

Retrofitting Practice Continental Europe



The Housing Finance Corporation Cambridge Symposium July 2022

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RITTERWALD is a pan-European housing consultancy with offices in Berlin, Frankfurt, Amsterdam and London

We support housing providers in the corporate residential rental sector



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UK Director

UK market lead

Our European presence (excerpt of clients)

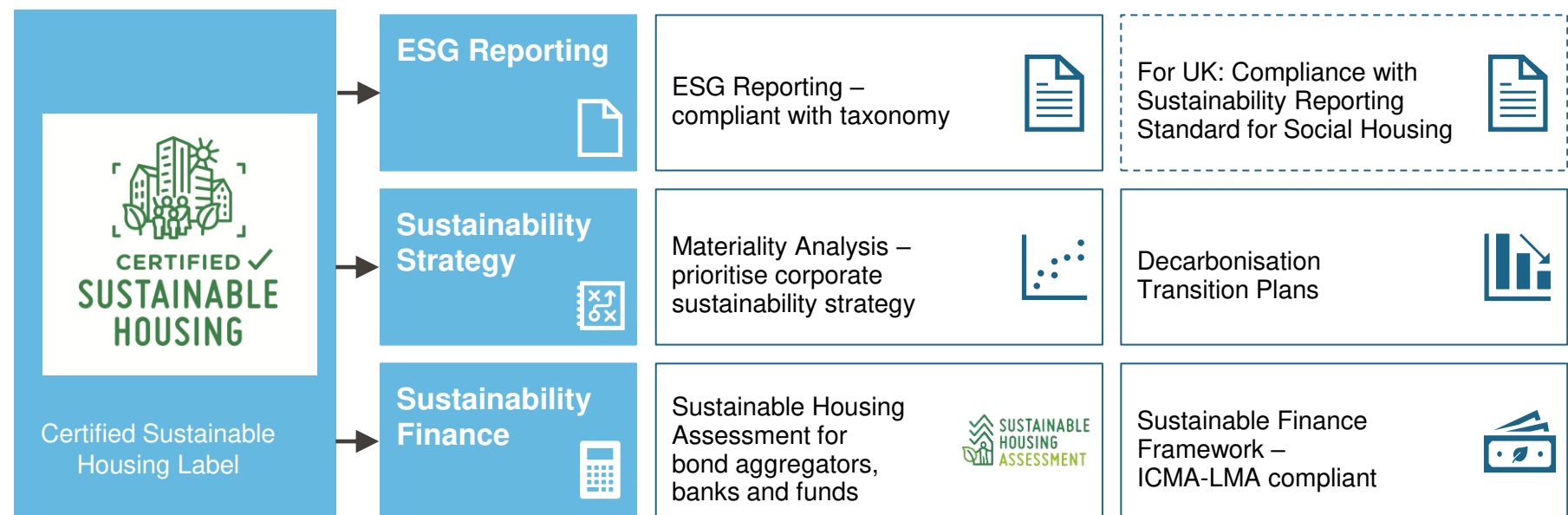


Our ESG credentials – RITTERWALD provides the only housing specific independently verified ESG accreditation

RITTERWALD enables housing providers to demonstrate and enhance their ESG credentials

SETTING THE SCENE

RITTERWALD' ANSWER TO INCREASING NEED FOR SUSTAINABILITY SERVICES



CONTENT

Page

A	Main features of social housing in selected countries	5
B	Policy frameworks towards Net Zero emissions	9
C	Energy performance of legacy housing stock	12
D	Financing for retrofitting	16
E	Case studies of four European housing associations	25
F	Observations	33

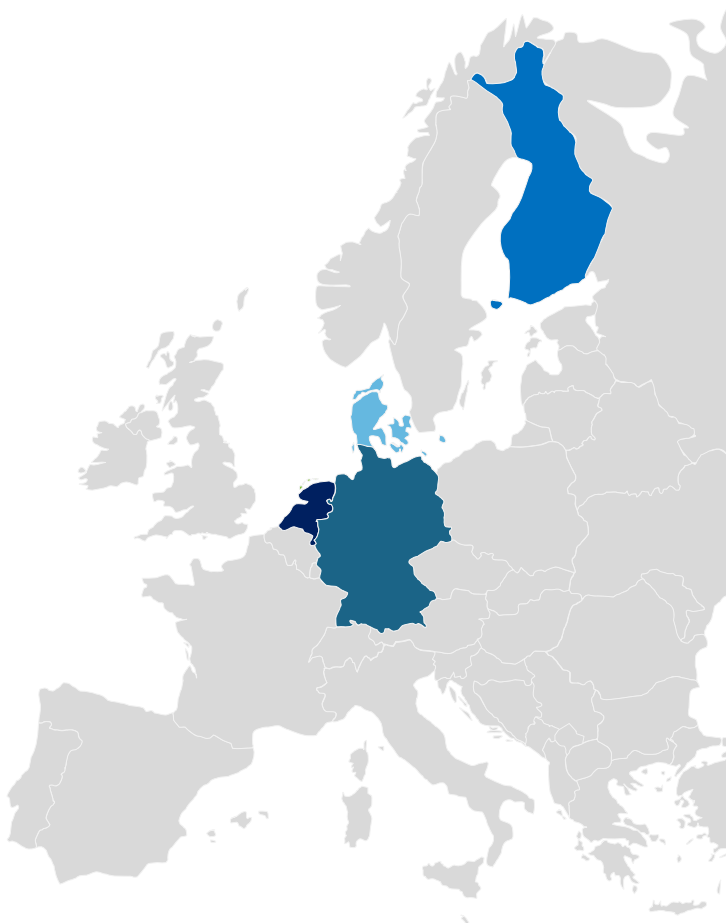


A

Main features of social housing in selected countries

Germany, the Netherlands, Denmark and Finland are the focus for this selection of case countries in continental Europe

