HOUSEFUL

D4.8 Report on financial schemes and funding opportunities for all Front-runner buildings and replication activities (final update) (PUBLIC VERSION)

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Technical References

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0.4	Dara TURNBULL, Edit LAKATOS, Julien DIJOL	Housing Europe	18 April 2022
0.5	Carolina CARBÓ	Leitat	26 April 2022
0.6	Dara TURNBULL, Edit LAKATOS, Julien DIJOL	Housing Europe	29 April 2022

Table of Contents

List of Tables

List of Figures

0 Abstract

The HOUSEFUL demo sites benefit from EC financing under Horizon 2020. However, going forward, if the innovations and solutions of the project are to be upscaled or replicated, other sources of financing will be required; especially from private sources. In this deliverable, the financing of the HOUSEFUL demo sites is assessed, along with other potential funding opportunities for 'follower' buildings.

The information presented here as *D.4.8* is a continuation of previous deliverables (*D.4.5* and *D4.6*). However, the funding environment has changed somewhat since their completion. This reflects the fact that we have now entered a new EU 'Multiannual Financial Framework' (MFF) phase (2021-2027), with some previously highlighted funding packages now ended or else significantly modified. The focus by all member states on climate sustainability, including in the built environment, as part of their respective post-COVID national recovery plans is also a highly relevant development[1]. Finally, recent changes in EU policy also have the potential to positively impact on the financing environment for HOUSEFUL followers. These are reviewed in this document.

This report is part of **Task 4.6 'Improved access to finance through investment planning'** [Leader: *Housing Europe; Participants: ALCN, AHC, AIGUASOL, ITEC, LEITAT*].

The ultimate objective of this report is that it will serve as a guide to followers on the sorts of funding opportunities that may exist for them at the local, national and international levels. It will also critically assess these funding opportunities, and provide related policy recommendations.

Of course, mapping all funding opportunities for each region in the EU is not possible. However, D4.8 will look at broad funding structures, which are common across most, if not all, EU member states.

[1] A review of these schemes has been prepared by Housing Europe – 'Impact of the Recovery Plans on the Social and Affordable Housing Sector', December 2021. It can be read at: https://www.housingeurope.eu/resource-1635/impact-of-the-recovery-plans-on-the-social-and-affordable-housing-sector

1 Review of the financing from the four HOUSEFUL demo buildings

1.1 Overview of works to be completed in each demo site

The HOUSEFUL project includes the development and real-world testing of 11 circular 'solutions'[2], as well as the interactive SaaS platform for circular services. However, not all of these solutions will be tested at each of the four demo sites. Thus, the associated costs of renovations will differ from demo-to-demo. At the same time, while Horizon 2020 funding was vital in the delivery of the solutions, third party sources of finance have also played a role to a greater or lesser extent in the realisation of the renovation works at each demo site.

Table 1: Overview of HOUSEFUL solutions in each Demo building

Solution	Demo 1	Demo 2	Demo 3	Demo 4
SaaS	X	X	X	X+
S1: Circularity assessment	X	X	X	X+
S2: Social engagement for co-creation	X	X	X	X
S3: Materials passport	X	X	X	X+
S4: Local building materials	X	X	X	X+
S5: Reuse of rainwater & greywater	X	X		
S6: Reuse of unsegregated water			X	
S7: Biogas production			X	
S8: Fertiliser / Compost production	X#		X	
S9: End of life waste management	X	X	X	X+
S10: Passive solutions	X	X	X	
S11: Energy use monitoring	X*	X*		X

* = partial implementation only

+ = solutions will not be installed or directly developed within the building. Demo site leader will contribute its 'knowledge' on development of these solutions

= At the time of writing (early April 2022) this solution is not decided yet, with two competing ideas on how to implement S8 being considered. Final information on this should be available by June 2022.

[2] See: http://houseful.eu/solutions/

Table 2: Clarifications and notes on deviations from demo sites

Demo site	Clarifications and notes on deviations from demo sites
Demo 1 – Els Mestres	- **S1, S3, S4, S9 & SAAS**. These are implemented -by different consortium partners under Cartiff 's coordination as WP4 leader. In the democase AHC has spent part of its HOUSEFULbudget in the implementation of these solutions (specifically, the cork insulation, the recycled gypsum boards and the action of restore and adapt the existing iron railings instead of placing new ones) - **S5.** Its installation couldn't be done during the renovation works carried out by AHC. Now it is pending on the Amedment approval to be implemented by LEITAT. The solution will try to involve also the school placed beside the building. - **S7**. There is a technical executive project to implement the solution in Demo 1, but it won't be installed due to cost involved, as well as other raisons. - **S11**. Monitoring of energy consumption in the Demo 1 is planned, but is pending based on a review of the budget available. AHC won't contract any service company, Solar thermal panels are owned by the property of the buildings (AHC/INCASOL)
Demo 2 - Sant Quirze	- **S1, S3, S4, S9 & SAAS**. These solutions are implemented by different consortium partners under Cartif's coordination as WP4 leader. It is not decided yet if AHC will use part of its HOUSEFUL budget in the implementation of these solutions (pending on the final agreement with the construction company in charge of the renovation). - **S11**. Monitoring of energy consumption in the Demo 2 site is planned, but is pending based on a review of the budget available. AHC won't contract any service company, Solar thermal panels and Photovoltaic panels are owned by the property of the buildings (AHC/INCASOL)
Demo 3 - Cambium Community	- **SaaS, S1, S2, S3, S4, S6, S9, S10** is implemented at Demo 3 as proposed. All activities at Demo 3 are coordinated by ALCN together with solution specific partners. - Due to legal barriers detected related to the integration of **S7b** and **S8** at Demo 3, technical changes have been proposed and are covered in the 2nd AMD. The timely implementation of affected solutions are pending on the outcome of the approval of this AMD. Execution project and permits have been prepared accordingly.
Demo 4 - Donaufelder Strasse 115	- Neues Leben will primarily provide 'knowledge sharing' rather than practical development of solutions within the demo site

1.2 Overview of costs and financing in Demo 1 site - Els Mestres

Confidential section: This section is only available to members of the consortium and Commission Services.

1.3 Overview of costs and financing in Demo 2 site – Sant Quirze

Confidential section: This section is only available to members of the consortium and Commission Services.

1.4 Overview of costs and financing in Demo 3 site – Cambium Community

Confidential section: This section is only available to members of the consortium and Commission Services.

1.5 Overview of costs and financing in Demo 4 site – Donaufelder Strasse

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2 Review of funding choices and related issues in Demo 2 and Demo 3 sites

2.1 Review of funding sources used in Demo 2 site

The Demo 2 site it is expected to be funded by three sources:

1. INCASOL's own funds (through AHC)
2. Next Generation EU (pending on the results of the request),
3. Horizon 2020;

The reasons why AHC chose these options are the following:

INCASOL funds (through AHC)	Originally the AHC/INCASOL funds were available to renovate the damaged ventilated facades (maintenance/security raisons). As HOUSEFUL covered this cost with the implementation of S10. The budget is then available to be used in other actions (as insulating the rest of the façades).
Horizon2020 funds	It helps to introduce new practices and solutions in the renovation works with higher energy or circular standards (and higher costs) than conventional solutions typically used by AHC. Thus, it helps to bridge the funding gap between a 'conventional' renovation and the more costly 'circular' renovation.
Next Generation EU (NGEU)	NGEU covers actions that H2020 wouldn't have covered. NGEU is used because it helped achieve a high standard energy renovation in the global block unit. The renovation actions needed to achieve these standards were not completely covered by Horizon2020, therefore this extra funding was need.

In terms of the process involved in accessing funding (e.g., administration), the three funding options each had their own specific processes.

To obtain Next Generation and Horizon2020 it was necessary to:

1. Have **a cost estimation** of the actions implemented
2. Introduce **administrative specific requirements** (i.e., the logo of the funds) in the Tender Procedure
3. Have a **strict control of invoice certification** during the works, to have the **cost of each separate action**, and **separate the actions that receive different funds** as it is not possible to combine different funding sources for the same action).

To obtain Horizon2020 funds, it was necessary to:

1. Have **pictures of the works during the renovation** and the specific materials used
2. Have a **monitoring process for the installation** that validates the promised results
3. Have material/products **technical sheets**

Specific for Next Generation EU:

1. **Achieve the energy efficient standards required**. NGEU requires at least a 30% reduction of primary non-renewal energy consumption (PED) and 25% of heating/cooling demand for Climate Zone C (i.e., the climate zone of Demo 02). However, to achieve an 80% of financing aid (as are different % of aid) it is necessary to decrease at least 60% the non-renewal primary energy consumption (taking into account that the maximum aid is €18,800 per apartment). This is shown by CE3X simulations[3].

Possibility of choosing a different financing option

Partners report that **there was no particular need to look for a different financing option**. H2020 allowed AHC to obtain 100% of funding required for the implementation of the innovative HOUSEFUL solutions, and the rest of the actions received 80% of their budget thanks to Next Generation EU. Combining H2020 with Next Generation allowed the Demo to have a higher budget (to achieve a global renovation and at the same time introduce innovative solutions).

Alternative financing

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2.2 Review of funding sources used in Demo 3 site

In Demo 3, only H2020 was used due to the suitable nature of the call for demonstration of circular and nature-based solutions.

However, other forms of financing were considered and investigated by the Demo 3 Leaders. These included:

- InnovFIN;
- EFRE/ERDF;
- Austria Wirtschaftsservice (AWS) funding[4];
- local federal state funding for wastewater treatment plants;
- private loans;
- International Building Exhibition Vienna 2022.

The administrative process related to H2020 included the following steps:

[3] See: https://energia.gob.es/desarrollo/EficienciaEnergetica/CertificacionEnergetica/DocumentosReconocidos/Paginas/procedimientos-certificacion-proyecto-terminados.aspx

[4] AWS is a public financing agency in Austria. See: https://www.aws.at/en/

- Research and review of funding opportunities (local / regional / national / EU level);
- meetings with local authorities (federal state funding) and local contact persons (EFRE/ERDF, InnovFIN);
- Meeting bank advisors (application processes regarding AWS).

What ALCN found difficult was **the lack of a national centralised and standardised data/information system on funding opportunities for circular economy solutions** showing and comparing funding criteria.

Further, alchemia-nova reported that partial funding rates of various funding opportunities represented another obstacle.

Other funding sources:

Table 3: alchemia-nova assessment of financing options

Financing option	Issues
Innovfin	InnovFin is handled by the public AWS financing agency in Austria. • Clear funding criteria were not available and the application process was deemed to be too much effort for the Demo Leader; • profit margin was the most important criteria; • sustainability criteria are given less weight.
EFRE/ERDF	• ERDF could have funded only 50% of the eligible costs and the information about acceptance of costs was only clarified after implementation; • the application process was difficult and time-consuming; • no clear communication from local focal points regarding interference of various funding possibilities with H2020 funding (double funding);
Local federal state funding for wastewater treatment plants	No funding possibilities were identified for innovative technologies like those used in the Demo 3 site.

ALCN reported that in the case of each of the funding options, there were **uncertainties about the acceptance of eligible costs** and **clarification only happened after the implementation**. The other issue which caused problems was **the lack of pre-payment** (payment after the realisation of actions only). This made the other financing options effectively untenable, given the structure of the Cambium Community and its available financial resources.

Therefore, **ALCN recommends a clearer availability of information regarding funding criteria, and double funding of various calls/opportunities** that could help similar projects in the future. National governments should work to establish online funding portals, which can help to demystify the process of accessing the various grants and loans available for HOUSEFUL-type solutions. At present, too

much of the information burden is on the potential project, which likely leads to a lower use of innovative renovation techniques.

3 Alternative financing for Demo 2 and Demo 3 sites

3.1 Counterfactual funding package for Demo 2 site

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3.2 Counterfactual funding package for Demo 3 site

Confidential section: This section is only available to members of the consortium and Commission Services.

4 Review of potential EU-level funding opportunities for circular building development and renovation

4.1 Changes compared to EU-level schemes outlined in D 4.5 and D 4.6.

At the time of the drafting and completion of D4.5 and D4.6, EU member states were operating under the prior Multiannual Financial Framework (MFF), which officially ended on the 31st of December, 2020.

As a result, a review of the EU-level programmes highlighted as potential funding opportunities for both the frontrunner and follower buildings implementing HOUSEFUL solutions is now required.

As shown in Table 16, a number of EU-level funding opportunities have been extended into the new MFF period, which will run from 2021 to the end of 2027, and which will provide funding of €1,074 billion.

While the structure of some EU programmes remains the same, many have been altered. This includes changes in eligibility criteria, co-financing or minimum capital investment levels, as well as changes in the scope and focus of some programmes. Some new programmes are also available for small-scale circular projects.

Table 4: Changes in EU-level funding opportunities highlighted in D 4.5 & D 4.6

Funding scheme	Period 2014-2020 (highlighted in D4.5 and/or D4.6)	Period 2021-2027 (Current status of the funding opportunity)
European Regional Development Fund (ERDF)	- provides several opportunities for housing. This is notably the case for activities related to promoting energy efficiency and use of renewables.	- Unchanged, but with a **broader scope**
European Social Fund (ESF)	- provide education and training to those struggling with employment or social inclusion - This could come in the form of providing employment and training within circular development and renovation projects, including in follower buildings	- **Restructured**, became ESF+ (comprising the old ESF, EaSI and Fead programme)
Cohesion Fund (CF)	- Available to countries whose Gross National Income (GNI) per inhabitant is less than 90% of the EU average. - For the 2014-2020 cycle, this excludes both Spain and Austria, both of which are relatively high GNI per capita countries	- **Unchanged**
Urban Innovative Actions (UIA)	- Provides urban areas throughout Europe with resources to test new and unproven solutions to address urban challenges. - In terms of housing, an added value is that housing associations can work with cities as partners and the nature of financing is small-scale (max €5 million)	- **Restructured,** became European Urban Initiative (EUI) that has a broader scope (supporting capacity building, innovative actions, knowledge,

	with a maximum co-financing rate of 80%. Thus, it would be particularly well suited to future HOUSEFUL-type projects.	policy development and communication)
Horizon 2020	- Funds a broad range of research and innovation activities in participating countries - HOUSEFUL is just one example of the type of project that Horizon 2020 has funded	- **Restructured**, became Horizon Europe - calls for affordable housing will be found in the 'Climate, Energy and Mobility' Cluster[5], along with energy efficiency research and innovation activities - energy efficiency market-uptake activities will move to the new LIFE programme[6]
LIFE Programme	- Focusing on the environment and climate action (especially nature conservation and biodiversity)	- **Restructured** (going to support some energy efficiency market-uptake activities)
Innovation Fund	- Fund on innovative technologies focusing on the decarbonisation of energy-intensive industries (for example construction material, hydrogen) and the energy sector, through innovative production and use of renewable energy or storage solutions. The Fund has a budget of €1.5 billion	- **Unchanged**
European Energy Efficiency Fund	- Supports energy efficiency and renewable energy related operations up to €5 million. - Eligible organisations include only local, regional and (if justified) national public authorities or public or private entities acting on their behalf - The nature of financing is debt or equity which can be combined with other Funds such as the European Structural and Investment Funds (ESIF)	- **Unchanged**
European Investment Bank (EIB) loan	- EIB can fund social and public housing projects (no funding available for 'for-profit' housing) - Funding available for energy efficiency and circularity projects (*both public and private entities*) - EIB typically provides funding at 50% of total capital requirement - EIB does not fund 'small-scale' projects – *for example, when funding public projects it usually only allows projects of €25 million or more*	- The EIB remains an option for the funding or upscaling of HOUSEFUL-type circular solutions - Scope and ambition of funding **unchanged**

[5] See: https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/cluster-5-climate-energy-and-mobility_en

[6] See: https://ec.europa.eu/growth/industry/strategy/hydrogen/funding-guide/eu-programmes-funds/life-programme_en

	- 'Joint Initiative on Circular Economy' providing co-financing of circular projects of €10 billion (*only available in Poland, France, Italy, Spain, and Germany*)	
European Fund for Strategic Investment (EFSI)	- EFSI can finance projects of more than €25 million or smaller ones through a suitable intermediary. - Co-financing should represent 50%, but blending of funds is possible: - EFSI can support parts of projects which are not eligible under Structural Funds, but which are part of a bigger investment.	- **Restructured**, became InvestEU – a single EU investment support mechanism for internal action, replacing all existing financial instruments (including EFSI). - From 2022, a **dedicated vehicle that targets circular economy** will be established under the programme
European Local Energy Assistance (ELENA)	- Programme of the EIB and European Commission providing grant support for technical assistance during the preparation (*not implementation*) of investment programmes, including the business model and the design of the financing scheme - It focuses on energy efficiency measures (renovation/renewables/district heating and PV). - The grant covers up to 90% of costs related to project development support and should be linked to a planned investment programme of a min €20 million in size	- The **minimum size of the linked investment increased** from €20 million to €30 million, meaning less projects will now qualify for assistance
InnovFin	- a joint initiative launched by the European Investment Bank Group in cooperation with the European Commission under Horizon 2020 - InnovFin is available across all eligible sectors under Horizon 2020-including energy efficient construction and refurbishment and use of renewable energy. - loan guarantees or equity-type financing goes typically between €7.5 million and €75 million to innovative demonstration projects in the fields of energy system transformation, including, but not limited to, renewable energy technologies, smart energy systems, energy storage, carbon capture and storage or carbon capture and use, helping them to bridge the gap from demonstration to commercialisation.	- A **thematic window for innovative Circular Economy projects was created in 2021** as a pilot under the Thematic Instrument for EDP (Energy Demo Projects)
Council of Europe Development Bank (CEB) loan	- Financing for social and public housing schemes available - Eligible activities involve the renovation, construction or refurbishment of housing and the conversion of existing buildings to	- The CEB remains an option for the funding or upscaling of HOUSEFUL-type circular solutions

	residential use in order to provide decent and affordable housing for people on low incomes - Combination is possible with other Funds (and EIB support) - Not all EU Member States are members of the CEB (e.g., Spain is a member, but Austria is not)	- Scope and ambition of funding **unchanged**

4.2 New EU-level funding opportunities under Next Generation EU and the new MFF (2021-2027)

In addition to the funding opportunities that have been extended, in one form or another, into the current MFF period, there are a number of new funding opportunities that arise from the new MFF (2021-2027). At the same time, the EU's post-pandemic recovery programme, Next Generation EU (NGEU) will also provide significant funding for projects aligned to the Bloc's strategic ambitions, including the renovation of buildings and tackling climate change.

