



Vonovia 's Residential Sustainable Approach

Energy Efficiency in Construction and Housing
Webinar hosted by Kepler Cheuvreux

December 15, 2020



Urbanization

An increasing part of the population is moving into urban areas

We are providing apartments at fair price levels to a growing urban population

Our products and services give more than one million people an affordable home in their apartment and neighborhood



Energy efficiency

Ca. 1/3 of greenhouse gas emissions are related to real estate

We are a driving force of the industry and have embarked on a climate path that will result in a CO₂ neutral portfolio by 2050

The energy-efficient modernization of the housing stock and innovative solutions for carbon neutral residential neighborhoods are paramount for achieving climate protection targets



Demographic change

An increasing share of the population is 65+ years

We are preparing at least one third of all apartments that become vacant for elderly tenants

Demographic changes require refurbishing apartments to enable an ageing population to stay in their homes with little or no assistance for longer

Our scale, sustainable business model and access to capital markets enable us to assume a leading role in our industry for finding and implementing solutions.

Serving a Fundamental Need in a Highly Relevant Market. Our Business Is Deeply Rooted in ESG

- We provide a home to around 1 million people from ca. 150 nations.
- CO₂ emissions related to housing are one of the largest sources of greenhouse gas emissions.
- As a listed, blue-chip company we are rightfully held to a high standard.

All of our actions have more than just an economic dimension and require adequate stakeholder reconciliation.



