

February 2021

Our real estate journey to net zero



Contents

Our journey to net zero 3

Our carbon reduction achievements to date 4

Investment boundary for net zero 5

What is the carbon footprint of our global
real estate portfolio? 6

What do we mean by net zero? 7

Our net zero pathway to 2050 –
how will we reach our target? 8

Data, verification and certification 9

Operating efficiently and powered
by renewables 10

Operating efficiently and powered by
renewables: fund net zero pathways 11

Taking our occupiers on the net zero journey 12

Low carbon construction and refurbishment ... 13-15

Our carbon boundary 16-18

Appendix A: detailed 2020 greenhouse gas
emissions footprint 19

Appendix B: detailed net zero
intervention measures 20

Our journey to net zero



Tony Brown

Head of M&G Real Estate

M&G Real Estate, the property investment manager for M&G Investments, is one of the world's largest real estate investment managers. As such, we recognise that our business activities have wide ranging social, environmental and economic impacts. Environmental and social issues are already influencing real estate market fundamentals including obsolescence, rate of depreciation, voids, operational costs and liquidity.

We believe that climate change is the most important environmental issue facing the world today. The risks posed by climate change are multi-faceted and far reaching, and the implications on our environment and society are profound. To limit the global average temperature rise to well below 2°C above pre-industrial levels, in line with the Paris Climate Agreement¹, the world must achieve net zero greenhouse gas (GHG) emissions by 2050.

Achieving this will only be possible with material changes in behaviour, as well as investment, to transition to a low-carbon economy.

In March 2020, M&G plc announced two new commitments to focus and accelerate our efforts to address climate change:

- As an asset owner and manager, we have committed to reach net zero carbon emissions across our total book of assets under management and administration by 2050, in line with the Paris Agreement and the UK Government's target. This includes all investments made by M&G Investments.
- As a company, we have committed to reduce our own carbon emissions to net zero by 2030.

For M&G Real Estate, we made a commitment in late 2019 to achieve net zero carbon by 2050 across our global real estate portfolio (AUM: £33.5bn as at 30 September 2020 including cash), as one of the founding signatories of Better Buildings Partnership (BBP) Climate Change Commitment².

With the built environment contributing approximately 40% of global carbon emissions³, if we are to limit the worst effects of climate change we must achieve decarbonisation of our built environment.

As part of the Climate Change Commitment, we have prepared this document which sets out our pathway to achieving our net zero ambitions. We have tried to be open about the complexity and challenges we face, both as an organisation and as a sector. We believe that collaboration with the industry will be crucial, and our chairmanship of the BBP Net Zero working group demonstrates our commitment to this.

We will report progress annually against our pathway. As an investment manager, this document is intended to provide a high level overview of our approach and progress. We operate globally and across many different asset classes which can make a single global approach or targets inappropriate. To supplement this document, at a fund level we set out fund specific targets as well as performance data to provide evidence to investors of our approach and commitment at a fund level.

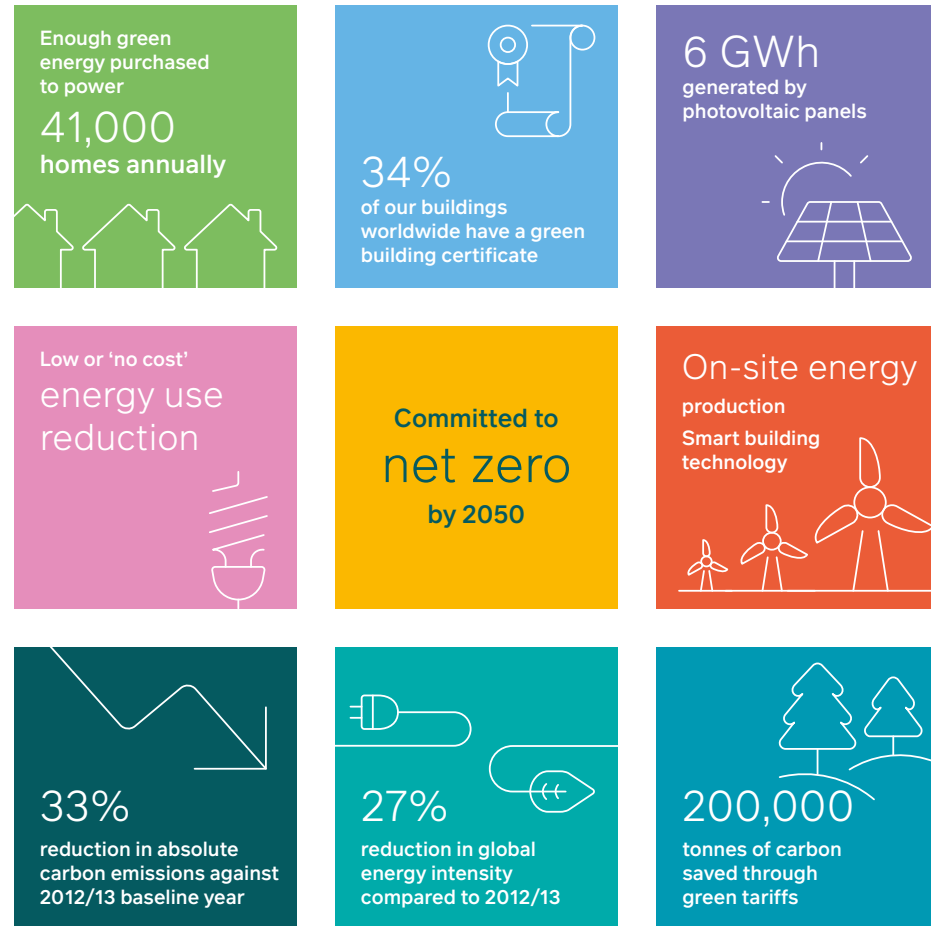
¹Paris Agreement, 21st Conference of the Parties, September 2015.