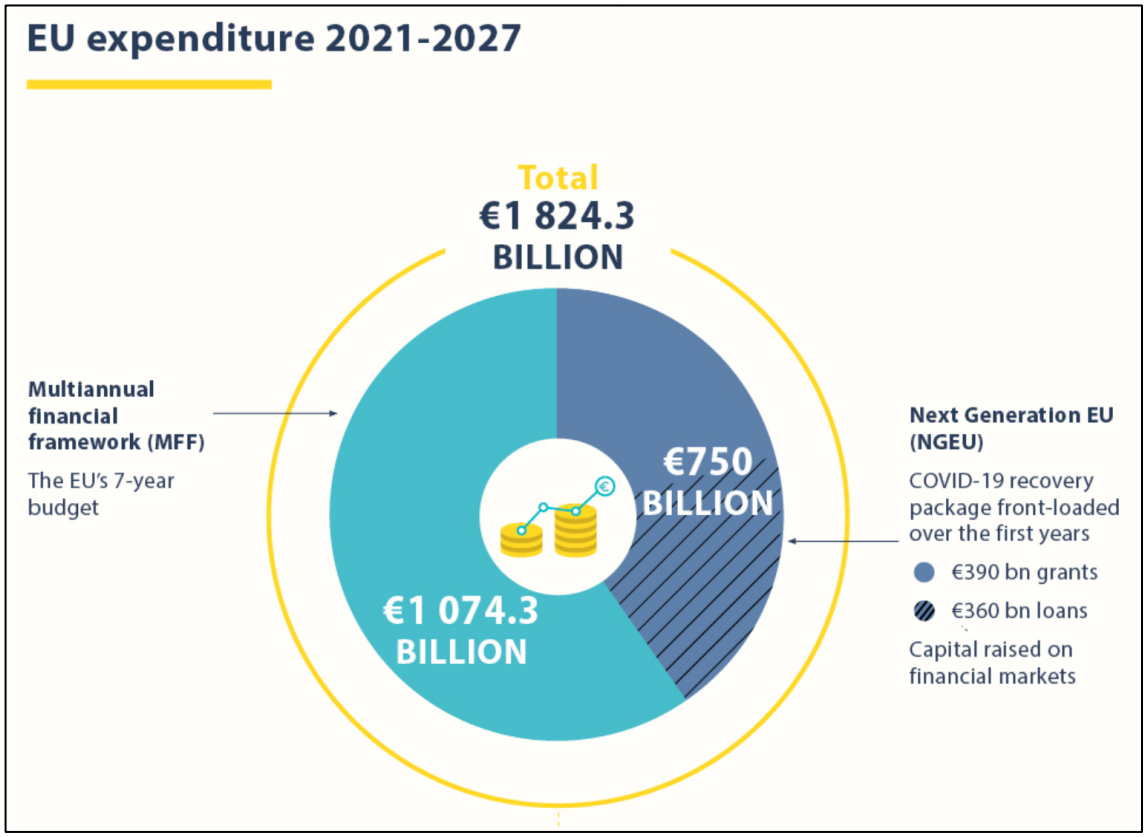


Figure 1: Overview of MFF and NGEU funding allocations (2021-2027) – Source: European Commission

4.2.1 New HOUSEFUL-aligned funding opportunities under the new MFF

In the period 2021-2027, the Multiannual Financial Framework (MFF) represents a total funding envelope of €1,074.3 billion, to be spent in line with what is described below in Table 17. This includes a strong focus on activities related to regional development and cohesion, as well as environmental issues and mitigating climate change.

Table 5: Allocation of Funds under the new MFF (2021-2027)

Funding Priority	Funding allocation
Single Market, Innovation and Digital policies	€132.8bn
Cohesion, Resilience and Values	€377.8bn
Natural Resources and Environment	€356.4
Migration and Boarder Management	€22.7bn
Security and Defence	€13.2bn
Neighbourhood and the World	€98.4bn
European Public Administration	€73.1bn
Total MFF	**€1,074.3bn**

Source: European Commission

Structural Funds (former ESIF)

Structural Funds (ESIF) have been increased for the period of the new MFF, with a total of €378 billion to be spent. Although, the priorities for the funds are 'narrower' now than in the previous MFF period.

The "priorities" for Structural Funds have also been modified under the new MFF. These are summarised under five points[7]:

1. a more **competitive** and **smarter** Europe
2. a **greener**, low-carbon transitioning towards a net zero carbon economy
3. a more **connected** Europe by enhancing mobility
4. a more **social** and inclusive Europe
5. Europe closer to **citizens** by fostering the sustainable and integrated development of all types of territories

Priority 2 is clearly the one most closely associated to the replication of HOUSEFUL-type circular solutions. Activities that fall under this Priority include:

- promoting energy efficiency measures;
- promoting renewable energy;
- developing smart energy systems, grids and storage at local level;
- promoting climate change adaptation, risk prevention and disaster resilience;
- promoting sustainable water management;
- promoting the **transition to a circular economy**;

[7] https://ec.europa.eu/regional_policy/en/policy/how/priorities

- enhancing biodiversity, green infrastructure in the urban environment, and reducing pollution;

It is important to comprehend that 'Structural Funds' is actually the 'umbrella' term used by the EU in order to describe five interlinked funding schemes. These are outlined in Table 18, below. The funding allocation is only what is covered under the MFF. As will be shown in Section 4.2.2, the Next Generation EU recovery package also includes top-up funding for some of the Structural Funds schemes.

Table 6: Structural Funds programmes - MFF (2021-2027)

Funding scheme	Link to the five 'priorities'	Available funding under the new MFF
European Regional Development Fund	- Supports all five (but special focus on 1 and 2)	€226.1bn
European Social Fund+	- Focused on priority 4	€99.3bn
Cohesion Fund	- Priorities 2 and 3	€36.6bn
Just Transition Fund	- provides support under dedicated specific objectives (art. 8 of JTF regulation)	€8.5bn
European Territorial Cooperation - Interreg	- have 2 additional policy objectives at their disposal (art. 14, Interreg regulation) : 'A better cooperation governance' and 'A safer and more secure Europe'	€9.0bn

Any EU region can apply for Structural Funds. However, the allocation conditions vary between regions, based on their level of economic prosperity. This is measured via 'Gross Domestic Product (GDP) per capita'. The most 'developed' regions can avail of co-financing rates of 40% to 50%, while 'less developed' regions can avail of rates as high as 85%. Thus, in the latter case, for every one euro spent, 85 cent will be provided directly from Structural Funds, versus 15 cent from the national or regional partner.

Table 7: Structural Funds Co-financing Rates

Region Type	Definition	Co-financing rate applied
More Developed Regions	GDP per capita > 100% of EU-27 average	40% to 50%
Transition Regions	GDP per capita between 75% and 100% EU-27 average	60% to 70%
Less Developed Regions	GDP per capita < 75% EU-27 average	85%

- European Regional Development Fund (ERDF)[8]

The ERDF finances programmes in cooperation between the European Commission and national and regional authorities in Member States. The Member States'

[8] https://ec.europa.eu/regional_policy/en/funding/erdf/#2

administrations choose which projects to finance. They also take responsibility for day-to-day administration linked to these projects. Thus, there is a role for local circular stakeholders in advocating for ERDF funding for their projects. Of course, **in order for this to happen, these local innovators must first be aware that such financing is available**.

The new ERDF puts a strong focus on projects related to "greener, low-carbon transitioning towards a net zero carbon economy and resilient Europe"; Priority 2. This must make up **a minimum of 30% of all ERDF funding allocated to a region**. This could be useful for developing and funding circular projects, provided national or regional authorities are convinced by the value of such initiatives.

- European Social Fund Plus

The European Social Fund Plus (ESF+) is the EU's main instrument for investing in people. This includes programmes related to employment, social, education and skills policies; including structural reforms in these areas. From a HOUSEFUL replication perspective, ESF+ has the potential to fund jobs training programmes related to developing and implementing circular solutions. For example, it could help to retrain or upskill workers in the construction sector to improve their knowledge of innovative circular building and renovation practices.

- Cohesion Fund[9]

The Cohesion Fund provides support to Member States with a Gross National Income (GNI) per capita below 90% of the EU-27 average. Its ambition is to strengthen the economic, social and territorial cohesion of the EU. Thus, not all member states are eligible for the Cohesion Fund. For the 2021-2027 period, the Fund concerns 15 of the EU's 27 Member States.

1. Bulgaria
2. Czechia
3. Estonia
4. Greece
5. Croatia
6. Cyprus
7. Latvia
8. Lithuania
9. Hungary
10. Malta
11. Poland
12. Portugal
13. Romania
14. Slovakia
15. Slovenia

Encouragingly, **37% of the overall financial allocation of the Cohesion Fund need to contribute to climate objectives**. Indeed, the Fund aligns itself to Priority 2 – 'a greener, low-carbon and circular economy'. Although, the Cohesion Fund is not allowed to support investment in housing unless it is related to the promotion of

[9] https://ec.europa.eu/regional_policy/en/funding/cohesion-fund/

energy efficiency or renewable energy use. This could align with the replication of some HOUSEFUL solutions.

- Just Transition Fund (JTF)[10]

The JTF is a new funding mechanism introduced under the MFF. The JTF supports the territories most affected by the transition towards climate neutrality, in order to avoid regional inequalities growing, in line with EU cohesion policy's aim to reduce regional disparities and to address structural changes in the EU. In other words, it seeks to compensate regions who face the greatest 'burden' in shifting towards climate neutrality, such as regions with a low-quality housing stock or where the local economy is based on the exploitation of fossil fuels and other finite resources.

The JTF can finance projects related to a number of areas potentially linked to circularity. This includes reskilling of workers, investments in clean energy and research and innovation projects.

- European Territorial Cooperation - Interreg

Interreg is the European Union's instrument to support cooperation across regions and countries: a new generation of Interreg programmes in and outside the EU will further develop joint services and strengthen solidarity. Interreg provides funding for projects between Member States, their outermost regions, the EU accession countries and neighbourhood countries.

Interreg projects must align with the five priorities of the Structural Funds, as discussed earlier in this section. **One of the specific aims of Interreg under the new MFF is to work to promote circularity; specifically the re-use of materials**. However, Interreg has so far not funded projects related to circularity in building design or renovation. This, of course, may change during the current funding cycle. Thus, potential follower buildings would be encouraged to follow the project funding announcements[11] of their local Interreg bureau.

- Review of Structural Funds

Having looked at the five sub-components of EU Structural Funds, some analysis and review is required to assess their potential use to HOUSEFUL-type circular projects.

Table 8: Potential Circular Allocations from Structural Funds

Funding Programme	Potential Circular Allocations	Linked to HOUSEFUL solution
European Regional Development Fund	- Minimum 30% allocation to Priority 2 - Offers potentially broad use for replication of HOUSEFUL solutions	All
European Social Fund+	- fund jobs training programmes related to developing and	All (via labour inputs in circular design and use)

[10] https://www.europarl.europa.eu/factsheets/en/sheet/214/just-transition-fund

[11] Calls for projects can be found via the Interreg online portal: https://interreg.eu/call-for-project/

	implementing circular solutions	
Cohesion Fund	- promotion of energy efficiency or renewable energy use	S10, S11
Just Transition Fund	- reskilling of workers, investments in clean energy, and research and innovation projects	All (but especially S11)
European Territorial Cooperation - Interreg	- Will prioritise circularity, though not yet related to development and renovation of buildings	TBD

While Structural Funds have the potential to fund a broad spectrum of HOUSEFUL-type circular solutions, they would appear to be suited to some solutions more than others. Solutions related to renewable energy generation and energy efficiency within buildings seems to be particularly interesting.

It is also important that we develop a critical perspective on the potential use of structural funds. To that end, the SWOT analysis (outline in Table 21) is a useful tool to those thinking of using this funding channel.

Table 9: SWOT Analysis of Structural Funds

Strengths	Weaknesses	Opportunities	Threats
✓ Both energy efficiency and RES-related investments are supported ✓ Offers significant grants and financial instruments (FI) are available ✓ Combination with other programmes is encouraged	- Time-consuming processes of application - Some operations are partly covered for specific Beneficiaries - Co-financing is often necessary	✓ Enhances social inclusion (European Social Pillar) ✓ Numerous financial instruments for more people ✓ to benefit from ✓ Address energy and fuel poverty	- Beneficiaries discouraged by partly covered operations - Co-financing not always available

European Urban Initiative (EUI)

The European Urban Initiative will be financed by €500 million from ERDF. It replaces a number of now discontinued programmes, such as the Urban Innovative Actions (UIA) and URBACT, which were previously discussed in D4.5 and D4.6.

The EUI aims to strengthen integrated and participatory approaches to sustainable urban development. It will do so by facilitating and supporting innovative actions, capacity and knowledge building, policy development and communication on sustainable urban development.

In terms of the budget division, the support for capacity-building will represent 20% of the budget, the support for innovative actions will be 60% (which is based on the former UIA programme), and knowledge support will represent another 20% of the budget.

In terms of eligibility, building owners (including providers of social housing) are not directly eligible, but they can work with cities as partners in the different projects.

The first call for projects and funding under the EUI will come in 2022. This may include the possibility for the replication of all or some of the HOUSEFUL solutions.

Table 10: SWOT Analysis of the EUI

Strengths	Weaknesses	Opportunities	Threats
✓ Supports small-scale projects ✓ Offers significant grants ✓ Does not require co-financing ✓ Able to co-finance projects already supported by ESIF/Horizon Europe	- Requires an experienced, technical project team - Housing providers cannot lead the project	✓ Supports complex projects that support the district approach (includes innovative projects focusing on energy efficiency, renewables, adaptation, circularity, social accompanying) ✓ May serve as seed capital for InvestEU to provide additional investments ✓ Can fund piloting new technologies ✓ Capacity building is strongly supported	- Co-financing may become necessary - Very competitive funding allocation process

Horizon Europe

Horizon Europe is the EU's key funding programme for research and innovation (the continuation of the Horizon 2020 programme) in 2021-2027, with a budget from the MFF of €95.5 billion.

The Horizon Europe programme introduces new simplified rules that can benefit faster and more efficient project implementation such as:

- Up to 100% funding rate of direct costs

- Increased use of simplified forms of funding where appropriate (building on the H2020 lump sum pilot experience)
- Broader acceptance of usual cost accounting practices
- Enhanced cross-reliance on audits benefiting beneficiaries taking part in several EU programmes

HOUSEFUL itself has of course benefitted from funding from the previous iteration of Horizon Europe, Horizon 2020. However, the experience of HOUSEFUL also highlights that unlike in many other funding streams under the MFF, Horizon Europe projects must fit within the parameters for projects defined by the European Commission under each 'call'. Thus, relevant funding for replication of circular solutions will not always be available at every moment in time.

Relevant calls

- Calls for proposals for affordable housing providers will be found in the **'Climate, energy and mobility' cluster** under Pillar II.
- Energy efficiency market-uptake activities will move to the new **LIFE programme**. A dedicated LIFE sub-programme 'Clean Energy Transition' will aim at continuing to break market barriers and at facilitating the transition towards an energy-efficient, renewable energy-based, climate-neutral and resilient economy by funding coordination and support actions across Europe.
- The energy efficiency research and innovation activities will move to Horizon Europe's Cluster 5 '**Climate, Energy and Mobility**' in the Pillar 2 *Global Challenges and European Industrial Competitiveness*, where the Built4People partnership will also be supported between industry and the European Commission and continue with innovating energy efficiency products and methods. Built4People brings together the whole construction value chain and aims at developing sector-relevant innovation clusters across the EU, which could extend to circularity clusters.

Therefore, sustainable energy projects will not only get support from the new Horizon Europe, but also from LIFE Clean Energy Transition, Innovation Fund, Connecting Europe Facility Energy and from the Renewable Energy Financing Mechanism.

Another new element in Horizon Europe is the European Innovation Council[12], which will give support for innovations with potential breakthrough and "disruptive" nature with scale-up potential that may be too risky for private investors. The European Innovation Council will work as a one-stop-shop:

- helping researchers and innovators create markets of the future, leverage private finance, scale up their companies
- Innovation centric, risk taking & agile, pro-active management and follow up
- Mostly 'bottom up', but also targeting strategic challenges
- EIC Programme Managers to develop visions for breakthroughs and steer portfolios
- New approach to partnerships: Objective-driven and more ambitious partnerships with industry in support of EU policy objectives.

[12] https://eic.ec.europa.eu/index_en

The **relevant Partnerships for the circular-economy related activities are as follows**:

1. **People-centric sustainable built environment (Built4People)**

The vision of the partnerships is high quality, low carbon, energy and resource efficient built environments which drive the transition towards sustainability. The partnership brings together the whole value chain and it will develop sector-relevant innovation clusters across the EU.

The objectives are scientific (generate holistic innovation for sustainability), economic (revitalise the sector via sustainable operation) and societal (induce behavioural change towards sustainable living). The objectives will be reached through a user-centric approach.

2. **European Partnership – driving urban transitions to a sustainable future (DUT)**

The partnership will engage and enable the whole spectrum of urban stakeholders (local authorities, municipalities, business and citizens) to co-create innovative, systemic and people-centric approaches, tools, methods and services in support of urban transformative transitions.

This will lead to more efficient and decarbonised use of energy, sustainable and people-friendly mobility systems, circular and environmental-friendly use of resources, for the well-being of citizens and preservation of biodiversity.

Table 11: SWOT Analysis of Horizon Europe

Strengths	Weaknesses	Opportunities	Threats
✓ Supports energy-related projects (energy efficiency, renovations, renewables, adaptation, circularity) ✓ Supports small-scale projects ✓ Offers significant grants ✓ Does not require co-financing ✓ Able to co-finance projects already supported by ESIF	- Requires an experienced, technical project team	✓ May serve as seed capital for InvestEU to provide additional investments ✓ Addresses energy and fuel poverty ✓ Can fund piloting new technologies	- Co-financing may become necessary - Very competitive funding allocation process

LIFE programme

As mentioned under Horizon Europe, the LIFE programme is going to support some energy efficiency market-uptake activities.

Under its sub-programmes, there are two funding streams that are **highly relevant for circular projects**:

- The '**Circular economy and quality of life**' sub-programme[13] that focuses on circular districts involving the creation of circular value chains to boost urban economies whilst producing urban and territorial regeneration.
- '**Climate change mitigation and adaptation**' sub-programme[14] that aims the achievement of important EU strategic objectives, such as the transition to a circular economy, the protection and improvement of air and water quality in the within the EU, the implementation of the climate and energy framework for action by 2030 and the respect of the EU's commitments under the Paris Agreement.

The funding rate under these sub-programmes is a minimum 60% and depends on the specific call.

Table 12: SWOT Analysis of the LIFE Programme

Strengths	Weaknesses	Opportunities	Threats
✓ Circular district approach ✓ Supports energy-related projects (energy efficiency, renovations, renewables, adaptation, circularity) ✓ Supports small-scale projects ✓ Able to co-finance projects already supported by ESIF	- Requires an experienced, technical project team	✓ A new programme that supports energy efficiency related activities ✓ Can fund piloting new technologies	- Very competitive - Co-financing might be necessary

- Synergies between different funding programmes

- **Horizon Europe and Structural Funds**: important synergies will be needed between Horizon Europe and the Structural Funds for the purpose of "sharing excellence", thereby enhancing regional R&I capacity and the ability of all regions to develop clusters of excellence.
- **InvestEU, Structural Funds and/or Horizon Europe**: will act as a single EU investment support mechanism for internal action, replacing all existing financial instruments. Its overall ambition is to support the policy objectives of the Union by mobilising public and private investment within the EU that fulfil the criterion of additionality, thereby addressing market failures and sub-optimal investment situations that hamper the achievement of EU goals regarding sustainability, competitiveness and inclusive growth.

[13] See : https://cinea.ec.europa.eu/life/circular-economy-and-quality-life_en
[14] See : https://cinea.ec.europa.eu/life/climate-change-mitigation-and-adaptation_en

Managing Authorities may decide to contribute to InvestEU and have their financial instruments implemented through the four policy windows. Applicable rules are those of InvestEU.[15]

Innovation Fund

The Innovation Fund (IF) is one of the world's largest funding programmes for demonstration of innovative low-carbon technologies. The IF focuses on highly innovative technologies and big flagship projects with European value added that can bring significant emission reductions; focusing on the following areas:

- innovative low-carbon technologies and processes in energy-intensive industries, including products substituting carbon-intensive ones
- carbon capture and utilisation (CCU)
- construction and operation of carbon capture and storage (CCS)
- innovative renewable energy generation
- energy storage

Both large- and small-scale projects are supported:

- Large scale projects with a capital expenditure above €7.5 million.
- Small scale projects with total capital costs below €7.5 million.

