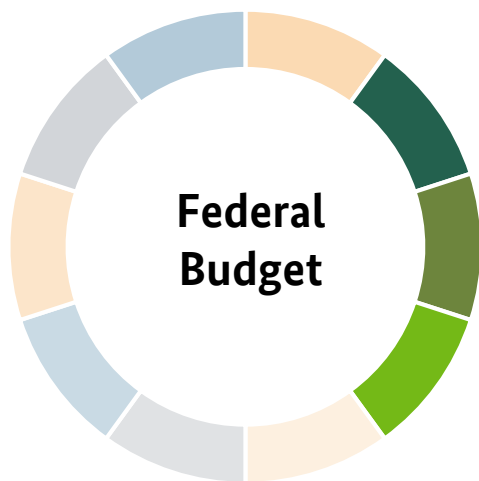
- Expansion of renewable energies increases
- Photovoltaic expansion almost doubled in 2023
- Promotion of the energy transition through legislation package
 - Renewable Energy Sources Act
 - Offshore Wind Energy Act
 - Onshore Wind Energy Act

Sources: Federal Ministry for Economic Affairs and Climate Action (Monthly Report August 2023)

2. Green Bond Program - Use of Proceeds

Use of Proceeds

- **Germany's Green Bond Framework provides for five Green Sectors for the use of proceeds:** (1) transport; (2) international cooperation; (3) research, innovation and awareness raising; (4) energy and industry; (5) agriculture, forestry, natural landscapes and biodiversity.
- Eligible Green Expenditures contribute to the six environmental objectives of the EU Taxonomy Regulation and at least 12 out of the 17 UN Sustainable Development Goals



Eligible green expenditures:

- Green Eligible Expenditures can include any type of Federal expenditure contributing to a transition towards a low-carbon, resource efficient and sustainable economy

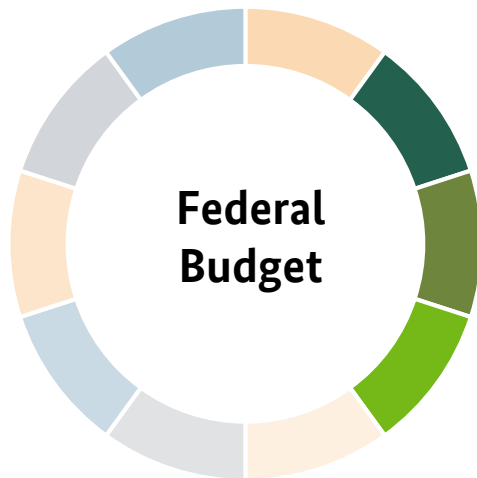
Excluded expenditures:

- State expenditures which are already earmarked by other public Green Bond issuers (such as KfW or NGEU)
- Armaments, defence, tobacco, alcohol, gambling, fossil fuels and nuclear power

High Level of Transparency and Strict Standards

➤ **Exclusion of double counting:**

Expenditures allocated to Green German Federal securities are earmarked for this purpose only, and will not overlap with the use of any other green funding source.



