

Investor Briefing | May 2024

Impact Report

NRW Sustainability Bond #10

*Impact Reporting of the Sustainability
Bond #10 issued in 2024 by the German
State of North Rhine-Westphalia (NRW)*

This report is based on the results of a study conducted on behalf of the State Government of North Rhine-Westphalia. The authors are responsible for the content.

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#Wuppertal, May 2024

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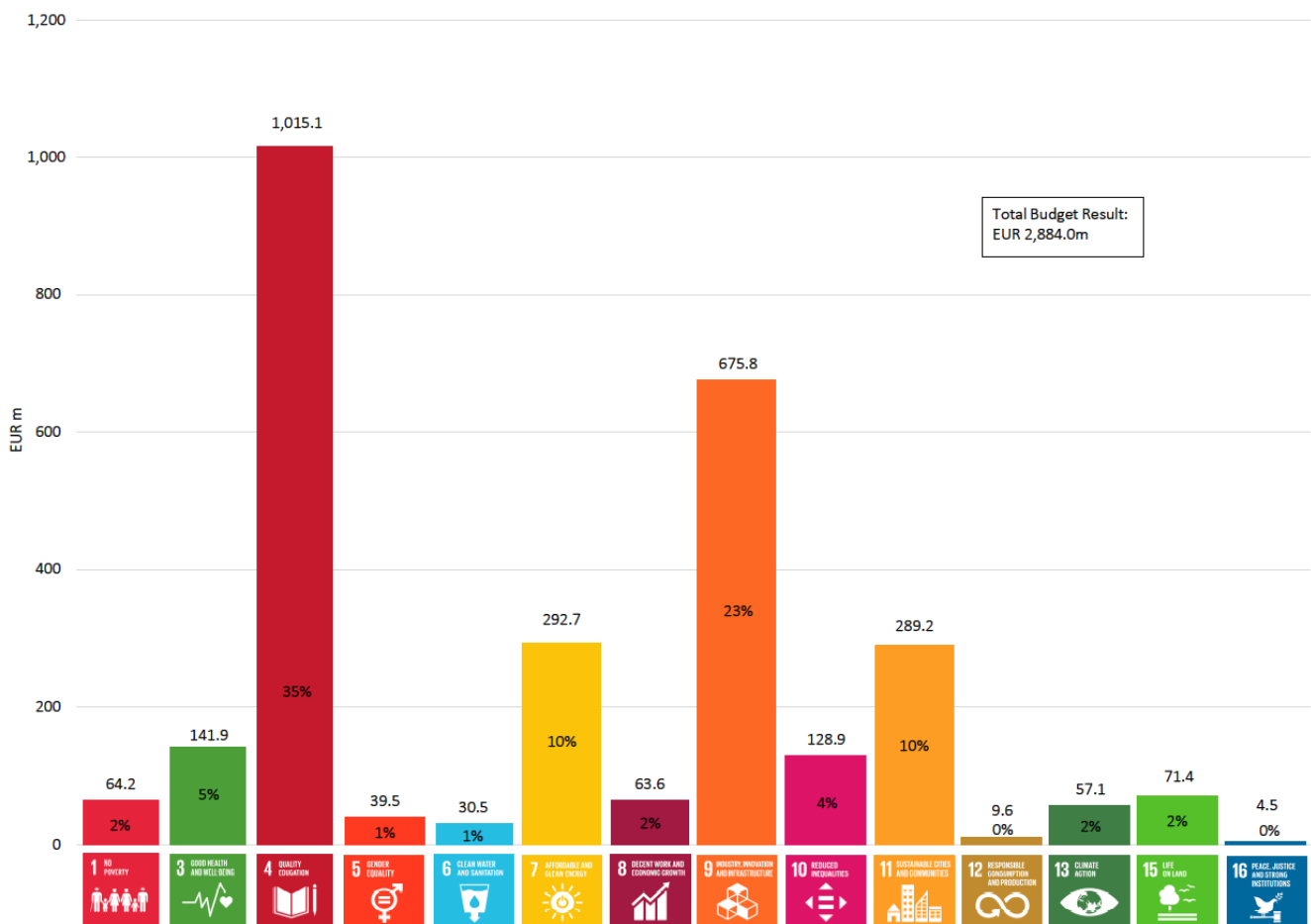


Overview

The Wuppertal Institute analysed the NRW Sustainability Bond #10 (2023) on behalf of the State Government of North Rhine-Westphalia (NRW). The eligible assets of the most recent Bond amount to a volume of EUR 3.199bn¹ and are part of the budget plan 2023. EUR 2.884bn have been allocated to the respective budget results for 2023 (see allocation table in Annex). The selection of projects (53 eligible projects²) is done according to the Sustainability Bond Framework³, based on the NRW Sustainability Strategy 2020⁴ and aligned with the Sustainable Development Goals (SDGs).

Figure 1 shows the allocation per SDG. A large portion of the projects can be attributed to SDG 4 on quality education (35% of allocation) and SDG 9 on industry, infrastructure, and innovation (23%). The third and fourth largest shares contribute to SDG 7 on affordable and clean energy (10%) and SDG 11 on sustainable cities and communities (10%). However, the eligible projects contribute to almost all SDGs (except SDGs 2, 14 and 17) and many projects contribute to more than one SDG.

figure 1: weighted attribution of allocated eligible projects to Sustainable Development Goals



source: Ministry of Finance NRW, 2024

¹ In prior publications the eligible assets amounted to EUR 2.997bn according to the budget plan. The volume has been increased for some projects compared to prior publications (s. Appendix).