Selected countries



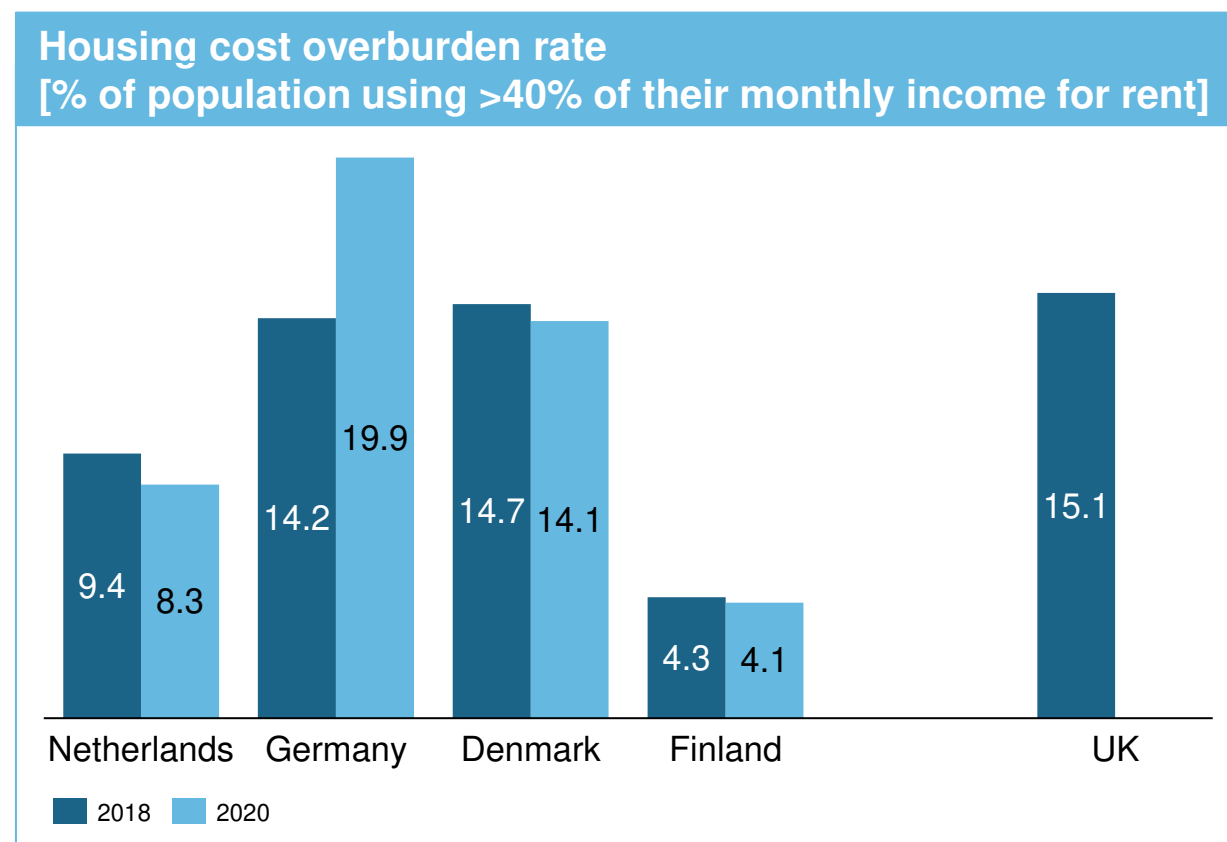
- 1 GERMANY 
- 2 NETHERLANDS 
- 3 DENMARK 
- 4 FINLAND 

Social and affordable housing providers operate in different policy and regulatory environments in the selected countries

	1  Germany	2  Netherlands	3  Denmark	4  Finland	5  United Kingdom
	83.2 million inhabitants 3% social housing	17.4 million inhabitants 29% social housing	5.8 million inhabitants 21% social housing	5.5 million inhabitants 11% public rental	67.2 million inhabitants 18% social housing
Rent setting	Market-based Rent levels mainly determined as a percentage of market-level rent levels for similar properties	Quality-based Rent levels mainly determined administratively by considering property features, often using a point system	Cost-based Rent levels determined mainly by the costs of construction or acquiring the property to allow long-term cost recovery	Cost-based Rent levels determined mainly by the costs of construction or acquiring the property to allow long-term cost recovery	Market- and cost-based Affordable rents are determined as a percentage of market-level rents for similar properties; social rents are administratively determined
Tenure	Publicly subsidised housing is offered by almost all housing companies, but municipal housing companies hold the majority	Housing offered by non-profit housing associations under the requirement to give priority to households with lower incomes	Social housing is offered by around 700 legally regulated non-profit housing associations	The publicly subsidised rental dwellings are owned by municipalities and few profit housing companies	Publicly subsidised housing is mainly offered by housing associations and local authorities
Main regulatory focus	Development of social housing lies with the federal states , which implement programmes and funding schemes	'Revolving Fund Model' The housing associations act as independent bodies in an environment of guaranteed capital market loans and rent-level regulations	The principle of tenants' democracy in social housing gives tenants the legal right to influence their living conditions	The 'Housing First' policy establishes the right to access secure and high-quality housing for every citizen	Development of social housing lies with housing associations , which draw on public subsidies and capital market access to fund new built and retrofit

Skyrocketing energy prices for poorly insulated homes will aggravate the cost overburden rate in all selected countries

The housing cost overburden rate in selected countries



Remarks

- Old and post-war stock, i.e. **legacy stock has low energy performance** due to poor insulation
- The concurrence of the **energy transition** and the **war in the Ukraine** have led to **skyrocketing fuel prices, aggravating fuel poverty** across all selected countries
- Additionally to the increase in energy costs, the **affordable and social housing market** is experiencing **growing demand whilst falling short in suppling enough new built**



B

Policy frameworks towards Net Zero emissions

The 10 countries making the greatest progress and commitment toward building a low carbon future are mostly located in Europe

Top 10 of the Green Future Index 2021 – 2022

2022	2021	Country	Index
1	1	Iceland	6,92
2	2	Denmark	6,55
3	10	Netherlands	6,42
4	17	United Kingdom	6,29
5	3	Norway	6,21
6	6	Finland	6,21
7	4	France	6,12
8	11	Germany	6,12
9	12	Sweden	6,07
10	31	South Korea	6,03

Remarks

- The **Green Future Index** ranks 76 economies on their **readiness for a low-carbon future**
- 16 out of the top 20 countries are **located in Europe**
- The assessment takes into account
 - Carbon emissions
 - Energy transition
 - Green society / Consumer behaviour
 - Clean innovation
 - Climate policy

Nordics are frontrunners in the development of renewable energy production, financial support for renewable heating in all countries