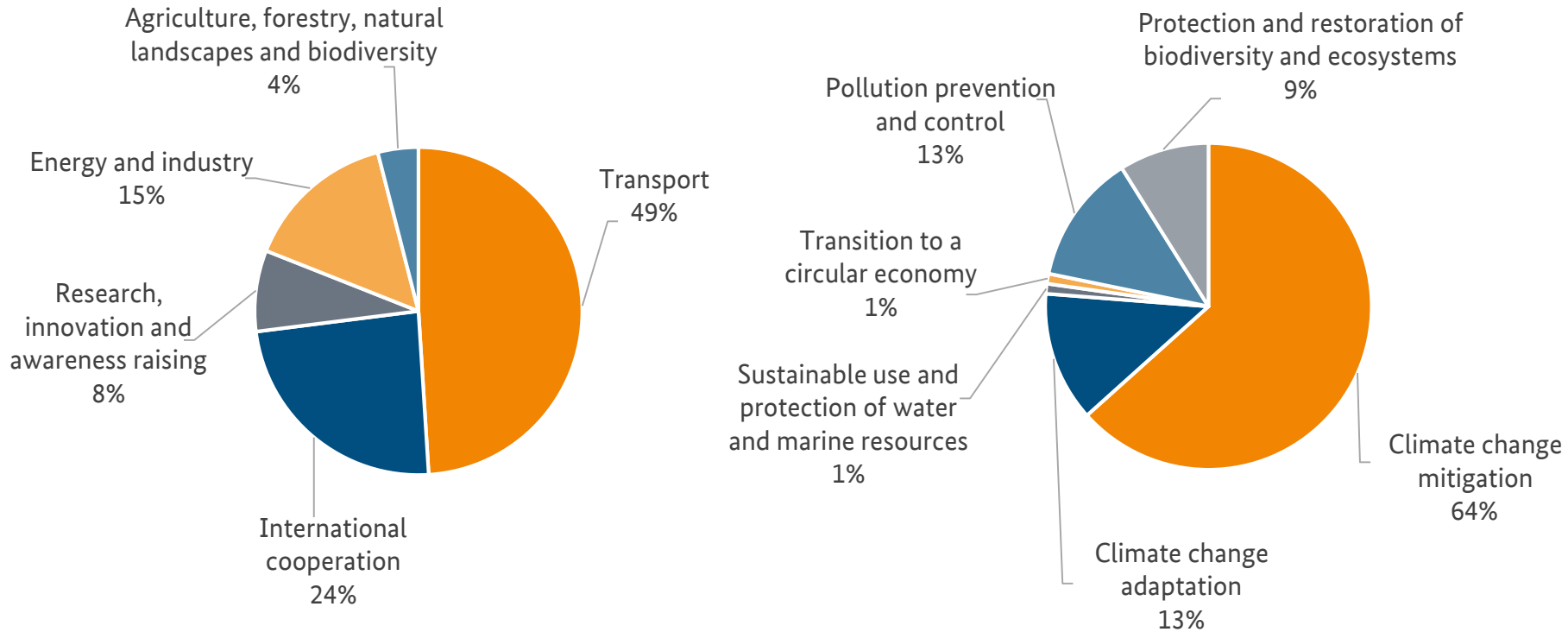
Clear differentiation of green expenditures:

- Expenditures proposed by the federal government in the German Recovery and Resilience Plan (DARP) for the NGEU program are excluded from the allocation to Green Bunds.
- Only CTF (Climate and Transition Fund) expenditures in the amount financed by the federal budget (including reserves) are taken into account for Green Bunds.
- Federal budget expenditures associated with KfW Green Bonds are excluded from the allocation to Green Bunds.

Overview Use of Proceeds: Eligible Green Expenditures (€ mn)

Green Sectors	2023 Indicative	2022	2021	2020	2019
Transport	9,400 - 9,700	8,931.1	8,344.1	7,387.3	7,125.3
International cooperation	4,000 - 4,200	4,442.1	3,701.0	3,278.3	2,981.7
Research, innovation and awareness raising	1,700 - 1,900	1,534.0	1,359.8	1,085.0	625.1
Energy and industry	2,000 - 2,200	2,743.5	2,665.5	1,093.2	1,198.5
Agriculture, forestry, natural landscapes and biodiversity	900 - 1,000	717.9	767.0	564.0	381.5
Total	18,000 - 19,000	18,368.6	16,837.4	13,407.8	12,312.1

Contributions of Eligible Green Expenditures: Breakdown by Green Sector and by EU Environmental Objective



Based on eligible green expenditures 2022; further information: Allocation Report 2023

Eligible Green Expenditures in a Nutshell (1)

Germany is investing massively in measures to protect the climate and adapt to climate change, to promote and protect natural habitats, such as forests, moors and floodplains, both in Germany and internationally, year after year, legitimised and supported by the German parliament.