² https://nachhaltigkeit.nrw.de/fileadmin/Dokumente/10_Nachhaltigkeitsanleihe/NRW-State-Eligible-Assets-Sus-Bond-10.pdf

³ https://nachhaltigkeit.nrw.de/fileadmin/Dokumente/10_Nachhaltigkeitsanleihe/NRW-State-Sustainability-Bond-Framework.pdf

⁴ https://nachhaltigkeit.nrw.de/fileadmin/Dokumente/NRW_Sustainability_Strategy_2020.pdf

This Investor Briefing reports on indicators related to 61.2% of the budget results in the projects (EUR 1.764bn). It continues to apply the updated methodology presented in the previous Investor Briefings and Method Papers. In addition, results from previous impact reports for Sustainability Bonds #2 to #9 (and including the results of this report) are now listed in a separate file to be made available to any interested party. This file will be uploaded on the website of the issuer⁵.

Results

Summary

The Sustainability Bond NRW #10 covers 53 projects in 14 categories that were aligned with the Green Bond Principles (GBP), Social Bond Principles (SBP) and Sustainability Bond Guidelines (SBG) by ICMA. Although some projects contribute to more than one dimension, these categories can be roughly divided into contributions to social targets (categories A to F) and environmental targets (categories G to N). The following table 1 lists all 37 indicators and includes information on their quality, robustness, and attributed State expenditures.

table 1: indicators and values for NRW Sustainability Bond #10 (budget year 2023)

Category (quantified share in %)	budget results	Indicators	Quality	Share	Indicator Value*	
			2023	2023	2023	2023
A: Affordable Basic Infrastructure (100% assessed here)	EUR 351.8m	equivalent of promoted broadband access points (a)	C ₃	49.1%	58,100	beneficiaries (full contribution)
		equivalent of paid social tickets (a)	D ₃	11.3%	80,500	beneficiaries (full contribution)
		equivalent of paid student tickets (a)	D ₃	6.4%	101,900	beneficiaries (full contribution)
B: Access to Essential Services (59% assessed here)	EUR 1,293.9m	equivalent of paid vaccination centres	C ₃	0.2%	0.3	entities (full contribution)
		equivalent of promoted geriatric nurse students	D ₃	0.08%	200	beneficiaries (partial contribution)
		returned researchers	C ₁	0.6%	70	jobs created/sustained (full contribution)
		equivalent of paid pedagogical teachers (b)	D ₃	8.0%	2,600	jobs created/sustained (full contribution)
		equivalent of promoted day-care centre helpers (c)	D ₃	0.4%	400	jobs created/sustained (partial contribution)
		equivalent of paid social school workers (a)	C ₃	4.4%	900	jobs created/sustained (full contribution)
		equivalent of promoted first-year student places (d)	C ₃	5.8%	22,900	beneficiaries (partial contribution)
		children benefiting from day-care exemptions for parents	C ₃	34.4%	300,000	beneficiaries (partial contribution)
		equivalent of promoted family centres (a)	C ₃	5.6%	3,600	entities (partial contribution)
C: Affordable Housing (63% assessed here)	EUR 90.9m	equivalent of paid urban development projects (e)	D ₃	63.3%	18	projects (full contribution)
D: Employment Generation (52% assessed here)	EUR 5.1m	equivalent of jobs promoted for persons with disabilities (f)	B ₃	52.1%	132	jobs created/sustained (partial contribution)
E: Food Security and sustainable food systems (69% assessed here)	EUR 3.4m	equivalent of students supported with healthy meals	C ₁	68.9%	262,000	beneficiaries (partial contribution)
F: Socioeconomic advancement and empowerment (64% assessed here)	EUR 111.9m	equivalent of vulnerable persons receiving help (a)	B ₃	5.8%	3,100	beneficiaries (full contribution)
		equivalent of students supported for career-entry (a)	B ₃	13.7%	4,200	beneficiaries (full contribution)
		competence centers women and profession	D ₃	4.4%	16	entities (partial contribution)
		promoted women shelter places	C ₃	25.0%	673	beneficiaries (partial contribution)
		promoted women counseling centers	D ₃	2.0%	62	entities (partial contribution)
		promoted men shelter places	C ₁	0.8%	16	beneficiaries (partial contribution)
		equivalent of paid personnel for integration centres	C ₃	12.6%	74	jobs created/sustained (full contribution)
G: Renewable Energy (67% assessed here)	EUR 190.2m	promoted trainees	C ₁	0.1%	156	beneficiaries (full contribution)
		promoted renewable energy production (g)	C ₃	66.4%	75,800	[MWh] of re production/storage (full contribution)
H: Energy Efficiency (26% assessed here)	EUR 121.4m	promoted low-carbon vehicles	C ₁	11.5%	1,400	vehicles (partial contribution)
		promoted charging stations	C ₁	11.6%	13,100	entities (partial contribution)
		promoted cargo bikes	C ₁	3.0%	2,100	vehicles (partial contribution)
I: Pollution Prevention & Control (25% assessed here)	EUR 32.8m	promotion of innovation projects	D ₁	25.1%	8	projects (partial contribution)
J: Environmentally sustainable management of living natural resources and land use (100% assessed here)	EUR 42.5m	equivalent of paid full-time project work for biological stations	C ₃	100.0%	400	jobs created/sustained (full contribution)
K: Clean transportation (16% assessed here)	EUR 76.6m	additional bicycle lanes on country roads	C ₁	27.6%	109	[km] of bicycle lanes (partial contribution)
		maintained bicycle lanes on country roads	C ₁	27.6%	83	[km] of bicycle lanes (partial contribution)
L: Sustainable water and wastewater management (85% assessed here)	EUR 76.1m	future additional retention volume (flood retention, Rhine area) (h)	C ₁	n.a.	74	[million m ³] water retention (partial contribution)
		future additional retention area (dyke relocation, Rhine area) (h)	C ₁	n.a.	922	[ha] natural retention area (partial contribution)
M: Climate change adaptation (100% assessed here)	EUR 39.6m	promotion of nature-conservation projects	D ₁	38.8%	12	projects (partial contribution)
		re-afforestation of damaged forests	B ₁	61.2%	35,625	[ha] of sustainable land-use (full contribution)
N: Green buildings (64% assessed here)	EUR 434.8m	equivalent of university and university clinic building expansion	D ₃	54.9%	49,109	[m ²] of new buildings (full contribution)
		equivalent of university and university clinic building modernisation	D ₃	9.2%	97,748	[m ²] of building area renovated (full contribution)