²<https://www.betterbuildingspartnership.co.uk/member-climate-change-commitment>

³International Energy Agency.

There is no guarantee that such initiatives will enhance investment performance.

Our carbon reduction achievements to date



Investment boundary for net zero

M&G plc have a group wide commitment to achieve net zero carbon⁴ by 2050, covering all assets we manage. Our commitment to the BBP Climate Change Commitment covers all the funds under management by M&G Real Estate.

M&G Real Estate is one of the world's largest property investors with £33.5bn** of assets across all the major sectors in the UK, Europe, Asia and North America. Our clients include insurers, institutional investors as well as retail investors. We manage both pooled and segregated funds.

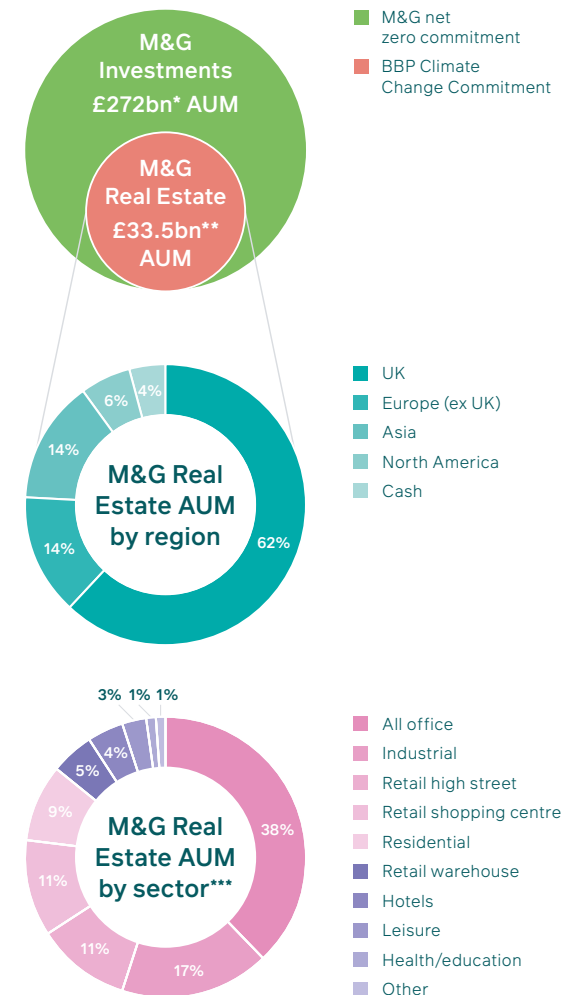
This document describes how we are seeking to achieve net zero carbon for our real estate investments. For the purpose of transparency, this covers 100% of our AUM.

However, there are some activities where we need to further develop our approach in order to track progress and set interim targets. These are included in our net zero by 2050 commitment, however, until 2025, the following will not be explicitly incorporated into our pathway and are not covered by any commitments made unless explicitly stated:

- Indirect investments in third party funds – we seek to engage with third party funds and will be developing approaches to track their progress against net zero commitments and map these to ours
- Non bricks and mortar assets, such as land
- Assets on which we have a purely advisory role
- Cash

This represents c.10% of AUM (as at 30 September 2020).

For the rest of the document, where we make reference to AUM covered by the pathway, it is as described above excluding the four activities listed.



*As at 30 June 2020. **As at 30 September 2020 (including cash). ***As at 30 September 2020 (excluding cash and indirect investments).

⁴We use the phrase 'carbon' as short-hand for carbon dioxide equivalent, including all greenhouse gases associated with climate change.

What is the carbon footprint of our global real estate portfolio?

To track progress against net zero, we need to be able to understand the carbon footprint of our global assets under management to put in place a plan to reduce these emissions. Our carbon footprint comprises the greenhouse gas (GHG) emissions of energy we have direct control over (where we procure electricity or gas as landlord, known as scope 1 and 2 emissions⁵), as well as the indirect emissions of value chain eg by our occupiers, materials we use during construction, and our supply chain (known as scope 3 emissions⁵).

In 2020, we significantly advanced our knowledge of the Scope 3 emission impact associated with our funds by completing a full and comprehensive measurement of Scope 1, 2 and 3 emissions across eight funds, representing 72% of the AUM covered by the pathway commitment. The assessment demonstrated that, as with most of the real estate sector, only a small proportion of operational emissions (Scope 1 and 2, equal to 13% of total emissions) are within our direct control. Overall, the Scope 3 emissions generated by our occupiers' use of energy (43% of total emissions), and the embodied

carbon emissions associated with development and refurbishment works (35% of total emissions), represent the most significant emissions sources. We recognise that driving emission reduction in these two areas will be critical to the success of our net zero commitment.