2024 is the 5th issuance year of Green Federal securities. During this period, the portfolio of eligible green expenditure (EGE) has developed visibly. The number of budget items increased from 65 (2019 budget) to more than 100 (2023 budget), the total amount from € 12.3 bn (2019) to more than € 18 bn (2023). However, in terms of relative distribution, the composition is very stable across all sectors.

The further development depends on various factors. The **Federal budget** continues to show considerable annual amounts of green expenditure. From these generally eligible expenditures, the German Core Green Bond Team makes a significant reduction in order to strictly avoid a double counting. This includes expenditure which is part of Germany's Recovery and Resilience plan (NGEU green bonds), as well as expenditure with other sources of financing, such as revenues from the carbon pricing scheme.

Eligible Green Expenditures in a Nutshell (2)

In general, project administration costs are only taken into account if they are necessary for the implementation of the projects and do not account for a significant proportion (e.g. not in the start-up phase; no ministerial administration costs for the Core Green Bond Team or the Interministerial Working Group).

Capex / Opex

1/5

Only about a fifth of the EGE portfolio is attributable to **non-personnel administrative expenditure or grants not intended for investments** (e.g. for R&D),

4/5

while a full four-fifths is attributable to **construction measures and other expenditure on investments**.

EU Taxonomy

All EGE are mapped to the six environmental objectives of the EU taxonomy. They largely contribute to the first two objectives: **Climate Change Mitigation and Adaptation** add up to around 75% of the EGE portfolio.

3/4

Comparatively, **biodiversity** – with approximately one tenth year by year – is significant as well.

1/10

Beyond this, an initial assessment of the Core Green Bond Team based on the 2022 EGE suggests the following.

2/5

For at least 40%, a **significant contribution** to climate protection can be reported in accordance with the TSC, particularly from the transport sector (rail and cycling infrastructure). A reliable statement on adverse impacts on other EU environmental objectives (DNSH) is not possible (particularly due to large number of parties involved).

1/4

For around a quarter of the EGE, the EU taxonomy is **largely inapplicable**, e.g. in the area of basic research.

1/4

Around a further quarter has not yet been analysed due to the **large number and heterogeneity** of the projects in the respective budget items.

Sector Details: Transport



The German government has adopted extensive measures to decarbonise passenger and freight transport and to make it more environmentally friendly.

Rail transport	Investment subsidies for rail construction and expansion projects, for the maintenance of the high-quality rail infrastructure, and to address bottlenecks in public transport networks
Alternative drive systems and fuels	Promotion of the transformation towards electric mobility, innovative drive technologies, as well as the necessary infrastructure and the system integration into the energy system
Public transport	Investment subsidies and financial aid to support local public transport infrastructure, funding program to digitalise local transport systems
Cycling	Measures to implement the National Cycling Plan, investment funding and subsidies for the expansion of Germany's network of cycling routes

Past impact examples (2021)

Reduction of GHG emissions

- 1.7 million t CO₂e p.a. (co-financing)
- 1.4 million t CO₂e in 2020 (full financing)

Decarbonisation of the mobility sector

- > 360 H₂ vehicles
- > 500 infrastructure facilities

Renewal of tracks, switches, bridges

- 1,995 km tracks
- 2,277 switches
- 35,414 m² bridges

Sector Details: International Cooperation for the Green Transformation (1)



Eligible programs/projects are targeted at:

- mitigating and adapting to climate change
- transitioning towards sustainable energy systems based primarily on renewable energy sources
- improving energy efficiency
- protecting habitats and biodiversity
- sustainable use of natural resources and energy, including developing renewable energy generation facilities sustainable agriculture

Breakdown by EU Environmental Objectives	Allocation 2023
Climate change mitigation	32.2%
Climate change adaptation	24.3%
Sustainable use and protection of water and marine resources	0.3%
Transition to a circular economy	0.2%
Pollution prevention and control	27.4%
Protection and restoration of biodiversity and ecosystems	15.6%

Past impact examples (2021)