Projects will be selected based on the effectiveness of greenhouse gas emissions avoidance, degree of innovation, project maturity, scalability and cost efficiency.

The Innovation Fund will support up to 60% of the additional capital and operational costs of large-scale projects and up to 60% of the capital costs of small-scale projects. The grants will be disbursed in a flexible way based on project financing needs, taking into account the milestones achieved during the project lifetime. Up to 40% of the grants can be given based on pre-defined milestones before the whole project is fully up and running.

The Executive Agency for Innovation and Networks is the implementing body of the Fund. The European Investment Bank is responsible for the provision and management of the Project Development Assistance (PDA) support.

European Energy Efficiency Fund

The EEEF[16], which is managed by the EIB, supports energy efficiency and renewable energy related operations up to €5 million. Eligible organisations include only local, regional and (if justified) national public authorities or public or private entities acting on their behalf. The nature of financing is debt or equity which can be combined with other funds, such as the European Structural and Investment Funds (ESIF).

Affordable Housing Initiative

The Affordable Housing Initiative (AHI) is part of the European Commission's renovation wave strategy, which aims to green buildings, create jobs and improve

[15] Art. 10 CPR
[16] See: https://www.eeef.lu/home.html

lives. This strategy intends to at least double renovation rates in the EU by breaking down long-standing barriers to energy and resource-efficient renovation as well as improving reuse and recycling. By 2030, the construction sector could see 35 million renovated buildings and up to 160,000 additional green jobs.

The AHI, which will begin in 2022, will work to make sure social and affordable housing can also benefit from the renovation wave. It will guarantee local social housing projects' access to necessary technical and innovation capacity and project support by:

- piloting 100 lighthouse renovation districts with a smart neighbourhood approach focused on liveability and innovation, also providing blueprints for replication
- mobilising cross-sectoral project partnerships and linking them to local actors, such as social economy, SMEs, local authorities, housing associations and civil society
- promoting efficient access and **use of innovative processes such as circular and modular building** as well as social innovation and engagement models to empower residents in the renovation process

Innovative circular social housing renovation, like the Demo 1 and Demo 2 sites, could therefore be included in the 100 lighthouse projects, with funding available from national and EU-level sources. The AHI therefore offers a good platform for HOUSEFUL follower buildings.

4.2.2 Funding opportunities under NGEU

As a result of the COVID pandemic, which has had a profound impact on our economies and societies, the EU agreed to establish an unprecedented unified recovery programme – Next Generation EU (NGEU).

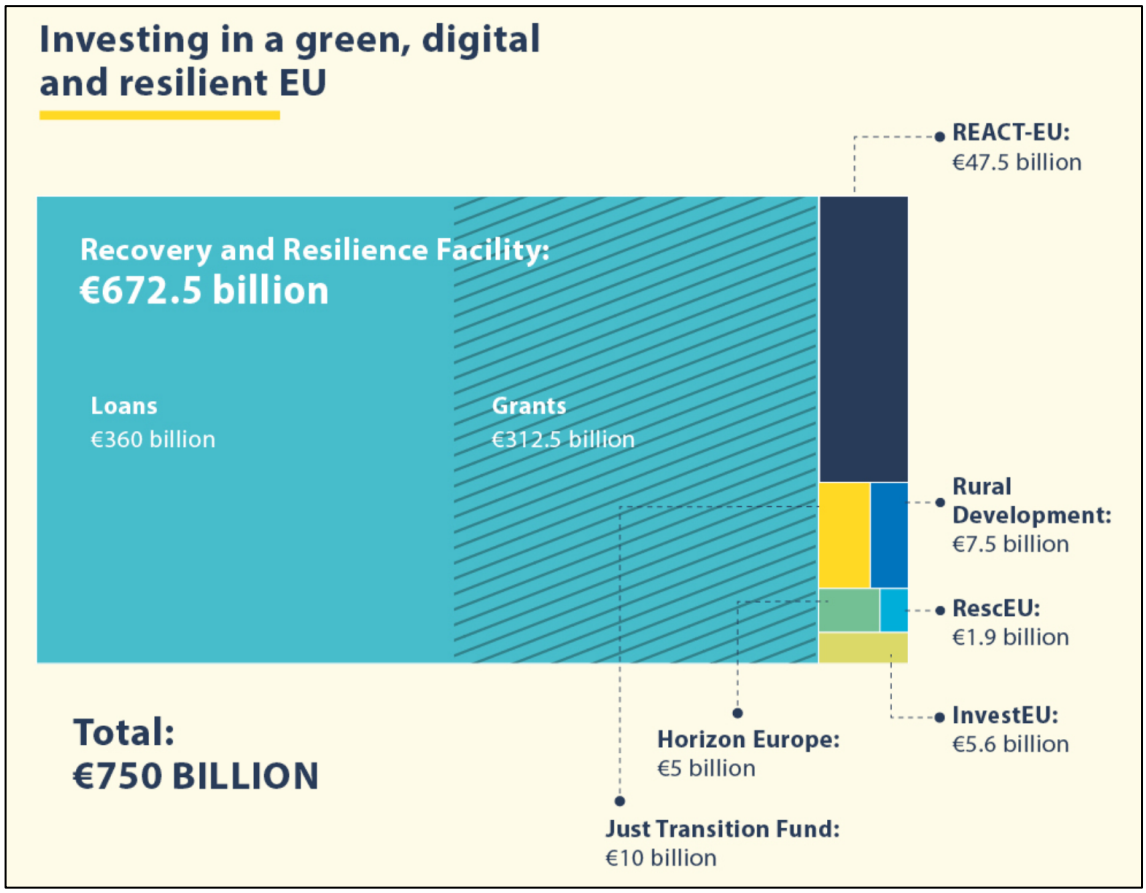


Figure 2: Overview of allocations under the NGEU programme – Source: European Commission

As shown in Figure 2, the €750bn (in 2018 prices; €806.9bn in 2021 prices) funding allocation is divided amongst a number of different packages. This includes 'top-ups' for the Just Transition Fund (€10bn) and Horizon Europe (€5bn). These top-ups will be distributed in line with what has already been described in *Section 4.2.1*. Allocations with be relative to the economic impact of COVID on Member States (based on declines in GDP, and increases in unemployment), as well as the relative size of the Member State.

Recovery & Resilience Facility (RRF)

The main component of NGEU is the *Recovery & Resilience Facility* (RRF). The RRF is aimed at delivering a timely and significant boost to the EU Member States most impacted by the pandemic. The structure of the RRF provides many advantages to Member States. Firstly, it offers up to €312.5 billion in the form of grants. This is money that the Members States will not have to repay, and it is therefore not included in the calculation of their national debt.

At the same time, Member States must agree with the European Commission and the European Council how they will spend RRF money before funds are allocated. Spending must meet a number of conditions. Firstly, **at least 30% must be allocated to tackling climate change, which could benefit building**

renovations, production of renewable energy, and increased circularity[17]. In addition, RRF funding must address the Country Specific Recommendations (CSR)[18] made each year as part of the European Semester[19] process. In recent years, the CSRs have put a lot of focus on the need for building renovations and the development of more sustainable energy and resource management. A review of the HOUSEFUL-aligned programmes linked to the RRF (at the individual member state level) is presented in *Section 4.3*.

Table 13: SWOT analysis of the RRF

Strengths	Weaknesses	Opportunities	Threats
✓ Offers significant grants and financial instruments	- New funding programme that is not sufficiently stress-tested - Each country will use its own eligibility criteria	✓ Opportunity for small-housing providers that are not eligible for bigger-scale programmes to ensure finance	- Absorption capacity is likely to be low in the coming years - Impact is not clear on State Aid the Stability and Growth Pact (SGP)

REACT-EU[20]

After the RRF, the most significant part of the NGEU package is 'Recovery Assistance for Cohesion and the Territories of Europe' (REACT-EU), which will provide funding of €47.5 billion (in 2018 prices, €50.6bn in 2021 prices).

REACT-EU has two main functions. Firstly, to provide additional resources for projects that foster crisis repair capacities in the context of the coronavirus crisis, and secondly investments in operations **contributing to preparing a green, digital and resilient recovery of the economy**. In the context of HOUSEFUL, the second objective is clearly of greater interest.

The allocation methodology for this funding takes full account of the economic and social impact of the crisis on the EU countries, reflecting the GDP drop and rise of unemployment, as well as the relative wealth of the countries.

The funds will be distributed in 2021 and 2022 via funds established under the previous MFF – primarily the ERDF and ESF.

From the ERDF, the additional resources shall primarily be used to support investment in products and services for health services and to provide support in the form of working capital or investment support to SMEs.

[17] Indeed, as already highlighted in Section 1.2 & Section 1.3 the Demo 1 and Demo 2 sites used in HOUSEFUL have recently received funding from NGEU, showing the potential for follower buildings.
[18] See : https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/eu-economic-governance-monitoring-prevention-correction/european-semester/european-semester-timeline/spring-package_en
[19] See : https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/eu-economic-governance-monitoring-prevention-correction/european-semester_en
[20] https://ec.europa.eu/regional_policy/en/newsroom/coronavirus-response/react-eu

In order to create the right conditions for recovery, it should also be possible to support investments contributing to **the transition towards a digital and green economy** as well as in infrastructure providing basic services to citizens, or economic measures in the regions that are most dependent on sectors most affected by the crisis (e.g. tourism, culture, hospitality services, etc.).

From the ESF, the additional resources shall primarily be used to support job maintenance, including through short-time work schemes and support to self-employed. The additional resources shall also support job creation, in particular for people in vulnerable situations, youth employment measures, skills development, **in particular to support the twin green and digital transitions**, and enhanced access to social services of general interest, including for children. Thus, as with the old ESF programme, and the new ESF+, the main interest from a circular renovations point of view is with regard to **training people to carry out such renovations**.

Table 14: SWOT analysis of the React-EU

Strengths	Weaknesses	Opportunities	Threats
✓ The allocation methodology takes account of the economic and social impact of the crisis	- New funding programme that is not sufficiently stress-tested - Time-consuming processes of application - Some operations are partly covered for specific Beneficiaries - Co-financing is often necessary	✓ Offers additional resources to the green transition ✓ Opportunity for small-housing providers that are not eligible for bigger-scale programmes to ensure finance	- The resources could be allocated by the central level to the health sector - Impact is not clear on State Aid the Stability and Growth Pact (SGP)

InvestEU

The programme will act as a single EU investment support mechanism for internal action, replacing all existing financial instruments (including EFSI). Its overall objective is to support the policy objectives of the Union by mobilising public and private investment within the EU that fulfil the criterion of additionality, thereby addressing market failures and sub-optimal investment situations that hamper the achievement of EU goals regarding sustainability, competitiveness and inclusive growth.

The InvestEU Fund is expected to mobilise more than €372 billion of public and private investment through an EU budget guarantee of €26.2 billion that backs the investment of financial partners such as the European Investment Bank (EIB) Group and others.

The eligibility of projects is similar than in the case of EFSI in the previous period. Projects must:

- Address market failures or investment gaps and be economically viable

- Need EU backing in order to get off the ground
- Achieve a multiplier effect and where possible crowd-in private investment
- Help meet EU policy objectives

In terms of combination with other funds, InvestEU can be combined with grants or financial instruments (or both), funded by the centrally managed EU budget or by the Innovation Fund.

Such combinations can create advantages for project promoters. When a project uses EU grants and InvestEU, the InvestEU rules will apply for the entire project. This means a single rulebook and a major simplification.

Under InvestEU there will be a specific lending channel targeting promotion of a more circular economy. However, details of this scheme have yet to be finalised.

Table 15: SWOT Analysis of InvestEU

Strengths	Weaknesses	Opportunities	Threats
✓ Supports the quick and cost-effective construction of new dwellings and long-term investment schemes. ✓ Supports energy saving investments ✓ Supports the Energy Performance Contracting (EPC) model ✓ Easily combined with other funds	- Lends under a less stable regulatory/market environment - Takes higher risks that generally accepted by banks	✓ Increase the number of beneficiaries in the Eastern region ✓ The higher risk accepted, creates an opportunity ✓ for the smaller social-housing organisation to access financing sources	- Lack of mobilising capacity in numerous regions - Lack of dedicated intermediaries in - countries with housing systems in transition, to facilitate access to the funding

4.3 A review of building renovation and energy transition programmes for the built environment in National Recovery Plans

As part of NGEU, all EU Member States have been obliged to submit a National Recovery Plan (NRP). Each NRP outlines the post-COVID recovery strategy of the Member States, as well as providing details on the proposed use of NGEU grants and finance. In this Section, we will review the NRPs, and highlight areas of potential interest to HOUSEFUL followers. This review has been prepared by Housing Europe.

Austria:

Table 16: Austrian Recovery Plan – links to HOUSEFUL replication

Scheme title	Details of Scheme & Potential interest for HOUSEFUL-type replication

Social housing is not prominently mentioned in the Austrian Plan, but there are some measures where the building sector as a whole and also the social housing sector will benefit from.	
Sub-component 1.A RENOVATION WAVE (€ 209 million)	- The Funding promotes the green transition by supporting the **replacement of climate-damaging oil and gas heating systems with renewable technology**, and strengthens social resilience by **supporting complex thermal renovation of dwellings**
Reform 1.A.1 Renewable Heating Law	- **creates the framework conditions** for replacing outdated heating systems. - **creates a common platform** to coordinate flanking measures against energy poverty, including funding and consultancy services for low-income households
Investment: 1.A.2 Exchange of oil and gas heating systems (€ 158.92 million)	- It is a support **scheme for private individuals** (31 800 dwellings) to replace fossil fuel heating system with biomass-based heaters, heat pumps or connectors to district heating - from 2025 onwards
Investment: 1.A.3 Combating energy poverty (€50 million)	- **thermal renovation of dwellings of low-income households** prone to energy poverty (2 250 houses)
Reform 1.D.1 Renewables Expansion Law	- The reform represents a **key government priority** in energy policy that plays an essential role on Austria's path towards climate neutrality by 2040.
Reform: 4.D.6 Green Finance Agenda	- **mobilises private capital** for the necessary investments to achieve the climate and energy targets of 2030. - Facilitation of **granting of 'green loans'** is foreseen.

Belgium:

Table 17: Belgian Recovery Plan – links to HOUSEFUL replication

Scheme title	Details of Scheme & Potential interest for HOUSEFUL-type replication
The Plan is structured into 6 strategic axes, of which relevant are (1) the climate, sustainability and innovation axe, and (4) the social and living together axe.	
The Renovation wave (€1 012 million)	- will concern 1,300,000 m² of public buildings and 240,000 additional private residences (including social housing). Investments include: - **Renovation of social housing** – Wallonia/ Brussels region/ German region - **Renovation of public buildings** – Flanders, Wallonia, Brussels region, federal level - **Renolab: Renovation laboratory** – RBC - Flanders will establish a **Research Platform** on the energy transition with €26.45 million and an energy island to be established on national level with the help of €100 million.
Component 4.3	- Includes investment in social housing in Wallonia, some of it equipped with **assistive technologies in order to** support the independent living of persons with disabilities and elderly

	people (part of the Walloon deinstitutionalisation strategy for long-term care).[21]
The Blue Deal measure of Flanders (I-1.24)	- **addressees the drought problems** with a strong focus on integrated and nature-based solutions: - **€291 million** will be channelled via **circular water use projects**, **better water retention and infiltration**. **Smart monitoring and data systems** are expected to ensure better governance of existing infrastructures.[22]

Bulgaria:

Table 18: Bulgarian Recovery Plan – links to HOUSEFUL replication

Scheme title	Details of Scheme & Potential interest for HOUSEFUL-type replication
The Plan is built around 4 pillars of which 1 is relevant: - Green Bulgaria – with a focus on sustainable management of natural resources allowing to meet the current needs of the economy and society, while maintaining environmental stability, so that these needs can continue to be met in the long run – 41.9% of the resources under the Plan.[23]	
Low-carbon economy 2.B.-under Green Bulgaria (5 109 649 BGN):	- The energy efficiency element will be featured in this Component - Reforms and investments under the Component are described below
Reform 1: Establishment of a **National Decarbonisation Fund**	- The fund will be used to offer **grants, financial and technical assistance, combined with financial instruments including credit lines and guarantees and/or a combination** thereof. The fund provides for the creation of a single point for the technical assistance of the candidates by one-stop-shop or similar mechanisms.
Reform 2: Facilitating and **increasing the effectiveness of energy efficiency investments** in multi-family residential buildings:[24]	- The measure will be implemented by **amending the Condominium Management Act (LUEA)** and aims to resolve obstacles to energy efficiency investments in multi-family buildings, such as the **need to facilitate decision-making** by owners of detached units in multi-family residential buildings; - It will also **regulate the professional management of condominiums in multi-family residential buildings**, thereby **improving control** over companies carrying out this activity and to ensure **greater accountability** to consumers; - Finally, it will **create the legal possibility of establishing a condominium bank account for funds collected for management and ongoing maintenance**, not only for the maintenance of the Repair and Renovation Fund. The bank account should be in the

[21] Page 38-39, Assessment of the European Commission on the Belgian RRP https://ec.europa.eu/info/system/files/com-2021-349_swd_en.pdf
[22] Page 67, Assessment of the European Commission on the Belgian RRP https://ec.europa.eu/info/system/files/com-2021-349_swd_en.pdf
[23] Page 41, Bulgarian Recovery Plan 1.5, April 2022
[24] Page 94, Bulgarian Recovery Plan 1.5, Apr 2022

	name of the condominium, that facilitates the application for collective loans.
Investment 1: Energy efficiency in buildings (BGN 2 475.4 million)	- It is a measure exclusively **devoted to renewables (solar panels, solar thermal energy that are not connected to heat and gas transmission networks) and energy efficiency (purchase of heat pumps).** - it will **cover 100% of expenses for owners' associations that have applied in the first year** of implementation - **80% for owners' associations that have applied from April 2023 until the end of the calendar year**.[25] - In order to top up the grant, other funds will also be available.
Investment 2: Programme to finance single energy efficiency measures in one-dwelling buildings and multi-dwelling buildings that are not connected to heat and gas transmission networks (BGN 240.0 million (BGN 140.0 million from RRF):	- financing the purchase of energy-efficient thermo pumps, solar systems for household heat supply and photovoltaic systems. Supported measures: - - **Replacing existing heating appliances** with thermo pumps of high efficiency class (A++ and higher, respectively SCOOP 4.6 or higher) in buildings that are not connected to the heat and gas transmission networks. The maximum amount of the grant per household will be 50% of the thermal pump cost, but not more than BGN 1 050, and for a household on heating benefits – 100% of the thermal pump cost but not more than BGN 2 100; - **Building solar systems for household heated water supply**. The maximum amount of the grant per household will be 100% of the thermal pump cost, but not more than BGN 1960.83; - **Supply and installation of photovoltaic systems** up to 10 kW. The maximum amount of the grant per household will be 70% of the thermal pump cost, but not more than BGN 15 000. Energy poor households may apply for the grant up to 100% of the cost of the system, but not more than BGN 15 000. In case of technical feasibility households may include them in the project for photovoltaic system, as long as the threshold of BGN 15 000 is not exceeded. Households may install photovoltaic installations whose capacity exceeds 10 kW and a value of BGN 15 000, but grant funding is limited to BGN 15 000.
Reform 3: Developing a definition and criteria of "energy poverty" for households in the Energy Act for the purposes of financing energy efficiency projects	- building **a special information system** to enable the development of a database for monitoring and reporting of the residential building renovation process - developping a definition of "energy poverty" for households in the Energy Act for the purposes of financing energy efficiency projects
Reform 4: Mechanism to finance energy efficiency and RES projects together with electricity bills	- expanding the opportunities for implementation of measures and projects for energy efficiency improvement and use of renewable energy sources in a context of limited financial resources.