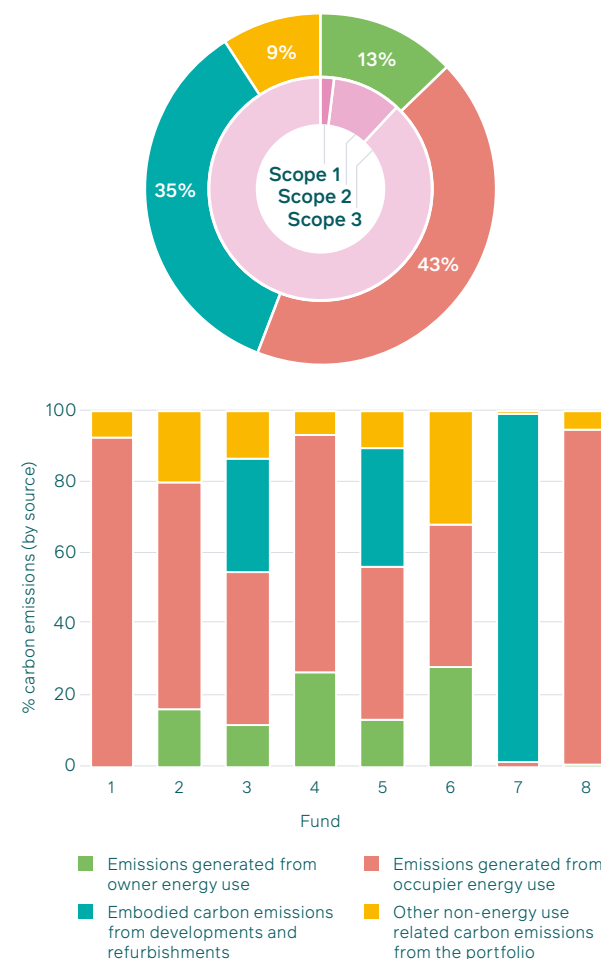
Analysis of emissions within the eight funds highlighted showed that there is high degree of variability in the significance of different emissions sources. This is dependent on investment strategy and the geographical location of investments, among other factors. By example, emissions from occupier energy use ranged from as low as 2% to as high as 93% of total fund emissions. This clearly demonstrates that our approach to addressing and reducing carbon emissions must be driven at the fund level, to ensure that strategies are tailored to each portfolio.

In 2021 we will complete a full GHG footprint for all funds covered by this pathway and incorporate the learnings from this process into our fund net zero pathways.

⁵Scope 1: Emissions from the combustion of fuel eg from use of gas to heat buildings.

Scope 2: Indirect emissions from electricity consumption or other energy generated by third parties.

Scope 3: Indirect emissions from our value chain eg occupier energy consumption, emissions from materials purchased, and from our supply chain.



What do we mean by net zero?

The concept of net zero is both simple and deeply complex. At its simplest, it means the amount of carbon emissions associated with a building's operational energy on an annual basis, or the amount of carbon emissions associated with the materials used to build or maintain a building (embodied carbon). Net zero is achieved through a combination of reducing carbon emissions as far as possible (through improved efficiency or lower carbon product specification), generation of on-site renewable energy, use of off-site renewable energy and, where emissions cannot be eliminated, offsetting any remaining emissions. When both operation and embodied carbon are net zero, net zero whole life carbon is achieved.

However, the industry is still grappling with what this means in practice, for example:

- Must a specific level of energy efficiency be achieved to be net zero operational carbon?
- Are certified renewable energy tariffs acceptable or is additionality a necessity?
- In which circumstance can offsets be used? What level of verification certification must be achieved?

We urgently need a more consistent understanding of net zero by the industry, supported by net zero certification scheme(s) to create clarity around the standards expected. We are playing an active role in these discussions.

In the meantime, for the purpose of our net zero approach, we have used the principles that follow.

To achieve operational net zero carbon buildings must be:

- Highly energy efficient and meet certain thresholds of energy use (see page 9 for further details)
- Be powered by renewable energy – either on-site or through renewable energy tariffs
- Use carbon offsetting where emissions cannot be eliminated by the above

To achieve net zero embodied carbon:

- Reduce embodied carbon in developments and refurbishments (see page 13 for further details)
- Use carbon offsetting where emissions cannot be eliminated by the above

Our approach and definitions will continue to evolve alongside the industry.