* rounded in most cases to avoid the appearance of accuracy where it is not warranted

(a) potential number based on funding alone (without other promotions)

(b) representing the funding of full-time positions for language support only

(c) funding for only 7 months at a monthly rate of EUR 2,100 per day-to-day helper

(d) based on number of sold student tickets in 2022

(e) based on hump promotion and States' share for urban development programs in NRW (including other programs)

(f) the initial promotion relates to job creation and is therefore considered a intermediate-outcome rather than project output

(g) based on average costs for rooftop systems (assuming 100% attribution by the State) and typical yield in Düsseldorf, NRW

(h) These estimates relate to planned measures in the NRW part of the river Rhine area from 2022 onward. The direct funding for these measures in 2022 (compared to the total funding) could not be ascertained.

source: own compilation based on current methodology

⁵ <https://nachhaltigkeit.nrw.de/en/sustainability-bonds-nrw/sustainability-bond-10-of-the-state-of-north-rhine-westphalia>

The overall effects can be summarized with the help of so-called units of comparison like the number of beneficiaries or the building area renovated. These represent numerical effects that allow to compare indicators between different Bonds by the issuer. Some of these effects can solely be attributed to the Bond (full contribution), while others constitute a partial contribution.

Over 830,000 people – ranging from students in schools to homeless persons – benefited in 2023 from projects in the Bond. Out of this group, roughly 247,000 of these beneficiaries can be solely attributed to funding by the State of NRW. In addition, circa 4,100 jobs were either created or sustained, with 4,000 jobs from a full contribution.

In the area of environmental effects, 35,000 ha is fully attributed to sustainable land-use, resulting from a project for re-forestation. Another 147,000 m² of building area is fully attributed to green construction and renovation of university clinical buildings. A further 192 km of new and maintained bicycle lanes can at least be partially attributed to the Sustainability Bond.

Regarding climate change adaptation, current expenditures and measures correspond to a future water retention of 74 million m³ of water and 920 ha of natural retention area in the Rhine area of NRW.

The following sections will investigate social effects, environmental effects as well as co-benefits for climate change mitigation in more detail. A full accounting of all indicators as well as the underlying data and methods will be shown in the upcoming method description.

Social Effects

Desired societal outcomes can be mainly attributed to categories A to F (as shown in table 2) and categorized regarding their position in an impact pathway. We distinguish between activities (efforts towards outputs), outputs (tangible programme results) and outcomes (indicating desired effects on a larger or regional scale). Overall, 61% of the allocated expenditures can be associated with benefits to society in this manner.

table 2: assessed and quantified expenditures for social effects

Categories	Allocated Expenditures	Quantified impacts of Expenditures
A Affordable basic infrastructure	EUR 351.8m	EUR 235.0m (66.8%)
B Access to essential services	EUR 1,306.9m	EUR 769.1m (58.9%)
C Affordable housing	EUR 90.9m	EUR 57.5m (63.3%)
D Employment generation	EUR 5.1m	EUR 2.6m (52.1%)
E Food security and sustainable food systems	EUR 3.4m	EUR 2.3m (68.9%)
F Socioeconomic advancement and empowerment	EUR 111.9m	EUR 72.1m (64.4%)
in Total	EUR 1,869.9m	EUR 1,138.8m (60.9%)

source: own calculation

The majority of funding towards social goals is used for improving access to essential services (B) like health care and education. Most indicators in category B relate to persons benefiting from these programmes (e.g., promoting additional first-year students at universities) or jobs created in these sectors (e.g., supporting the salaries of professionals or educating trainees). More than 320,000 persons are positively affected in this way. Regarding the assessment, 6 out of 9 indicators quantified are tangible results (outputs).

The second largest category (A) comprises of projects for affordable basic infrastructures. One output-indicator and two activity-indicators were assessed here: access to broadband internet (circa 58,100 households and/or entities), promoting social tickets (funding sufficient⁶ for 80,500 tickets) and promoting tickets for students and trainees (funding sufficient⁶ for 101,900 tickets).