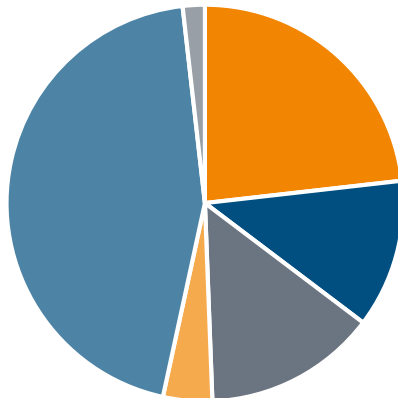
Approx. 1,800 development aid projects on climate and environmental issues were supported with a wide range of impacts, for example:

- GHG emission reductions
- Land area with improved ecosystem protection
- Energy saved
- Installation of renewable energy capacities

Sector Details: International Cooperation for the Green Transformation (2)



By funding region (Allocation 2023)



- Africa
- Asia
- Latin America and Caribbean
- South-east Europe / Caucasus
- Multilateral or global
- Other

Governance in international cooperation

- The selection and approval of specific projects is subject to compliance with German law, the Guidelines for bilateral Financial and Technical Cooperation and all relevant international agreements and treaties signed by Germany.
- Governance safeguards and processes are in place for every type of expenditure to prevent corruption and money laundering in line with European and national legislation and standards.
- Social safeguards and processes are in place for every type of expenditure to reduce the risk of forced labor and child labor and to promote and strengthen human rights in developing countries in accordance with European and national legislation and standards.
- International support is reported in accordance with internationally agreed guidelines, criteria and reporting cycles, either as official development assistance (ODA) to the OECD Development Assistance Committee (DAC) and/or as climate finance to the EU and United Nations Framework Convention on Climate Change (UNFCCC).

Sector Details: Research, Innovation and Awareness Raising



Eligible expenditure are used in particular to develop solutions to combat climate change, curb GHG emissions, preserve ecosystems and biodiversity and protect natural resources.

Areas of action (selection):

Research for sustainability

- energy research, focused on developing sustainable energy systems, e.g. energy technologies, efficient energy use, green hydrogen, electricity grids and storage systems
- bioeconomic research, e.g. sustainable agricultural systems, innovative plant cultivation systems
- carbon dioxide removal technologies

Aerospace, energy, transport and digitalisation

- climate-efficient and climate-neutral fuels and drive systems
- development of new mobility strategies, focused on climate action and resource protection

Cross-Section

In a society making a transition towards a sustainable economy, strong government commitment is essential. Thus, the federal budget contains considerable green expenditures on research, innovation and awareness raising. The expenditures are found partly in this research sector and partly in the other four sectors (if there is a clear connection to the respective sector). Taken together, they account for approximately 13% of the total allocated expenditures.

Past impact examples (2021)

The eligible expenditures of around € 1.1 billion in the research, innovation and awareness raising sector include more than 6,800 projects that enable and support education and innovation on climate and environmental issues.

Sector Details: Energy and Industry



Energy research

Funding is focused on technologies and approaches that improve efficiency, support the transition to renewable energy sources and guarantee the security of supply.

Renewable energy

Examples: renewable heating technologies, solar collector systems, solid biomass combustion systems, efficient heat pumps, deep geothermal systems, international market ramp-up of green hydrogen

Energy efficiency

Funding includes, for example, measures to increase energy and resource efficiency and to reduce carbon emissions in industry and businesses, as well as advisory services on energy consumption and corresponding measures for all end users, such as private households.

National climate action measures

broad range of climate action activities, e.g. developing long-term strategies to specific support measures in areas including energy, transport and business/industry

Past impact examples (2021)

Reduction of GHG emissions

- 1.4 million t CO₂e p.a. (full financing)
- 2.3 million t CO₂e (total project duration)

Research

- ~ 4,500 ongoing projects

Climate and Transition Fund (CTF)

The CTF is the main funding instrument in this area. Programmes funded by the CTF play a central role in implementing the energy transition and achieving national and international climate target.