Net zero operational carbon

Highly energy efficient buildings



Powered by renewable energy



Carbon offsets where emissions cannot be eliminated

Net zero whole life carbon

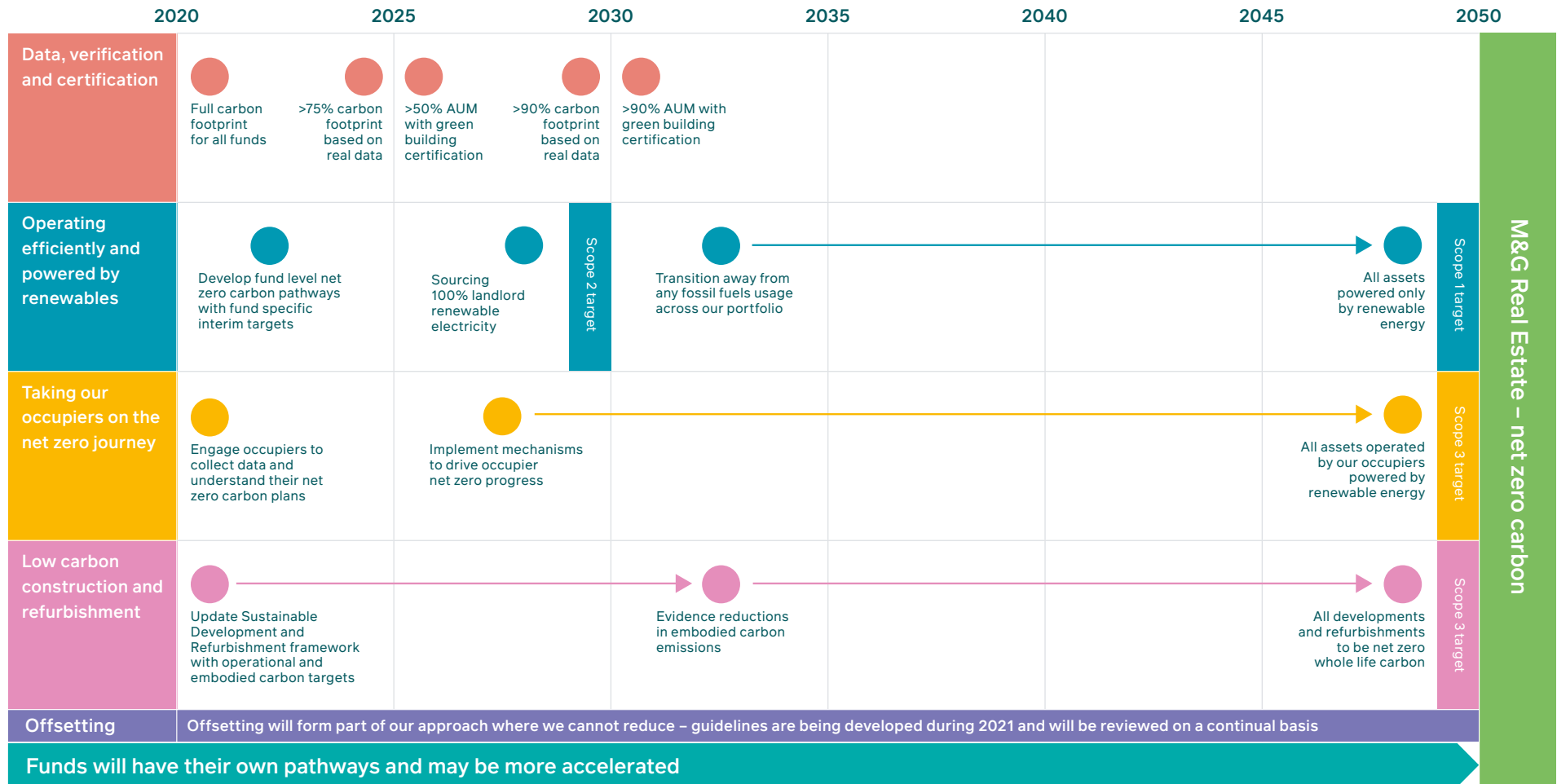
Net zero embodied carbon

Reduce embodied carbon in developments and refurbishments



Carbon offsets where emissions cannot be eliminated

Our net zero pathway to 2050 – how will we reach our target?



Data, verification and certification

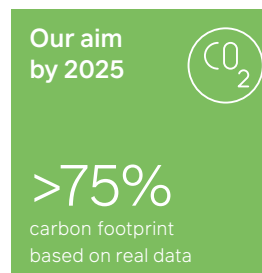
Data is crucial in tracking performance and evidencing that we are on course to achieve our ambitions. Maintaining an accurate understanding of energy and carbon performance has been a key component of our long established Responsible Property Investment (RPI) strategy. Equally, the use of third party green building certification provides a valuable assessment of performance at the asset level, aiding the identification of best practice and opportunities to improve. We see data completeness, data verification and building certification as critical to the success of our net zero commitment.

Our current environmental data management programme captures environmental performance data (including energy and carbon) on all assets where we have operational control on energy use, water and waste. This data is subject to a rigorous quarterly review process and annual formal limited verification by our external consultants using the ISO 50002, ISO 14064-3, ISO 14046 and ISO 19011 verification standards.

As part of our net zero commitment, we are working to expand the scope of our data collection programme to include the energy use associated with all occupiers. During 2020 we have already had significant success in this area through a combination of direct engagement with tenants led by our fund and asset management teams on our long income funds, as well as through the roll out of a tenant engagement and smart metering system for our European portfolios. These are key tools which we will look to expand and replicate across other portfolios during 2021. For embodied carbon, we are in the process of updating our Sustainable Development and Refurbishment Framework to set requirements on the measurement of embodied carbon emissions for all new projects. By 2025 we have set a milestone target for 75% of our carbon footprint to be based on real data.

Our other milestone target is for 50% of assets under management to be covered by certification by 2025. During 2020 we made significant progress in increasing the number of assets covered by green building certification to 34% AUM (by value) up from 31% AUM in 2019. In 2021 we plan to extend certification on existing buildings, as well as enhancing our requirements for certification on development and refurbishment projects.

We believe that green building certification has a crucial role to play in providing a standard set of tools for measuring and independently verifying net zero performance at the building level, both in terms of operational and embodied carbon emissions. We are committed to working with the industry, including direct engagement with scheme operators such as BRE Global, to support the development of a net zero assessment standard.



*As at 30 September 2020 (excluding cash).

Operating efficiently and powered by renewables

We believe that reducing energy consumption is essential for any net zero commitment. We have had significant success in reducing the energy intensity of the assets we manage where we have operational control, as well as increasing the proportion of energy consumed from renewable sources. We established a target to achieve a 25% reduction in energy intensity on an indexed trend for all landlord procured energy by 2025 compared to a 2012/13 baseline. As at 31 March 2020 we have measured a 27% reduction in energy use across the portfolios we manage.

This success has been delivered through a combination of comprehensive energy monitoring, structured engagement with our supply chain to identify improvement opportunities, and targeted investment to unlock efficiency gains. Examples of works undertaken include upgrading lighting to LED and deploying a range of remote monitoring technologies to aid the maintenance of operational efficiency in our most significant assets. We are looking to roll out these technologies to additional assets.