Country specific policies for energy transition

Topics	Germany 	Netherlands 	Denmark 	Finland 	United Kingdom 
GHG reduction goal 	By 2030, 55% reduction compared to 1990	By 2030, 49% reduction compared to 1990	By 2030, 70% reduction compared to 1990	By 2030, 55% reduction compared to 1990	By 2030, 54% reduction compared to 1990
% of renewables in heating 	Data 2019 – 14.5% Goal 2030 – 27%	Data 2019 – 7.2% Goal 2030 – 32%	Data 2019 – 47.3% Goal 2030 – 60%	Data 2019 – 56.8% Goal 2030 – 61%	Data 2019 – 7.8% Goal 2030 – 27%
Heat pumps 	Installation cost is subsidised with 35% plus an addition 10% if oil heating is replaced	The Sustainable Energy Investment Subsidy offers a subvention of >€ 500 for the installation of new heat pumps	Scheme to scrap oil boilers outside central and district heating until 2024 and for 'heat pumps on subscription'	Heat pumps are subsidised through ARA energy grants if renovation leads to major improvement of EPC rating	Grants for retrofitting are provided by Social Housing Decarbonisation Fund
Landlord-tenant conundrum 	Landlords can recover a part of the cost of energy-efficient refurbishment from the tenant Ideally, the increase in cold rent equals the reduced energy costs	Landlords can recover a part of the cost of energy-efficient refurbishment from the tenant Ideally, the increase in cold rent equals the reduced energy costs	Incentives for energy renovation take the form of high taxes on space heating and tax deductions and grants targeted at buildings and companies	Heating costs and other facilities are generally included in the rent, which avoids this dilemma	Landlords are unable to increase rents after energy efficiency refurbishments, hindering volume and pace in retrofitting

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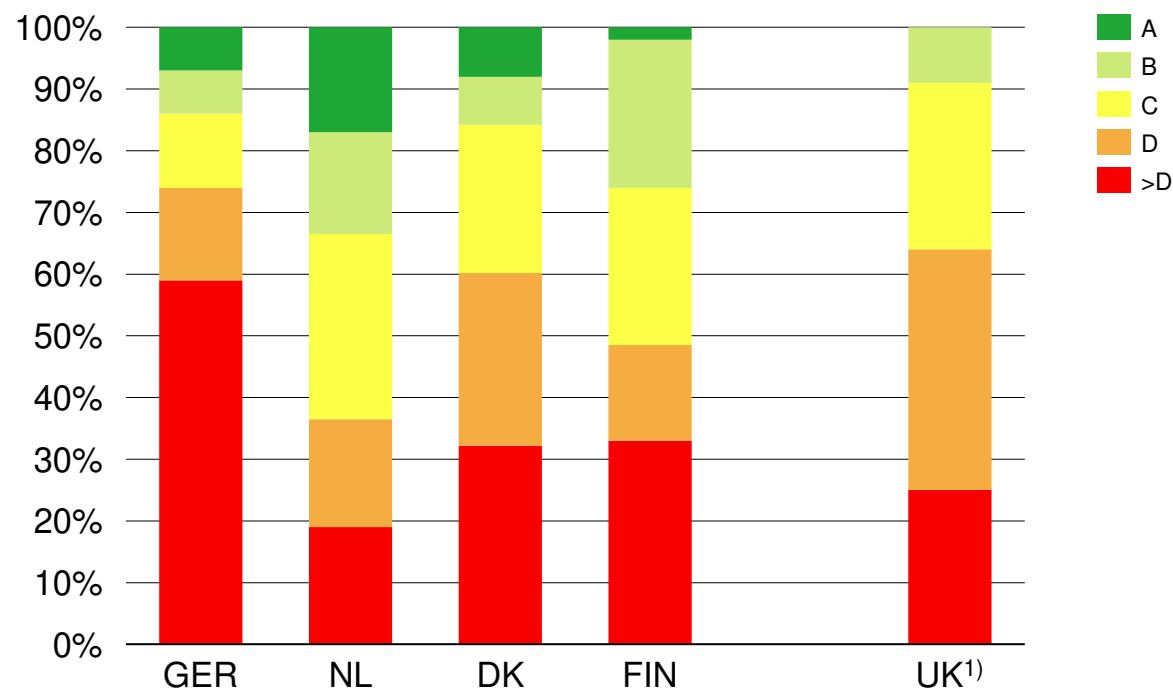
C

Energy performance of legacy housing stock

EPC-ratings demonstrate the progress in national retrofitting programs

EPC-ratings in selected case countries and UK

Distribution of EPC label ratings in the residential sector



Disclaimer

The EPC-scales are not coherent on an international level. The graphic should therefore always be seen in context with the nationally varying rating systems and scales

