Finance & Investing in Decarbonising Europe's Buildings

Six financial levers to accelerate the decarbonisation of the construction and operation of European buildings

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Presentation from PETER SWEATMAN

CEO CLIMATE STRATEGY & PARTNERS

CLIMATE & STRATEGY PARTNERS

Agenda

1. The Problem
2. Mapping the Financial Levers
3. Six Strategies
4. A Galaxy of Opportunity

- This report was prepared by Climate Strategy & Partners 2020-21
- The recommendations are based upon own research and 19 structured expert interviews
- The recommendations do not necessarily reflect a consensus, nor all views of all the stakeholders
- This report is informed by its process and conclusions are funded by and to inform the Laudes Foundation

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- BloombergNEF
- Buildings Transparency
- Climate Bonds Initiative
- EIT Urban Mobility
- EMF ECBC
- European Investment Bank (EIB)
- Deutsche Bank
- D-fine
- DWS
- LGIM
- Nationwide
- ING
- IRE BS
- RePattern
- SEB
- Willis Towers Watson

1.

The Problem

Buildings are the Achilles-heal of Europe's climate strategy…

Buildings are one of Europe's most resource consuming sectors, representing:

- **36%** of greenhouse emissions
- **40%** of the final energy consumption
- **50%** of extracted materials
- **30-50%** material resource use
- **21%** of total water abstracted
- **35%** of the EU's total waste generation comes from buildings, with very significant life cycle impacts, particularly associated with extraction and processing stages.

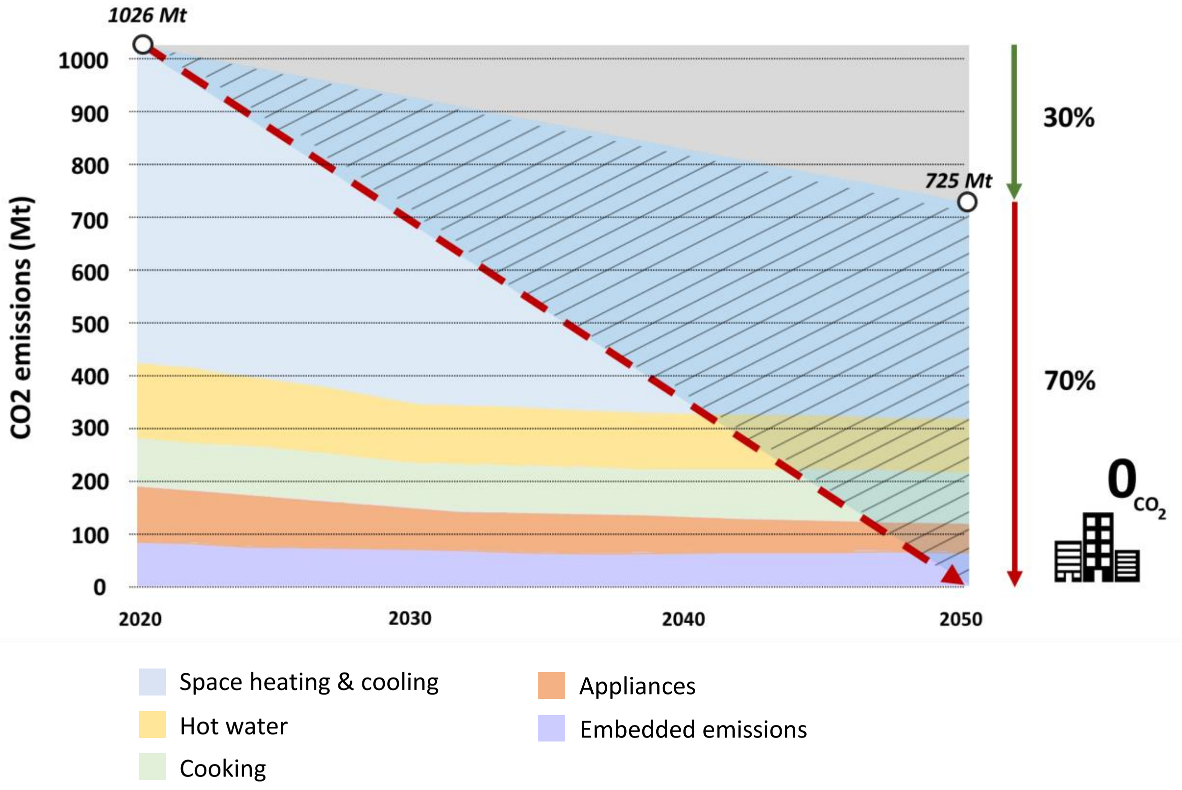
97% of the existing buildings built before 2010 require a partial or total refurbishment in order to deliver a net zero emissions economy by 2050.

- **2/3** of the EU's buildings were built when energy efficiency requirements were limited or non-existent.
- **Half of global stored wealth** is in buildings.
- Buildings **renovation rates** in Europe have hovered around **1.2%** for a decade, with a tiny proportion making deep energy savings.
    - It needs to be over **3%+ annually**, and mainly deep renovation, to deliver EU goals.

Sources: BIO Intelligence Services (2012), Copenhagen Resource Institute & Ecorys (2014), EEA (2010), eu.bac (2015), European Commission (2018, 2019 & 2020), IPEEC & UNEP FI (2019), and Odysee-Mure (2018)

There are two distinct buildings decarbonisation challenges: Renovation and Net-zero Embodied Carbon Construction…

Baseline annual CO2 emissions of the EU residential sector
***Direct, indirect and embedded emissions**



1. Renovation Challenge:

- Globally, over 30 years the renovation and construction challenges are approximately balanced.
- In Europe, buildings are old and renovation to reduce operational emissions represents around 80% of the overall building challenge.