We have also driven enhanced energy performance at our new developments and refurbishments. During 2021 in the UK and Europe, we will be updating our Sustainable Development and

Refurbishment Framework to set even higher requirements for operational performance for all assets. In Asia and North America we utilise local green building certification frameworks to set standards and drive performance improvement.

We have significant ambitions to expand our use of renewable energy across the portfolios we manage. A significant proportion (92%) of electricity procured for our UK assets (representing 45% of all energy consumed globally*) is already procured on a zero carbon tariff which is backed by Renewable Energy Guarantees of Origin (REGO) certification. We are working with our property and asset management teams in Europe, Asia and North America to ensure that renewable energy tariffs are adopted wherever local market conditions allow. We will also explore the use of Purchase Power Agreements as a way of accessing renewable energy and directly supporting the development of generating infrastructure.

For on-site generation, we have significantly increased generating capacity in our Asia portfolio in the past year (2.4GWh generated in 19/20*) and have plans to install a further 1,250kW of capacity in Q1 2021. On-site generation is also a focus in our UK and European portfolios and we will progress with feasibility assessment on further sites during 2021.

Another central part of our net zero strategy is the measurement of performance of portfolios and

assets against net zero benchmarks. This enables us to understand the performance gap and what measures are required to improve performance and the associated capital costs. We are committed to developing fund level net zero pathways across all the portfolios we manage, including setting and communicating interim targets where these are achievable. We have already started this programme of works with a number of our funds, discussed on the following page.

Our focus 

Develop fund level net zero carbon pathways with fund specific interim targets

Progress in 2020 

62%
of global electricity procured through renewable energy tariffs

Progress in 2020 

27%
reduction in landlord energy intensity compared to 2012/13 baseline

Progress in 2020 

6 GWh
of renewable energy generated on-site*

*For year end March 2020.

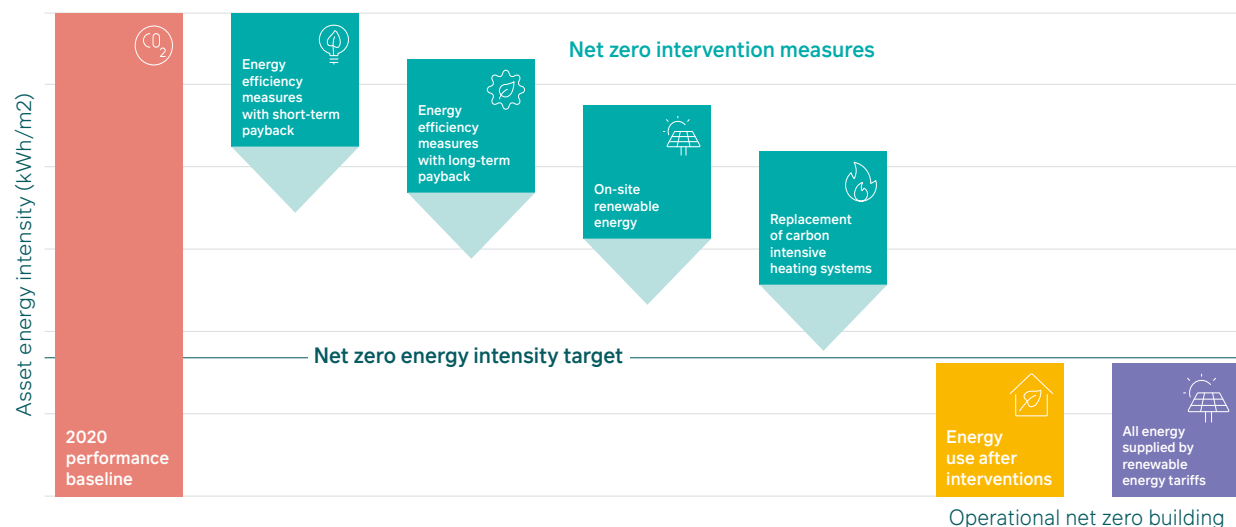
Operating efficiently and powered by renewables: fund net zero pathways

In 2020 we embarked on the development of fund specific net zero pathways for a number of the portfolios we manage, utilising external consultancy support.

Fund net zero pathways are critical to our overall approach to net zero; they provide a fund specific overview of current performance and actions needed to drive net zero. To build these pathways we follow the following process:

- Measure current energy and carbon intensity of the underlying assets in each portfolio, including estimation of occupier energy use based on appropriate industry benchmarks
- Compare performance (and asset stranding risk) against emerging net zero targets at the asset level, including the Carbon Risk Real Estate Monitor (CCREM) tool and national frameworks such as those established by governments and industry working groups (eg UK Green Building Council)
- Identify the energy and carbon reduction pathways available to each asset, including easy to implement measures as well as more disruptive measures such as decarbonisation of heating systems and deep retrofit, and provide an estimate on the impact of these measures in achieving net zero performance
- Quantify the cost of these measures and therefore the cost of achieving net zero which is crucial to influencing investment management processes
- Understand if there is still a performance gap at the asset level

How do you make a building net zero operational carbon?



Our fund and asset management teams have been involved in these initial pathway exercises and are in the process of providing in-depth appraisals on the modelled outputs. This engagement process adds further context with regard to the technical condition of assets, lease arrangements and investment strategies relating to each asset held in our portfolios. This process allows us to refine the net zero pathways further, identify assets where site based audits will be needed and provide funds with a clear set of interim objectives and targets for moving performance towards net zero by 2050 or sooner. We are committed to producing net zero pathways for all portfolios.