[25] Greenpeace Bulgaria, *The Bulgarian antediluvian energy plan* (2021)
Bulgarian Council of Ministers, National Recovery and Resilience Plan, (draft as of February 2021) (in Bulgarian and English) Project A10

Reform 5: One stop shop	- 6 territorial units will be piloted, **providing services** on the "one-stop shop" principle, and in a 24-month horizon the activity will be rolled out in all **28 districts of the country**. - A working group with representatives of all stakeholders will be set up in 2022 to prepare specific recommendations for streamlining and reducing the administrative barriers throughout the project cycle; identify services to be offered (digital and physical).[26]
Reform 6: Stimulating renewable energy production	- It will reduce the administrative burden on investment by renewables in terms of installation, connection and operation of capacities. As a result of these actions, at **least 3 500 MW of new renewable energy capacity (wind and solar) compared to existing ones will be commissioned** and connected to the grid by 30 June 2026.[27]
Reform 8: Electricity market liberalisation	- The aim is to transition **to a liberalised electricity market by 31 December 2025**, through the gradual **abolition of regulated household prices** in a liberalised wholesale electricity market in two successive stages (in 2023 and 2025) and ending the setting of energy supply quotas on a regulated market by the EWRC. - The reform will **set regulated prices for final suppliers** who will buy electricity on the free market, in accordance with the requirements of Article 5 of the Directive (EU) 2019/944. - The **network digitisation/data access is foreseen** by the end of 2022, and the net metering and Smart metering at the end of 2024.

Cyprus:

Table 19: Cypriot Recovery Plan – links to HOUSEFUL replication

Scheme title	Details of Scheme & Potential interest for HOUSEFUL-type replication
The Plan consists of 5 Policy Areas, of which the following are relevant: • **"Accelerated Transition to a Green Economy" (in total €447.6 million which is 36.3 % of the whole budget),** • "Strengthening the Resilience and Competitiveness of the Economy", • "Towards a Digital Era".	
Component 2.1 Climate neutrality, energy efficiency and renewable energy (estimated budget €269.1 million):	Relevant reforms under the Component - **Reform 3: Digital One-Stop Shops to streamline RES projects permitting and to facilitate Energy Renovation in Buildings** - **Reform 4: Energy Storage Regulatory Framework** Relevant Investments - Investment 1: Promoting **energy efficiency investments in SMEs, municipalities, communities and the wider public sector** (€40 million)

[26] Page 101, Bulgarian Recovery Plan 1.5
[27] Page 102, Bulgarian Recovery Plan 1.5

	- Investment 2: **Promoting renewables and individual energy efficiency measures in dwellings** and tackling energy poverty in households of disabled people - Investment 3: **Encouraging the use of renewables** and energy savings by local/wider public authorities as well as NGOs and facilitate the transition of local communities towards climate mitigation & adaptation: This investment includes also social housing investments of over €20,000 each). ○ Mitigation part: **Grant Scheme to support local rural Community Councils**
Component 3.1 New Growth Model	- sub-component 3.1.4 Circular Economy contains a **concrete Action plan** which focuses on creating a culture among citizens (sustainable consumption) and businesses, provide effective incentives for industry to invest in the circular economy and develop the necessary infrastructure. - **includes a grant scheme to enhance investment in the circular economy**, open to SMEs aiming to move into a circular operating model. **Grants may go up to €317,500 for each beneficiary, covering up to 60% of the investment cost incurred**.[28]

Czechia:

Table 20: Czech Recovery Plan – links to HOUSEFUL replication

Scheme title	Details of Scheme & Potential interest for HOUSEFUL-type replication
The plan sets **out six main areas of which the following are relevant**: • **Physical infrastructure & green transition (energy consumption, building renovation, investment incentives)** ○ Simplification of the process of granting construction permits ○ New construction law and zoning law • Research & Development In total, €1.22 billion is provided for buildings.	
Component 2.3: Transition to cleaner energy sources (€ 262 million)	- Investment 1: **Increasing installed capacity of sources of photovoltaic energy** - Investment 2: **Achieving primary energy savings resulting from the modernization of heat distribution** (replacement of steam-based distribution networks by hot water distribution networks.[29])
Component 2.5: Building renovation and air protection (€ 632 million)	- Reform 1: Renovation wave in the household sector (€332 million) Foreseen actions[30]: ○ **The New Green Savings 2030 programme:** optimising the setting of support conditions, increasing the requirements for medium-scale renovations (saving 30 % of primary energy consumption), increasing the emphasis on complex energy renovations, reinforcing support for the

[28] Page 54, Annex to the Proposal of the European Commission https://ec.europa.eu/info/sites/default/files/com-2021-398_annexe_en.pdf
[29] Page 62, Annex to the Proposal of the European Commission to the Council https://ec.europa.eu/info/sites/default/files/com-2021-431_annexe_en.pdf
[30] Page 70, Annex to the Proposal of the European Commission to the Council https://ec.europa.eu/info/sites/default/files/com-2021-431_annexe_en.pdf

	construction of new houses with higher energy efficiency standards, and supporting **efficient water management**. ○ The **energy consultation centres** will be integrated in the network of local energy agencies. ○ The **support for training and retraining of workers** deploying green construction, green technologies or materials under the State programme for **supporting energy savings** (EFEKT) will be strengthened and expanded
Reform 2: Support for energy communities (€ 283 million)	Foreseen actions: - The New Green Savings 2030 programme will **support the installation of new renewable energy sources** in a way that eliminates obstacles to their future integration in the energy community. The programme will also **support smaller common multi-home energy storage sites or the creation of energy communities within individual multi-family buildings**. - **Awareness-raising and education** - Investment 1: **Support for the renovation & revitalisation of housing**: ○ replacing non-compliant combustion sources in households using solid fuels with gas condensing boilers of energy class A, using renewable energy sources, promotion of smart meters, common energy storage sites and demand aggregation, incentives to install new gas-fired boilers and to adopt other energy efficiency measures. - Investment 2: **Support exchanges of non-compliant heat generators and installing renewable energy sources (€283 million)** - Investment 3: **Pre-project preparation**
Component 2.6: Adaptation to climate change (€ 542 million)	Relevant Investment: - **Flood protection (€99 million)**
Component 2.7: Circular economy and recycling industrial water (€141 million)	- Reform 2: **Finalisation and implementation of the circular Czechia strategy 2040**

Denmark:

Table 21: Danish Recovery Plan – links to HOUSEFUL replication

Scheme title	Details of Scheme & Potential interest for HOUSEFUL-type replication
The plan's main objective is to speed up the green transition. A key reform initiative is the green tax reform.[31] In addition, the plan contains dedicated components focusing on **improving energy efficiency** for households, industry and public buildings, promoting sustainable transport solutions and providing **funding for green research and development**.	
Component 3: energy efficiency, green heating, carbon capture and storage (€235 million)	Relevant investments: - Investment 1: '**Replacing Oil Burners and Gas Furnaces'** (€65 million) aims at phasing oil and natural

[31] In the first step, the green tax reform includes increased tax deductibility for investments to create an incentive for companies to speed up green investments, which is expected to facilitate the implementation of the reform. In the second step, energy taxes will be raised as of 2023 and target the CO2 content of fossil energy, thus providing an incentive to use clean energy and reduce greenhouse gas emissions.

	gas out of the heating system and replaced with electric heat pumps and district heating from renewable sources. The measure will provide subsidies. - Investment 3: '**Energy renovations in public buildings'** (€40 million) will focus on energy renovations in regional and municipal buildings with the lowest energy performance certificate standards - Investment 4: '**Energy Efficiency in Households'**[32] (€63 million) will ensure that residential buildings are renovated (supporting insulation, optimization of the operation of the building or replacement of heating by oil burners and gas furnaces with heat pumps)

Estonia:

Table 22: Estonian Recovery Plan – links to HOUSEFUL replication

Scheme title	Details of Scheme & Potential interest for HOUSEFUL-type replication
Estonia will access **€969.3 million** of grants from the RRF: • **€600 million** will go for projects related **to the green and digital revolutions**; • €312 million will be support entrepreneurship, including support for the digital revolution in the economy, the promotion of integrated hydrogen technologies and support for business in foreign markets; • €178 million from the REACT-EU Rapid Crisis Response fund will complement the funding, which is dedicated to dealing with the effects of the corona crisis. • **ESIF funds, which represent €336 million is already planned for renovation of multi-apartment building stock.**	
Component 4 Energy efficiency	Reform 1: **Promoting energy efficiency and integrated renovation:** - **Investment 1: Supporting the renovation of apartment buildings** (€44.75 million) - **Investment 2: Supporting the renovation of small residential buildings** (€2.4 million from RRF) - **Housing Investment Fund: energy efficiency upgrading** of up to 8,400 apartment buildings and providing a Housing loan guarantee for housing associations which can be combined with Kredex funding - **Development of E-construction by using BIM** to provide the housing owner with energy savings calculators and analyse the potential for renewable energy use, for example by efficiency of solar panels on a building-by-building basis

Finland:

Table 23: Finnish Recovery Plan – links to HOUSEFUL replication

Scheme title	Details of Scheme & Potential interest for HOUSEFUL-type replication

[32] Page 17, Annex to the Proposal for Council Decision https://ec.europa.eu/info/system/files/com-2021-326_annexe_en.pdf

Finland's Recovery and Resilience Plan is centred around 4 priorities: Green transition, Digitalisation, Employment and skills and Health & social services. Affordable housing investments could be supported under the 'Green transition' priority which represents a total of €820 million budget[33] and **it will be the largest single climate investment that Finland has ever made.**	
Investment on Supporting the replacement of building heating systems from fossil oil to low-carbon energy efficient heating (€70 million)	- Available especially for small houses - Residential buildings, terraced houses and apartment blocks, including social rented housing, are eligible for a separate national energy grant scheme for energy efficiency improvements, which may include the abandonment of oil heating
Low-carbon built environment programme (€40 million)	Planned measures include: - **Establishing a network of change agents to share knowledge and skills** and design of joint projects for Finnish companies seeking to export low-carbon solutions (€4 million) - Launching a **support programme for R&D** and innovation to accelerate investment (at least €32 million) - Developing **a knowledge base and assessment tool** to support climate solutions and low carbon technologies (at least €4 million) - Development and coordination of **design and planning support schemes** for the export of Finnish products to the developing countries (€2 million).
Component on Environmental sustainability and Nature-based solutions	- Reform on **Nature protection legislation and the Strategic promotion of the circular economy.** - **Climate-resilient investments in the land use sector** (€10 million) ○ **Re-use and recycling of construction and demolition waste**
Development of an apartment information system (€14 million)[34]	- The reform will improve consumer protection in the housing market and **provide information on the financial and economic performance of housing**. The housing information system will allow the creation of a positive credit record, which will enable consumers to benefit from a fairer treatment in credit granting situations.

France:

Table 24: French Recovery Plan – links to HOUSEFUL replication

Scheme title	Details of Scheme & Potential interest for HOUSEFUL-type replication
France's recovery plan focuses on three key priorities: the green transition (€20.2 billion), competitiveness (€34 billion), and social & territorial cohesion (€36 billion). In total, the Plan features 70 investments and 22 reforms, for a total of € 40.95 billion. € 5.8 billion of costs are estimated for the renovation of buildings.	

[33] https://vm.fi/en/green-transition

[34] Page 126-127, Finnish Plan, June 2021

Component 1 Social and territorial cohesion	- Improving social cohesion by reducing energy poverty and by supporting investments in the **renovation of social housing (€ 0.5 billion).** - **€ 445 million for major renovations** in order to jump several energy classes and **€50 million for the deployment of industrialized renovation solutions** (Energiesprong-type projects[35]). - **Promotion of "comprehensive renovations"** with the objective of reaching BBC level; deploying "industrial solutions for energy renovation": a call for projects will be launched to deploying "industrial solutions for energy renovation of existing social housing".
React EU and ESIF 2021-27	- Affordable housing providers will be able to benefit from the React EU and the Structural Funds 2021-2027. **The RRF grants are not cumulative with the React Eu and Structural Funds 2021-2027 for the same project**.[36]

Germany:

Table 25: German Recovery Plan – links to HOUSEFUL replication

Scheme title	Details of Scheme & Potential interest for HOUSEFUL-type replication
Specific measures of the German Plan will concentrate on 6 pillars: - **Climate policy and energy transformation (€ 11.3 billion, 40% of the Budget)** - Digitalisation of the economy & Digitalisation of education (€5.25 billion) - Strengthening social participation - Strengthening a pandemic-resilient health system (€ 3 billion) - Modern administration and elimination of obstacles to investment.	
Component 1.3: Climate-friendly building and refurbishment (€2.5 billion)	- Investment in the further development of climate-friendly construction with wood; as well as the **introduction of Building Information Modelling (BIM)** into the planning and manufacturing process - Investment in Municipal real laboratories of the energy transition - A federal funding programme for energy efficient Buildings – Innovation Funding (€5.5 billion)[37]

Greece:

Table 26: Greek Recovery Plan – links to HOUSEFUL replication

Scheme title	Details of Scheme & Potential interest for HOUSEFUL-type replication
The Greek Recovery Plan consists of four pillars: Green, Digital, Social, and Economic and Institutional reform.	
Green transition	- It focuses on **energy efficiency and buildings renovation, renewables, electro-mobility, climate resilience, and environmental protection**. The investments include, among others:

[35] For more information on the Energiesprong model, see: http://www.energiesprong.fr/
[36] Page 11, L'Europe investit dans le logement social Décodeur Hlm, n86, Repères Europe, l'Union social pour l'Habitat
[37] Page 240, German RRP, April 2021

	- **Extensive renovation programmes** for households, businesses, public buildings and infrastructure. - The **interconnection of Greek islands**, which will significantly reduce the energy costs of households. - **Promotion of strategic urban actions**. - Large investments **in flood control projects**, accompanied by **changes in the use of irrigation networks and leak detection and smart water management.** - Investments for the **elaboration of urban plans** that will inform validly regarding land use for 4/5 of the country.
Component 1.2 Renovate (€2,711 million)	- Reforms and investments in **urban and spatial planning** - Investment in the **renovation** of residential, buildings to improve energy performance and reduce the carbon footprint (**€1 billion)** ○ Setting the **national fund for the development of renewables** - **Energy poverty action plan** - **Housing programmes for vulnerable groups** (€166 million)[38] - Climate change **adaptation and mitigation interventions in 16 urban and coastal areas** such as the **protection of urban landmarks** of significant importance and the **promotion of the climate neutrality of cities** (€160 million)

Hungary:

Table 27: Hungarian Recovery Plan – links to HOUSEFUL replication

Scheme title	Details of Scheme & Potential interest for HOUSEFUL-type replication
The Plan[39] consists of **nine components, such as demographics, education, green policies, circular economy, and digitalisation**. The seven Operational Programmes that implement Structural Funds are in a close line with these priorities. The components focus mainly on the RES to make the heating sector cleaner but they also have some renovation elements (change of windows without isolation and interventions to avoid severe housing quality problems such as leaking roofs and unsecure housing conditions).	
Component C settlements	- Social energy communities (HUF 70 billion): small-scale solar power plants will be installed in small settlements (focuses on families with small children) - The 300 settlements renovation programme will improve the situation of the most disadvantaged settlements of Hungary
Component F energy	- Individual solar panels programme (HUF 158 billion): PV and heat pump installation on individual homes. The target groups are households that are at a high risk of energy poverty

[38] Page 107, Greece 2.0

[39] https://www.palyazat.gov.hu/helyreallitasi-es-ellenallokepessegi-eszkoz-rrf?fbclid=IwAR006vMq36mIxmoW5mgFQXs3RYnUxjEM1V4RyLLv5duuRvddazBgRP4u1ZA

Ireland:

Table 28: Irish Recovery Plan – links to HOUSEFUL replication

Scheme title	Details of Scheme & Potential interest for HOUSEFUL-type replication
The Irish plan is structured around three priority areas: **advancing the green transition**, accelerating and expanding digital reforms and transformation, and **social and economic recovery** and job creation. The Plan allocates **€155 million** to renovate residential and public buildings and to support businesses that improve their energy efficiency.	
Component 1: 'Advancing the green transition' (€518 million)	- **De-risking a Low-Cost Residential Retrofit Loan Scheme** through the use of loan guarantees (€ 30 million) - **A Public Sector Retrofit Pathfinder Project** to undertake the deep retrofit of public office accommodation (€ 60 million);
Component 3: 'Social and Economic Recovery and Job Creation' (€ 181 million)	- **Affordable Housing Act** and the **Land Development Agency Bill** - 'The **SOLAS recovery skills response investment programme – green skills action'** (€29 million)

Italy:

Table 29: Italian Recovery Plan – links to HOUSEFUL replication

Scheme title	Details of Scheme & Potential interest for HOUSEFUL-type replication
The Plan consists of 6 priority areas or 'missions': 1. Digitalization, innovation and competitiveness 2. Green revolution and ecological transition (€ 70.9 billion) 3. Infrastructures for mobility 4. Education, training, research and culture 5. Social, gender and territorial equity 6. Health Out of these six for a total, mission number 2 is particularly relevant for the housing sector and circularity.	
M2C3. Energy efficiency and buildings renovation	- **Investment 2.1: 'Ecobonus' and 'sismabonus' measures**: Energy refurbishment and seismic strengthening of private and public residential buildings with an allocated budget of €13.81 billion - The measure consists of a **tax deduction** hat can be used to support energy retrofit, anti-seismic renovation, photovoltaic panels or installing structures/chargers for electric cars and it gives the possibility to deduct 110% of expenditure incurred for the type of works mentioned above from income taxes (in 5 yearly instalments). - **Requirements for the Condominiums**: reference is made only to the expenses **relating to the common parts.**
M5C2. Social infrastructures, families, communities and third sector	- **Point 2. Urban regeneration and social housing**, allocated budget: €9.02 billion ○ Investment 2.1 urban regeneration projects aimed at tackling social exclusion and decay, allocated budget €3.30 billion ○ Beneficiaries are municipalities with more than 15,000 inhabitants and the range of activities that can be financed is quite broad aimed at improvement and revitalization of urban areas

	- **Investment 2.2 integrated urban plans**, allocated budget: 2.9 billion
	  ○ This programme targets the 'peripheries' of metropolitan areas. Interestingly it should include a specific stream dedicated to housing solutions for workers in industry and agriculture
	- **Investment 2.3 Housing quality innovation programme**, €2.8 billion
	  ○ It reinforces with new funding allocation a pre-existing programme set up in 2019. The objective is to **foster construction of new public housing and requalification of existing stock and degraded areas** (with focus on sustainability and green innovation).
	  ○ Funding proposals will be selected using indicators of environmental, social, cultural, urban/territorial, economic/financial and technological impact.