Commitment to climate protection and CO₂ reduction



Responsibility for customers, society and employees

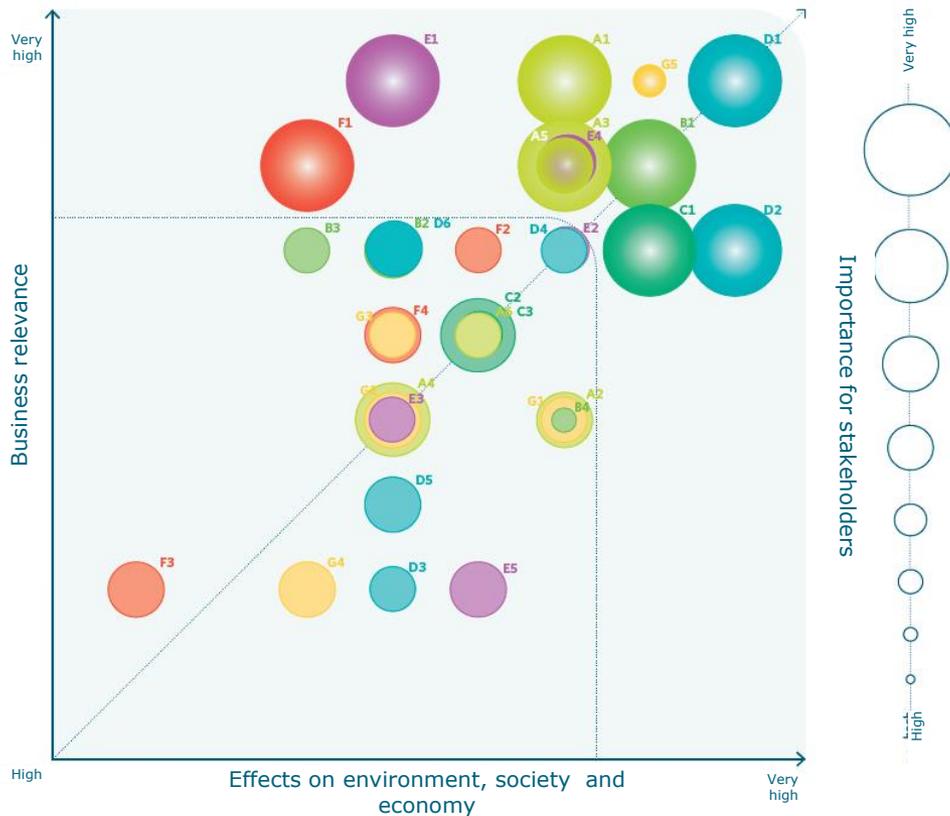


Reliable and transparent corporate governance built on trust

Sustainability Strategy	<ul style="list-style-type: none"> ➢ Vonovia has further developed its sustainability strategy, aligned it to ESG dimensions and defined targets. ➢ Top sustainability issues for Vonovia were identified in a thorough materiality analysis.
UN Sustainability Targets (SDGs)	<ul style="list-style-type: none"> ➢ 8 of the 17 United Nations Sustainability Goals (SDGs), have been identified as essential and are part of our sustainability strategy. ➢ Our sustainability strategy has the largest impact on these SDG's.
Climate path / CO₂ reduction & Climate Conference	<ul style="list-style-type: none"> ➢ Vonovia has defined a climate path for the portfolio to achieve a climate-neutral building stock by 2050. ➢ Vonovia hosted the Climate Conference "Perspectives for Climate-neutral Living" in October and presented itself as the driving force for climate protection in the housing industry.
Innovation Renewable Energies	<ul style="list-style-type: none"> ➢ Innovative research center in Bochum Weitmar to develop solutions for CO₂-neutral residential properties and sector coupling. ➢ Research in new technologies & use of renewable energies.
ESG ratings improved	<ul style="list-style-type: none"> ➢ Substantially improved ESG ratings. Sustainalytics (1st percentile worldwide), ISS Oekom (from D to C), MSCI (from B to A) CDP (from C to B). ➢ Inclusion in leading ESG indices such as DAX 50 ESG, STOXX Global ESG Leaders, STOXX Europe ESG Leaders 50, Dow Jones Sustainability Europe Index.
Sustainability Performance Index	<ul style="list-style-type: none"> ➢ Development of a sustainability performance index for implementing non-financial KPIs in the management system.

Process & result of the materiality analysis

- Stakeholder survey: online survey (142), stakeholder interviews (42)
- Assessment of business relevance and evaluation of the company impact via workshops



11 key topics

A1	A home at a fair rental level
A3	Adequate products and services in relation to demographic change
A5	Customer satisfaction and service quality
B1	Neighborhood development and contribution to infrastructure
C1	Sustainable new construction and refurbishment
D1	CO ₂ reduction of existing buildings
D2	Renewable energies and energy mix
E1	Attractiveness as an employer
E4	Diversity and equal opportunities
F1	Governance and compliance
G5	Capital markets appeal



CO₂ reduction of existing buildings

➢ ≈ 3% annual modernization rate - CO₂ Intensity: 30-35 kg CO₂/sqm by 2030.

Sustainable and CO₂- efficient new construction of buildings

➢ 85 % of completed new buildings in energy efficiency class A or better and set target on average primary energy need

Biodiversity

➢ Expansion of wildflower meadows to 100,000 sqm and 100 insect habitats.

Low-barrier refurbishment

➢ Maximize number of apartments with low barrier refurbishment.

Customer satisfaction & service quality

➢ Increase customer satisfaction and our CSI.

Attractive employer - best in class

➢ Increase employee satisfaction.

Workforce gender Diversity

➢ Increase in the proportion of women in the top two management levels below the Management Board.

Vonovia's Sustainability Strategy is Committed to 8 United Nations Sustainability Development Goals

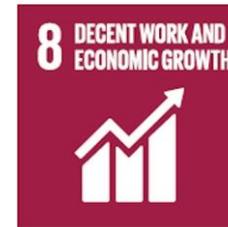
We consider 8 of the 17 United Nations Sustainability Development Goals to be material to our business activities and aligned with our sustainability strategy. Our sustainability strategy is expected to have positive impacts on these important goals.



- Employer attractiveness
- Diversity and equal opportunity



- Renewable energies & energy mix



- Capital markets appeal
- Governance & compliance



- Adequate products and services in relation to demographic change



- Neighborhood development and contribution to infrastructure
- Sustainable new construction and refurbishment
- A home at a fair rental level