Taking our occupiers on the net zero journey

The emissions generated from our occupiers' use of energy to operate the buildings they lease is often the most significant emission source across the portfolios we manage. To achieve net zero in operation, we must bring our occupiers on the journey to drive operational energy efficiency, increase the use of renewable energy and decarbonise heating systems at the asset level.

Our key focus is to engage occupiers to collect data and understand their net zero carbon plans. By engaging with our occupiers in this way, we will establish an accurate view on current energy performance, collect valuable information for modelling how performance might change under their net zero strategy, and identify what opportunities might exist for cooperation and co-investment in net zero improvement technologies which are mutually beneficial.

In the past year, we have undertaken extensive engagement with a wide range of occupiers to establish a dialogue on net zero and wider sustainability issues. This has confirmed that a large number have set, or are in the process of developing, net zero targets and delivery strategies which align with our own ambitions. Our next steps are to identify and assess opportunities to support their ambitions, particularly in the area of renewable energy and on-site generation.

Access to occupier data is supported by green lease terms, and the introduction of technology to automate the data collection process. Our European portfolios have already piloted use of smart metering and engagement technology which is now actively in use across a number of assets within these portfolios and provide tenants with access to web-based tools for reviewing energy performance trends. Our aim is to expand this approach to other portfolios in the year ahead and to pilot collaboration projects where these opportunities are identified through discussion.

Our focus



Engage occupiers to collect data and understand their net zero carbon plans

Progress in 2020



Working with a wider range of occupiers to gather data and share net zero ambition

Low carbon construction and refurbishment

Embodied carbon is the greenhouse gas emitted when we build and maintain a building. This can be one of a fund's greatest sources of Scope 3 carbon emissions, particularly if they undertake a significant amount of development or refurbishment activity.

The majority of embodied carbon is emitted during the construction or refurbishment of a property. However, embodied carbon is also emitted during the maintenance and fit-out cycles, which is also included in our net zero pathway.

Our key action to reduce embodied carbon will be through new requirements set as part of our Sustainable Development and Refurbishment Framework, both in terms of measurement of embodied and whole life carbon as well as targets to reduce this. Alongside this, we will also be setting more ambitious operational carbon requirements. We already have exemplar buildings globally, including Surbana Jurong in Singapore which is one of the first buildings in Singapore to be awarded the BCA Green Mark (Super Low Energy) Certification.

We are committed to working with the wider industry on developing an understanding of embodied carbon, enhancing reporting and measurement, as well as better integrating circular economy principles. In 2019, we participated in 'From Principles to Practices', a two-phase collaborative project led by Arup and the Ellen MacArthur Foundation that aims to translate the principles of a circular economy into everyday built environment practices. The output report: 'Realising the Value of Circular Economy in Real Estate'⁶ provides thoughts and case studies for the built environment to consider what circular models might look like.

Our focus



Update Sustainable Development and Refurbishment network framework with operational and embodied carbon targets



Surbana Jurong: one of the first buildings to achieve Super Low Energy Certification in Singapore

⁶<https://www.ellenmacarthurfoundation.org/assets/downloads/Realising-the-value-of-circular-economy-in-real-estate.pdf>

Pathway actions:

The below summarises our pathway actions to allow comparisons to be made across the industry in line with the BBP Climate Change Commitment.

Topic	Our aims	Strategy to achieve (by end 2021 unless indicated)	Reporting metrics
Operational carbon emissions	Reduce energy and carbon intensity of assets within our portfolios and seek to align with industry energy and carbon targets	- Undertake fund specific net zero carbon pathways for operational carbon emissions, using industry frameworks eg CRREM enabling us to establish building level energy and carbon reduction trajectories and energy action plans - Use the outcomes of the net zero carbon pathways for operation carbon emissions to set fund specific net zero operational carbon targets - Improve data accuracy and seek to further enhance the data provided from our occupiers - Set targets for operational performance as part of the update of our UK and European Sustainable Development and Refurbishment Framework; in Asia and North America utilise green building certification framework to set standards and drive performance - Enhance our acquisition processes to identify and plan for the cost of achieving net zero	Energy intensity (kWh/m²/year) Carbon intensity (kgCO₂e/m²/year) % AUM achieving net zero energy efficiency targets % AUM achieving net zero carbon targets/net zero aligned Data coverage (%NLA m² based on actual data, %Tenant energy MWh estimated)
Renewable energy (on-site generation and off-site procurement)	Decarbonise the energy used at assets by ourselves and our occupiers. Maximise use of on-site renewable energy generation	- Explore opportunities for on-site generation of renewable energy at existing assets - Set requirements that support decarbonisation of heat as part of the update of our UK and European Sustainable Development and Refurbishment Framework - Set requirements for the use of on-site renewable energy as part of the update of our UK and European Sustainable Development and Refurbishment Framework - Where possible, ensure that all imported electricity is procured from certified renewable energy supplies (eg REGO certified), and encourage our joint venture partners to adopt the same approach - Support the development of renewable energy generation through the use of purchase power agreements where technically and financially viable - Explore opportunity to provide renewable energy procurement services to our occupiers to decarbonise their energy supplies	MWh on-site generated energy MWh procured renewable energy Location and market-based emissions (tCO₂e/year) % of total energy purchased that is renewable