Latvia:

Table 30: Latvian Recovery Plan – links to HOUSEFUL replication

Scheme title	Details of Scheme & Potential interest for HOUSEFUL-type replication
The measures of the RRP are organised into six areas: green transition (€ 676.2 million representing 37.6% of the total allocation), digital transition, healthcare, reduction of inequality, productivity and the rule of law.	
Green transition	- €248 million (46% of investments) will target **energy efficiency in 3000 multi-apartment buildings** (€ 36.63 million), central government, historical buildings (€ 36.63 million) municipal buildings (€ 29.3 million) and the business sector (€ 145,44 million being the largest recipient of funds). - **Mitigation and adaptation measures**: The recovery plan also focuses on climate change adaptation thanks to **investment in flood prevention and fire prevention** which should directly contribute to the objective of adapting to the consequences of climate change.

Lithuania:

Table 31: Lithuanian Recovery Plan – links to HOUSEFUL replication

Scheme title	Details of Scheme & Potential interest for HOUSEFUL-type replication
The EU grant will be used for seven pillars, namely: green transition, digital transformation, health, social affairs, research and innovation, education, public governance. Green transition and digital transformation are priorities of the entire European Union, to which each Member State must allocate at least 37 % and 20 % of the Fund's assistance, respectively.	
Component Green transformation (€1,305.46 million, of which EAGADP funds €823.1 million)	Out of the 4 reforms, two are relevant for the affordable housing sector: **1. Accelerated renovation of buildings and sustainable urban environment** (COFOG 06.1 and 06.6) -EAGADP (€217.8 million), national budget (€51.6 million), ESFIP (€103.2 million) and private companies funds (€93 million): The reform includes measures that will optimise the administration and management of renovation projects,

	creating integrated information systems tools, the development of standardised renovation projects. The renovation projects will be based on standardised, organic material designs. The objective is to increase energy efficiency and launch a wave of renovation in Lithuania that will ensure renovation **of 1 000 apartment buildings per year until 2030**.[40] - It is planned to implement renovation projects **using modular structures** and reaching A or B class. - **A new renovation information system (€13 million)** is planned to be set up and to implement **pilot demonstration projects in 4 apartment buildings and 4 public buildings**, putting into practice the most advanced energy efficiency solutions, introducing the use of RES, universal design principles and energy efficiency practices. - €50 million planned to be agreed by the State aid scheme, **to develop wood-based materials and building components used for green energy production capacity** for the green renovation of buildings. - **State support for smart and accelerated modernisation of multi-apartment buildings** (€154.8 million) -covering up to 30% of the investment in energy efficiency.[41] **2. Towards a circular economy** (COFOG 04.1, 04.8, 04.9 and 05.1)-financed by ESFIP - Lithuanian manufacturing companies see the transition towards a circular economy in the short term as more social and environmental but not long-term economic benefits, and therefore only a partial view of the circular economy prevails orientation towards resource efficiency.[42] - In order to comply with the TR'2019 on resource efficiency, **the reform "Towards a Circular Economy" will be implemented**, which foresees the participation of stakeholders and socio-economic partners in 2023 and, with the participation of institutions and socio-economic partners, to prepare and implement a **roadmap for Lithuania's transition to a circular economy by 2035**.

Luxemburg:

Table 32: Luxemburgish Recovery Plan – links to HOUSEFUL replication

Scheme title	Details of Scheme & Potential interest for HOUSEFUL-type replication
The projects pre-selected by the government are based on three pillars, namely: **cohesion and social resilience, green transition and digitalisation, innovation.** These pillars are part of the continuity of the government's action and reflect the priority of a recovery focussed on the dual green and digital transition.	
Component 1 'increase the offer of affordable and sustainable public housing'	- The measure has a €51.46 million envelop, of which €24 million (47%) is covered by the RRF. - A total of **at least 1,200 affordable housing** units will be put on the market between 2022 and 2025.

[40] Page 27, Lithuanian Plan, June 2021
[41] Page 138, Lithuanian Plan, June 2021
[42] Page 95, Lithuanian Plan, June 2021

Under the Pillar 1 Cohesion and social resilience.[43]	
Component 2 'Project « Neischmelz » in Dudelange' Under the Pillar 1 Cohesion and social resilience[44]	- The project aims the **conversion of a 40-hectare industrial wasteland within the city of Dudelange**, with an urban planning concept that also takes into account the industrial heritage of the region. - The Housing Fund, a public developer, is the master project's work. In the long run, the **construction of more than 1,000 housing units** on this site will enable to accommodate nearly 2,300 people. More than half of the units will be for affordable rental. In addition, the project aims **to build 10,000 m2 PV on the surface.**

Malta:

Table 33: Maltese Recovery Plan – links to HOUSEFUL replication

Scheme title	Details of Scheme & Potential interest for HOUSEFUL-type replication
The Maltese plan covers six areas, including sustainable transport, **circular economy**, clean energy and energy-efficiency in buildings, digital transformation of the public administration and the legal system, projects targeting the health and education sectors, as well as institutional reforms.	
Component 1: Addressing climate neutrality through enhanced energy efficiency, clean energy and a circular economy (€78 million)	- The component includes investments in the **renovation of** a number of **public buildings, public schools and hospitals, and support the renovation of private buildings (€ 30 million)**. Reforms include: - **The development of a long-term renovation strategy** as a key action of Malta's efforts for Clean Energy and to achieve the decarbonisation of the building stock by 2050; - **The launch of a training and certification programme** to ensure a sufficient and diversified pool of staff with appropriate expertise;[45] - **The fostering of effective waste management** through a robust waste governance framework including reforming the waste collection system and actions envisaged in the forthcoming Construction and Demolition Waste Strategy, such as o the completion of a study and legislation to extend producer responsibility to additional waste streams and o the reform of the waste collection system by regions, including packaging waste.[46] - The reforms and investments are complemented by schemes and financial instruments supported by other EU funds.

[43] Page 45, RRP of Luxemburg
[44] Page 50, RRP of Luxemburg
[45] Page 55, Assessment of the European Commission https://ec.europa.eu/info/sites/default/files/com_2021_584_swd_en.pdf
[46] Page 39, Assessment of the European Commission https://ec.europa.eu/info/sites/default/files/com_2021_584_swd_en.pdf

Netherlands:

Table 34: Dutch Recovery Plan – links to HOUSEFUL replication

Scheme title	Details of Scheme & Potential interest for HOUSEFUL-type replication
- At the time of writing (early April 2022), the Netherlands has not submitted a national recovery plan	

Poland:

Table 35: Polish Recovery Plan – links to HOUSEFUL replication

Scheme title	Details of Scheme & Potential interest for HOUSEFUL-type replication
Poland's Recovery Plan is divided into five pillars: 1. Resilience and competitiveness (€4.5 billion grant and €245 million loan (a total of €4.7 billion), which accounts for 13.1%; **2. Green energy and reduction of energy intensity (€5.7 billion grant and EUR 8.6 billion loan (a total of € 14.3 billion);** 3. Digital transformation (€ 2.79 billion grant and €2.10 billion loan (altogether € 4.897 billion), which accounts for 13.6%; 4. Health care (€ 4.1 billion grant and € 450 million loan (a total of € 4.5 billion), i.e. 12.6%; 5. Green, intelligent mobility (€ 6.8 billion grant and €700 million loan (altogether €7.5 billion).[47] The green component amounts to 39 % of the total budget, being the first priority area.	
Flagship housing renovation and Clean Air Programme	- **Flagship housing renovation Programme**: €3 billion of Recovery Plan goes for the renovation of buildings - The existing "**Clean Air" programme will be sped up**, which supports renovating heating systems, improving buildings' energy efficiency and installing renewable energy sources.[48] The programme[49] aims to achieve the **modernization of 3 million houses by 2029**. ○ It will make it possible to **increase the pace of thermo-modernisation** and **replacement of inefficient heat sources** with environmentally friendly ones in single-family buildings. Support will also be given to investments connected with improving the **energy efficiency of multi-family buildings**, schools, libraries and cultural centres as well as investments in replacement or **modernisation of heat sources in district heating systems**.
Energy Efficiency reform Programme	- The Energy Efficiency reform aims **to accelerate the process of replacing high-emission heat sources and promoting the use of renewable energy sources**, both for individual homes and for multifamily buildings, as well as for public infrastructure. - Planned actions include the **modernization of the district heating system**; developing a **mechanism to support investments in renewable energy sources**, focused on

[47] Page 30, Polish RRP, June 2021

[48] European Commission, Impact assessment study for the review of Directive 2009/33 on the promotion of clean and energy (2020)

[49] Czyste Powietrze Program ("Clean air" programme)

	transformation of inefficient district heating systems located in small and medium-sized towns; as well as the **ban on sale/leaseback of district heating systems.** - The subsidy may amount to **60% of the incurred investment implementation costs**, i.e. by PLN 7 thousand more in relation to the basic level of subsidy (in total PLN 37 thousand). This solution was introduced for people with lower income – in the case of multi-apartment with monthly income is up to PLN 1400 per person, and in the case of single-person households – up to PLN 1960.[50]
Replacement of heat sources and improvement of energy efficiency in residential buildings (€ 3.2 billion)	- includes the **replacement of inefficient sources used for heating and hot water preparation**; **thermo-modernisation of residential buildings**; as well as the **installation of renewable energy sources** (including photovoltaic panels and solar collectors). - Investments in energy efficiency in multi-family housing will be realized within the **Subsidy Fund and the Modernization and Renovation Fund**.
Investment for energy communities (€97 million)	- **create 5000 energy communities** - A Green Urban Transformation Fund: The fund will finance **bottom-up projects focusing on energy efficiency of buildings, adaptation to climate change.**[51]

Portugal:

Table 36: Portuguese Recovery Plan – links to HOUSEFUL replication

Scheme title	Details of Scheme & Potential interest for HOUSEFUL-type replication
The Plan has three main Pillars: Green transition, digital, smart sustainable and inclusive growth which are divided in 20 components. These components result in 32 reforms, carried out through 83 investments.	
Investment 1 Support Programme for Access to Housing	- It is providing mainly **social housing accommodation**, but also providing **financial support for renovation or construction** to the identified target groups that do not have the financial capacity to guarantee the adequacy of their own housing, for at least 26,000 households by 2026.
Investment 2 National Emergency and Temporary Accommodation Grant	- The objective of this investment is to provide 2000 **temporary or emergency accommodation** to the vulnerable population groups in mainland Portugal
Investment 3 Strengthening of the supply of social housing in the Autonomous Region of Madeira:[52]	- **rehabilitation of the 325 private dwellings** (including improved energy performance). The investment also foresees the procurement of services for the development of information systems and e-government solutions in the housing sector.
Investment 4 Increasing housing conditions in the housing stock of the Autonomous Region of the Azores	- **the construction of 277 buildings; 77 apartments; and** - **the rehabilitation of buildings (deep renovation for 106 buildings, medium renovation of 252 buildings and small intervention in 116 buildings).**

[50] Page 33, Polish RRP, June 2021
[51] Page 34, Polish RRP, June 2021
[52] Page 19, ANNEX of the Proposal for Council Decision https://ec.europa.eu/info/system/files/com_321_1_annexe_en.pdf

Investment Energy efficiency in residential buildings:[53]	- **Support the cost of projects** (typically between 50% and 70% of the overall cost) **promoting renovation, energy efficiency**, decarbonisation, **water efficiency and circular economy in buildings**. This shall be done through annually launched notices. - **For low-income households** in energy poverty (where up to 100% of the cost may be subsidised), such actions shall require closer collaboration between central and local authorities. Vales eficiência, or **energy efficiency vouchers, worth on average €1,300 each**, shall be issued and delivered to households in energy poverty, which shall entitle the recipient to certain works, energy efficient solutions, equipment and electrification of energy uses. - **Communication channels and one-stop shops** shall also be made available to help clarify on how to obtain this support.

Romania:

Table 37: Romanian Recovery Plan – links to HOUSEFUL replication

Scheme title	Details of Scheme & Potential interest for HOUSEFUL-type replication
The reforms and investments included in the plan are structured across six pillars: ○ Green Transition – water & waste management, afforestation, transport, energy efficiency and renewable energy (represents 41% of the Plan's total allocation); ○ Digital transformation (21 % of the total allocation); ○ Smart, sustainable, inclusive growth – including tax reforms, R&D. ○ Social and territorial cohesion – green & digital transition at local level, reducing disparities; ○ Health and social and institutional economic resilience – access to health, social reforms; ○ Policies for the next generation- resilience, digitalisation, dual vocational training, etc.	
Renovation Wave Component (€ 2.2 billion loans from RRF)	- It ensures an **integrated approach to seismic strengthening, energy efficiency, energy reduction, energy fire risk reduction, indoor air quality improvement and the transition to smart buildings**. - includes measures to **monitor the performance of the built stock** through the development of **the digital register of buildings** and the phased implementation of the **building energy passport**. The implementation of these two measures will be funded through the RRP (€5 million). - the **circular economy part of the rehabilitation of historic buildings (€4.95 million)** is key by creating a **pilot centre for the collection and re-use of historic building materials** from demolition. **€ 3.1 million** of the RRF will support the maintenance of the rehabilitated buildings. Renovation Fund includes: ○ Grant scheme for resilience and energy efficiency in residential buildings multi-family buildings (€1 billion); ○ grant scheme for energy efficiency and resilience in public buildings-public service buildings, including historic buildings on the basis of an intervention methodology that preserves cultural value (€1.17 billion).[54]

[53] Page 126, Annex of the Proposal for Council Decision https://ec.europa.eu/info/system/files/com_321_1_annexe_en.pdf

[54] Page 362

	○ In the frame of strengthening the professional capacity of specialists and workers in the field of energy-efficient buildings, Romania plans to develop a **regional training and education centre (€10 million).**

Slovakia:

Table 38: Slovak Recovery Plan – links to HOUSEFUL replication

Scheme title	Details of Scheme & Potential interest for HOUSEFUL-type replication
The plan is structured around 5 areas. The area called "Green Slovakia" accounts for the biggest part of the budget with €1.9 bn (measures that directly contribute to cutting emissions as opposed to other environmental priorities) followed by healthcare with €1.4 bn earmarked. The plan includes aims to renovate buildings, pursue renewable energy sources and develop more sustainable transport infrastructure. The area of housing will be represented to a small extent in the Slovak Plan. In housing refurbishment/modernisation, Slovakia has long-term and effective national instruments. Almost 70% of residential building are already refurbished in the country. This support will continue (mostly through our State Housing Development Fund) and ESIF 2021-2027 will be also used.	
Modernisation of 30000 family housing	- €528 million to **renovate at least 30,000 family houses** to improve their energy and green performance, while reducing people's energy bills and greenhouse gas emissions as well as adapting to climate change with water retention measures. - €220 million is allocated to **renewable energy generation.**

Slovenia:

Table 39: Slovenian Recovery Plan – links to HOUSEFUL replication

Scheme title	Details of Scheme & Potential interest for HOUSEFUL-type replication
The recovery and resilience plan stipulates that there will be €1.8 billion provided in grants and €705 million loans available for four key areas, namely green transition (€1.06 billion), digital transformation (€330.5 million), smart, sustainable and inclusive growth (€750 million) and health, social security and housing area (€364 million).	
Revolving fund for energy refurbishments in the public sector	- The fund should help **overcome current obstacles of refurbishment through ESCO financing** where capital intensive refurbishments with smaller energy savings potential remain un-refurbished.
Funding for renewable energy projects and energy efficiency totalling for 146 million €	- Includes the remote restructuring renewable energy systems using new technologies (€11 million); - The exploitation geothermal energy and for hydropower (€50 million); - **€86 million for the sustainable renovation of the buildings.**
Adaptation and mitigation	- €473 million is planned for projects in the field of a clean and safe environment, of which €335 million for **flood risk reduction and risk reduction projects for other natural disasters, such as landslides**.

	- For the construction of water supply and sewerage municipalities will have 108 million € at their disposal. For the installation of charging stations for electric cars is estimated 5.8 million €. - Among the measures for the transition to a circular economy and resource efficiency is **28 million € earmarked for projects to increase wood processing capacity.**
EcoFund	- **promotes the energy efficiency and the use of RES**, dedicated to promoting environmental investments, including the transition away from environmentally harmful sources to more environmentally friendly ones. Incentives for environmental investments are granted in the form of **soft loans and grants**.[55] - **introduces the concept of circular construction** to achieve a reduction of the carbon footprint and by **introducing new modelling techniques (e.g. BIM)** and increasing material efficiency in construction.[56]

Spain:

Table 40: Spanish Recovery Plan – links to HOUSEFUL replication

Scheme title	Details of Scheme & Potential interest for HOUSEFUL-type replication
The Plan is structured of 4 different axes, of which the axe 2 Green Spain[57] is relevant for circular economy, with a total estimated cost of € 31,2 billion. Relevant spending areas: ○ **€ 6.8 billion earmarked to energy renovations and construction of buildings** (an additional € 1 billion for energy renovation in public buildings under Component 11 Public administration); ○ €6,1 billion is dedicated to infrastructure, renewables & green technologies (including hydrogen); ○ € 2.1 billion to water management and coastal protection; and €300 million to the just transition.[58]	
Regulatory reform to foster private investment	- facilitating communities of owners to borrow and by providing Instituto de Crédito Oficial (ICO) guarantees to banks for **lending** for this purpose.[59]
Sustainable rural development	- a **total of 130 measures dedicated to rural areas**, which will mobilize more than **10% of the Spanish Recovery Plan** (€10 billion of investment).[60] - Some of the most important actions include measures **to improve energy efficiency and renewable energy generation projects**; and the promotion of the bioeconomy and the **conservation of biodiversity to**

[55] Page 38, Slovenian RRP, April 2021
[56] Page 36, Slovenian RRP, April 2021
[57] Page 20-21, Ibidem
[58] Page 36, Assessment of the European Commission https://ec.europa.eu/info/system/files/com_322_4_swd_en.pdf
[59] Page 75, Assessment of the European Commission https://ec.europa.eu/info/system/files/com_322_4_swd_en.pdf
[60] Spanish Ministry of Ecological Transition (MITECO), El Plan de Medidas ante el Reto Demográfico destinará más de 10.000 millones y 130 políticas activas a luchar contra la despoblación y garantizar la cohesión territorial y social (March 2021)

	contribute to a better quality of life for the population, including measures for the conservation and restoration of ecosystems.[61]
Component 4 Ecosystems and biodiversity	- measure on the renewal and modernisation of the fleet of aerial firefighting equipment, and the **improvement of means and infrastructure associated with the prevention and reduction of damage** due to natural hazards.
Component 5 Coast and water resources	- actions to **mitigate flood risk** through implementing the **Coastal Adaptation to Climate Change Action Plan**, improving the safety of dams and reservoirs, and reducing risk and damage in case of flooding.[62]

Sweden:

Table 41: Swedish Recovery Plan – links to HOUSEFUL replication

Scheme title	Details of Scheme & Potential interest for HOUSEFUL-type replication
The Swedish plan is structured around five components: green recovery; education and transition into work; meeting demographic challenges; expansion of broadband and digitalisation of public administration; and **investment for growth and housing**.[63]	
Component 1: green recovery- €1.46 billion[64]	- Investment 1: Local and regional climate investments (the Climate Leap) The beneficiaries are private and public entities, including municipalities, organisations and enterprises, excluding individuals. Supported actions include recharging points for electric vehicles to the **replacement of oil by district heating.** - Investment 3: Energy efficiency in multi-dwelling buildings (€ 60 million) The aim of the measure is to increase the pace of energy efficiency and at the same time improve the conditions for carrying out the necessary renovations. In total that **represents €423 million** of which **the RRF funds €60 million**. This public support scheme, which shall **be established by a proposed regulation for energy efficiency** in multi-dwelling buildings, aims to incentivise property owners to renovate multi-dwelling buildings, which is usually not profitable. The support scheme **will give support to investments that achieve at least a 20% reduction** in the primary energy demand at the level of the building. It shall also aim

[61] El Diario, El reto demográfico movilizará más de 10.000 millones de euros de inversión asociada al Plan de Recuperación (March 2021)
[62] Page 40, Assessment of the European Commission https://ec.europa.eu/info/system/files/com_322_4_swd_en.pdf
[63] Swedish RRP, April 2022 https://www.regeringen.se/49bfc1/contentassets/dad10f1743b64c78a1c5b2d71f81a6eb/sveriges-aterhamtningsplan.pdf
[64] Page 1, Annex to the Proposal for a Council Implementing Decision https://ec.europa.eu/info/sites/default/files/com_2022_152_1_en_annexe_proposition_cp_part1_v5.pdf

	at creating incentives for property owners to include smart energy systems as part of the renovation effort.
Component 5: investment for growth and housing	- Investment 1: Investment aid for rental and student housing (€ 296 million) The measure, supported by the RRF funds will strengthen this governmental support. It will contribute to the increase of new affordable rental dwellings relative to new non-subsidised housing.
Reform 2: A simplified and efficient regulatory framework for building permits	- It aims to make the regulatory framework for building permits more effective and efficient. The reform measure shall establish when a license or notification obligation should arise for different types of construction measures
Reform 3: Better prerequisites in housing construction	- The reform shall modify the Planning and Building Act (SCS 2010:900) by introducing a new player in the Planning and Building Act, a certified construction project company.