2. Construction Challenge:

- The EU has defined near-zero energy buildings (NZEBs) nationally and has an industrial strategy to decarbonise cement and steel
- Mandatory Environmental Product Labelling and transparency is a huge lever.

Graph source: Röck, et al. (2020) & EC (2016)

2.

Mapping the Financial Levers

- European buildings decarbonisation splits into two important, and largely separate challenges:

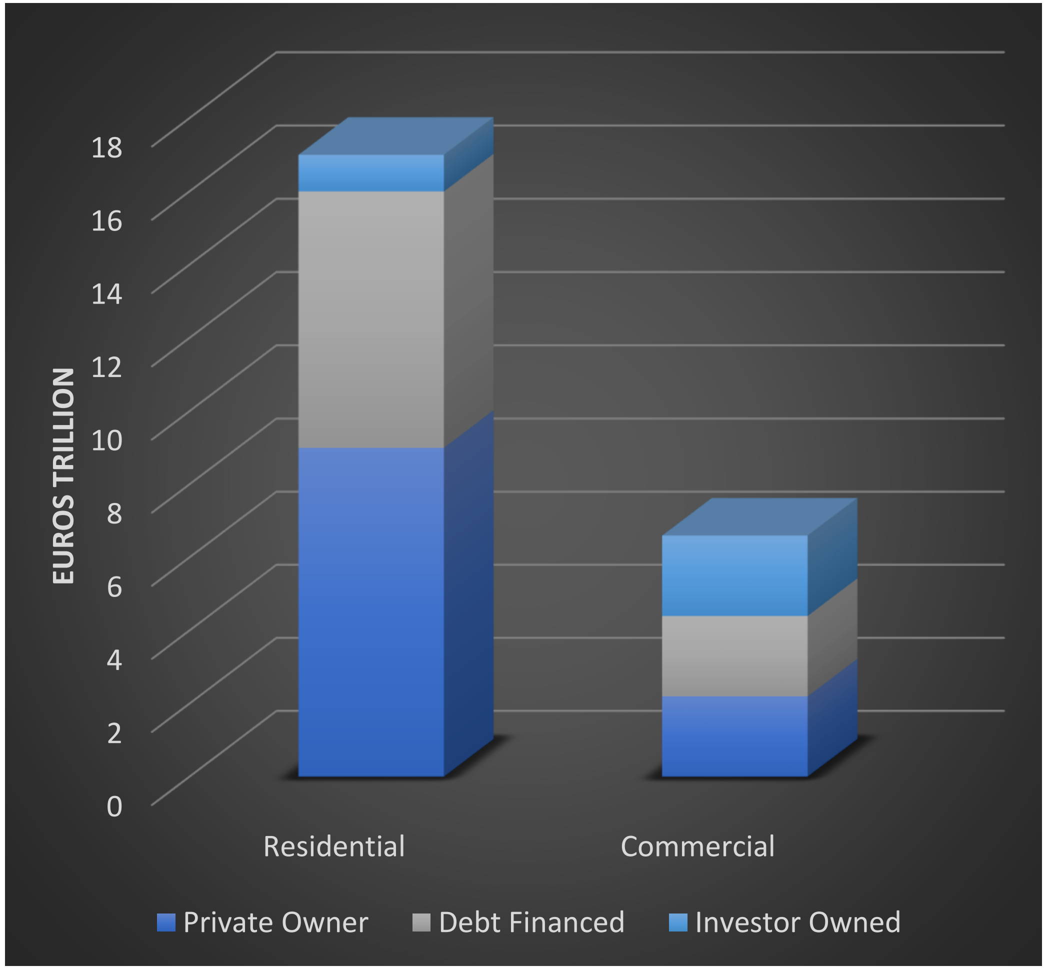
    1. Buildings renovation; and

    2. Decarbonising (and reducing) new build

- Financial actors overlap, but tend to have separate teams and approaches to construction finance, than renovation finance

- EU financial levers in the focus here

There are many financial actors and their levers are direct as commercial owners and indirect as debt holders…

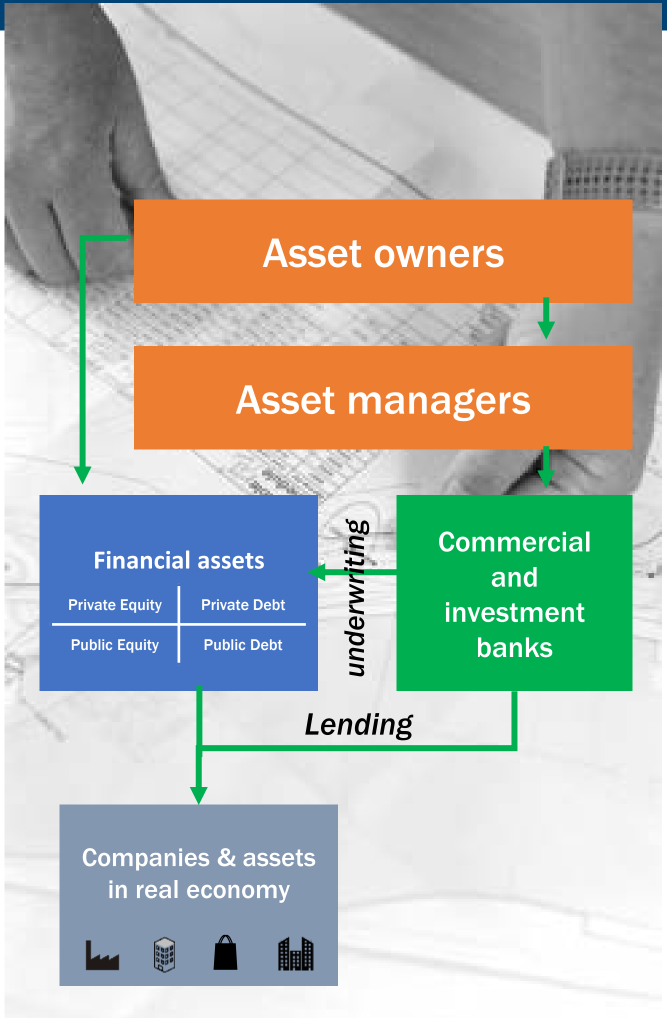


Financial levers to promote buildings renovation depend upon owner, debt level and building type:

- The most significant financier of EU buildings are banks providing the majority of mortgages (Euro 7 trillion) and asset-backed lending to commercial real estate.
- Homeowners and private owners own the majority of real estate which is approximately 50% of family and individual savings.
- Private institutions and listed funds own commercial real estate, as well as residential which also has social landlords.

Construction finance is more concentrated in banks:

- Banks dominate real estate project finance and debt underwriting, which is why financial levers over new-build are potentially more direct than in renovation.



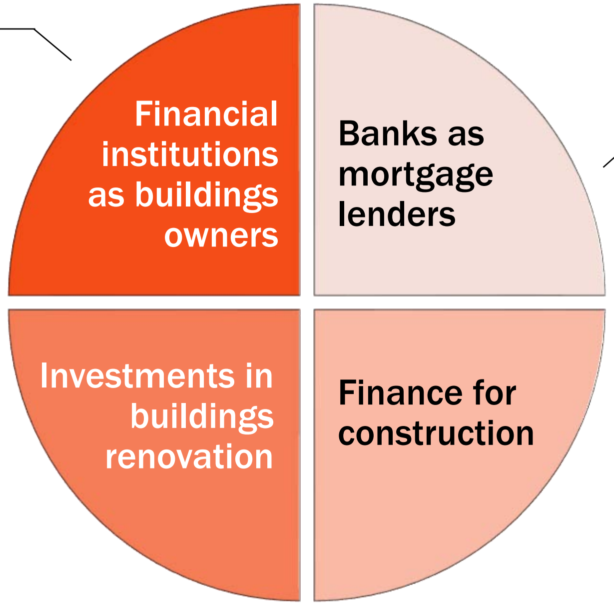
Graph source: WBCSD, 2021

Graphs source: Multiple sources and own estimations for illustrative purposes.

Here are the four biggest finance and investment levers for buildings decarbonisation…

- Buildings are a subset of the real estate asset class and European buildings are worth an estimated Euro 17 trillion

- The European mortgage market is Euro 7 trillion of size and this debt is mainly held on the balance sheets of retail banks, representing around 30% of bank assets.



- Europe needs Euro 275 billion of additional investments in buildings annually to meet its climate targets.
- Europe invests EUR 85-90 billion annually in buildings energy efficiency measures, around 40% of the world-wide market for energy efficiency retrofits.
- These improvements employ around 1.5 million Europeans.

- EU27 invested Euro 700 billion in construction of buildings in 2019, 40% residential and 60% non-residential.
- Buildings construction is the source of employment for 5 million Europeans.

Sources: European Commission (2019 & 2020), HSBC (2017), S&P Global Market Intelligence (2018), and Statista (2021)

Financial and investment levers also act differently in different buildings sub-sectors

	Owner Occupied Residential	Private Rental	Social Housing	Commercial Real Estate	Public Buildings
1. Financial institutions as buildings owners		(✓)		✓	
2. Banks as mortgage lenders	✓		(✓)	✓	(✓)
3. Investments in buildings renovation	✓	(✓)	(✓)	✓	(✓)
4. Finance for construction	✓	✓	✓	✓	✓
Public finance (e.g. Recovery Funds)	✓	✓	✓	✓	✓

(✓) = Limited lever, as the market conditions do not allow to amplify returns on investment

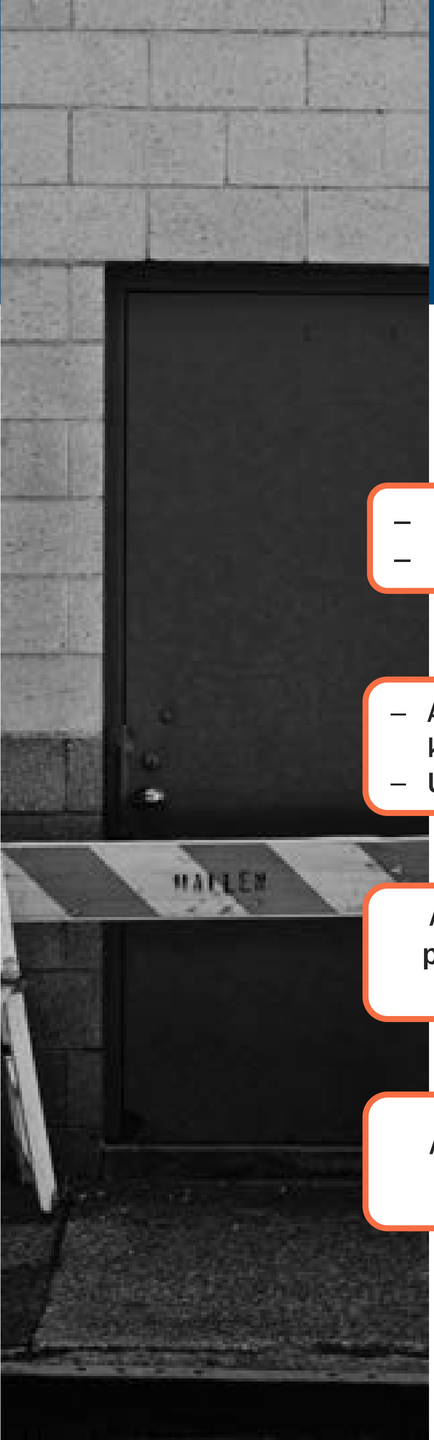
✓ = Array of different instruments is suitable to lever investments

- Finance and financial actors have strong influence in renovation in Commercial real estate and for owner occupied residential buildings, and across the board in construction.
- Finance and financial institutions own less private rental, social housing and public buildings. Pension funds are starting to exert their leverage.