- CO₂ reduction of existing buildings
- Energy-efficient modernization

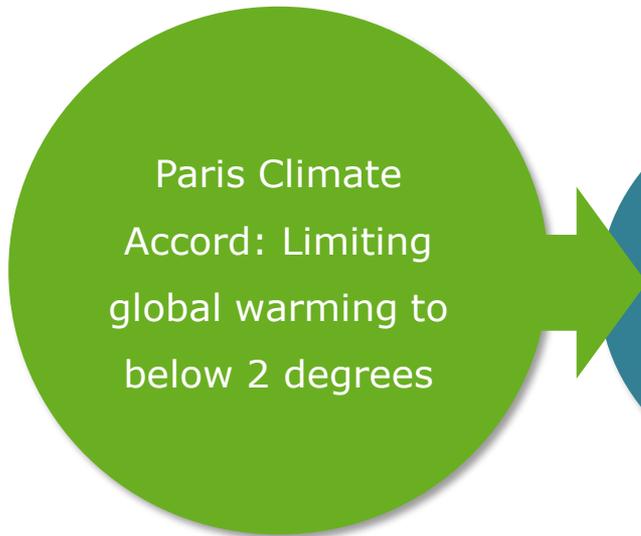


- Biodiversity and water



- Partnerships / holdings

Europe



Germany



- EU Renovation Wave: doubling the modernization rate

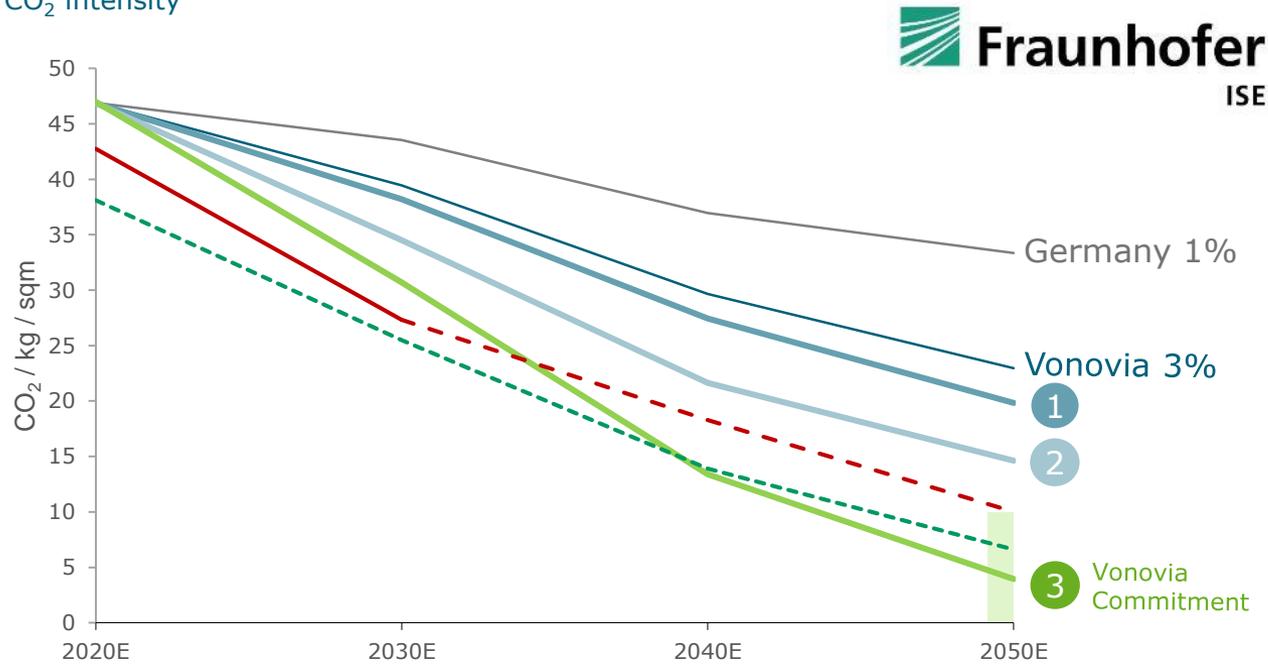
- The energy and building sectors account for a total of **30-40%** of CO₂ emissions, of which **14%** in the building sector
- Defined interim targets in the building sector: In 2030, a maximum of **72 million tons of CO₂/year** may be emitted.
- 2018 - 2030 -> **40 % reduction**
- CO₂ pricing to facilitate reaching the climate targets: CO₂ **tax to be introduced starting in 2021**
- 1% refurbishment rate in Germany is not sufficient to meet climate targets
- The preservation and creation of new **affordable housing is a central goal in connection with climate protection**

Our Ambition: Vonovia is a driving force in the housing industry on the way to a climate-neutral building stock

Vonovia's Climate Path towards CO₂ Neutrality through Continued Modernization, Renewable Energy and Sector Coupling

Illustration of different climate path scenarios 2020-2050

CO₂ intensity



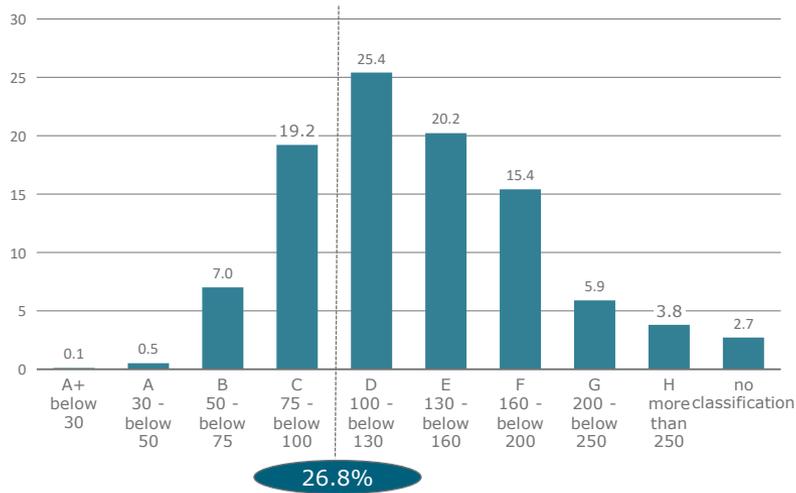
- Energy efficient modernization rate Germany (1%)
- Energy efficient modernization rate Vonovia (3%)
- -60% reduction, 3% energy efficient modernization rate
- -60% reduction, 3% energy efficient modernization rate + gas condensing & solar thermal technology
- -60% reduction, 3% energy efficient modernization rate + proprietary district heating, sector coupling / or + heat pump / or + PV
- - - Target path of German government 2030 / scenario for climate neutral housing portfolio
- - - CRREM 2-degree path 04/2020
- Target corridor