The third largest category for socioeconomic advancement and empowerment (F) covers a broad range of activities such as reduction of poverty, protection against violence or gender equality and inclusion of migrants. 7 indicators were quantified here (2 intermediate outcomes, 3 outputs and 2 activities), that mostly relate to direct beneficiaries (circa 8,000) like supporting students for career-entry or women and men in sheltered places.

Among the smaller categories, 18 urban development projects are promoted (activity towards affordable housing in category C), circa 130 jobs are created for persons with disabilities (outcome towards employment generation in category D) and over 262,000 school children benefit from frequent vegetables and fruits in the EU school programme (output towards food security in category E).

Environmental Impacts

The area of environmental effects was assessed in the same manner as social effects (activities, outputs, and outcomes). Direct environmental effects are attributed to the categories G to N. Overall, 62% of the allocated expenditures can be associated with benefits to the environment in this manner.

table 3: assessed and quantified environmental effects

Categories	Allocated Expenditures	Quantified impacts of Expenditures
G Renewable energy	EUR 190.2m	EUR 126.5m (66.5%)
H Energy efficiency	EUR 121.4m	EUR 31.2m (26.1%)
I Pollution prevention and control	EUR 32.8m	EUR 8.3m (25.1%)
J Environmentally sustainable management of resources	EUR 42.5m	EUR 42.5m (100%)
K Clean transportation	EUR 76.6m	EUR 33.7m (44%)
L Sustainable water and wastewater management	EUR 76.1m	EUR 64.9m (85.2%)
M Climate change adaptation	EUR 39.6m	EUR 39.6m (100%)
N Green buildings	EUR 434.8m	EUR 278.6m (64.1%)
in Total	EUR 1,014.0m	EUR 625.2m (61.7%)

source: own calculation

Category N is both the largest category here and the highest volume assessed in terms of indicators. As shown for co-benefits of climate mitigation later on, this category solely focuses on either the construction, renovation, or modernisation of university clinical buildings (including equipment for e.g., research). It is estimated that circa 49,000 m² of building area are added and circa 98,000 m² are renovated (activity-indicators).

⁶ The grand total of promoted social and student tickets is much larger. These amounts relate to the number of tickets that could be purchased from the funding alone.

The two projects in the second largest category G (renewable energy) comprise of a variety of state-funded programmes, in particular promoting climate mitigation technologies (progres.nrw – Klimaschutztechnik), through the funding of photovoltaic systems, heat transfer stations, thermal solar systems and training for heat pump installers. Two output-indicators were assessed here that all relate to grants as part of the aforementioned programme. Based on these grants, over 150 trainees participated in courses for heat pumps. A larger portion of the grants (EUR 126m) was also used to promote rooftop photovoltaic systems. These grants alone (assuming a full attribution to average costs of PV systems) can be estimated to contribute to more than 75,000 MWh of renewable electricity per year.

The projects in category H (energy efficiency) were like wise partially promoted through a state-funded programme, in this case towards low emission mobility (“Progres.nrw – Emissionsarme Mobilität”). Three output-indicators were assessed in this category. The funding contributes (partial contribution) to 13,000 charging stations, the procurement of 1,400 vehicles with zero tailpipe emissions and 2,100 cargo bikes.

In category L on sustainable water and wastewater management, two output-indicators were assessed regarding measures for flood retention in the rhine area. The current financing partially contributes to projects that will provide an additional retention volume of 74 million m³ of water and circa 920 ha of additional retention area from the re-location of dykes.

Category J on the sustainable management of natural resources constitutes the fifth largest share of quantified programmes. One output was assessed here for the year 2023: 400 jobs from paid project hours in biological stations.

The target of climate-change adaption is addressed in category M. Two indicators could be assessed: the (partial) funding of 12 nature-conservation projects (activity-indicator) as well as more than 35,600 ha of sustainable land-use from re-forestation (full contribution to a desired outcome).

In the area of clean transportation (K), all funds were used to support municipalities in constructing and maintaining bicycle lanes (especially on state roads). It has been reported⁷ that at least 108 km of bicycle lanes were constructed (output-indicator) and 83km of bicycle lanes were maintained (output-indicator) in 2023, that also help to reduce GHG emissions (shown in the section on “Co-Benefits of GHG Savings” where also other additional bicycle lanes are estimated).

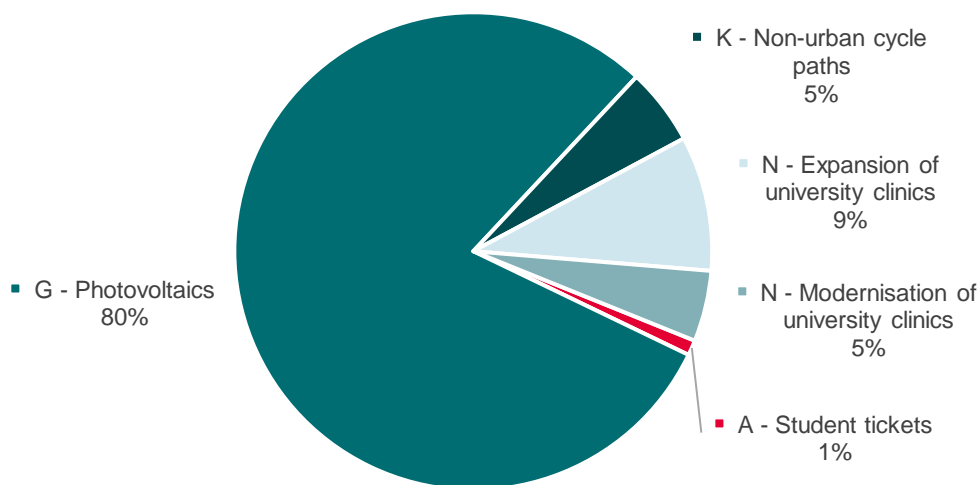
In category I (Pollution prevention and control) the project “Innovation for the climate-neutral energy and economic system of the future” is funded through another progres.nrw programme (progres.nrw – Innovation). Through this programme, we estimate that 8 projects revolving around innovation towards clean energy and a circular economy are being promoted (activity-indicator).