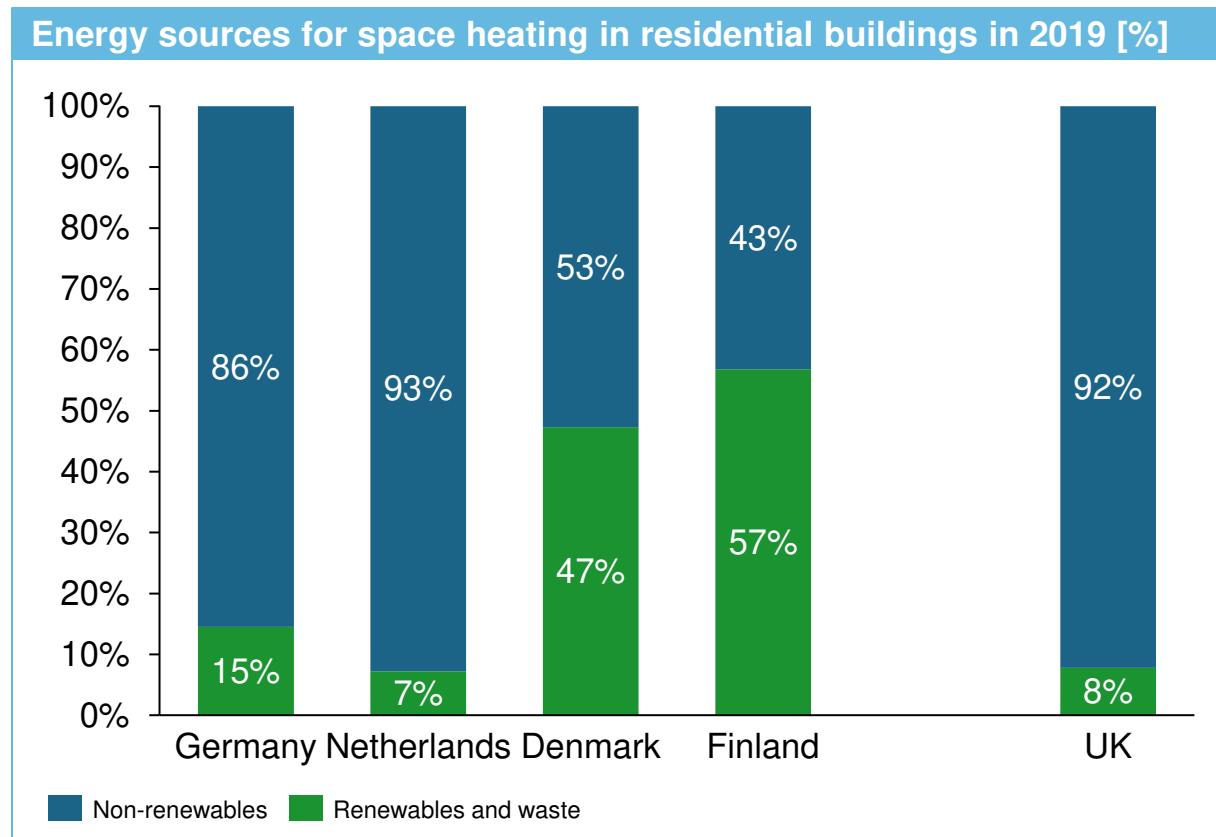
Remarks

- All countries, including the UK are refurbishing with the **goal** to reach an average **energy efficiency rating of C**
- Private and public landlords not only conduct refurbishments to **comply with regulatory standards** but also to **maintain and increase real estate value** across their stock

1) Share of EPC ratings for England and Wales; similar distribution in Northern Ireland and Scotland

The use of renewable energies vary greatly across case countries, the electrification of heating is the major contributor

Energy sources for space heating in selected countries



Remarks

- The **electrification of heating technologies**, e.g. heat pumps, contributed to the **growth of renewable energy** in heating and cooling
- Renewable energy sources include **solar thermal** and **geothermal** energy, **ambient heating** (heat pumps) as well as **solid, liquid and gaseous biofuels** and **waste**

The operational models for heat supply share one goal: retrofitting stock in an affordable (tenant) and fundable (landlord) manner

Overview of housing associations' operational models for heat supply

	Energy Saving Campaign	Harnessing Buying Power	Energy Service Company	Heat-as-a-Service
Tenant engagement	High – behavioural changes dependent on energy prices thus tenant engagement is elementary in the long-run	High – to keep demand pool above threshold level and expand over time	High – support for retrofitting process and outcome required	Medium to low – as energy supply hardly affects tenants apart from tariff policy
Contribution to net zero	High – contributes to the reduction of both scope 1 and scope 3 emissions and will have reinforcing effects on all additional measures	High – potential to fully decarbonise heating and largely eliminate scope 3 emissions	High – necessary first step to reduce energy consumption and install more efficient heating technologies	High – potential to fully decarbonise heating and radically improve heating technology
Financial viability	No CAPEX , little additional OPEX for resource allocation to energy saving campaign	No CAPEX , limited amount of OPEX for supplier negotiat. and demand pool mainten.	No CAPEX , amount of OPEX needed depending on the scope of services procured	Significant amount of CAPEX and OPEX – depending on chosen model
Feasibility	Easy – information on archetypes and heating systems are largely existent but must be made available	Medium – set-up of demand pool and supplier procurement is resource intensive	Medium to hard – prioritisation of stock and retrofitting measure needed plus dedicated project team to work with the ESCo	Hard – significant learning curve required with regards to energy market
Rentability	High – both in terms of energy savings and resources invested, but continuous and targeted training needed	Low to medium – new revenue stream when sharing price benefit with tenants.	Limited – as long as landlord tenant conundrum not solved	High – proceeds can be redirected to cross-finance retrofit, safety and new built schemes

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D

Funding for retrofitting

The German Government supports the energy efficiency of buildings with Federal Funding options through KfW Bank

'Federal Funding for Efficient Buildings' programme



Residential Buildings



Aims to support 50,000 overall measures,
Reducing the emissions by
520,000 tCO₂ / year

Non-residential Buildings



Aims to support 1,500 overall measures,
Reducing emissions by
175,000 tCO₂ / year

Individual Measures



Aims to support 150,000 individual measures,
Reducing emissions by
360,000 tCO₂ / year



Funding Programme is one core element of the 2030 Climate Action Programme to achieve climate-neutrality by 2050
Federal Funding is available for private customers, public institutions and companies

Includes measures on the building envelope, plant engineering and heat generation systems

Dutch social housing providers act as independent bodies in a regulatory environment of guaranteed capital market loans

Three-level security structure for registered social housing providers



REVOLVING FUND MODEL

Social housing providers are financially independent



1) AUTHORITY HOUSING ASSOCIATIONS (AW)

- Special regulatory public body
- Can rescue and sanction social housing providers or give specific project support, all paid for by social housing sector
- Coordinates its assessment with WSW

2) GUARANTEE FUND FOR SOCIAL HOUSING (WSW)

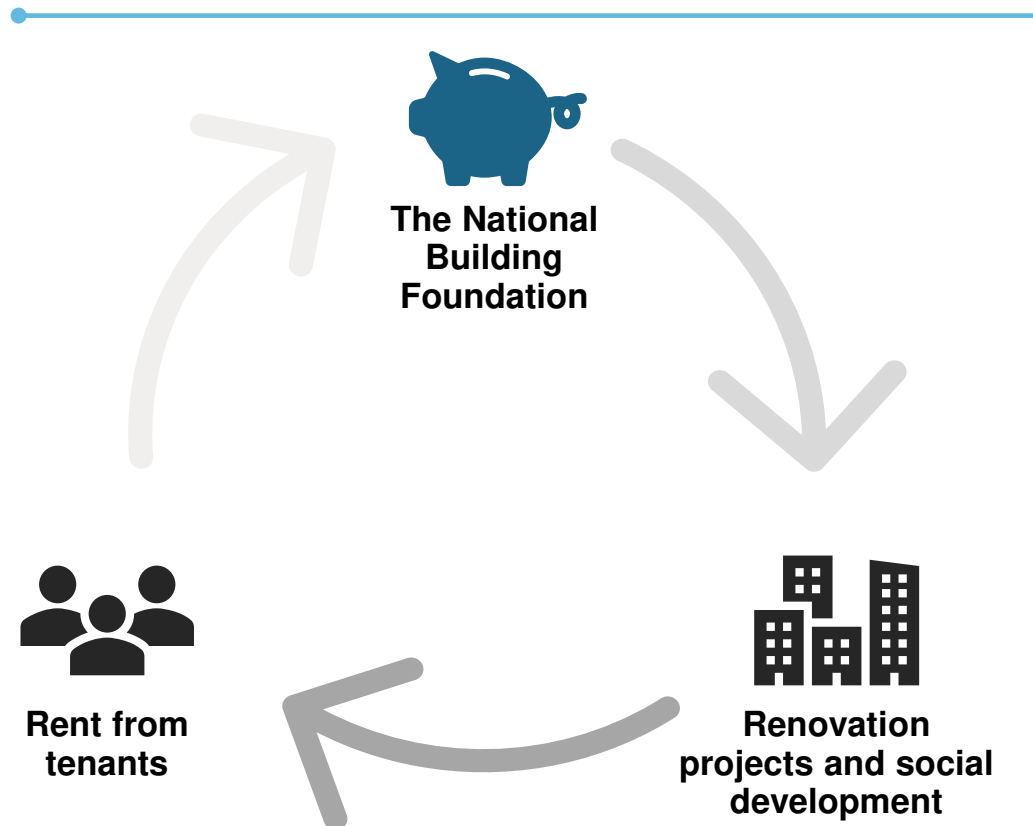
- Private organisation established by housing associations
- Financed through guarantee fees that organisations pay when requesting a loan with WSW guarantee
- One of the most highly regarded guarantees