Sector Details: Agriculture, forestry, natural landscapes and biodiversity



Agriculture	Improvement the conditions for organic farming and the organic food industry; enhancing energy efficiency and reducing of carbon emissions in agriculture and horticulture
LULUCF	Supporting sustainable and resource-conserving agriculture and forestry
Biodiversity and natural landscapes	Funding for various programs dedicated to the conservation of biodiversity and the protection of natural habitat and endangered species
Coastal and flood protection	Funding support to implement a wide range of coastal defence and flood protection measures

Past impact examples (2021)
<ul style="list-style-type: none"> • > 1000 subprojects • > 1000 beneficiaries • 0.046 million t CO₂e p.a GHG reduction
<ul style="list-style-type: none"> • 6,475 ha reforested area • 90 ha area of initial afforestation • 32,043 ha of forest nature conservation
<ul style="list-style-type: none"> • 616 ha placed under protection • 92,000 ha total area restored
<ul style="list-style-type: none"> • > 1.5 mn ha protected area • 16,675 ha reclaimed floodplain area • 509 million m³ reservoir space gained

Expenditures - Issues - Reporting: Annual Cycle in Practice

	n-1 <i>Federal budget year</i> <i>Eligible green expend.</i>	n <i>Issuance year</i> <i>Issuance volume</i>	n+1 <i>Report title</i> <i>Date</i>	n+2 <i>Report title</i> <i>Date</i>
Green Bond Framework 24 August 2020	2019 € 12.3 bn	2020 € 11.5 bn	20.04.2021 Allocation Report 2020	30.09.2022 Impact Report 2020
	2020 € 13.4 bn	2021 € 12.5 bn	10.05.2022 Allocation Report 2021	28.09.2023 Impact Report 2021
	2021 € 16.8 bn	2022 € 14.5 bn	30.03.2023 Allocation Report 2022	
	2022 € 18.4 bn	2023 € 17.25 bn	28.03.2024 Allocation Report 2023	
	2023 € 18-19 bn	2024 € 5 bn YTD		



As of 4 April 2024. Images are linked to the report.

3. Green Bond Program – Twin Bond Concept and Execution Strategy

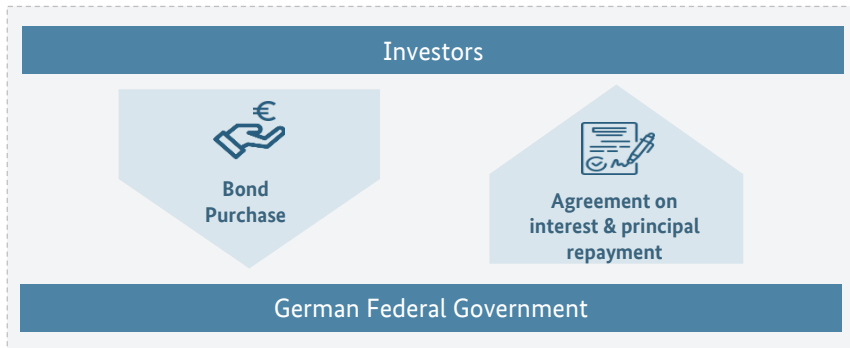
Germany's Green Bond Issuance: all Transactions at a Glance

	Green Bobl October 2025	Green Bobl October 2027	Green Bobl 2029	Green Bund August 2030	Green Bund August 2031	Green Bund February 2033	Green Bund August 2050	Green Bund August 2053
total:	€ 8.5 bn	€ 9 bn		€ 9.5 bn	€ 9 bn	€ 7.25 bn	€ 11 bn	€ 6.5 bn
02.09.2020				€ 6.5 bn (S)				
04.11.2020	€ 5 bn							
11.05.2021							€ 6 bn (S)	
08.09.2021					€ 3.5 bn			
20.10.2021					€ 3 bn			
02.03.2022				€ 1.5 bn				
04.05.2022					€ 1.5 bn			
01.06.2022							€ 4 bn (S)	
20.07.2022				€ 1.5 bn				
31.08.2022		€ 5 bn (S)						
02.11.2022					€ 1 bn			
24.01.2023	€ 1.5 bn							
21.03.2023		€ 1.5 bn						
25.04.2023						€ 5.25 bn (S)		
07.06.2023	€ 1 bn							
13.06.2023								€ 4.5 bn (S)
05.07.2023						€ 1 bn		
30.08.2023		€ 1.5 bn						
31.10.2023								€ 1 bn
23.01.2024		€ 1 bn						€ 1 bn
27.02.2024							€ 1 bn	
26.03.2024	€ 1 bn					€ 1 bn		
30.04.2024								
28.05.2024								
02.07.2024								
20.08.2024								
10.09.2024								
08.10.2024								
05.11.2024								
2024								(S)