⁷ <https://www.landtag.nrw.de/portal/WWW/dokumentenarchiv/Dokument/MMV18-1289.pdf>

Co-Benefits for Climate Change Mitigation

The estimated GHG emissions avoided by the Bond can be attributed to investments of EUR 519m for 5 different measures. The measures are part of investments in category A (student tickets), G (rooftop photovoltaic systems), K (urban cycle paths; non-urban fast cycle paths) and N (modernisation, conservation, remediation and enlargement of university clinics as well as other investments). The measures are expected to save approximately 992,000 tons of CO₂-equivalents (unit [CO₂e]) over their lifetime (see figure 2) or 55,300 tons per year. Assuming that a tree absorbs circa 3.5 tons of CO₂ over his lifetime⁸, the potential annual savings are equivalent to circa 15,800 additional planted trees.

figure 2: GHG savings (over lifetime) from projects in NRW Sustainability Bond #10



source: own calculations

Annual results for each measure range from 1,375 tons CO₂e per year to 39,600 CO₂e tons per year (see table 4). With the exception of student tickets, all of these measures are expected to save emissions beyond the ten-year term of the Sustainability Bond.

table 4: GHG savings from projects in categories A, G, K and N

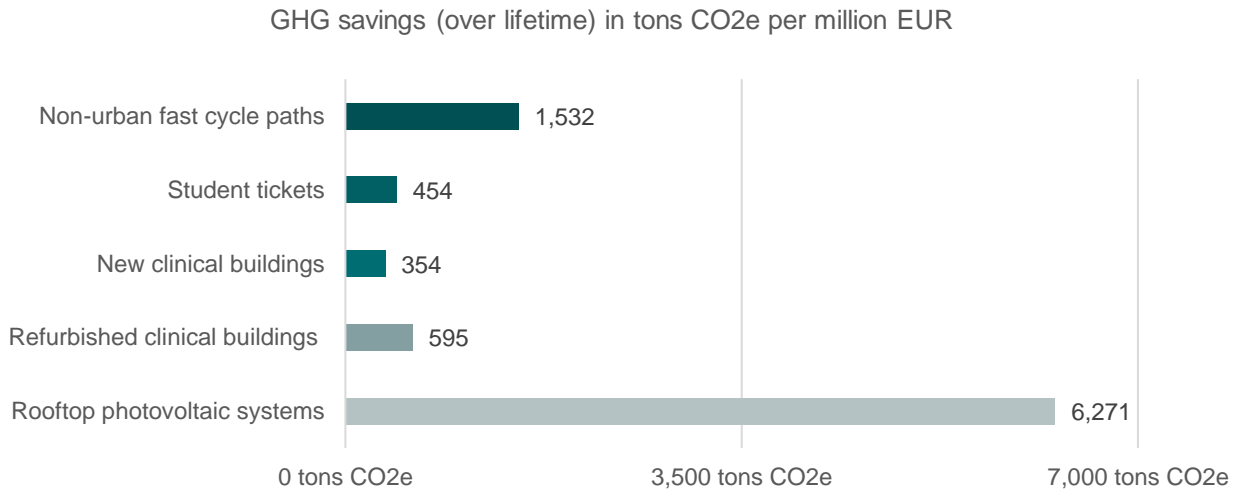
Measure	GHG savings per year in tons CO ₂ e	GHG savings over Lifetime in tons CO ₂ e	average Lifetime (assumption) in years a
Non-urban fast cycle paths	1,720	51,601	30
Student tickets	10,250	10,250	1
Expansion of university clinics	1,375	90,722	50-66
Modernisation of university clinics	2,379	47,580	20
Rooftop photovoltaic systems	39,600	792,000	20

source: own calculation based on methods and data depicted in the method description

⁸ For a beech tree over his lifetime according to <https://www.wald.de/waldwissen/wie-viel-kohlendioxid-co2-speichert-der-wald-bzw-ein-baum/>

In terms of investments, the anticipated impacts can be normalised to represent the GHG savings over lifetime when one million Euro are invested (see figure 3).