3) DUTCH STATE AND MUNICIPALITIES

- Backup role if WSW is nearly exhausted
- Grants interest-free loans in case of financial problems

With the National Building Foundation, the Danish Government enables a cycle of social and environmental innovation

The Danish National Building Fund Cycle



HOW DOES IT WORK?

After the original mortgage loan is paid off, 2/3 of the **rent from tenants** goes to the National Building Foundation

The solidary **National Building Foundation** acts as a savings account for the whole of the social housing sector

Housing organisations can apply for funds for large scale **renovation projects and social development plans**

In Finland, the ARA is responsible for the implementation of Finnish housing policy and can make grants and loans available

ARA – The Housing Finance and Development Centre of Finland



ARA operational service units / ARA organization

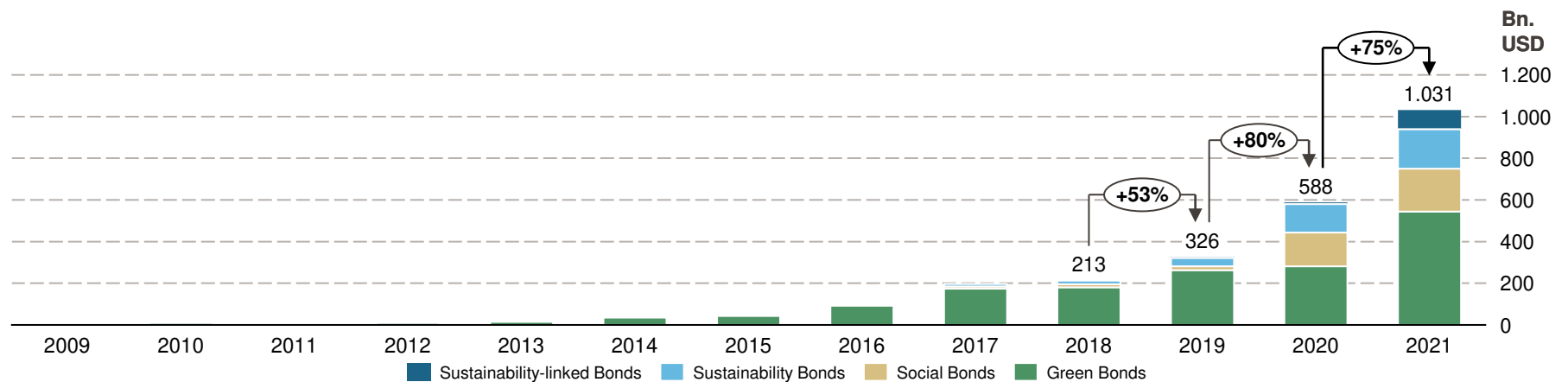
- **Financing**
 - ARA grants loans and subsidies to organisations, and repair subsidies for housing companies and citizens
 - 9,000 new affordable homes subsidized in 2020
- **Housing development and information services**
 - ARA develops better living solutions and provides information services related to housing
 - £ 600,000 investments annually in research and development projects within the housing sector
- **Monitoring and control services**
 - ARA is guiding the use of ARA homes and the implementation of affordable housing policy
 - 259 less homeless persons were recorded in 2020¹⁾ due to the implementation of the 'Housing First' policy
- **General service**

ARA supports the prerequisites for the agency service functions to promote effectiveness and efficiency

1) in comparison to 2019

Volume GSS Bonds has risen sharply and has almost reached USD 1.0 Trn. at start of 2022 - social and sustainability bonds in vogue

Market development for Green, Social and Sustainability Bonds (GSS-Bonds)

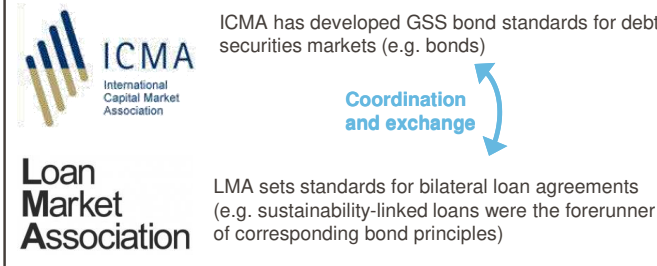


Note: 2020 - Social bonds skyrocketed contributing to over 30% of the total sustainable bond supply due to Covid. In the European region, social bonds increased by a staggering 985% compared to 2019

WHAT ARE THE RELEVANT STANDARDS?



WHO SETS THESE STANDARDS?