4.4 Other high-level funding schemes of interest

Outside of the MFF and activities directly linked to NGEU, there are numerous other funding opportunities that have the potential to be accessed across a number of member states in the EU. Many of these schemes are wholly or partly administered by the European Investment Bank (EIB) and its national and regional counterparts.

EIB loan

The EIB contributes to the provision of social and affordable housing (since it is key to integrated urban development), inclusive growth, and social and economic cohesion.

EIB support is eligible for a wide range of operations, including energy efficiency or circularity, however it does not support ordinary maintenance of homes. The scale of project support can vary. However, above €25 million, the negotiations should be carried out with the EIB directly, otherwise it will be handled by designated national financial intermediaries.[65]

The EIB is seeking to position itself as the 'Green Bank' in the EU, in order to back the European Commission's commitment to the EU Green Deal. As part of this, it will aim for at least 50% of its investments to be 'Green' by 2025. Thus, in the field of social housing, EIB funded projects will need to be of the highest standards when it comes to environmental sustainability.

One of the more recent initiatives of the EIB is the launch of a 'Joint Initiative on Circular Economy' (JICE) fund of €10 billion in 2019. It is spread across five EU countries (includes Spain, but not Austria). As the JICE is managed by the national intermediaries, the rules and access to funds differ slightly from country to country.

The JICE target of €10 billion for circular economy financing is set until 2023. As part of its knowledge sharing programme, recently the JICE has organised two webinars

[65] A list of EIB intermediaries can be found on their website: https://www.eib.org/intermediarieslist/search/index

on "Promoting a circular transition in cities and regions" in June 2021 and "Circular economy in the Building Sector" in October 2021.[66]

Relevant examples from the JICE initiative:

- The urban regeneration project **Ex Sadoch (Trieste)** has seen the retrofitting of a building complex of over 8,900m^2, which once housed the Saul Sadoch paper factory, a site with considerable historical value for Trieste located within a purely residential neighbourhood. The building complex was given new life with new housing units, commercial space, and social spaces. Besides the buildings, the project has also allowed the **renovation and redevelopment of the surrounding formerly industrial area**, which for a long time represented a space of abandonment and degradation. The project was carried out by the FVG Social Housing Fund, in which CDP Investimenti SGR has invested over €60 million through "Fondo Investimenti per l'Abitare" (FIA), real estate fund dedicated to social housing.[67]
- The **Ex Manifattura Tabacchi retrofitting project (Milan)** saw the regeneration of 90,000m^2 former industrial site. The project is being led by an SPV of which 50% of shares are held by CDP Immobiliare and in which CDP invested over €40 million. CDP Group confirms its role in supporting the territory, with initiatives aimed at giving new life to abandoned and no longer used historical and industrial buildings and areas of the cities, whilst applying circular principles.[68]
- **Red de Calor de Soria – Biomass District Heating**: Leading district heating project in Soria, Spain, promoted by a local expert in biomass management, using woodchip residue from local wood industry as fuel. The project supplies heat and water to more than 16,000 inhabitants and 8,000 homes. Total investment adds up to €20 million and Instituto de Crédito Oficial (ICO) participates in a relevant proportion in equity through the FondICO Infrastructures fund. The amount of renewable energy supplied is around 80 GWh/year, saving CO2 emissions for more than 28,000 Tm/year, using local fuel and creating local jobs.

Table 48: SWOT Analysis of EIB loans

Strengths	Weaknesses	Opportunities	Threats
✓ Supports affordable social-housing ✓ Supports a wide range of affordable housing-providers ✓ Eligible organisations can be both public and private entities	- Difficulties in providing the continuously increasing funds demanded by EIB (projects should be min €25 million)	✓ Reinforce the EIB's position in the EU market environment, through providing greater funding in the Western EU countries. ✓ New countries in Eastern Europe	- Unstable regulatory/ market environment threatens the investments expected of EIB (undedicated intermediaries)

[66] You can access the recording and presentations for the second webinar here Post event page - JICE - Circular Economy in the Building Sector (cvent.com)

[67] https://www.cdp.it/sitointernet/page/en/social_housing_in_trieste_new_life_for_the_former_paper_mill?contentId=PRG20621

[68] http://www.cdpimmobiliare.it/en/projects/manifatture-milano.html

✓ Provides significant financial ✓ support (€25 million) ✓ Combination with other funds is optional			- The nature of finance includes loans - Not enough mobilising capacity

ELENA

ELENA[69] is the PDA programme of the EIB and European Commission, which provides grant support for the preparation (not implementation) of investment programmes and which is focused on energy efficiency measures (renovation/renewables/district heating and PV). **The grant covers up to 90% of costs related to project development** and should be **linked to a planned investment programme of a min €30 million in size** (with a minimum of 3-year implementation period) for energy efficiency (residential projects included).

Eligible entities are not only public (local, regional, national authorities) but also entities from the private sector.[70]

ELENA encourages and supports the aggregation of different projects to increase the attractiveness for contractors and financers. The minimum ratio/leverage factor between the total investment amount and the amount of the ELENA grant is as follows:

- For "Sustainable Energy" envelope Investment Programmes, the total investment amount must be at least 20 times the amount of the ELENA grant.
- For "Sustainable Residential" envelope Investment Programmes, the total investment amount must be at least 10 times the amount of the ELENA grant.

Eligible costs include both internal and external costs. In terms of payment, **40% of pre-financing is possible at the beginning of the project.**

A relevant example from Belgium illustrates the potential of ELENA in project development. The **ASTER project[71]** has been implemented by VVH, the Flemish social housing agency, which created a special purpose company to manage and finance investment programmes tackling energy poverty. Social tenants will be enabled to reduce energy use and to access the benefits renewable energy.

In practice, the project is the **retrofit of existing social housing with solar panels**. Tenants will benefit from a minimum 20% net saving on their energy bill. Investments are repaid as a proportion of the gross saving which the tenant receives. This is the so-called 'split-incentive' model.[72] ELENA was essential to ASTER, financing a part of the research and preparatory work needed to get the project off the ground.

[69] https://www.eib.org/en/products/advising/elena/index.htm
[70] Contact details of the Support: elena@eib.org
[71] See: https://aster.vlaanderen/nl
[72] More on ASTER: https://www.housingeurope.eu/blog-1279/improving-access-to-renewable-energy-for-social-tenants-with-eib-elena

Table 49: SWOT Analysis of ELENA funding

Strengths	Weaknesses	Opportunities	Threats
✓ Provides grants to help local and regional authorities launch large-scale sustainable energy investment ✓ The support scale may cover up to 90% of the technical support costs needed ✓ Allows up to 40% pre-financing	- At least 10% of the co-financing should be ensured by the beneficiary	✓ Expected to provide the necessary tools for facilitating the implementation of energy-related interventions (e.g. buildings' inspections and energy audits)	- Obligation to link the project to a min €20 million investment - Lack of dedicated financial intermediaries in different countries - Lack of mobilising capacity

The Circular City Centre scheme (C3)

The C3 scheme[73]–which was launched in October 2021–will provide capacity building to cities in order to help impellent their circular economy transition. The Centre has been established with the support of the European Commission through the European Investment Advisory Hub[74] to advance circular action in cities, including facilitating access to advisory and financing for circular projects.

The scheme will help explicitly in:

- Sharing resources and practical information to support city-level circular action;
- Providing circular city advisory to support cities in their circular transition-project screening and programming;
- Raising awareness about relevant advisory and funding opportunities for circular projects, links to resources, tools and information, webinars and other events

The advice is free of charge for cities. The EIB also developed a database on current and past circular city initiatives, and a Circular City Funding Guide.[75]

[73] https://eiah.eib.org/about/circular-city-centre.htm
[74] See: https://eiah.eib.org/
[75] https://www.circularcityfundingguide.eu/case-studies/

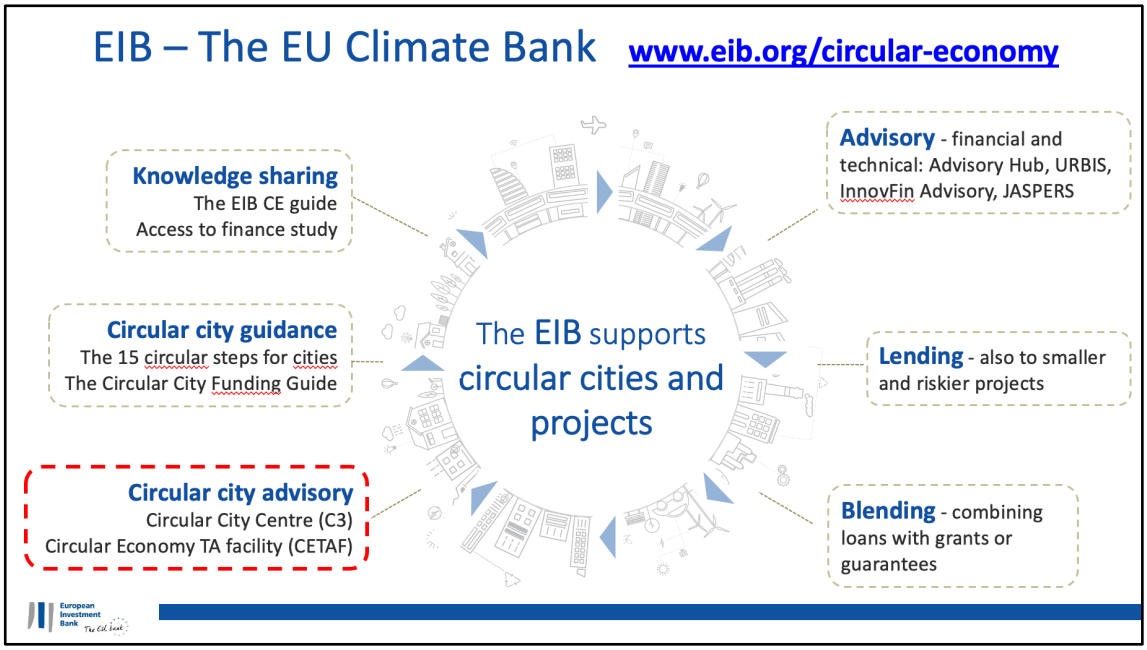


Figure 3: Overview of EIB supports for circular projects – Source: European Investment Bank

InnovFin

InnovFin[76] is a joint initiative launched by the European Investment Bank in cooperation with the European Commission under Horizon 2020. InnovFin consists of a series of financing tools and advisory services, covering the entire value chain of R&I to support investments from the smallest to the largest enterprise. InnovFin is available across a wide range of sectors, including energy efficient construction and refurbishment, and use of renewable energy.

InnovFin provides debt and equity financing as well as advisory services, though co-financing is an obligation. The loans, guarantees or equity-type financing range from typically between €7.5 million and €75 million to innovative demonstration projects in the fields of energy system transformation, including, but not limited to, renewable energy technologies, smart energy systems, energy storage, carbon capture and storage or carbon capture and use. This helps them to bridge the gap between demonstration and commercialisation.

The technologies demonstrated in the project should be 60nnovateve in relation to others in the market. Innovation may relate to a specific technology, processes, products or services. The innovative aspect may consist of the innovative combination or innovative application of existing technologies.

As of 1 January 2021, EIB can approve new operations only under InnovFin Thematic Financing, targeting key policy sectors facing particularly significant financing gaps.[77] **A thematic window for innovative Circular Economy projects was recently**

[76] https://www.eib.org/en/products/mandates-partnerships/innovfin/index.htm
[77] Please see details in InnovFin EU Finance for innovators (eib.org)

created as a pilot under the Thematic Instrument for EDP (Energy Demo Projects)[78].

The first operation financed under this circular pilot thematic window was in Sweden,[79] though others are now following.

In addition to Thematic Financing, InnovFin Advisory[80] is providing guidance to promoters on how to structure their R&I projects in order to improve their access to finance.

Table 42: SWOT Analysis of InnovFin

Strengths	Weaknesses	Opportunities	Threats
✓ Provides not only loans but also advisory services ✓ Covers the entire value chain of R&I	- At least 50% of the co-financing should be ensured by the beneficiary - Supports bigger scale projects (min €7.5 million)	✓ Supports highly innovative technologies ✓ Including but not limited to renewable energy technologies, smart energy systems, energy storage, carbon capture and storage/use	- Lack of dedicated financial intermediaries in different countries - Lack of mobilising capacity

[78] Please see InnovFin Energy Demo Projects (eib.org).
[79] Sweden: EU backs Renewcell to boost circularity in the fashion industry (eib.org)
[80] See: https://www.eib.org/en/products/advising/innovfin-advisory/index.htm

5 Options for the use of private sources of financing

The Demo sites in the HOUSEFUL project benefit from a strong level of public financing, especially through Horizon 2020. However, if HOUSEFUL-type circular solutions are to be scaled up in the future to a degree that would constitute a fundamental paradigm shift in the way that we develop and renovate buildings in the EU, then there must be a strong level of buy-in and participation from the private sector, both in terms of those who own buildings and those who provide financing.

Regarding the issue of access to private sources of financing, Section 5 will look at this issue from a number of angles. We will first conduct two national 'case study' reviews of private financing opportunities, based on discussions with partners responsible for the four HOUSEFUL demo sites; e.g., in Catalonia (Spain) and Austria.

Section 5 will continue with a review of responses to a questionnaire and interviews conducted by the leaders of this deliverable (Housing Europe) with EU-level organisations responsible for promoting the interests of private providers of financing. What this shows is that the private banking sector has not, as yet, begun to view the issue of 'circularity' as being a standalone category of lending. Thus, unlike the EU, EIB and special NRP programmes mentioned earlier, HOUSEFUL Followers cannot currently expect to find specific lending instruments aimed at circular activities available from private banks and credit institutions.

5.1 Private funding sources – Spain

The Spanish banking sector is currently dominated by Credit Unions (*Cooperativas de crédito*), and 'traditional' Private Banks. There are also two large savings banks (*Cajas de ahorros*).

Table 43: Number and type of private credit institutions in Spain

Private Banks	Savings Banks	Credit Unions	**TOTAL**
48	2	61	**111**

Source: Central Bank of Spain

The latest figures[81] available from the Central Bank of Spain (CBS) show that outstanding lending to households stands at around €1.14 trillion (95% of Spanish GDP for 2021), while outstanding lending to non-financial corporations was at €717 billion (60% of Spanish GDP for 2021). However, the CBS does not provide a breakdown of this lending by type of private credit institution.

Overall, debt-to-GDP ratios in Spain are high, creating possible systemic risks, which may in turn act as a headwind to the capacity of Spanish banks to lend. This reflects

[81] https://www.bde.es/webbde/es/estadis/infoest/ifycir_bale.pdf

the fact that these banks must keep extra reserves of capital in order to insulate against such risks, as per ECB rules on capital buffers[82].

The average lending rate on new loans to non-financial corporations is currently 1.45%. Table 56 below shows the annual cost of servicing debts under various scenarios.

Table 44: Annual repayment of borrowing from Spanish financial institutions

Repayment period / Amount borrowed	5-years	10-years	15-years	20-years
€10,000	€ 2,075	€ 1,075	€ 742	€ 576
€25,000	€ 5,186	€ 2,687	€ 1,855	€ 1,441
€50,000	€ 10,373	€ 5,374	€ 3,711	€ 2,881
€100,000	€ 20,746	€ 10,749	€ 7,422	€ 5,763
€1,000,000	€ 207,458	€ 107,485	€ 74,219	€ 57,630
€966,996.64 (Cost of Demo 2)	**€ 200,611**	**€ 103,938**	**€ 71,770**	**€ 55,728**

Source: Housing Europe calculations, based on fixed interest rate of 1.45%

Regarding specific private financing sources in Catalonia, there two main lines of loans that might be interesting for the private sector in case they want to start a circular service, or especially to carry a building renovation.

From one side, there is the ICF (Catalan Finances Institute)[83] that offers several lines of products to activate the Catalan economy. There is the *Ecoverda*[84] a loan for companies or autonomous workers, that finances projects related with energy renovation, green economy or circularity. It can finance up to 100% of the investment. More related to the housing sector, there is the *ICF Vivienda Comunidades*[85] a loan for neighbourhood communities, that finances renovation or maintenance works in the buildings (in particular, structural, accessibility or energy efficiency works but some circular HOUSEFUL solutions might be accepted too) with an interest rate of 2% and during a 15-year period.

On the other hand, recently, there has been an agreement between the Catalan Government and 10 bank entities[86] in order to offer a specific line of loans to pre-

[82] See discussion of this: https://www.ecb.europa.eu/pub/financial-stability/macroprudential-bulletin/html/ecb.mpbu202010_1~01c4f1a5f4.en.html

[83] ICF is the public financial institution, owned by the Generalitat de Catalunya (Catalan Government) founded in 1985. The mission of the ICF is to promote and facilitate access to finance for the economic sector of Catalonia, in order to contribute to the growth of the Catalan economy, acting as a complement to the private financial sector.ICF is member of the Euroepan Association of Public Banks.

[84] See: http://www.icf.cat/es/productes-financers/prestecs/icf-ecoverda/index.html

[85] See: http://www.icf.cat/es/productes-financers/prestecs/icf-habitatge-social-comunitats

[86] The 10 bank entities of the Agreement are: ARQUIA BANCA, Bankinter, BBVA, Banco de Sabadell, Banco Santander, CaixaBank, Caja de Ingenieros, Deutsche Bank, Ibercaja y UCI (Unión de Créditos Inmobiliarios).

finance energy renovation in those residential buildings that will receive Next Generation EU funds.

As Next Generation funds for energy renovation of buildings are received after the renovation works, this line of loans gives to the Renovation Agent[87] or private owners (single owners or community owners) the possibility to gather the necessary budget before the renovation works (i.e., pre-financing).