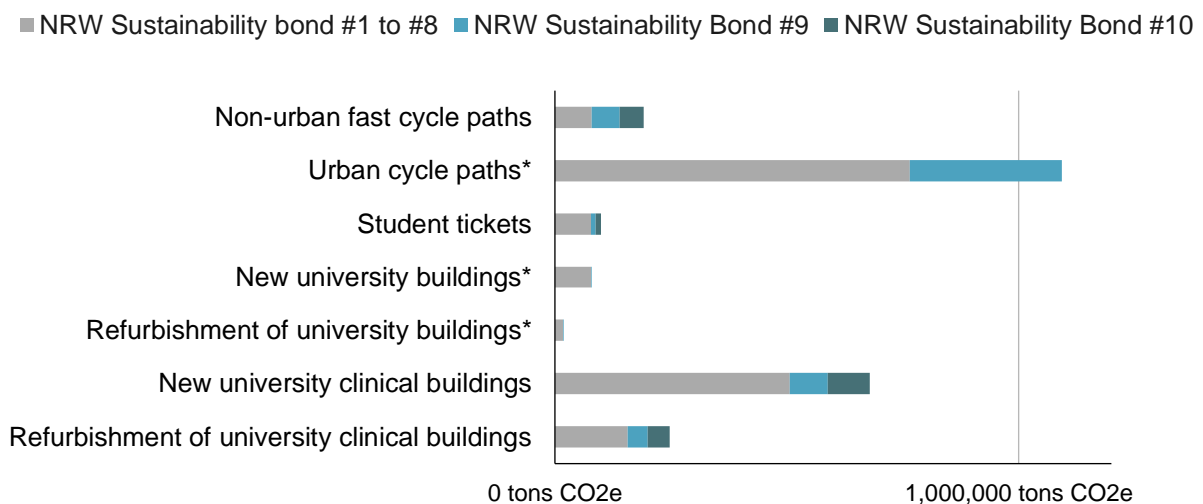
figure 3: efficiency of co-benefits of GHG savings from NRW Sustainability Bond #10



source: own calculation based on methods and data depicted in the method description

All of these projects with the exception of grants for rooftop photovoltaics (at least in terms of materialization) in the Sustainability Bond #10 have already been part of the Sustainability Bonds #1 (2015) up to #9 (2022). Consequently, the categories can be aggregated into a nine-year portfolio⁹. In total, these projects help to mitigate over 2.2 million tons of GHG emissions over the assumed lifetime of the measures (see figure 4).

figure 4: GHG savings over lifetime of projects from 2014 to 2023



source: own calculation based on methods and data depicted in the method description

*omitted in Sustainability Bond #10

⁹ For single measures, such as solar thermal energy generation (Bond #3) or combined heat and power (Bond #2), this was not feasible.

Additional climate change mitigation effects can be attributed to the States' funding for the promotion of "Effizienz Agentur NRW" (efa+) and "Ökoprofit". These programmes help stakeholders towards higher energy efficiency, material efficiency, water and waste savings. Previous reports accumulated the validated GHG savings by these entities over several bonds at once but the required data was restricted to budget years before issuance. This is why an alternative approach was chosen for NHA NRW #9, which we continue to apply for NHA NRW #10 as well.

It is estimated how the States' expenditures in 2022 contribute to potential GHG savings by relating previous savings with previous expenditures. The underlying data and context are shown in table 5. According to this estimation, NHA NRW #10 fully contributes to annual GHG savings of 15,700 tons CO₂-equ. for efa+ and partially contributes to GHG savings of 14,800 tons for Ökoprofit.

table 5: estimated GHG savings from efa+ and Ökoprofit

Programme	Contribution	Budget Result #2 to #7 (2015-2020)	GHG Savings* 2015-2020	Expenditures** #10 (2023)	GHG Savings NRW Sust. Bond #10
efa+	full	EUR 30.4m	83,000 t CO ₂ e	EUR 5.8m	15,700 t CO ₂ e/a
Ökoprofit**	partial	EUR 1.5m**	111,000 t CO ₂ e	EUR 0.2m	14,800 t CO ₂ e/a

* these (validated) effects cannot be solely attributed to funding by the State of NRW as additional funds were necessary to achieve the goals (such as EU funding or own financial efforts by the stakeholders)
 ** All expenditures are estimates, as they related budget items cover more than the programmes shown here. For ERDF, other measures into green infrastructures are included, while the expenditures for efa+ and Ökoprofit are covered under the same budget item.

source: previous reporting¹⁰

¹⁰ https://nachhaltigkeit.nrw.de/fileadmin/Dokumente/9_Nachhaltigkeitsanleihe/impact-report-WI-NHA-NRW.pdf

Annex

Allocation Report by NRW Ministry of Finance

The following table lists the budget plan and budget results for all projects in the NRW Sustainability Bond #10. In total, EUR 2.884bn, which is more than 100% of the Bond volume (EUR 2.0bn), have been allocated to eligible projects.

EUR 485m of the budget result (19.5%) of all projects have been allocated to activities in alignment with the EU Taxonomy (EUT aligned). This is 55.4% of all green expenditures of Sustainability Bond #10 or 56.3% of the projects in scope of the analysis.

table 6: Allocation Report (Budget Plan, Budget Result, EU Taxonomy (EUT) alignment)