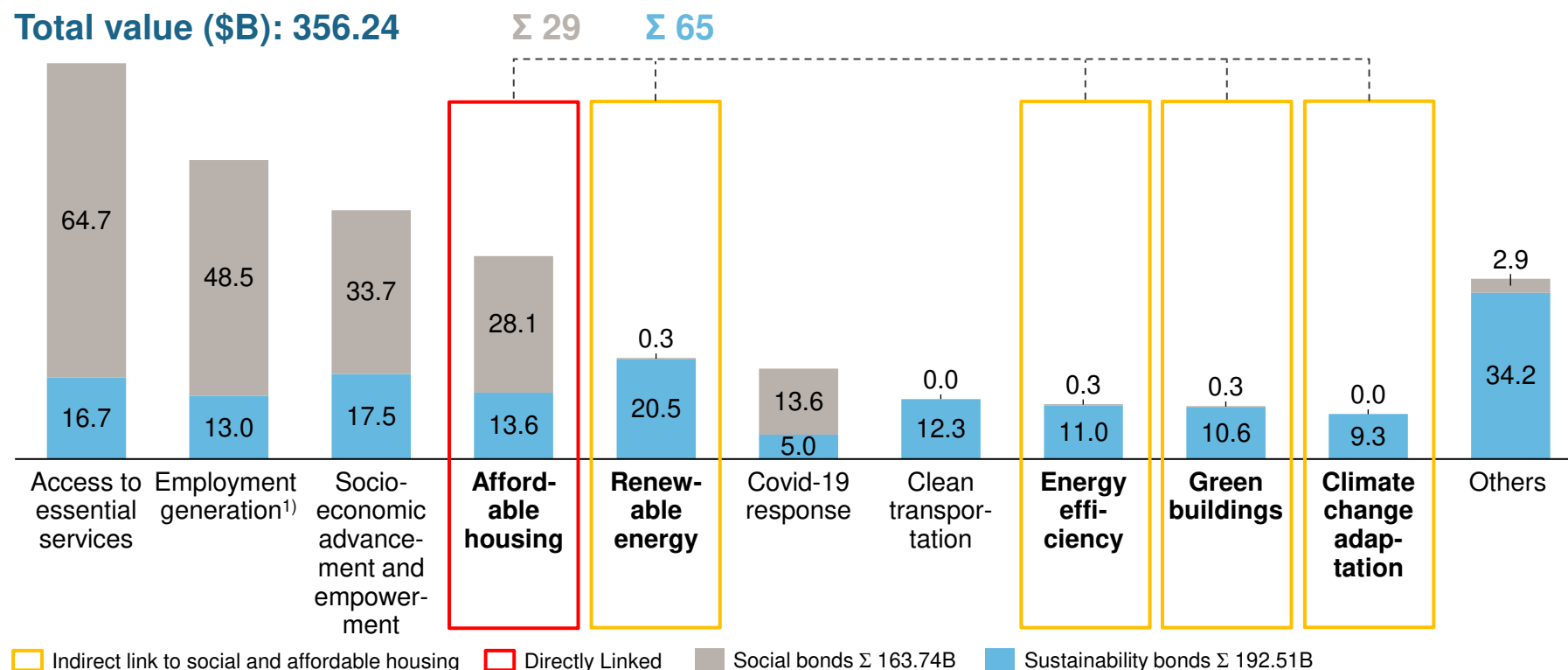
OTHER SELECTED STANDARDS/ INITIATIVE



About 15% of social bonds and 40% of sustainability bonds issued in 2021 were directed at initiatives in the built environment

Use of proceeds breakdown of social and sustainability bonds issued in 2021 (worldwide in US\$B)

Total value (\$B): 356.24



1) Including through the potential effect of SME financing and microfinance

2) Including: Food Security / Sustainable water management / Pollution Prevention Control / Sustainable management of living natural resources / Terrestrial and aquatic biodiversity conservation a.o.

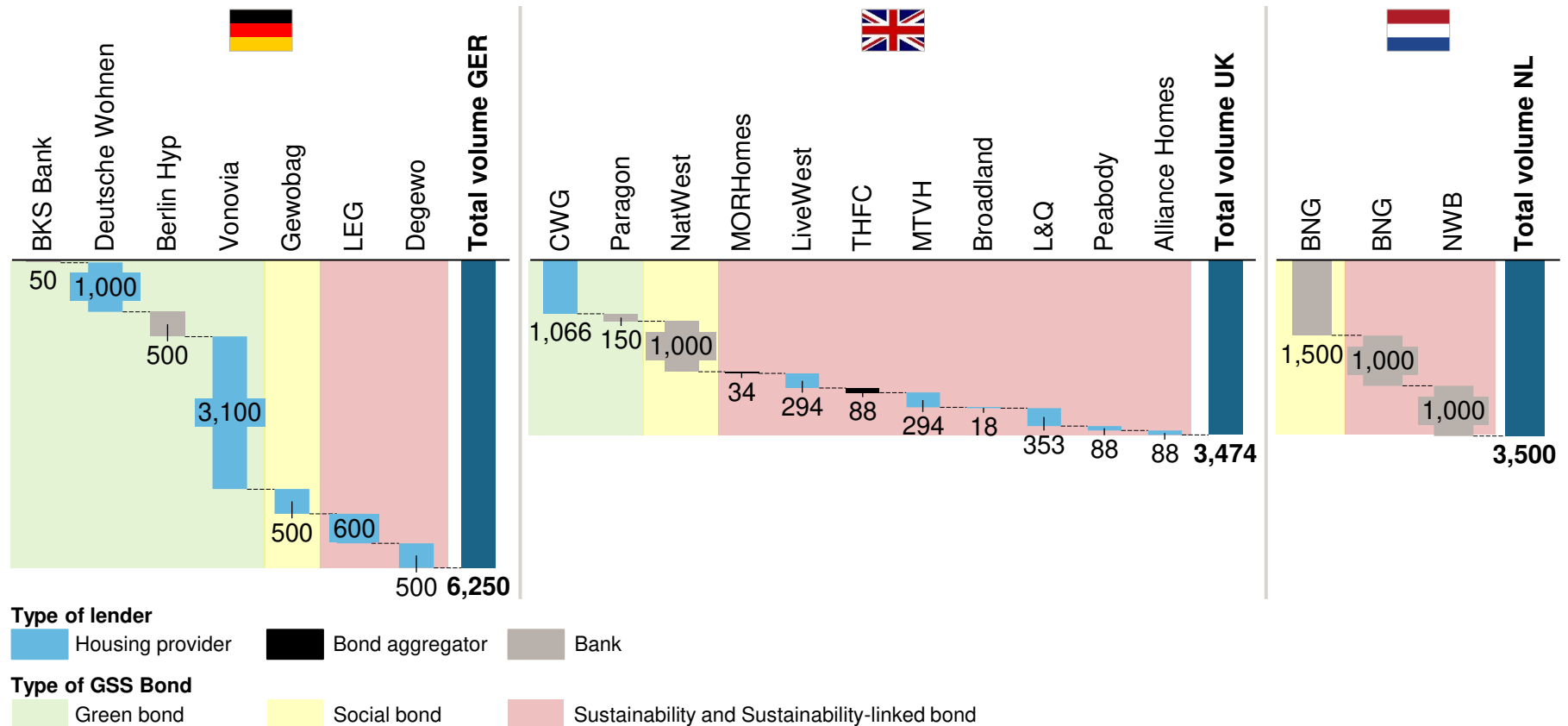
GSS-Bonds are either emitted by the housing provider itself or by banks and bond aggregators