How do Europeans live?

- 70% the population in EU-27 live in owner-occupied dwellings;
- 21% are tenants with a market price rent; and
- 9 % are tenants in reduced-rent or rent-free accommodation.

Source: Eurostat (2020)



Renovation's "dirty little secret" that maybe (just maybe) retail finance can help address

Transaction Costs – the hidden barrier to buildings renovation

Asset specificity / uncertainty	Stage	Transaction costs
– Asset specificity – Uncertainty	Consideration	– Determining the costs & benefits of renovation – Determining the available & appropriate measures
– Asset specificity in knowledge/skills – Uncertainty in planning	Planning	– Receiving essential permits for major renovations (e.g. changing the facade) – Understanding the process – Finding experienced people – Planning
Asset specificity in physical assets and knowledge/skills	Decision	– Finding reliable experts – Finding subsidies/ benefits – Uncertainties of the expected benefits
Asset specificity in knowledge/skills	Executing	– Mess and nuisance during the renovation – Uncertainties in doing by my-self/contractors – Uncertainties, risks and trust on the quality of the works of contractors – Uncertainties due the opportunism behavior

Transaction costs can represent 10-30% of the renovation investment.

- Main financial barriers:
  - "No money to renovate"
  - "No access to finance"
  - "Can't afford it"

Source: Energy and Buildings, 2020

3.

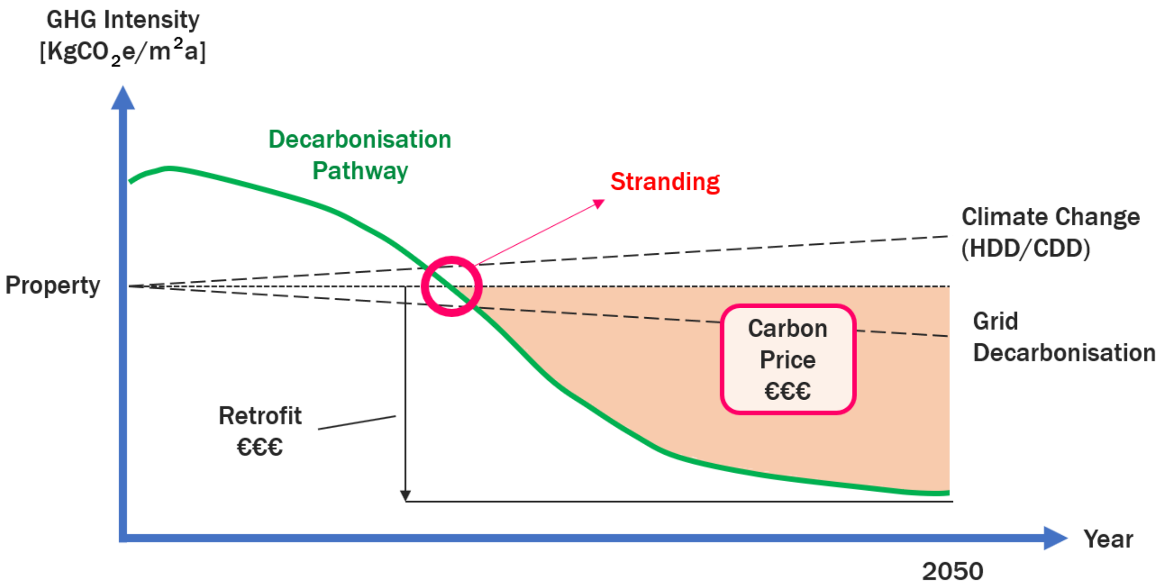
Six Strategies

Lexicon

Finance	Management of money, banking, investments and credit (usually a flow term)
Investment	Property acquired for financial return or benefit (usually an ownership purpose)
Funding	A term used to identify the provision of funds (a payment) which may come from a public or private source with or without return expectations
Grant	A type of funding which requires no financial return

STRATEGY 1: Give each building a science-based decarbonisation trajectory, led by commercial real estate asset owners

Stranding of real estate assets



CRREM provides a EU-funded building-level tool to manage stranding risk and renovation strategy

Interventions Required:

1. Euro 5.5 trillion of net-zero asset owner alliance investors (AoA) pledge to use CRREM to set real estate portfolio targets to align with 1.5 degC pathway.

2. CRREM tool defines data disclosure requirements for "traditional buildings labels" – therefore can be used as a plug-in for GRESB, BREEAM, LEED, NABERS, CASBEE.