SDGs	Projects types: social (S) environmental (E) * budget plan figures changed compared to prior publications		Budget Plan (million EUR)	Budget Result (million EUR)	EUT aligned
A Affordable basic infrastructure			352	352	
9	Broadband expansion/Digitalization	S	172.2	172.7	
9 11	Public transportation for low-income citizens	S	40.0	39.8	
11	Public transportation for pupils and students	S	139.4	139.4	
B Access to essential services			1,569*	1,307	
3	Vaccination against SARS-CoV-2	S	62.0	13.0	
3	Combating the dangers of addiction	S	16.3*	13.1	
3	Health economy, telematics, further development of the health campus	S	8.3	3.5	
3	Health aid, health protection, action plan hygiene, epidemics control	S	6.8	6.4	
3	Measures to ensure medical care	S	2.5	3.0	
3	Psychiatric care	S	3.0	1.5	
3	Development plan on geriatric care	S	14.5	10.9	
3 4	Professional education of geriatric nurses	S	9.6	1.0	
4 8	Bund-Länder-Covenant for the expansion of universities	S	113.9	113.7	
4 8 10	Training facilities for the education of special education teachers	S	21.2	21.2	
4	Measures to improve the quality of teaching and studying at universities	S	300.0	300.0	
4 8 9	Return programme for highly qualified young researchers from abroad	S	7.7	7.6	
1 10	Support for family centres/promotion of cooperation of family formation [...]	S	75.7	72.5	
4 10	PlusKita and language courses at childcare facilities	S	103.1	103.0	
4 10	Childcare in special cases	S	21.0	21.9	
4	Exemption to contribution for parents for the last two years of day care	S	446.6	444.6	
4 3	Measures at day care centres in response to the coronavirus pandemic	S	170.2*	6.1	
4 10	Social work at schools	S	57.7	57.5	
9	Excellence Strategy	S	32.0	26.4	
8 9	Promotion of innovation	S	89.4	73.3	
4 12	Foundation for Nature and Sustainable Development	S	4.0	4.0	
4 12	Facilities for environmental education	S	3.3	2.7	
C Affordable housing			117	91	
9 11	[...] "Urban Reconstruction in the West" and "Growth and Sustainable Renewal"	S	51.6	41.5	
8 9 11	[...] "Social City" and "Social Cohesion"	S	37.8	21.3	
9 11	State programme for village renewal	S	28.0	28.0	
D Employment generation			11	5	
8 10	Occupational integration of people with disabilities	S	7.7	2.6	
8 9	Environmental economy, sustainable economy	S	3.1	2.4	
E Food security and sustainable food systems			4	3	
3 4	EU school programme	S	3.7	3.4	

not applicable

F Socioeconomic advancement and empowerment			145	112	
1 10	Fight against poverty and social exclusion	S	10.3	6.8	
4 8	European Social Fund 2014-2020 [...] "No dead-end qualification" [...]	S	44.8	29.2	
5 8	Equality and potential development in work and society	S	4.9	4.9	
4 5	Promotion of equality at universities	S	4.5	4.5	
5 16	Girls in special situations	S	1.2	1.2	
16	Protection of children	S	8.6	1.1	
5 16	Protection from violence	S	35.3	33.4	
8 10 11	Social inclusion of persons with disabilities	S	4.3	4.1	
4 8 10	Measures for children from refugee families and for young refugees	S	12.6	12.7	
10	Promoting integration of migrants living together in diversity	S	18.9	14.1	
G Renewable energy			225	190	141
7	Energy and heat transition investment programme	E	213.0	190.2	140.6
7	Energy storage	E	12.0	0.0	
H Energy efficiency			106	121	121
7 9	Climate protection technologies and low-emission mobility	E	99.6	115.7	115.7
7 12	Enhancement of resource efficiency	E	6.9	5.8	5.8
I Pollution prevention and control			31	33	31
7 9	Innovation for the climate-neutral energy and economic system of the future	E	21.5	31.5	31.5
9 13	Municipal and societal climate protection	E	9.8	1.3	
J Environmentally sustainable management of living natural resources and land use			45	42	25
15	Protection of nature	E	45.4	42.5	25.3
K Clean transportation			91*	77	77
11	Infrastructure for cyclists and pedestrians	E	90.5*	76.6	76.6
L Sustainable water and wastewater management			110	76	76
6 13 15	Flood protection and river restoration	E	110.5	76.1	76.1
M Climate change adaptation			28	40	24
13 15	Climate Action/Regional Climate Adaptation Measures [...]	E	3.6	15.4	
13 15	Forests reforestation	E	24.2	24.2	24.2
N Green buildings			365*	435	66
3 9	Conservation, remediation and enlargement of university clinics [...]	E	365.0*	434.8	65.5
in TOTAL			3,199*	2,884	561

not applicable

source: data provided by the Ministry of Finance of North Rhine-Westphalia (NRW)

NRW Sustainability Bond Programme (2015-2023)