- 1 **Base case**
Increased modernization depth (ca. 60% reduction)
- 2 **Hybrid case**
Increased modernization depth (ca. 60% reduction) + gas condensing + solar thermal technology
- 3 **Climate neutral case²**
Conversion to green district heating, sector coupling and renewable energy (heat pump / PV)

Note: This climate path refers to the German portfolio; we are in the process of developing separate climate paths for the portfolios in Austria and Sweden. Source: Fraunhofer ISE modelling of Vonovia portfolio. Reduction of energy need of 160 kWh towards 60% through the following measures: Building envelope (insulated facade, windows) to become KfW Standard 100-70; scenarios 2 and 3 include the simulation of a change of energy sources. ² In order to achieve the climate neutral case certain regulatory adjustments still need to be made and not all of the technological concepts have been fully developed yet.

Vonovia Portfolio - Energy Efficiency Classes

Portfolio in %. Energy efficiency classes (kWh(m²*a)) 2019



Vonovia's Climate Strategy

- Energy-efficient modernization of ca. 3%
- Continue building modernization with even greater depth (up to 60%)
- Additional efficiency gains from fuel switch & renewable energy:
 - Green district heat
 - New technologies
 - Sector coupling in the neighborhood (PV & mobility)
- New construction: CO₂ optimized, use of renewable energy (energy efficiency class A and better)

Modernization

Fuel switch / renewable energy

Existing technologies

- Continue energy efficient building modernization with a 60% reduction rate for post-refurbishment energy need
- Replacement of oil heating systems with gas condensing boilers
- Hybrid heating (combination of condensing boilers and solar, renewable)
- Heat pumps
- Green district heat
- Sector coupling

Innovation for CO₂-neutral Heat Generation

Tomorrow's Energy Center

- Construction of a proprietary research center in Bochum Weitmar to develop renewable energy systems
- Integration of technologies such as fuel cells, electrolyzer, etc.
- The objective is to evaluate different technologies in terms of economic and ecological impact with a view to roll them out in other neighborhoods of our portfolio



Pellet Heating Project

- Pellet heating is almost climate neutral
- Particularly suitable in connection with local district heating
- Pellet costs are similar to gas costs; heating plants are more expensive
- When subsidized, pellet heating is a viable ecological and economically feasible alternative
- First concepts for potential pilots underway



Energiesprong – Serial Refurbishment

- Concept for cost-neutral modernization by combining serial refurbishment and the integration of renewable heat and electricity
- First pilot in Bochum about to be implemented;
- Additional pilots planned until 2024



Hydrogen Technology

- Decentralized generation of green hydrogen via PV
- Areas of application:
 - Hydrogen storage for subsequent heat generation
 - Disposal of hydrogen
- Technology currently still too expensive; a growing market is expected to lead to substantial cost reductions, rendering H₂ economically feasible



New Construction and Development Projects are Sustainable and CO₂-optimized

Vienna, Marina Tower



- ca. 500 condominiums
- ÖGNI NH Certificate Gold / klimaaktiv Gold Certificate
- Low-emission and low-pollution building materials
- Sustainable mobility concept

Berlin-Grünau, pilot houses



- 2-5 room apartments
- Wood-hybrid construction
- Low-emission and low-pollution building materials
- Low-energy houses Standard KfW 40

Buchloe, An der Halde



- New construction of 27 apartments (50% of them barrier-free)
- Wood hybrid construction
- Energy efficiency class A+ / Standard KfW 55
- Pellet heating incl. earth bunker

Bochum, Waldenburger Str.



- New construction of 14 apartments
- Fully automated pellet boiler
- Energy efficiency class A+ (heating)
- Photovoltaic system

- > New construction projects geared towards energy efficiency
- > Use of renewable energies (PV, CO₂, renewable heating)
- > Mainly A+ KfW

Program 55



Objective 2020

85% New construction better efficiency class A / KfW 55 standard

Five Areas of Action to Achieve CO₂-neutral, Energy-autonomous Neighborhoods for a Decentralized Energy Revolution

PERSPEKTIVEN KLIMANEUTRALEN WOHNENS

As a leader for climate protection in the residential sector Vonovia hosted the climate conference "Outlook for Climate-neutral Living" in Berlin on October 1, 2020.