3. CRREM

   CREEM method drawn up into:
   - Climate Bond Standard
   - Green Bond Underwriting Standards
   - CDP-SBTi
   - BBP
   - PCAF

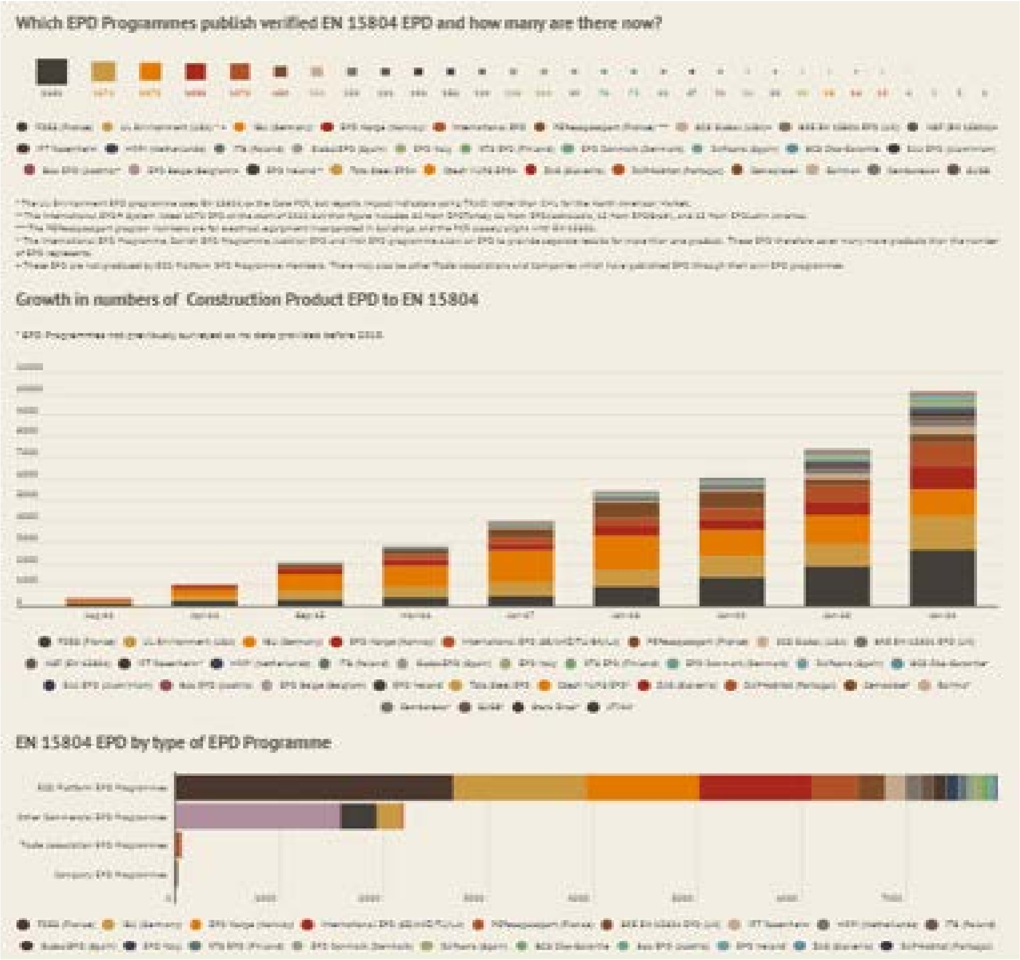
Sources: UNEP FI & PRI (2021), and CRREM (2020 & 2021)

STRATEGY 2: Embed embodied carbon in construction finance due diligence (via EPDs)

Interventions Required:

1. Reduce complexity barriers for construction finance due diligence of embodied carbon through digital third party-verified Environmental Product Disclosure (EPDs) according to European Standard EN 15804, required by revised Construction Products Regulation.
2. Ensure DG JUST's legislative proposal on mandatory supply chain due diligence includes upstream embodied carbon certification requirements for buildings construction and construction finance due diligence.
3. Leading technical advisors to top EU construction financiers develop and adopt best practices on embodied carbon certification in construction finance processes.
4. Under EU Taxonomy Reg. 2020/852, the Platform for Sustainable Finance can develop minimum safeguards for financial due diligence at finance completion to third party verify energy performance and certify embodied carbon.

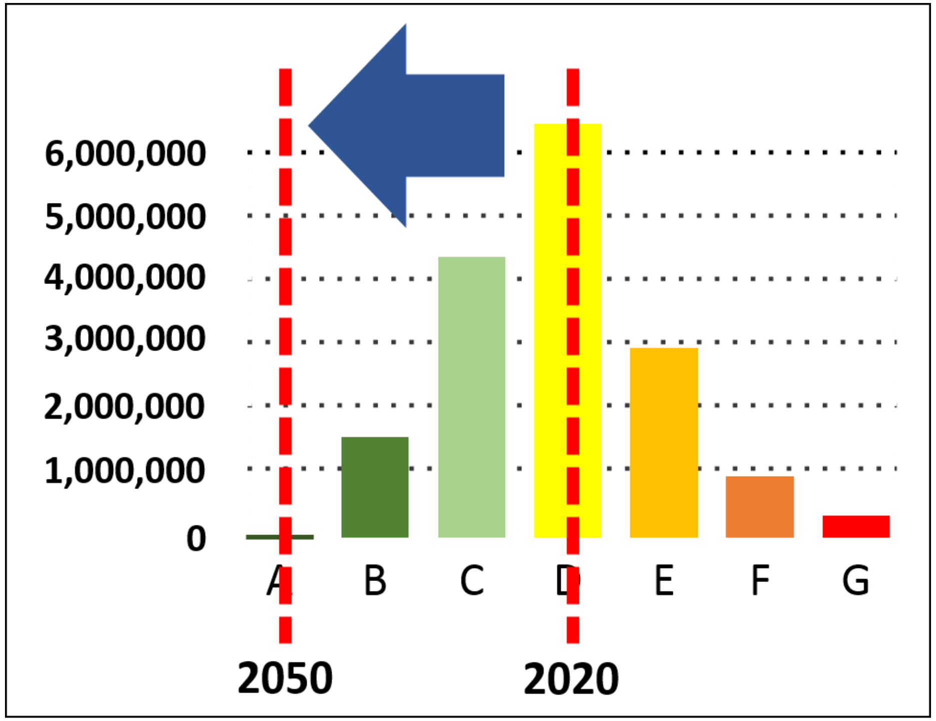
Sources: CEN (2021), EPD (2021), and Official Journal of the European Union (2020)