Topic	Our aims	Strategy to achieve (by end 2021 unless indicated)	Reporting metrics
Embodied carbon	Reduce carbon intensity of developments and refurbishments	• Set targets for embodied/whole life carbon as part of the update of our UK and European Sustainable Development and Refurbishment Framework • Set thresholds/requirements for embodied/whole life carbon assessments as part of the update of our UK and European Sustainable Development and Refurbishment Framework • Review the above once completed to set requirements in Asia and North America	Carbon intensity (kgCO ₂ e/m ²)
Carbon offsetting	Offset only after actions to reduce have been implemented first	• Further develop our approach to offsetting residual carbon and mechanisms to do this (eg internal carbon price, how are proceeds spent) • Develop guidelines on our approach to offsetting • Set requirements for offsetting as part of the update of our UK and European Sustainable Development and Refurbishment Framework	Total emissions offset (tCO ₂ e) Types of offsetting used
Third-party verification and certification	Provide robust and independently verified data and certification to evidence achievements	• Continue to report and independently verify fund level energy performance and carbon emission data. Provide a global summary of performance and annual update on progress against our net zero pathway and any interim targets set globally • Achieve asset level green building certification in line with fund specific targets and guidelines • Work with the industry to help drive the creation of a certification to verify net zero operation and net zero embodied carbon performance	Independent verification statement % of AUM with green building certification % AUM with net zero certification (as these become available)
Governance and oversight	Have clear governance structures to ensure delivery of net zero commitments	• Ultimate responsibility sits at M&G RE Board level, as well as fund board level • Regular progress updates will be shared with these Boards, as well as to other committees which will support elements of achieving the net zero commitment	

Our carbon boundary

Our net zero commitment incorporates the emissions sources set out in the table below and on the following pages:

Business area	Sub-area	GHG protocol reporting category	Emissions scope	BBP climate change commitment	M&G real estate commitment	Data comment
Direct Real Estate Holdings (including JVs with management control)	Landlord purchased energy (electricity and fuels)	Purchased electricity, heat and steam and associated transmission and distribution losses	1, 2 and 3	✓	✓	
	Tenant purchased energy (electricity and fuels)	Downstream leased assets	3	✓	✓	
	Landlord refrigerants	Purchased goods and services	1	✓	✓	
	Tenant refrigerants	Tenant Scope 3	3			
	Landlord purchased water	Purchased goods and services	3	✓	✓	
	Tenant purchased water	Tenant Scope 3	3			
	Landlord managed operational waste	Waste generated in operations	3	✓	✓	
	Tenant managed operational waste	Tenant Scope 3	3			
	Tenant transport emissions	Tenant Scope 3	3			
	Tenant supply chain emissions	Tenant Scope 3	3			
	Landlord purchased capital goods and services (M&E and property management services)*	Purchased goods and services	3	✓	✓	

*This relates to services procured by the landlord to service and maintain the space eg. property management, service charge recoverable items and minor CapEx items eg minor replacements.

Business area	Sub-area	GHG protocol reporting category	Emissions scope	BBP climate change commitment	M&G real estate commitment	Data comment
Investments (Indirect Real Estate Holdings eg where investments are managed by a third party such as joint ventures (JVs) with no management control or investments in other real estate investment vehicles)	Landlord purchased energy (electricity and fuels)	Investments (proportional to the investment)	3	✓	✓	See note 1 page 18
	Tenant purchased energy (electricity and fuels)	Investments (proportional to the investment)	3	✓	✓	See note 1 page 18
	Landlord refrigerants	Investments (proportional to the investment)	3	✓	✓	See note 1 page 18
	Tenant refrigerants	Tenant Scope 3	3			
	Landlord purchased water	Investments (proportional to the investment)	3	✓	✓	See note 1 page 18
	Tenant purchased water	Tenant Scope 3	3			
	Landlord managed operational waste	Investments (proportional to the investment)	3	✓	✓	See note 1 page 18
	Tenant managed operational waste	Tenant Scope 3	3			
	Visitors transport emissions	Tenant Scope 3	3			
	Tenant supply chain emissions	Tenant Scope 3	3			
	Landlord purchased capital goods and services (M&E and property management services)*	Purchased goods and services	3	✓	✓	See note 1 page 18

*This relates to services procured by the landlord to service and maintain the space eg property management, service charge recoverable items and minor CapEx items eg minor replacements.

Business area	Sub-area	GHG protocol reporting category	Emissions scope	BBP climate change commitment	M&G real estate commitment	Data comment
Development	New development (including those where funding is being provided)	Purchased goods and services	3	✓	✓	
	Refurbishments	Purchased goods and services	3	✓	✓	
	Fit-out (landlord controlled)	Purchased goods and services	3	✓	✓	Not currently measured – note 2
	Fit-out (tenant controlled)	Tenant Scope 3	3	✓	✓	Not currently measured – note 2
	End of life	End of life treatment of sold products	3	**	**	
Corporate	Head office energy use	Company facilities	1 and 2		M&G plc commitment	
	Company vehicles	Company vehicles	1		M&G plc commitment	
	Business travel (excluding commuting)	Business travel	3		M&G plc commitment	
	Purchased goods and services	Purchased goods and services	3		M&G plc commitment	
	Operational waste generated	Waste generated in operations	3		M&G plc commitment	
	Operational water use	Purchased goods and services	3		M&G plc commitment	
	Employee commuting	Employee commuting	3		M&G plc commitment	

Notes:

¹As set out in our investment boundaries on page 5 there are some areas of activity where we need to further develop our approach in order to track progress and set interim targets. These are included in our net zero by 2050 commitment, but until 2025, will not be explicitly incorporated into our pathway and are not covered by any commitments. In terms of our indirect activities, indirect investments in third party funds are currently excluded, although we are working to include them and these may be included in some fund pathways already. We seek to engage with third party funds and will be developing approaches to track their progress against net zero commitments and map these to ours.