For the Renovation Agents the maximum annual loan interest rate will be 5% during a 10-year period. With the possibility of reducing the interest rate to 1.5% and extending it to 12 years, depending on various public guarantees.

On the case of community owners, the maximum annual loan interest rate will be 5.25% during a 10-year period. While for single owners the maximum annual loan interest rate will be 4% for a 7-year period. Both might be able to extend the period up to 15 years, depending on the offered guarantee.

5.2 Private funding sources – Austria

The Austrian banking sector is highly diversified, with different types of financial institutions designed to meet different types of saving and lending needs. This includes a highly-developed network of Raiffeisen cooperative banks, which work locally to provide credit to households and SMEs. There are also mortgage banks (i.e., building societies), which turn long-term borrowing of households into affordable mortgage loans.

Table 45: Number and type of private credit institutions in Austria

Private Banks	Savings Banks	State Mortgage Banks	Raiffeisen credit cooperatives	Volksbank credit cooperatives	Building and loan associations	**TOTAL**
35	49	6	338	9	4	**441**

Source: Central Bank of Austria

The latest figures[88] available from the Central Bank of Austria (CBA) show that outstanding lending to households stands at around €184.1 billion (46% of Austrian GDP for 2021), while outstanding lending to non-financial corporations was at €185.3 billion (46% of Austrian GDP for 2021). However, the CBA does not provide a breakdown of this lending by type of private credit institution.

Overall, debt-to-GDP ratios in Austria are low. This means perceived systemic risks are not significant. As a result, private lenders and banks is Austria may be more able to invest in new projects. This reflects the fact that, unlike their Spanish

[87] The *Renovation Agent* is a figure that manages the whole renovation procedure of a building (including technical, legal, and financing aspects). This figure is officially described in the Spanish Royal Decree 853/2021, which regulates the aid programs in residential and social housing rehabilitation of the Recovery, Transformation and Resilience Plan.
[88] https://www.oenb.at/isaweb/report.do?lang=DE&report=1.5.6

counterparts, Austrian banks are not required to hold as much in the way of reserves of capital in order to insulate against such risks, as per ECB rules on capital buffers[89].

The average lending rate on new loans (5-years or above) to non-financial corporations is currently 1.50%[90]. Table 58 below shows the annual cost of servicing debts under various scenarios.

Table 46: Annual repayment of borrowing from Austrian financial institutions

Repayment period / Amount borrowed	5-years	10-years	15-years	20-years
€10,000	€ 2,077	€ 1,077	€ 745	€ 579
€25,000	€ 5,193	€ 2,694	€ 1,862	€ 1,448
€50,000	€ 10,386	€ 5,387	€ 3,724	€ 2,895
€100,000	€ 20,772	€ 10,775	€ 7,449	€ 5,791
€1,000,000	€ 207,719	€ 107,750	€ 74,489	€ 57,905
€298,000 (Cost of Demo 3)	€ 61,962	€ 32,142	€ 22,220	€ 17,273

Source: Housing Europe calculations, based on fixed interest rate of 1.50%

5.3 Review of discussions with EU-level organisations representing providers of private finance

Confidential section: This section is only available to members of the consortium and Commission Services.

[89] See discussion of this: https://www.ecb.europa.eu/pub/financial-stability/macroprudential-bulletin/html/ecb.mpbu202010_1~01c4f1a5f4.en.html

[90] https://www.oenb.at/isaweb/report.do?lang=DE&report=2.8

6 Impact of recent EU directives and policy initiatives

6.1 The EU Environmental Taxonomy[91]

All providers of finance, who wish to have such finance labelled as being environmentally sustainable, will have to comply with a certain number of requirements in relation to sustainability and the reporting of their activities. Those requirements are expected to lead to increased investments in certain areas such as circular economy.

The first category of requirements is linked to the EU's environmental taxonomy. The EU taxonomy on sustainable investments provide criteria for a series of market players: Financial market participants offering financial products in the EU, including occupational pension providers; large companies who are already required to provide a non-financial statement under the 'Non-Financial Reporting Directive' [2014/95/EU]; The EU and Member States, when setting public measures, standards or labels for green financial products or green (corporate) bonds.

Financial market participants were required to complete their first set of disclosures against the Taxonomy, covering activities that substantially contribute to climate change mitigation and/or adaptation, by the 31st of December 2021. Companies will be required to disclose in the course of 2022.

Regarding the criteria used to determine whether an investment is compatible with the EU taxonomy, the references to circular economy for the building sector are the following[92]:

- At least 80% (by weight) of the non-hazardous construction and demolition waste (excluding naturally occurring material defined in category 17 05 04 in the EU waste list 422) generated on the construction site must be prepared for re-use or sent for recycling or other material recovery, including backfilling operations that use waste to substitute other materials
- At least 80% of all timber products used in the new construction for structures, cladding and finishes must have been either recycled/reused or sourced from sustainably managed forests as certified by third-party certification audits performed by accredited certification bodies, e.g. FSC/PEFC standards or equivalent

It means that any entity willing to invest in building related sustainable activities in the EU will be urged to comply with those criteria[93].

The second category of requirements refers to the Directive on Non-Financial Reporting which obliges large companies (above 250 employees) to disclose their

[91] https://ec.europa.eu/info/business-economy-euro/banking-and-finance/sustainable-finance/eu-taxonomy-sustainable-activities_en

[92] https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/documents/200309-sustainable-finance-teg-final-report-taxonomy-annexes_en.pdf

[93] https://ec.europa.eu/info/sites/info/files/business_economy_euro/banking_and_finance/documents/200309-sustainable-finance-teg-final-report-taxonomy_en.pdf

activities that have an impact on sustainable development. Those obligations will soon be linked to the criteria of the EU taxonomy, making circular economy one of the criteria to assess the sustainable of EU companies' investment.

In contrast to the HOUSEFUL project, the EU Taxonomy only looks at one dimension of circularity in buildings. Although highly relevant, this limitation to material use fails to expand beyond the construction/renovation phase. HOUSEFUL shows that a circular approach in the housing sector integrates other scarce resources such as water, (residential) waste, and energy during the operational phase and during the life cycle of a building.

6.2 The Energy Performance of Buildings Directive (EPBD)

The Energy Performance of Buildings Directive[94] is the most important piece of legislation that regulates renovation and new construction activities in the housing sector.

The proposed Article 7 on new buildings intends to take into account the whole life-cycle emissions of buildings. The article provides that Member States will have to use the methodology of the global warming potential and make sure that it is reduced to the minimum possible level when designing standards for new buildings from 2030 onwards.

The global warming potential over the whole life-cycle indicates the building's overall contribution to emissions that lead to climate change. It brings together greenhouse gas emissions embodied in construction products with direct and indirect emissions from the use stage. According to the European Commission, a requirement to calculate the life-cycle global warming potential of new buildings, therefore, constitutes a first step towards increased consideration of the whole life-cycle performance of buildings and a circular economy.

Article 15 of the proposed revised EPBD focuses on financial incentives and contains provisions that would support investment in resource efficient buildings. For instance, it provides that Member States shall incentivise deep renovation and sizeable programmes that address a high number of buildings and result in an overall reduction of at least 30% of primary energy demand with higher financial, fiscal, administrative and technical support. Importantly from 2030, deep renovation will mean bringing a building to the zero emission standard, which in turn contain a clear greenhouse gas dimension. Furthermore, the proposed article 15 states that financial incentives shall target as a priority vulnerable households, people affected by energy poverty and people living in social housing.

6.3 Energy Efficiency Directive (EED)

The proposed revision of the Energy Efficiency Directive[95] aims at increasing energy efficiency across all sectors by setting global objectives for the EU, and also some

[94] https://eur-lex.europa.eu/resource.html?uri=cellar:c51fe6d1-5da2-11ec-9c6c-01aa75ed71a1.0001.02/DOC_1&format=PDF
[95] https://eur-lex.europa.eu/resource.html?uri=cellar:a214c850-e574-11eb-a1a5-01aa75ed71a1.0001.02/DOC_1&format=PDF

objectives at Member States level. For instance, the proposed Article 5 provides that Member States shall ensure that the total final energy consumption of all public bodies combined is reduced by at least 1.7% each year, and Article 6 states that Member States shall ensure that every year 3% of the total floor area of buildings owned by public bodies (which include social housing) would be renovated to be transformed into Nearly Zero Energy Buildings (nZEB). Article 22 calls for Member States to empower and protect people affected by energy poverty, vulnerable customers and, where applicable, people living in social housing. In order to achieve these energy saving mandates, additional investment will have to be made available for renovation projects.

6.4 Expanded 'Emissions Trading System' (ETS) and the 'Social Climate Fund'

The European Union's 'Emissions Trading System' (ETS) is the largest carbon trading market in the world. At a high-level, the EU sets a cap on the amount of greenhouse gases large companies can emit each year. Companies are then provided with 'allowances', which function as a type of tradeable currency.

If a company needs to 'spend' more allowances than it has been allocated, then it can 'purchase' additional allowances off companies who do not use their full quota of 'free' allowances. In this way, polluters must pay a penalty for their emissions, whilst companies who cut their emissions can sell a part of their allowances in order to generate extra revenues. Thus, those who improve their processes are rewarded, while those who do not are punished. Although, in order to incentivise continued investment by companies in more sustainable practices, the allowances have been cut gradually over time.

Figure 4: Cost of EU ETS Allowances - Euro per Tonne of CO_2

Source: EEX.com

If many companies need to purchase extra allowances, because they have failed to cut their emissions, then the price that must be paid to purchase these allowances will rise, further penalising polluters. Indeed, the cost of an allowance to emit one additional tone of CO_2 under the ETS scheme rose from €37 at the start of 2021, to €87 by the end of the same year; a roughly 140% increase.

However, in order to better meet its climate objectives, the EU proposed in July 2021 to expand the number of sectors that fall under the ETS system[96]. At present, the ETS is used by power and heat generation, energy-intensive industrial sectors and commercial aviation within Europe. These sectors account for around 40% of total emissions in the EU.

The main ETS reform proposals of potential interest to building owners are:

- a new target to reduce emissions from ETS sectors by 61% by 2030, compared to 2005 levels. This represents an increase of 18 percentage points compared to the 43% target under the existing legislation;
- a one-off reduction of the overall emissions cap by 117 million allowances ('re-basing'), and a steeper annual emissions reduction of 4.2% (instead of 2.2% per year under the current system);
- a new separate emissions trading system to cover emissions from fuels used in road transport and buildings.

The last proposal in the above list is arguably the most significant for the built environment. Currently, the ETS directly or indirectly covers around 30% of buildings' emissions from heating. This is related to the system's coverage of district heating and electricity used for heating purposes. However, the new ETS system proposes to cover all emissions of fossil fuel combustion in the building sector, including systems that use polluting fossil fuels such as coal and oil[97]. This is proposed to happen from 2025 onwards, with the first allowances issued in 2026. The objective is to realise a decrease in emissions from buildings of 43% in 2030, compared to 2005 levels.

While officially it is the producers of the heating and electricity who will pay for any additional allowances required to meet the demands from building owners, it is already accepted that these costs will be passed on to customers. In the case of people living in older homes, many of which are not energy efficient, and which use high-emission forms of heating, like oil or gas, this has the potential to be quite costly. This poses a particular problem for low-income households. It is also a major issue for tenants, who likely do not have the ability to compel their landlord to renovate or modify the energy system in their home. Thus, the ETS will have the same impact on residents, of all types, as that of a carbon tax on their energy use.

Of course, if buildings generate their own renewable energy, then they are spared from the higher prices that will follow the ETS reforms. This may create powerful incentives for building owners to invest in renewable and self-sustaining forms of energy, such as those being tested in the HOUSEFUL project. Or, in other words, the

[96] See: https://ec.europa.eu/clima/eu-action/european-green-deal/delivering-european-green-deal/increasing-ambition-eu-emissions-trading_en

[97] See Commission proposal here: https://ec.europa.eu/info/sites/default/files/revision-eu-ets_with-annex_en_0.pdf

'pain factor' associated with not shifting to self-generated renewable forms of energy may become too great, especially for those who provide housing for predominantly low- and moderate-income households (i.e., provides of public housing), who can ill afford to pay high energy prices.

Figure 5: Overview of the European Commission proposals from the use of Social Climate Fund revenues

Source: European Commission[98]

However, **not all building owners will have the means to finance such energy saving investments**. As a result, **the EU has proposed a new financing mechanism, the 'Social Climate Fund' (SCF)**, which will use money generated by the sale of ETS allowances. The SCF will provide **€72.2 billion** in this way during the 2025-2032 period to support the European citizens most affected or at risk of energy poverty. The SCF will promote fairness and solidarity between and within Member States, while mitigating the risk of energy poverty during the transition of the building sector to a more climate-neutral footing. The €72.2bn coming from the SCF is also

[98] Screenshot of part of the document – 'Social and distributional aspects Factsheets – 14 July 2021': https://ec.europa.eu/commission/presscorner/detail/en/fs_21_3677

expected to draw on matching Member State funding. This means the Fund would mobilise a total of **€144.4 billion** to protect vulnerable households and help them to move towards climate-neutrality in their housing, including through deep renovations of buildings. However, **given that the European Commission estimates that the annual investment gap in the area of residential energy efficiency is already €115bn per year[99], the €144.4bn promised from the SCF over the entire 2025-2032 period is only a drop in the ocean in financing terms**. Thus, the SCF will have to be complemented by other forms of financing if member states are to assist lower income households in upgrading the environmental sustainability, and reducing the energy costs associated with their homes.

- *It is **important to emphasise** that at the time of the writing of this report (early April 2022) the ETS extension to buildings has not yet been formally adopted, and concerns about its potential impact on low-income households have been expressed. Thus, the final form that the revised ETS, and by extension the SCF, takes may be different from what is set out above.*

6.5 New rules governing Value Added Tax rates in the EU

Value Added Tax (VAT) is charged on most goods and services in the EU. However, the rates attached to individual goods and services are the purview of the individual Member States, though they must fall within a limited number of so-called VAT 'bands', as set out by the VAT Directive [*2006/112/EC*][100]. However, these rules have existed for over 30 years, and have become outdated in many areas.

Agreement on reforming the EU's VAT rules was reached at the end of 2021[101]. This has the potential to impact on the financing and ease with which HOUSEFUL-type solutions and building renovations can be completed in the future.

The new rules mean that the special "reduced" VAT rates[102] that member states can choose to apply to an EU-wide agreed list of good and services can now also be

[99] p.18, https://ec.europa.eu/info/sites/default/files/economy-finance/assessment_of_economic_and_investment_needs.pdf

[100] See: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02006L0112-20210701&from=EN

[101] See: https://www.consilium.europa.eu/en/press/press-releases/2021/12/07/council-reaches-agreement-on-updated-rules-for-vat-rates/

[102] Under the VAT Directive: "Member States should be allowed to apply reduced rates not lower than the minimum of 5 % to a maximum of twenty-four points of goods and services listed in Annex III to Directive 2006/112/EC. For the same reason, Member States are free to apply a reduced rate lower than the minimum of 5 % and an exemption with the right to deduct input VAT but only to a maximum of seven points listed in Annex III". What has been changed recently is the list of goods and services under "Annex III". The conclusion of the Council states that "It is appropriate for solar panels to be included amongst those seven points", which is "in line with Union environmental commitments on decarbonisation and with the Green Deal as well as to offer Member States the possibility to promote the use of renewable energy sources also by means of reduced VAT rates. To support the transition towards the use of renewable energy sources and to foster the Union's self-sufficiency with regard to energy, it is necessary to allow Member States to improve final consumers' access to green energy sources". In other words, a VAT rate of below 5%, or even zero, can be applied to solar panels.

applied to an expanded list, which includes a number of goods and services deemed essential to meeting the EU's policy objectives.

Up until the recent reforms, most goods and services falling under the agreed "reduced" rate list related to cultural and social activities, as these were seen as industries requiring special supports. Annex III of the VAT Directive, which sets out to which goods and services governments are allowed to apply a reduced VAT rate, is proposed to be amended to include the following additional sections[103]:

> *"(10) Supply and construction of housing, as part of a social policy, as defined by the Member States; renovation and alteration, including demolition and reconstruction, and repairing of housing and private dwellings; letting of immovable property for residential use;*
>
> *(10a) Construction and renovation of public and other buildings used for activities in the public interest;*
>
> *(10c) Supply and installation of solar panels on and adjacent to private dwellings, housing and public and other buildings used for activities in the public interest;*
>
> *(22) Supply of electricity, district heating and district cooling, and biogas produced by the feedstock listed in Part A of Annex IX to Directive 2018/2001[104]; supply and installation of highly efficient low emissions heating systems meeting the emission (PM) benchmarks laid down in Annex V of Commission Regulation (EU) 2015/1189[105] and in Annex V of Commission Regulation (EU) 2015/1185[106] respectively and having been attributed an EU energy label to show that the criterion referred to in Article 7(2) of Regulation (EU) 2017/1369[107] is met; and, until 1 January 2030, natural gas and wood used as firewood;"*

This has the potential to have a profound impact on the upscaling of HOUSEFUL-type solutions. In practice, it could help to drastically reduce the cost of the renovation of public buildings, including social housing, reduce the cost of solar panels, and the installation of biogas generators.

For example, in Spain, the current VAT rate on solar panels is 10%, while in Austria is it 13%. Thus, if the governments of those countries choose to apply a VAT rate of zero on panels, which is now their right, a solar panel system which today costs, for example, €20,000 would potentially cost €17,400 in Spain and €18,000 in Austria. In the current context of high energy prices, lower cost panels would help to reinforce the business case for such an investment.

[103] p. 19, https://data.consilium.europa.eu/doc/document/ST-14754-2021-INIT/en/pdf
[104] See: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018L2001&from=EN
[105] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32015R1189&from=EN
[106] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32015R1185&from=EN
[107] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017R1369&from=EN

6.6 Guidelines on State aid for Climate, Environmental Protection and Energy (CEEAG)

Formally adopted in January 2022, the CEEAG[108] represents a significant step forward in the ability of the Member States to use public money and resources to support climate friendly initiatives[109].

> *"The new rules involve an alignment with the important EU objectives and targets set out in the European Green Deal and with other recent regulatory changes in the energy and environmental areas and cater for the increased importance of climate protection. The new rules create a flexible, fit-for-purpose enabling framework to help Member States provide the necessary support to reach the European Green Deal objectives in a targeted and cost-effective manner".*[110]

Some of the main areas of potential interest for the replication of HOUSEFUL-type solutions include **aid for resource efficiency and circular economy**. Moreover, the CEEAG features dedicated sections for aid incentivising investments in flagship areas such as energy performance of buildings.

When considering if state aid should qualify for an exemption, the Commission will make an assessment based on what it calls "Positive" and "Negative" conditions. In other words, the 'positive' impact of the state aid (e.g., reducing carbon emissions, better management of scarce resources) must outweigh the potential 'negative' impacts, such as potential unfair distortions to the fair operation of competition within the EU single market.[111]

Positive conditions include:

- **Facilitating economic activity:** Member States must describe the expected benefits of the aid in terms of its material contribution to environmental protection, including climate change mitigation
- **Incentivising better outcomes:** the aid will have to induce the beneficiary to change its behaviour, to engage in additional economic activity or in more environmentally-friendly economic activity, which it would not carry out without the aid or would carry out in a restricted or different manner. This entails the identification of the factual scenario and the likely counterfactual scenario in the absence of aid. In the case of, for example, a social housing provider, it would have to be shown that the aid was essential in bridging the funding gap required to go from a 'traditional' form of building construction or renovation, to a more ambitious circular approach.
- **The aid must not breach any relevant provision of EU law**

Negative conditions include:

[108] Can be viewed at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.C_.2022.080.01.0001.01.ENG&toc=OJ%3AC%3A2022%3A080%3ATOC

[109] See: https://ec.europa.eu/commission/presscorner/detail/en/ip_21_6982

[110] Ibid.