Graph Sources: Jane Anderson, ConstructionLCA (2021), ECO-Platform

STRATEGY 3: Align Euro 7 trillion of Mortgages with the Paris Agreement using Mortgage Portfolio Standards (“MPS”)

Mortgage Portfolio Standards Align Lenders with Europe’s Climate Ambition



Graph sources: University of Southampton (2021) & Openrent (2020)

Interventions Required:

1. Mandatory collection of energy performance certificate and real energy consumption data in property assessment required under a revised Mortgage Credit Directive art 19, as noted in guidance EVS 6 Property Valuation and Energy Efficiency (TEGoVA 2020) and inclusion in EU Standardised Information Sheet (ESIS).

2. Article 10 of EPBD (2010) revised to include Mortgage Portfolio Standards for all mortgage lenders, and Art 11 to make EPCs mandatory for all EU buildings excepting those too small, unoccupied or not heated/cooled.

3. 2021 revision of NFRD includes mandatory requirement aligned with EC Guidelines (2019) to disclose weighted average energy performance of mortgage portfolio by sub-sector.

4. Lever concept of Green Asset Ratio (GAR – EBA advice to EC for KPIs under article 8 of EU Taxonomy regulation) to require mandatory Mortgage Portfolio Standard (MPS) for energy performance for leading EU mortgage lenders aligned with Paris Agreement pathways (CRREM tool can also be used).

5. Probability of Default (PD) and/or Loss Given Default (LGD) correlations evidenced with energy performance of buildings collateral, leads to green supporting factor in revised Credit Requirements Directive (CRD IV) and the Capital Requirements Regulation (CRR).

Sources: EBA (2021), European Parliament (2021), Official Journal of the European Union (2010 & 2014), and TEGOVA (2020)

STRATEGY 4: Fintech drives data transparency drives down transaction costs

Potential of technology to simplify the costumer experience

Consideration
- Determining the costs & benefits of renovation
- Determining the available & appropriate measures

Planning
- Receiving essential permits for major renovations (e.g. changing the facade)
- Understanding the process
- Finding experienced people
- Planning

Decision
- Finding reliable experts
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- Uncertainties of the expected benefits

Executing
- Mess and nuisance during the renovation
- Uncertainties in doing by my-self/contractors
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- Uncertainties due the opportunism behaviour

Interventions Required:

1. Smart meter and property-level energy data is made accessible to FIs to identify "low hanging fruit" for energy savings and can be run at city, regional or national level.
2. Property energy consumption is projected forward using latest regional climate data and energy price forecasts.
3. Fintech providers are incentivised to provide web-enabled customer facing Apps to promote deep renovations to clients with high savings potential.
4. National buildings and renovation calculators are populated with energy savings data and promote energy components of non-energy renovations.

Source: Energy and Buildings, 2020

STRATEGY 5: EU Renovation Loan (ERL) provides fair and cheap deep renovation funding to all European homes

What is the ERL?

30-year, zero coupon junior debt repayable upon sale in amount of a deep renovation…

Example Term Sheet Highlights:

- Face Amount: **€30,000**
- Zero Coupon
- YTM = 0,5% (EU 30 year borrowing cost 2021)
- Maturity: **€22,500** repayment in year 30
- Seniority: Junior to existing mortgage but lien on property
- Early Repayment: Sale or transfer with accumulated interest at date, no penalty
- Status: Guaranteed by Govt, fully TLTRO-eligible

Interventions Required:

1. EU Leaders understand the strategic power of an EU Renovation Loan which unlocks the resources to support and implement the new financing instrument needed to finance a deep renovation in nearly every EU residential building.
2. ECB launches special team to develop ERL instrument and relevant legal framework.
3. EC allocates the loan portion of recovery funds to raise capital for a massive programme promoting ERL distribution via leading retail banks and agrees guarantee structure (potentially via EIB).
4. Leading mortgage lenders understand and promote ERL development and develop operational plans to deliver to millions of clients annually.
5. ECB makes ERLs eligible for TLTRO and open market acquisition programmes.
6. Promotion by banks of positive customer uptake, best practise and experience encourages exponential growth in deep renovations.

STRATEGY 6: Increase client facing financial institutions stake in their customers' journey (and to help reduce transaction costs)

Interventions Required:

1	Incentive vs Risk balance for FIs shifts to give them more of a stake in fixing their customers' buildings.	So profits distributing renovation loans become higher, risks of execution are contained and FI's risks of customers with stranded assets and riskier mortgages requiring more capital are raised and highlight to FI management.
2	FIs see the business opportunity in the promotion of "renovation loan" products in the form of:	Mortgage extensions, green mortgages or long-term renovation loans to identified clients signposting networks of trusted technical partners to support customers in consideration-planning-decision making journey, supported by digital resources and data where appropriate. (or ERL !)
3	FIs are incentivised (with regulation and support: MPS) to identify "low hanging fruit"	in their mortgage portfolios and customer bases that will deliver maximum benefits from deep renovations.
4	FIs copy KfW-model and establish and monitor networks of accredited renovation contractors and developers	to ensure pipeline and works reliability, backed by insurance contracts to underwrite technical risks.

How this puzzle connects the dots...