 Renovation rate	 Renewables	 System change	 Mobility	 Stakeholders
<ul style="list-style-type: none"> ➢ Increase renovation rate and enable <i>Energiesprung</i> (energy efficiency leap) through high-quality, swift, and affordable renovation ➢ Spread between gas and electricity needs to be further reduced to enable electricity-based, low CO₂ heat supply 	<ul style="list-style-type: none"> ➢ Include landlord-to-tenant electricity in recoverable expenses ➢ Resi sector needs to be included in national Hydrogen Strategy 	<ul style="list-style-type: none"> ➢ Accelerate conversion of the electrical energy system ➢ Modify regulation to support decentralized electricity production ➢ Promote new energy markets for the financing of flexible electricity generators 	<ul style="list-style-type: none"> ➢ Accelerate charging infrastructure and market availability of e-vehicles through tailored subsidy programs for resi sector ➢ Establish standards for technical connection needs of grid operators plus grandfathering clause for installing charging stations 	<ul style="list-style-type: none"> ➢ Simplify landlord-to-tenant electricity models in resi sector ➢ Raise awareness why we need energy transition ➢ Facilitate landlord-to-tenant electricity in multifamily housing

Three essentials

- Continued modernization rate
- Adequate subsidy regime
- No grid fees or surcharges on decentralized and self-generated electricity

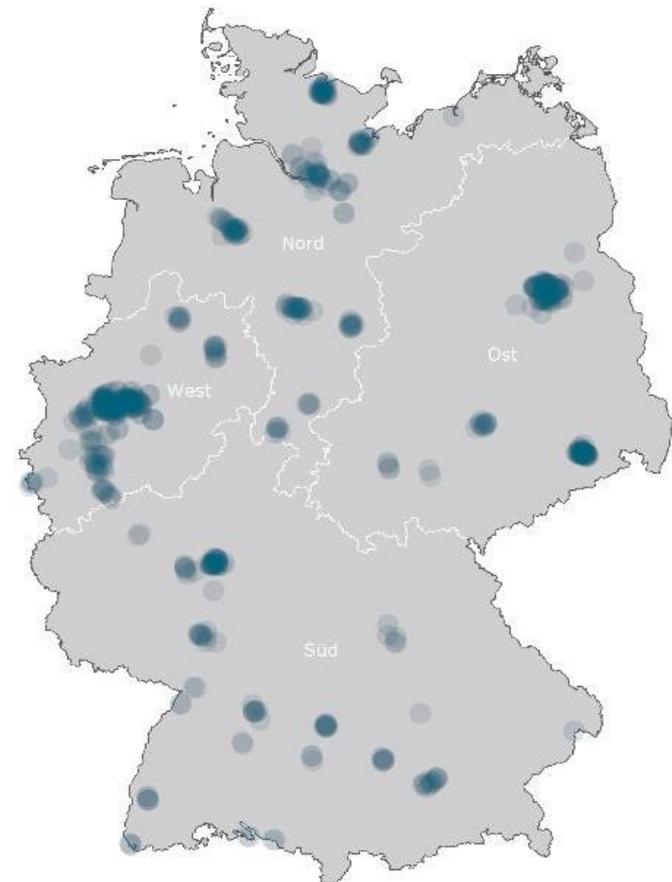
<p>A home at a fair rent level</p> 	<p>Fair rental levels for low- to mid-income households</p>	<p>Self-imposed obligation to cap modernization rent increases to max. €2 per sqm; Guarantee to tenants 70+ years that rents will remain affordable even if market rents change</p>	<p>Hardship case management to effectively assist tenants in financial distress</p>	<p>COVID-19 – special promise that we will find individual solutions for tenants who struggle financially; no one to lose the roof over their head</p>
<p>Contribution to society and stability of local neighborhoods</p> 	<p>242 social projects in our neighborhoods; Cooperation with non-profit organizations to support tenants in need</p>	<p>Vonovia Foundation supports multitude of social projects</p>	<p>34 Neighborhood managers and social workers to assist tenants and promote unity in diversity in our neighborhoods</p>	<p>Customers from ca. 150 different countries and tenants from all walks of life</p>
<p>Top employer</p> 	<p>It is our ambition to be the best employer in the real estate and craftsmen industries</p>	<p>Employer appeal – we are an attractive employer for former, current and future employees</p>	<p>Talents – we actively support our employees in their development to become the experts and leaders of our industry</p>	<p>Culture & change – we share a common culture of diversity, performance and appreciation in an developing organization that embraces change</p>

Urban neighborhoods are

- ...the right level to sustainably manage the megatrends,
- ...the right level for developing our 10 year master plan,
- ...our unique selling point!

- › **Ca. 3/4 of our portfolio** is located in almost **600 urban** districts, each with an **average of 430 apartments**
- › Each neighborhood has individual challenges that need be taken into account:
 - › Portfolio / properties
 - › People
 - › Urbanization, climate, demographics, mobility, integration

Our stock in urban Neighborhoods



circles & gradient mark location & quantity of quarters

- Vonovia is in the process of developing and implementing a Sustainability Performance Index with quantitative, non-financial KPIs and medium-term targets until 2025.