Selection of issuers of GSS-Bonds for sustainable housing in 2021

	Banks & Bond Aggregators				
	Germany 	Netherlands 	Denmark 	Finland 	UK 
	7,483 mil £	4,293 mil £	11,837 mil £	362.5 mil £	m£ 1,105
	  	 	  		   
	Corporates				
	2,295 mil £	425 mil £		382.5 mil £	m£ 2,286
	   			 	    

GSS Bonds are gaining momentum for housing companies across Europe, also through government sponsored bond aggregators

Selected issues of GSS bonds from the housing industry in m€ (2021-start 2022)



E

Case studies of four European housing associations

Selected housing associations for case studies

Overview of four European case companies

1 Germany



Property company owned by the Federal State of Berlin



70,000 units

Location of stock



2 Netherlands



Social housing association

60,000 units

Location of stock



3 Denmark



Property management company owned by 3 housing associations

15,000 units

Location of stock



4 Finland



Social housing provider

18,000 units

Location of stock



GEWOBAG engages a mix of approaches to create and maintain a sustainable living environment for its tenants

German housing association GEWOBAG



INSIGHTS ORGANISATION AS IS

€ 6.29 / sqm average rent¹⁾



160.35 kWh / sqm



~ m€ 25-35 investments in energy efficiency improvements

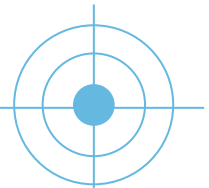


Published sustainability report



BEST PRACTICE

- The company has internal policies to increase the sustainable use of materials for new constructions
 - Insulations of the building envelope must be from mineral sources
- Projects for a sustainable living environment
 - Combined heat and power units combined with PV systems on façade in a residential park
 - Steel storage pilot project for peak electricity storage as heat, which can be used as heat or converted back into electricity
 - Roof extensions for additional living space without additional sealing of soil
- Sustainalytics ESG rating shows Gewobag to be among the top 10% of the rating (11.8 of 100 points)



1) Excluding bills for utilities

GEWOBAG re-designed the roof in a renovation project in Berliner Straße to create more living space and improve roof insulation

Renovation project example at Gewobag



Renovation measures

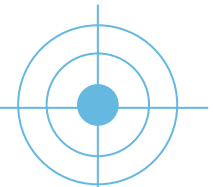
- Roof extensions for additional living space without additional sealing of soil
- Implementation of elevators
- Additional combined heat and power units
- Renovation measures on façades

Renovation project 2019



Renovation project Berliner Straße:

26 new housing units



Woonstad Rotterdam is one of the leading Dutch housing associations in turning their housing stock ESG-proof

Dutch housing association Woonstad Rotterdam



INSIGHTS ORGANISATION AS IS

€ 7.00 / sqm average rent



173 kWh / sqm



> m€ 30 investments in energy efficiency improvements

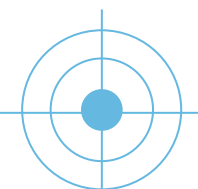


No sustainability report



BEST PRACTICE

- Sustainability strategy implemented in 2015
 - Key areas include energy transition, circular economy in building and climate change action
- 1.5% renovation rate per annum
- 20% of the portfolio is heated with renewable energies
- Average EPC rating of B across the portfolio



The renovation of senior citizen centre 'Princess Flats' has improved both energetic performance and the living environment

Renovation project example at Woonstad Rotterdam



Measures

- Improvement goal: from energy label F/G to A/B
- Façade insulation, new windows
- Implementation of district heating
- Creation of six new flats for handicapped tenants
- Larger balconies and more galleries

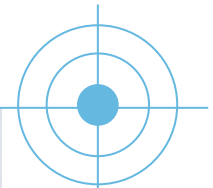
Renovation project 2021 – 2022



Renovation project Princess Flats:

495 housing units

Renovation budget: ca. bn€ 49.5



BO-VEST is engaged to reduce the CO₂-emissions of their stock whilst ensuring energy price stability

Danish public housing company BO-VEST



INSIGHTS ORGANISATION AS IS

KR 120 (€ 16) / sqm average rent



n/a kWh / sqm



bn€ 1.2 investments in energy efficiency improvements planned

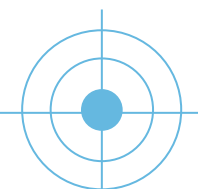


Yearly evaluation of sustainability measures



BEST PRACTICE

- Sustainability Strategy linked to the SDGs
- Solar panels in Silergården
 - For > 90 leases and common areas
 - Provide tenants with 100% renewable energy on the same price level
- Resident gardens in Shelf Damper
 - No use of pesticides
 - Wild Danish forest floor plants
 - Green roof that absorbs 50% of precipitation



The renovation of Galgebakken stock is a large scale project to improve energetic quality and liveability

Renovation project example at BO-VEST



Measures

- LCA analysis showed CO₂ reduction through renovation is greater than through re-construction
- Façade insulation, new windows and roofs including extra layer of insulation to cut energy consumption in half
- Full sanitation from PCB, Asbestos and mould
- Sustainable energy supply infrastructure including ventilation with heat recovery

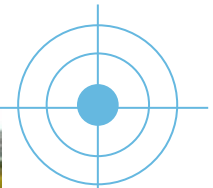
Renovation project 2022 – 2025



Renovation project Galgebakken:

600 housing units

Renovation budget: bnKR 1.55 (k€ 202)



Y-Foundation is committed to reach carbon net-zero by 2035 through investments in renovation and innovative new built (1/2)

Finnish social housing provider Y-Foundation



INSIGHTS ORGANISATION AS IS

€ 13.45 / sqm average rent



168 kWh / sqm



m€ 100 sustainability bond i.a. for energy efficiency improvements

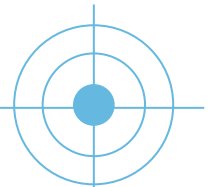


Annually published sustainability report



BEST PRACTICE

- Net-zero target is set for 2035
- Renovation of building envelope of at least 10% of the portfolio stock until 2030
 - Installation of geothermal heat, exhaust air heat pumps and solar panels in combination with metering solutions for apartments
- Issued a sustainable bond with a volume of m€ 100 under a green finance framework including wooden properties



Y-Foundation is planning to put past experiences from wooden house construction into a new biodiversity-focused project