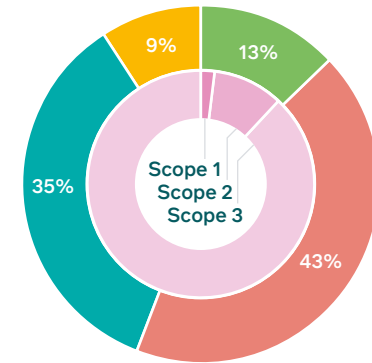
²We recognise that fit-out (both landlord and tenant controlled) is within the boundaries of the BBP Net Zero Commitment. We will work to incorporate this into our pathway, including strategies to measure and monitor, as the industry develops its approach on this topic.

**End of life carbon has not been included within the scope of the BBP Climate Change Commitment due to lack of industry consensus on how it should be accounted for. As industry understanding improves and an agreed approach adopted, this position will be reviewed.

Appendix A: detailed 2020 GHG footprint

Breakdown in emissions sources for year ending December 2019 across eight funds, representing 72% of the AUM covered by the pathway commitment

Scope	Emission source	Category in M&G Real Estate footprint	Total emissions (tCO ₂ e)	% of total emissions
Scope 1	Direct combustion	Owner generated emissions from energy use	10,477	2%
Scope 1	Refrigerants	Owner generated emissions from energy use	77	>1%
Scope 2	Electricity	Owner generated emissions from energy use	51,782	10%
Scope 2	Thermals	Owner generated emissions from energy use	2,748	1%
Scope 3	Capital goods	Embodied carbon emissions from development and refurbishments	182,609	35%
Scope 3	Purchase of goods or services	Other – non-energy use related emissions from the portfolio	32,444	6%
Scope 3	Fuel and energy related activities	Other – non-energy use related emissions from the portfolio	13,825	3%
Scope 3	Water	Other – non-energy use related emissions from the portfolio	1,211	>1%
Scope 3	Waste generated in operations	Other – non-energy use related emissions from the portfolio	299	>1%
Scope 3	Downstream leased assets	Occupier generated emissions from energy use	226,301	43%
Scope 3	Investments	Investments – not currently measured/included	–	0%
			521,772	



- Emissions generated from owner energy use
- Emissions generated from occupier energy use
- Embodied carbon emissions from developments and refurbishments
- Other non-energy use related carbon emissions from the portfolio

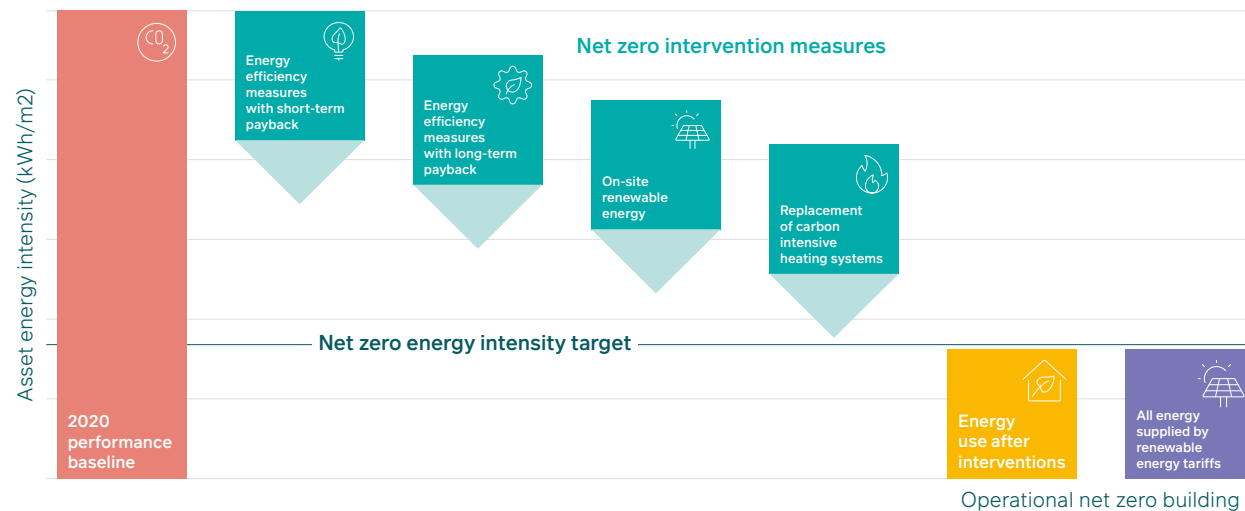
Scope 1 emissions: Direct emissions from the combustion of fuel – eg from use of gas to heat buildings.

Scope 2 emissions: Indirect emissions from electricity consumption or other energy generated by third parties.

Scope 3 emissions: All other indirect emissions, eg, energy use by tenants, embodied carbon of materials used in developments and refurbishments, third-party procured goods and services.

Appendix B: detailed net zero intervention measures

How do you make a building net zero operational carbon?



Understanding the net zero intervention measures:

- Energy efficiency measures with short payback periods include replacement of lighting with low energy LED equivalents, control and monitoring system upgrades, and management practices to reduce energy use.
- Measures with long-term payback periods include replacement of plant and equipment with high efficiency equivalents.
- On-site renewables include solar photovoltaic systems, wind turbines, geothermal, hydropower and other established technologies which are feasible.
- Replacement of heating systems refers specifically to the need to replace heating systems which are currently reliant on carbon intensive fossil fuels (typically natural gas) with low carbon alternatives or electric based systems such as heat pumps.

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