Next steps	12/2020	Supervisory Board to decide on new management remuneration scheme to be presented to the 05/2021 AGM for approval
	03/2021 (FY 2020 results)	Updated Management System and reporting of 2019 and 2020 actuals plus 2021 guidance
	04/2021 (2020 Sustainability report)	Sustainability Performance Index roadmap and targets for 2025
	05/2021 (AGM)	Resolution on new management remuneration scheme



Rene Hoffmann
Head of Investor Relations

+49 234 314 1629
rene.hoffmann@vonovia.de



Catrin Coners
Head of Sustainability & Strategy

+49 234 314 1642
catrin.coners@vonovia.de

- In partnership with renowned Fraunhofer institutes, Vonovia is implementing a three-year hands-on innovation project as part of Open District Hub e. V. in our neighborhood in Bochum-Weitmar to develop and test new technologies in ongoing operations.
- The aim of the project is to supply the neighborhood with electricity and heating that is as carbon-neutral as possible. We aim to achieve this by linking the energy sectors via a central platform.
- A smart, self-learning energy management system then ensures that the right energy is distributed to tenants when they need it – at electric charging stations, in the form of electricity for tenants’ own households or in the form of heating.

Level	Measure
Apartment	1 Implementation of measures that do not involve any structural intervention, e.g., optimized heating system settings
	2 Digitalization of buildings and apartments, e.g., to feature smart meters
Building	3 Energy-efficient refurbishment, e.g., measures relating to the building shells and heating systems
	4 Infrastructure for e-mobility, e.g., charging stations and e-wall sockets
	5 Sustainable energy supply, e.g., photovoltaic systems for tenant electricity
Neighborhood	6 Building digitalization and networking
	7 Sector coupling (heat, electricity, mobility, etc.) in the neighborhood via digital platform
	8 Storage and distribution of energy generated in a decentralized structure enables on-site consumption
	9 Promotion of biodiversity



Vonovia facts

- 15 million square meters of green spaces
- 220,000 trees
- 23 tree species, 20 of which are climate-resistant
- 1,000 replacement plantings
- 300 km hedges

Cooperation with NABU NRW



- Cooperation with NABU NRW since the end of 2019 and other partners (Animal Aided Design, Emscher Genossenschaft Innovation City, ...)
- Nationwide cooperation with NABU in preparation from 2021
- Central cooperation for neighborhood development: Pilot project launched in Bochum-Weitmar