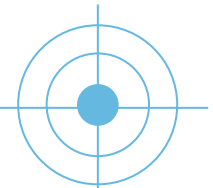
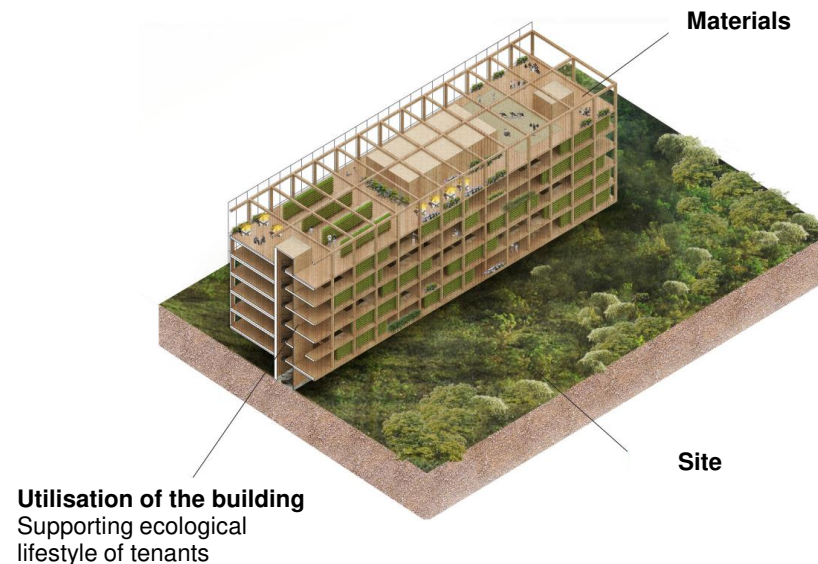
Biodiversity building of Y-Foundation



Measures

- Y-Foundation Biodiversity building:
 - Construction of the biodiversity building
 - a wooden building with few points of contact with soil to conserve the site
 - Encouraging low-carbon lifestyle through architectural design, e.g. through roof gardening
 - Installation of water saving and metering equipment with full transparency on water consumption for tenants

New construction project





Observations

Recent societal environment shows that the net zero goal is becoming a decisive factor for future market developments

Observations



There is no way back

All countries started the **journey to net zero carbon** anchored in national policy frameworks and laws



Market disruptors decarbonisation

The geopolitical situation (Ukraine war), high inflation of energy prices and building materials, and labour shortages come together to a **complex environment to achieve net zero**. However, the situation also shows that **achieving net zero is more important than ever**



Access and cost of sustainable finance

Access to sustainable finance is less challenging due to the **rapidly growing demand for sustainable investments**. Yet, **capital cost** is becoming increasingly problematic with higher interest rates that ultimately affect debt capacity of housing associations and affordability for tenants



Opportunity for innovations

Bond aggregators can **consider new ESG debt instruments** that rely less on government grants and guarantees as **new retrofitting technologies for scaling and affordability mature**, making investments into energy efficiency refurbishments more profitable



Asset management revisited

Considerations in capital allocation for **worst performing stock** between **demolition and retrofitting, life-cycle costs** are to be considered when deciding on whether to sell or keep underperforming legacy stock

The first RITTERWALD Sustainable Housing Outlook is now available on our website

Sustainable Housing Outlook Issue June 2022



Content

- ESG in social housing
- Sustainable bond issuances on the rise
- Alignment with UN Sustainable Development Goals
- Trends in Sustainability Regulations
- Sustainability Reporting Standard in United Kingdom
- Sustainable Housing Policies for selected European Countries
- [RITTERWALD's Sustainable Housing Outlook | RITTERWALD Consulting](#)

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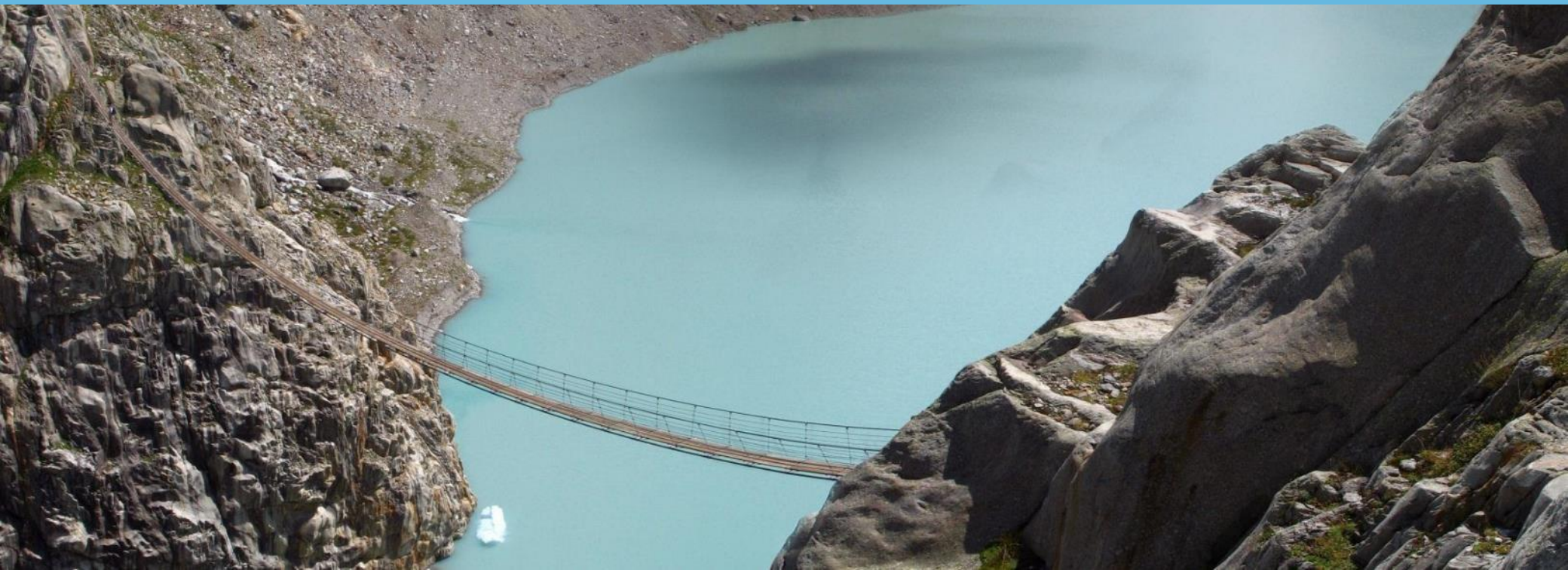
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With vision and care.**



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CONSULTING

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