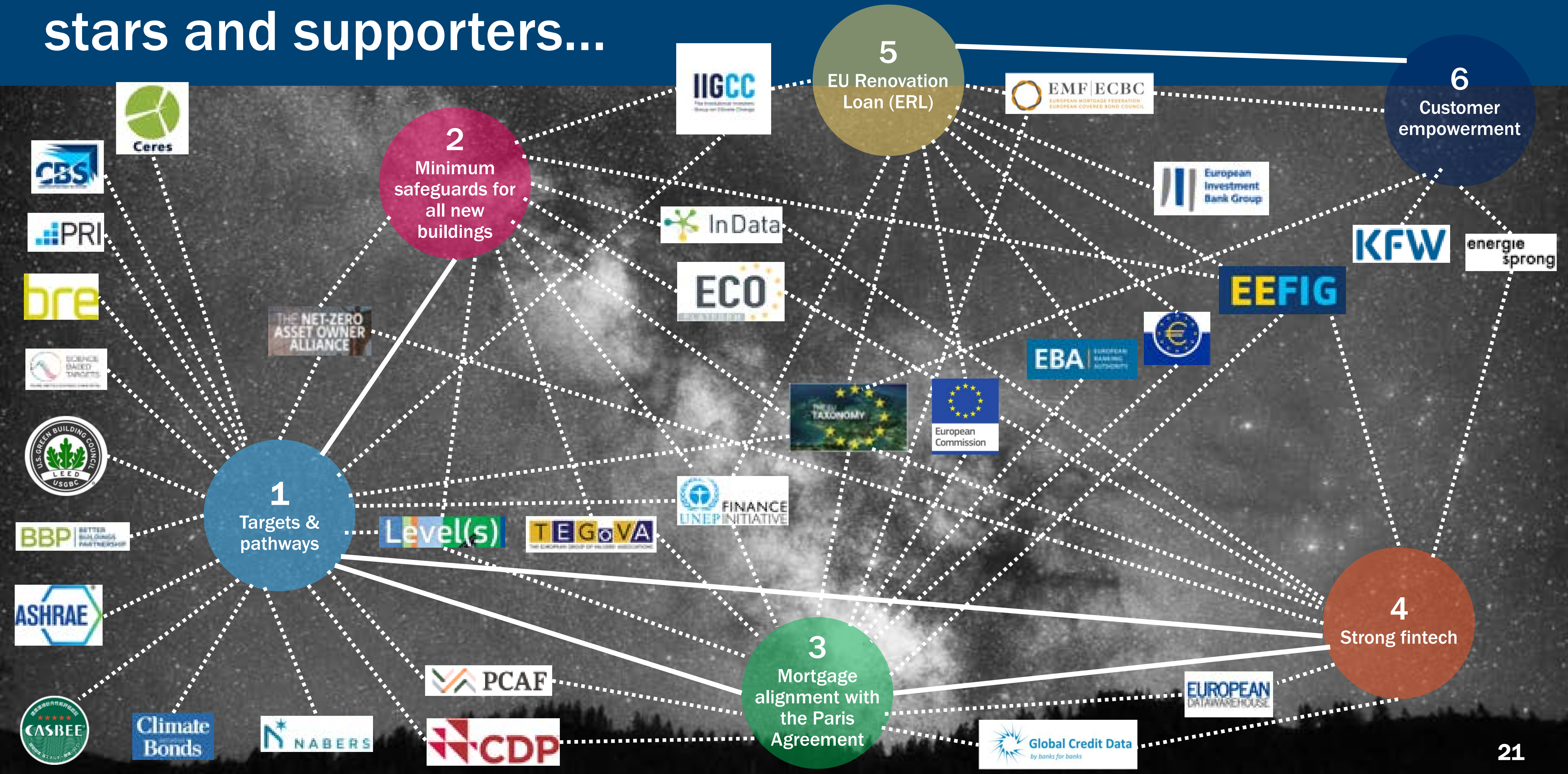
	Owner Occupied Residential	Private Rental	Social Housing	Commercial Real Estate	Public Buildings
Financial institutions as buildings owners		(✓)		✓	
Banks as mortgage lenders	✓		(✓)	✓	(✓)
Investments in buildings renovation	✓	(✓)	(✓)	✓	(✓)
Finance for construction	✓	✓	✓	✓	✓

1. Given high leverage that financial asset owners have in commercial real estate, they can be activated by science-backed reporting requirements and tools (e.g. CRREM)
2. The single lever for new-build is construction finance and therefore EPDs and LCAs must be reported by FI providers
3. The €7 trillion European Mortgages is the single most important financial lever on homeowners and home renovation
4. Energy renovation cost data transparency are like other FI problems and can be boosted by applying fintech solutions
5. To increase the rate at which private homeowners renovate attractive long-term funding must be offered via ERL
6. Financial institutions are expert at client handling and can drive costs out of the renovation process by taking more ownership

4.

A Galaxy of Opportunity

The six strategies sit in a constellation of potential stars and supporters…



The EC's Renovation Wave component of the EU Green Deal offers the intervention frame...

Renovation Wave Objectives & Objectives:

- Achieve the renovation of 35 million buildings
- Double the renovation rate by 2030
- Create 12-18 local jobs per million euro invested
- Growing green jobs in a green and circular construction sector
- Reduce:

60% of GHG emissions

14% of energy consumption

18% of heating and cooling

Barriers:

- Renovation projects are difficult to measure and monetize
- Renovating can also be costly, difficult to organise and lengthy to carry out.
- Public funds are frequently scarce and difficult to blend due to regulatory obstacles and lacking capacity in public administrations.
- Construction firms are largely SMEs.