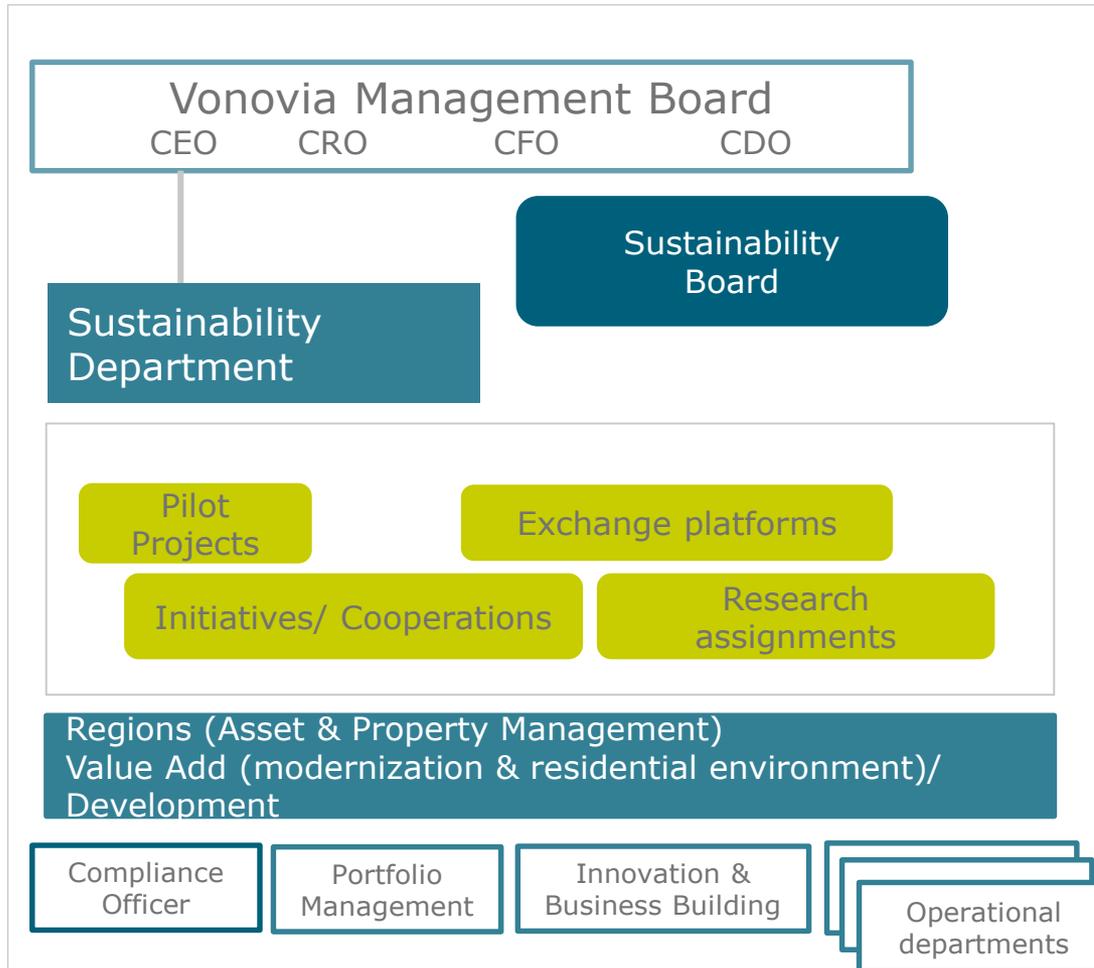
Products

- Wildflower meadow with nesting aids (insect habitats)
- Roof/facade greening
- Organic tenant gardens
- Floristic resilience and diversity
- Ecological pruning
- Rainwater Management

Measures implemented

- Nesting aids for bats and birds / Elements for facade greening
- approx. 100,000 sqm wildflower meadow
- Green roofs
- Ecological pruning





Board of Directors:

- Defines sustainability strategy

Sustainability Committee:

- Meets 3-4 times a year (Management Board / Heads of Sustainability, Communications and Financial Planning & Analysis)
- Sustainability Agenda
- Decides on strategic directions and sustainability goals

Sustainability Department:

- Further development of the sustainability strategy & roadmap
- Defines & monitors sustainability targets
- Implements sustainability projects
- Gives impetus and drives initiatives
- Responsible for reporting & sustainability report, ratings

Implementation of sustainability aspects in departments and operational units

Governance



Highly robust governance structure with two-tier board system and fully independent supervisory board

Dedicated ESG Department reporting directly to the CEO; The Supervisory Board monitors ESG issues in the Audit Committee; Sustainability Committee meets at regular intervals and on a need-basis

Numerous policies published (e.g. human rights, whistleblower, tax understanding, etc.) Committed to ILO Core Labor Standards and UN Global Compact on Human Rights

Roadmap 2020/2021



In the process of developing a concept for anchoring TCFD in our sustainability reporting and adopting EU taxonomy

Further development of sustainability risk management and environmental controlling

Continued progress on ESG Ratings and inclusion in leading ESG indices

ESG Ratings



Gold Award for three consecutive years



2016



2017



2018/19



2020



Upgraded in both ratings in 2020; Risk rating within 1st percentile of global rating universe

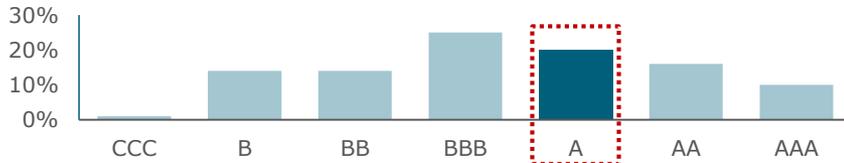
ESG Risk Rating 2020



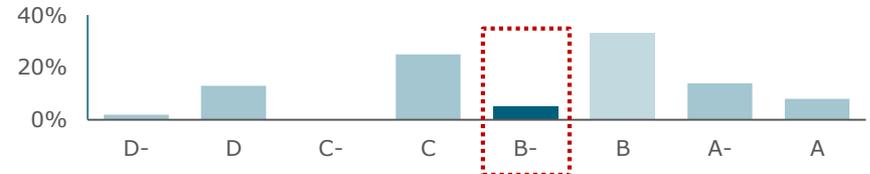
ESG Company Rating



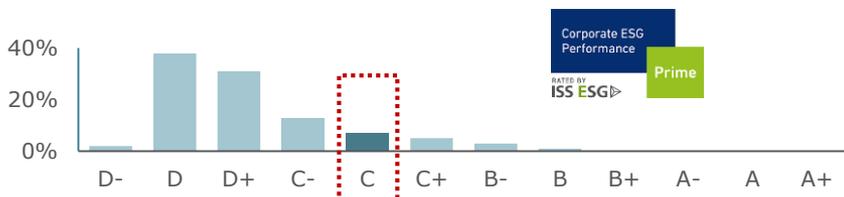
Upgraded from BBB to A



Upgraded from C to B- in 2020



Upgraded from C- to C in 2020



No participation in 2020. See Vonovia's open letter at <https://investors.vonovia.de/websites/vonovia/English/4080/news-detail.html?newsID=2024595&type=corporate>
Constructive dialogue with GRESB to try and enable participation going forward

ESG Indices

Vonovia is a constituent of various ESG indices, including the following: DAX 50 ESG, STOXX Global ESG Leaders, STOXX Europe ESG Leaders 50, Dow Jones Sustainability Europe Index

- The duties and authorities of the three governing bodies derive from the SE Regulation, the German Stock Corporation Act and the Articles of Association. In addition, Vonovia is **fully in compliance** with the German Corporate Governance Code.
- In the **two-tier governance system**, the management and monitoring of the business are **strictly separated** from each other.