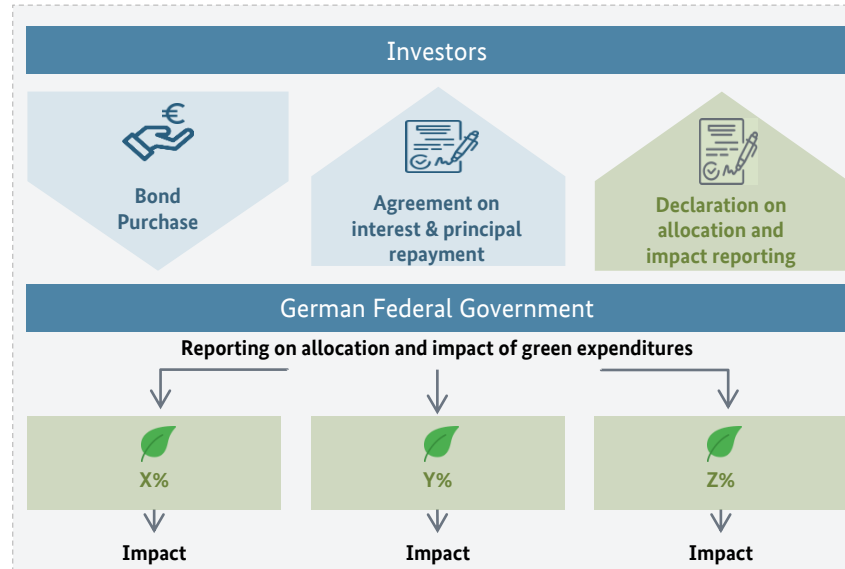
New issues in dark green, else reopening. S = syndicate, else auction. Up-to-date information on www.deutsche-finanzagentur.de

Twin Bond Concept

Conventional German Federal security “Conventional twin”