NRW Sustainability Bonds – Emissions

Matching of Bonds (sorted by end-of-term)*matured	Amount (EUR)
#1 NRW 0.5% 11-Mar-2025 (ISIN DE000NRWoGP1)	€ 750,000,000
#2 NRW 0.125% 16-Mar-2023 (ISIN DE000NRWoJF6)*	€ 1,585,000,000
#3 NRW 0.5% 16-Feb-2027 (ISIN DE000NRWoKB3)	€ 1,825,000,000
#4 NRW 0.95% 13-Mar-2028 (ISIN DE000NRWoK03)	€ 2,025,000,000
#5 NRW 1.10% 13-Mar-2034 (ISIN DE000NRWoLM8)	€ 2,250,000,000
#6/1 NRW 0.00% 26-Nov-2029 (ISIN DE000NRWoLZ0)	€ 1,000,000,000
#6/2 NRW 0.50% 25-Nov-2039 (ISIN DE000NRWoL02)	€ 1,500,000,000
#7 NRW 0.00% 12-Oct-2035 (ISIN DE000NRWoML8)	€ 2,400,000,000
#8/1 NRW 0.125% 04-Jun-2031 (ISIN DE000NRWoMY1)	€ 2,000,000,000
#8/2 NRW 0.6% 04-Jun-2041 (ISIN DE000NRWoMZ8)	€ 1,500,000,000
#9/1 NRW 2% 15-Jun-2032 (ISIN DE000NRWoNF8)	€ 2,000,000,000
#9/2 NRW 2.25% 14-Jun-2052 (ISIN DE000NRWoNG6)	€ 1,500,000,000
#10 NRW 2.90% 07-Jun-2033 (ISIN DE000NRWoN67)	€ 2,000,000,000
in Total Issued	€ 22,335,000,000
in Total Outstanding	€ 20,750,000,000

source: issuer (Ministry of Finance NRW, 2024)

Allocation Table

The following table shows the budget plan figures and budget results for the eligible assets of NRW's Sustainability Bonds #1-10 sorted according to the categories of the updated framework (February 2021)¹¹. The net proceeds for social assets (A-F) make up 77.1% in the budget plan and 75.4% in the budget results. Accordingly, green assets (G-N) contribute 22.9% to the budget plan and 24.6% to the budget results.

Eligible Sustainability Category		Budget plan 2014-2023		Budget result 2014-2023	
		value	share	value	share
A	Affordable basic infrastructure	EUR 3,538,074,700	11.2%	EUR 3,601,359,021	12.8%
B	Access to essential services	EUR 18,436,839,847	58.3%	EUR 15,569,608,925	55.5%
C	Affordable housing	EUR 933,278,000	3.0%	EUR 766,582,376	2.7%
D	Employment generation	EUR 91,069,815	0.3%	EUR 56,381,932	0.2%
E	Food security and sustainable food systems	EUR 15,990,000	0.1%	EUR 12,890,943	0.0%
F	Socioeconomic advancement and empowerment	EUR 1,371,207,500	4.3%	EUR 1,167,300,746	4.2%
G	Renewable energy	EUR 347,258,000	1.1%	EUR 229,055,045	0.8%
H	Energy efficiency	EUR 692,698,300	2.2%	EUR 660,000,260	2.4%
I	Pollution prevention and control	EUR 449,438,971	1.4%	EUR 313,172,659	1.1%
J	Environmentally sustainable management [...] *	EUR 715,292,328	2.3%	EUR 612,356,790	2.2%
K	Clean transportation	EUR 435,670,000	1.4%	EUR 380,921,175	1.4%
L	Sustainable water and wastewater management	EUR 553,922,900	1.8%	EUR 477,367,927	1.7%
M	Climate change adaptation	EUR 215,221,400	0.7%	EUR 159,075,712	0.6%
N	Green buildings	EUR 3,828,139,900	12.1%	EUR 4,070,343,691	14.5%
in Total		EUR 31,624,101,661	100.0%	EUR 28,076,417,200	100.0%

source: Ministry of Finance NRW, 2024

¹¹ Note that at the date of issuance the assets of Bonds # 1-7 were categorized into the categories according to the framework at the date of issuance. For this reason, the categorization as well as the share of social and environmental assets might deviate from previous publications.

Short Overview of Method Update

The full and detailed description of all quantified indicators as well as the required data and assumptions will be shown in an update of the already published “Method Description”. This new methodology, first introduced for the impact assessment of NRW Sustainability Bond #8, qualifies reported values according to the following characteristics: **Qualification** (What is the context of the measured effect?), **Robustness** (How was the value determined?), **Attributability** (Is the State of NRW the sole promoter of the effect?), **Accumulability** (Which values can be summed up over a period of time?)

Qualification

Indicators are qualified according to their position in an outcome pathway. Indicators that measure long-term and persistent outcomes towards overarching goals have the highest quality A (no indicator in the current report achieved this quality). Intermediate outcomes (B) describe desired changes beyond the scope of the programmes and projects on a societal or regional level (4 out of 37 indicators). The more common output-indicators (C) relate to tangible results on the level of projects (21 out of 37). Activity-indicators are classified as D and comprise of resources deployed to achieve outputs and outcomes (12 out of 37 indicators). The minimum quality E refers to inputs in the system. They describe the interventions by the actor (here the State of NRW). All funding towards projects in the NRW Sustainability Bond are considered to be inputs, as their eligibility is defined by the issuer’s framework and corroborated by a second-party opinion (SPO).

Robustness

The robustness of the indicators is defined in the following table.

Robustness	Criteria
1	primary data (directly monitored or evaluated)
2	directly estimated from primary data
3	calculated with the help of secondary sources or auxiliary variables
4	estimated on the basis of models with a simplified universal mechanism
5	results from 3rd party reporting without the possibility for validation

Attributability

The main goal of quantification is to attribute effects solely to household expenditures allocated in the Sustainability Bond of the State of NRW. However, not all available data (or other information) allows for such a contribution. In these cases, the indicator is indicated as “partial contribution”, rather than “full contribution”.

Accumulability

All indicators are assigned to “units of comparison”. This allows to accumulate the effects between projects as well as compared to previous Bonds. However, doing so might constitute double counting in some cases.