Annual General Meeting (AGM)

- Shareholders can exercise their voting rights.
- Decision making includes the appropriation of profit, discharge of members of the SVB and MB, and capital authorization.

Two-tier Governance System

Supervisory Board (SVB)

- Appoints, supervises and advises MB
- Examines and adopts the annual financial statements
- Forms Supervisory Board Committees
- Fully independent
- Board profile with all required skills and experience



Management Board (MB)

- Jointly accountable for independently managing the business in the best interest of the company and its stakeholders
- Informs the SVB regularly and comprehensively
- Develops the company's strategy, coordinates it with the SVB and executes that strategy



CEO
Rolf Buch



CFO
Helene von Roeder



CRO
Arnd Fittkau



CDO
Daniel Riedl

This presentation has been specifically prepared by Vonovia SE and/or its affiliates (together, "Vonovia") for internal use. Consequently, it may not be sufficient or appropriate for the purpose for which a third party might use it.

This presentation has been provided for information purposes only and is being circulated on a confidential basis. This presentation shall be used only in accordance with applicable law, e.g. regarding national and international insider dealing rules, and must not be distributed, published or reproduced, in whole or in part, nor may its contents be disclosed by the recipient to any other person. Receipt of this presentation constitutes an express agreement to be bound by such confidentiality and the other terms set out herein.

This presentation includes statements, estimates, opinions and projections with respect to anticipated future performance of Vonovia ("forward-looking statements") which reflect various assumptions concerning anticipated results taken from Vonovia's current business plan or from public sources which have not been independently verified or assessed by Vonovia and which may or may not prove to be correct. Any forward-looking statements reflect current expectations based on the current business plan and various other assumptions and involve significant risks and uncertainties and should not be read as guarantees of future performance or results and will not necessarily be accurate indications of whether or not such results will be achieved. Any forward-looking statements only speak as at the date the presentation is provided to the recipient. It is up to the recipient of this presentation to make its own assessment of the validity of any forward-looking statements and assumptions and no liability is accepted by Vonovia in respect of the achievement of such forward-looking statements and assumptions.

Vonovia accepts no liability whatsoever to the extent permitted by applicable law for any direct, indirect or consequential loss or penalty arising from any use of this presentation, its contents or preparation or otherwise in connection with it.

No representation or warranty (whether express or implied) is given in respect of any information in this presentation or that this presentation is suitable for the recipient's purposes. The delivery of this presentation does not imply that the information herein is correct as at any time subsequent to the date hereof.

Vonovia has no obligation whatsoever to update or revise any of the information, forward-looking statements or the conclusions contained herein or to reflect new events or circumstances or to correct any inaccuracies which may become apparent subsequent to the date hereof.

This presentation does not, and is not intended to, constitute or form part of, and should not be construed as, an offer to sell, or a solicitation of an offer to purchase, subscribe for or otherwise acquire, any securities of the Company nor shall it or any part of it form the basis of or be relied upon in connection with or act as any inducement to enter into any contract or commitment or investment decision whatsoever.

This presentation is neither an advertisement nor a prospectus and is made available on the express understanding that it does not contain all information that may be required to evaluate, and will not be used by the attendees/recipients in connection with, the purchase of or investment in any securities of the Company. This presentation is selective in nature and does not purport to contain all information that may be required to evaluate the Company and/or its securities. No reliance may or should be placed for any purpose whatsoever on the information contained in this presentation, or on its completeness, accuracy or fairness.

This presentation is not directed to or intended for distribution to or use by, any person or entity that is a citizen or resident or located in any locality, state, country or other jurisdiction where such distribution, publication, availability or use would be contrary to law or regulation or which would require any registration or licensing within such jurisdiction.

Neither this presentation nor the information contained in it may be taken, transmitted or distributed directly or indirectly into or within the United States, its territories or possessions. This presentation is not an offer of securities for sale in the United States. The securities of the Company have not been and will not be registered under the US Securities Act of 1933, as amended (the "Securities Act") or with any securities regulatory authority of any state or other jurisdiction of the United States. Consequently, the securities of the Company may not be offered, sold, resold, transferred, delivered or distributed, directly or indirectly, into or within the United States except pursuant to an exemption from, or in a transaction not subject to, the registration requirements of the Securities Act and in compliance with any applicable securities laws of any state or other jurisdiction of the United States unless registered under the Securities Act.

Tables and diagrams may include rounding effects. Per-share numbers for 2013 and 2014 are TERP-adjusted.