EC Identifies six areas for intervention:

1. Strengthening information, legal certainty and incentives for public and private owners and tenants to undertake renovations.
2. Ensuring adequate and well-targeted funding.
3. Increasing the capacity to prepare and implement projects.
4. Promoting comprehensive and integrated renovation interventions for smart buildings, integration of renewable energy and enabling to measure actual energy consumption.
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6. Promoting comprehensive and integrated renovation interventions for smart buildings, integration of renewable energy and enabling to measure actual energy consumption.

...with finance and investment just one of these areas.

Source: EC (2020)

"Fit for 55" and parallel financial directives and strategies offer the landing points for advocacy…

Construction Products Regulation

- European Parliament approved its implementation on 10 March 2021
- Harmonises conditions for the marketing of construction products

Energy Efficiency Directive (EED)

- November consultation launched, process ran until February 2021
- The EC 2021 work programme anticipates a legislative proposal to revise the EED, coupled with an accompanying impact assessment, to be adopted in Q2 2021

Energy Performance of Buildings Directive (EPBD)

- The EC 2021 work programme anticipates a legislative proposal to revise the EPBD, coupled with an accompanying impact assessment, to be adopted in Q4 2021

Strategy for a Sustainable Built Environment

- The EC intends to put forward a holistic approach for the built environment in 2021 or 2022.

Q1 Q2 Q3 Q4 Q1

2021

2022

Mortgage Credit Directive (MCD)

- The EC carried out a review of the implementation of the MCD by Q 1 2019 on the effectiveness and appropriateness of the MCD provisions.
- Review published on Q1 2021

Non-Financial Reporting Directive

- Adopted on 27 May 2020, the EC has indicated Q1 2021 as target delivery date for the revision

Renewed Sustainable Finance Strategy

- Intends to build on HLEG on Sustainable Finance and the TEG
- Consultation closed in Q3 2020
- Expected to be adopted in Q2 2021

Establishment of an EU Green Bond Standard

- Legislative proposal is scheduled to be delivered in Q3 2021

Capital Requirements Directives (CRD 4 & 5)

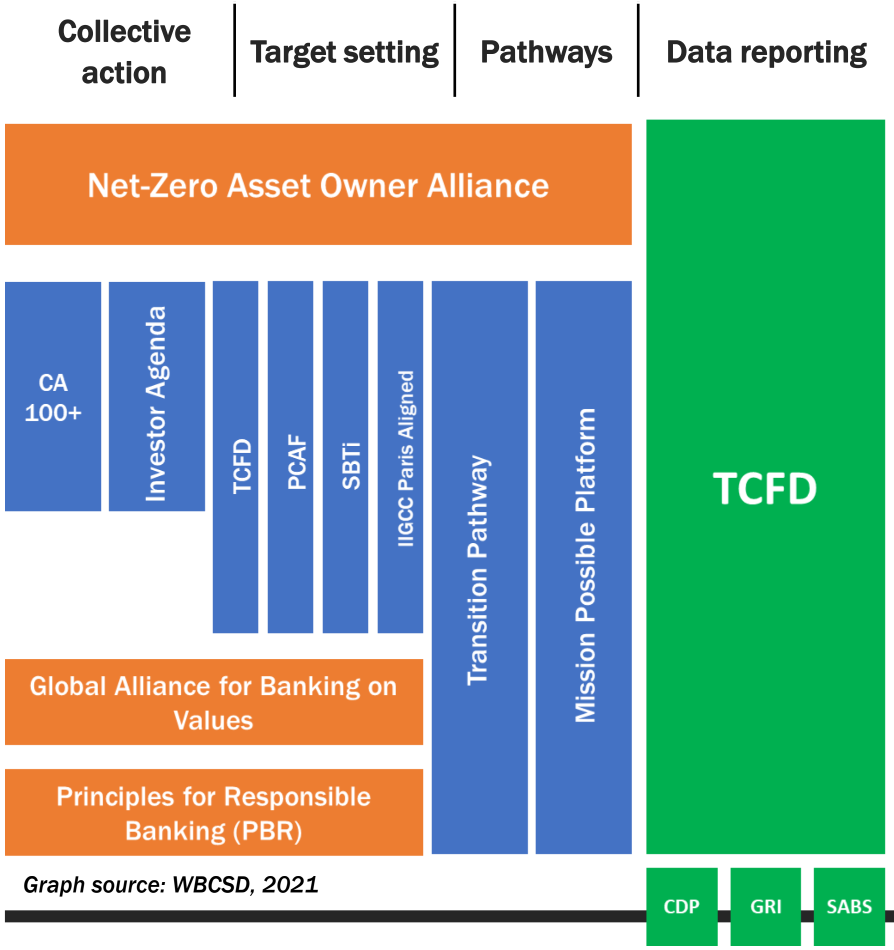
***Formerly Capital Adequacy Directive**

- MS shall adopt and publish by November 20, 2021 the laws, regulations, and administrative provisions necessary.
- Measures shall be applied in Q1 2022

Sources: European Parliament (2021) and European Commission (2021)

Financial Real-Estate Owners are moving and the pressure is rising…

FI Strategies' components include:



Graph source: WBCSD, 2021

Seven key initiatives contain leading finance-real estate actors and tool providers

- Who are reacting to increased regulation and consumer demand and are keen to contribute towards climate action.
- Organising structured thinking on the different components of a financial response to the challenge of buildings decarbonisation.

Sources: CREEM (2021), GRESB (2021), World Green Building Council (2021), UNEP FI (2019 & 2021), and WBCSD (2021).

Thanks!

CONTACT US @

@CLIMATEST

CLIMATE STRATEGY SL
Paseo de Recoletos, 5
28004 Madrid Spain

EMAIL
info@climatestrategy.es

PHONE NUMBERS
Local: +34 91 576 4837
Tel UK: +44 (0) 207 193 4807
Fax: +34 91 435 5983