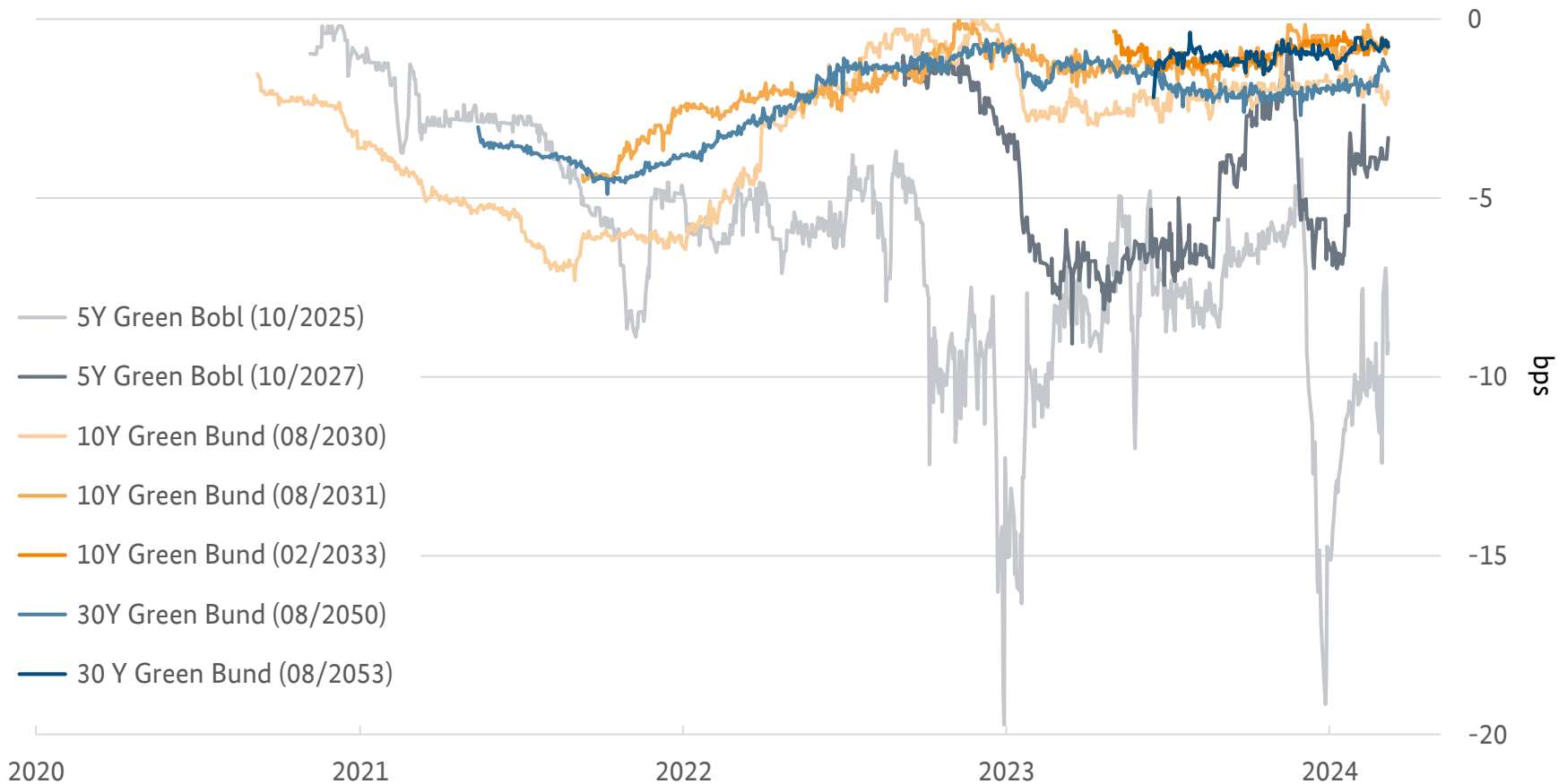
Green German Federal security “Green twin”



Example: Terms of (Green) Bund Feb 2033 (as of 4 April 2024)

	Conventional twin	Green twin
Identical to both twins	Maturity segment	10y
	Coupon	2.3%
	Interest dates	Annually
	Maturity	15 February 2033
	Future-Contracts	Deliverable
Different for each twin	Issuance date	11 January 2023
	ISIN	<u>DE000BU2Z007</u>
	Outstanding size	€ 38.25 bn
	Price / Yield	99.77 / 2.329%
		25 April 2023
		<u>DE000BU3Z005</u>
		€ 7.25 bn
		99.81 / 2.324%

The Twins` Performance: Making the ‚Greenium‘ Transparent



Greenium = yield spread between green and conventional bond

Green Bonds Issuance Plan 2024

	0 % Bobl/g	1.3 % Bobl/g	Bobl/g	0 % Bund/g	0 % Bund/g	2.3 % Bund/g	0 % Bund/g	1.8 % Bund/g
Issuance	04.11.2020	31.08.2022	2024	02.09.2020	08.09.2021	25.04.2023	11.05.2021	13.06.2023
Maturity	10.10.2025	15.10.2027	2029	15.08.2030	15.08.2031	15.02.2033	15.08.2050	15.08.2053
Outstanding	€ 8.5 bn	€ 9 bn		€ 9.5 bn	€ 9 bn	€ 7.25 bn	€ 11 bn	€ 6.5 bn

Green bond segment is to be further developed in 2024

- Planned issuance range of € 17-19 bn (YTD € 5 bn)
- Outstanding amount as of 5 April 2024: € 60.75 bn
- 10 auctions
 - including a new issue of a Green Bobl during the course of the year
 - including multi ISIN auctions
- Reopening of a long Green Bund via syndication

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