[111] A more detailed review of this balancing of positive and negative factors can be found at: https://www.cliffordchance.com/content/dam/cliffordchance/briefings/2022/01/revised_ceeag_briefing_jan2022.pdf

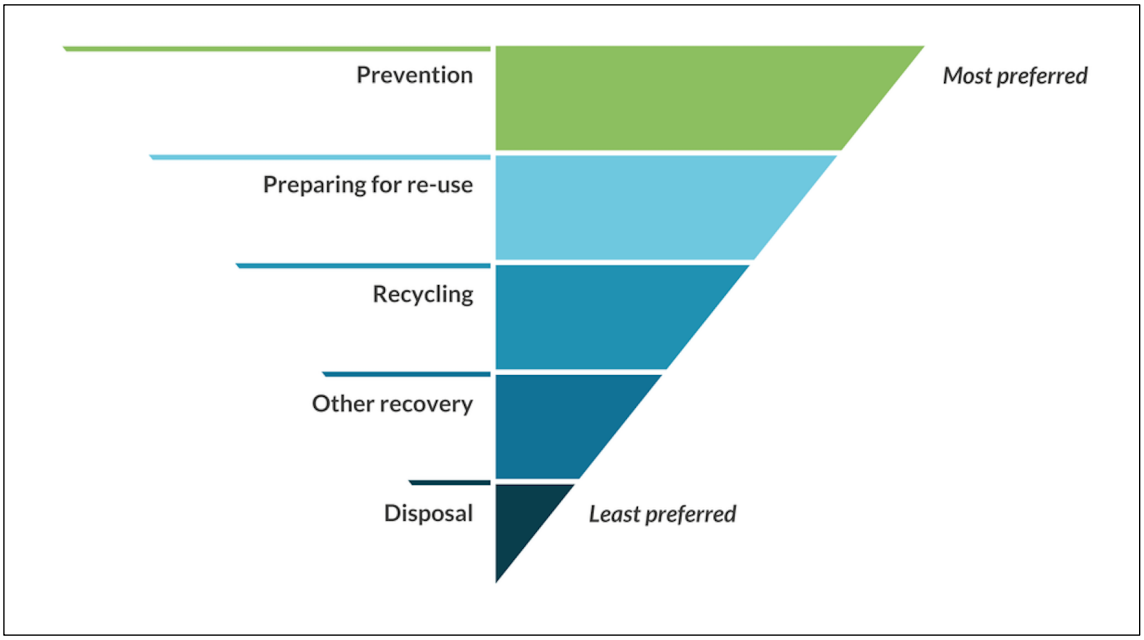
The aid measure must not unduly affect trading conditions to an extent contrary to the common interest, considering the below points:

- **Necessity of the aid:** there are market failures preventing the achievement of a sufficient level of environmental protection or an efficient internal energy market.
- **Appropriateness of the aid:** the aid measure must be the only and least distortive policy instrument to achieve the objective sought.
- **Proportionality of the aid:** as a general principle, aid will be considered as limited to the minimum needed for carrying out the project or activity if the aid corresponds to the net extra cost (i.e. the relevant funding gap). The net extra cost is the difference between the economic revenues and costs of the aided project and those of the alternative project which the beneficiary would credibly carry out in the absence of aid (counterfactual scenario).
- A detailed assessment of the net extra cost will not be required, if the aid amounts are determined through a competitive bidding process, given that it provides a reliable estimate of the minimum aid required by potential beneficiaries. Such process would have to be open, clear, transparent, non-discriminatory and based on objective criteria. This is already the case for publicly provided or supported projects, such as the renovation of social or public housing.

When it comes to the transition to sustainable forms of energy, **the CEEAG aims to support specific types of energy generation**. It is in line with the Renewable Energy Directive [2018/2001] (RED II)[112] including support for biofuels, bioliquids, biogas and biomass fuels, renewable/low-carbon hydrogen, and energy produced from waste. They also address aid to support electrification using renewable or low-carbon electricity, as well as all technologies that contribute to the reduction of greenhouse gas emissions, such as aid for carbon capture and storage or use.

[112] The Directive can be viewed at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32018L2001

Figure 6: The EU Waste Hierarchy[113]



Source: https://wikiwaste.org.uk/images/thumb/d/da/Waste_Hierarchy.png/1200px-Waste_Hierarchy.png (accessed 15/03/2022)

In terms of the promoting a circular economy, the CEEAG can help to support state aid in "investments for the reduction, prevention, preparing for reuse, material recovery, decontamination and recycling of waste generated by the beneficiary". It can also support "investments for the preparing for reuse, material recovery, decontamination and recycling of waste generated by third parties and which would otherwise be disposed of, or **be treated based on a treatment operation that is situated lower in the priority order of the waste hierarchy or in a less resource efficient manner**, or would lead to a lower quality of recycling".

This is particularly interesting for waste related to construction and renovation. The upcycling of resources is also a possibility here, such as using recycled plastics to produce claddings for building facades[114].

The CEEAG also foresees state aid "relating to the production of biofuels, bioliquids, biogas and biomass fuels from waste".

One potentially important issue related to the use of state aid under the terms of the CEEAG is the aforementioned need for the production of a "counterfactual" scenario by those seeking aid. This scenario should establish both the size of the funding gap (difference between what can be achieved with available financial resources and a set objective), but also that the objective of the entity seeking the state aid will not otherwise be realised. Such analysis can be technical and require expertise that those in need of funding may not have at their disposal. Thus, **in order to maximise the potential of the CEEAG, public agencies should be assigned the responsibility of assisting in the production of such analysis. Alternatively, digital/online**

[113] As established by the Waste Framework Directive [2008/98]
[114] An example of such an initiative can be seen: https://www.prettyplastic.nl/

tools could be developed to help generate the required analysis, without the need for expert knowledge or prior experience in their production.

When applying for aid, it must also be noted that the 'aid intensity' differs depending on the activity being undertaken. Aid intensity means the gross aid amount expressed as a percentage of the eligible costs. All figures used must be taken before any deduction of tax or other levies. Where aid is awarded in a form other than a grant, the aid amount must be the gross grant equivalent of the aid. Aid payable in several instalments must be calculated at its value at the moment of granting. The interest rate to be used for discounting purposes and for calculating the aid amount in a soft loan (i.e., a loan with a below-market interest rate) must be the reference rate applicable at the time of grant. The aid intensity and the form that aid may take for various activities is set out in the Table below.

Table 47: State aid under the CEEAG

Activity	Minimum requirements	Aid form and intensity
Aid for the improvement of the energy and environmental performance of buildings	a) in the case of renovation of existing buildings, energy performance improvements leading to a reduction in primary energy demand of at least 20 % compared to the situation prior to the investment or, where the improvements are part of a staged renovation, a reduction in primary energy demand of at least 30% compared to the situation prior to the investment, over a period of 5 years compared to the situation prior to the investment, over a period of 5 years, b) in case of renovation measures concerning the installation or replacement of just one type of building elements, a reduction in primary energy demand of at least 10 % compared to the situation prior to the investment, c) in the case of new buildings, energy performance improvements leading to a reduction in primary energy demand of at least 10 % compared to the threshold set for the nearly zero-energy building requirements in national measures	- eligible costs are the investment costs directly linked to the achievement of a higher level of energy or environmental performance - aid intensity 30-50% of the eligible costs linked to a) and c) - aid intensity must not exceed 25-45% of the eligible costs linked to b) - 100% of funding gap can be given, in special circumstances - Where the aid is granted in the form of a guarantee, the guarantee should not exceed 80 % of the underlying loan.
Aid for resource efficiency and for supporting the transition towards a circular economy	a) investments aimed at improving resource efficiency through any of the following: *i. a net reduction in the resources consumed in the production of the same quantity of output;* *ii. the replacement of primary raw materials or feedstock with secondary (reused or recycled) or recovered raw materials or feedstock; or*	- eligible costs are the extra investment costs determined by comparing the total investment costs of the project with those of a less environmentally-friendly project or activity

	iii. the replacement of fossil-based raw materials or feedstock with bio-based raw materials or feedstock; b) investments for the reduction, prevention, preparing for reuse, material recovery, decontamination and recycling of waste c) investments for the preparing for reuse, material recovery, decontamination and recycling of waste generated by third parties and which would otherwise be disposed of, or be treated based on a treatment operation that is situated lower in the priority order of the waste hierarchy or in a less resource-efficient manner, or would lead to a lower quality of recycling; d) investments for the reduction, prevention, preparing for reuse, material recovery, decontamination, reuse and recycling of other products, materials or substances generated by the beneficiary or by third parties, which do not necessarily qualify as waste, and which would otherwise be unused, disposed of or recovered in a less resource-efficient manner, would constitute waste unless reused or would lead to a lower quality of recycling; e) investments for the separate collection and sorting of waste or other products, materials or substances with a view to the preparing for reuse or recycling	- aid intensity must not exceed 40% of the eligible costs, but can be 10 to 20 percentage points higher for some SMEs - higher aid may also be granted in special cases following detailed analysis of the funding gap of a project - the aid may be granted for a maximum period of 5 years
Aid for the implementation of nature-based solutions for climate change adaptation and mitigation	The implementation of nature-based solutions for climate change adaptation and mitigation. However, where aid is granted for the implementation of nature-based solutions in buildings, for which an energy performance certificate exists, Member States would need to demonstrate that these investments do not prevent the implementation of energy efficiency measures recommended in the energy performance certificate.	The aid intensity may reach up 100 % of the eligible costs.

6.7 Revision of the Construction Products Regulation

The Construction Products Regulation (CPR) aims to ensure that construction products can freely circulate within the Single Market. To achieve this, the CPR lays down harmonised rules for putting construction products on the EU market.

The existing harmonised rules focus on how to express the performance of construction products in relation to their essential characteristics; for instance how they react to fire, how they conduct heat or insulate sound. The current legislative

framework also provides harmonised rules on the CE marking[115] of these products, which ensures they respect EU norms. This ensures that reliable information is available to professionals, public authorities and consumers, so they can compare the performance of products from different manufacturers in different countries.

The proposed revision to the CPR[116] will mean that manufacturers of construction materials and products, including those related to energy and heating, will have to deliver environmental information about the life-cycle of their products. Moreover, they will have to comply with several obligations, including:

- Design and manufacture a product and their packaging in such a way that their overall environmental sustainability reaches the state of the art level;
- Give preference to recyclable materials and materials gained from recycling;
- Respect the minimum recycled content obligations and other limit values regarding aspects of environmental sustainability;
- Make available, in product databases, instructions for use and repair of the products;
- Design products in such a way that re-use, remanufacturing and recycling are facilitated.

The proposal for the amended CPR makes maximum use of the potential of digitalisation to reduce administrative burden. In contrast, the current Construction Products Regulation does not foresee the application of digital tools. All information and documentation may, in the future, be processed in a digital form (e.g. Digital Product Passport) and stored, shared and accessed in an information system. This will lead to greater transparency along supply chains, allow data linked to the CPR to be stored in Building Logbooks and used for calculations required under other legislation (e.g. the Energy Performance of Buildings Directive[117], as outlined in Section 6.2).

In terms of specific changes that have the potential to drive investment towards circularity, the revised CPR proposes that construction sector products should include the following information at the time of purchase[118]:

> "2.1. Products shall be designed, manufactured, and packaged in such a way that the following inherent product environmental aspects are addressed in accordance with the state of the art:
>
> (a) maximising durability in terms of the expected average life span, the expected minimum life span under worst but still realistic conditions, and in terms of the minimum life span requirements;
> (b) minimising whole-life-cycle greenhouse gas emissions;
> (c) maximising recycled content wherever possible without safety loss or outweighing negative environmental impact;
> (d) selection of safe, environmentally benign substances;
> (e) energy use and energy efficiency;

[115] See: https://ec.europa.eu/growth/single-market/ce-marking_en
[116] See: https://ec.europa.eu/docsroom/documents/49315
[117] See: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021PC0802
[118] p.7, https://ec.europa.eu/docsroom/documents/49315/attachments/3/translations/en/renditions/native

(f) resource efficiency;
(g) identification which product or parts thereof and in what quantity can be reused after de-installation (reusability);
(h) upgradability;
(i) reparability during the expected life span;
(j) possibility of maintenance and refurbishment during the expected life span;
(k) recyclability and the capability to be remanufactured;
(l) capability of different materials or substances to be separated and recovered during dismantling or recycling procedures".

As well as 'normalising' considering the life-cycle of construction products and their re-usability, the proposed changes to the CPR may also help to drive the development of the secondary/futures market for construction materials. By this it is meant that it could help to facilitate a scenario in which the right to recover and re-use building inputs can be sold ahead of time, generating additional financing for building owners. This concept is outlined in further detail in Section 7.5 of this report. In theory, such a scenario would help to reduce any potential funding gap that might exist between the use of 'linear' and 'circular' building and renovation practices.

The secondary market can also be improved by the proposal of the EU to ensure that those who are involved "in the context of dismantling used products or other parts of construction works or remanufacturing and re-use thereof" will "need to contribute to a safe second life of construction products"[119]. In other words, the ambition is also to have high-transparency and standards (and, thus, confidence) for re-used materials.

[119] p.20, https://ec.europa.eu/docsroom/documents/49315/attachments/2/translations/en/renditions/native

7 Policy recommendations of improving financing for HOUSEFUL-type solutions

A key ask of the External Reviewers for the HOUSEFUL project, arising from their review of D4.5 and D4.6, was that D4.8 include clear policy recommendations related. More specifically, recommendations on how financing structures, regulations and practices could be improved or changed in order to facilitate the replication of HOUSEFUL-type solutions in follower buildings.

Arising from the completion of the proceeding sections of this report, especially the consultation with both members of the HOUSEFUL consortium and the external financial sector representatives, a number of policy recommendations have already been highlighted. This section will bring these recommendations together, as well as providing additional analysis and comment.

At a high level, we can group the policy recommendations under seven different headings:

Table 48: Summary of Policy Recommendations

Recommendation category	Description
1. Access to information / Knowledge	Policies aimed at increasing awareness of financing options for the replication, including promoting a better understanding of application processes and compatibility of different options
2. Need for pre-financing	Need for schemes that provide public supports as they are needed, not after the fact
3. Greater obligations on providers of finance	Methods of encouraging or requiring providers of finance to increase their awareness of circularity, and for them to take steps to actively support it
4. Use of financial intermediaries	The need for public institutions that can accept financing, manage repayments and distribute funds to building owners / housing providers. Central financing hubs, like one-stop-shops could also be useful in this regard.
5. Creating a secondary-market for materials	The need to boost circularity by creating a secondary market for materials (various inputs) used in buildings. This will incentivised the use of more sustainable use of materials, whilst providing additional funding to building owners.
6. Maximise the use of new EU rules	The CEEAG and VAT changes, if used to their full potential, could drastically decrease existing funding gaps.

7.1 Access to information and knowledge

A lack of relevant information and knowledge across a number of areas of financing were highlighted during the development of D4.8, and by different types of stakeholders.

Table 49: Issues and potential solutions - access to information and knowledge

Issue raised by	Issue	Possible solution
AHC	While AHC was able to access NGEU financing, there was a clear lack of easily accessible information. This included essential information such as the compatibility of NGEU with other sources of funding. Eventually, AHC were able to acquire the information, but only after showing persistence with national points of contact. This proved to be time consuming.	It is true that information on potential funding opportunities is often 'disjointed' or difficult to access. As a result many eligible circular projects might miss out on valuable assistance. Each member state should, working to a common structure, therefore establish 1) a **centralised interactive online funding database**, and 2) a **national funding agency**. An EU regulation or directive may be required to ensure compliance and commonality in implementation. The **funding database** should take information provided by project managers (e.g. scale, type of building, works to be completed) to auto-generate a list of potential funding options. This is preferable to simply providing a catalogue of all options. The **funding agency** should act as a one-stop-shop for project managers, providing not only advice on suitable funding options, but also explaining application processes and making links with those who actually provide funding. Both the database and the agency should pool EU and national/regional level funding opportunities, including information on their compatibility.
ALCN	ALCN expressed their frustration with the lack of a national centralised and standardised data/information system that catalogued different funding options available. A lack of easily accessible information on eligibility and funding criteria was also a source of frustration; the 'information burden' is firmly on the building owner.	The solution to this problem is also the idea of a **funding database** and **funding agency**. Working together, these would help simplify the process of identifying and applying for available funds.
Housing Europe	Section 4.1 outlined the wide range of EU-level funding opportunities that exist. However, many building owners do not possess the level of knowledge and competence required to seek out and access these funds independently. Thus, there is	One part of the solution to this problem is also the idea of the **funding database** and **funding agency**. An additional part is the need for relevant stakeholders (e.g., social housing providers, building owners, home-owners) to be aware that there might be funding available in the first instance. Working through relevant national or regional intermediaries (e.g.,

	a significant awareness gap that needs to be overcome.	social housing alliances, landlord agencies, owners' federations) **governments should work to increase awareness**, before eventually guiding potential applicants for funding towards the database and the agency
Housing Europe	Housing Europe notes the opportunity presented by the CEEAG amendments on state aid. However, the requirement for detailed counter-factual analysis, in order to justify the aid, poses a barrier, based on a lack of knowledge by many housing providers of such processes.	Governments should work to create **online tools** that will take available information (cost of 'linear' approach versus cost of 'innovative'/'circular' approach, expected climate impacts, available funds, beneficiaries) and use them to simply and quickly **generate standardised and acceptable counter-factual analysis**. This would help to drastically reduce the cost and time burdens potentially associated with maximising the use of the opportunities presented by CEEAG. Of course, the result of the analysis may be that a particular project is not eligible for state aid.
European Mortgage Federation	Given the potential savings from upgrading buildings, the lack of borrowing for this purpose suggests that there is a lack of awareness of the clear opportunities that exist for building owners to save money.	It is clear that many building owners/providers are unaware of the potential costs and savings associated with building renovation, including using circular techniques. In order to better meet obligations under the Paris Agreement, **states must be more proactive in raising awareness of available financing** – for example, through advertising, placing obligations on banks to provide certain information
Ellen MacArthur Foundation	The lack of 'lighthouse' circular buildings means that awareness of potential circular solutions amongst policymakers, who have the power to change national policies to favour such building and renovation practices, means that they are not well understood and are not prioritised.	Funding for innovative projects, such as those already included in HOUSEFUL, needs to be increased, with a least one lighthouse circular project in each member state. This will help to inspire follower buildings, and to provide accurate information on costs and advantages in a given local context. This will make accessing funding easier for applicants.
Ellen MacArthur Foundation	Investors, and even building owners, lack knowledge about the life-time costs of their buildings. This is through the current incomplete structure of evaluation models used when developing new buildings.	Projects over a certain size (perhaps defined in number of housing units or m^2) ought to be obliged to estimate the life-cycle costs associated with the different components used. However, this would likely require an EU Directive in order to implement. This will better highlight the true costs of buildings and favour the use of more sustainable circular solutions; even if the 'up-front' cost of investment may be higher.

7.2 Need for pre-financing

The circular solutions, such as those used in HOUSEFUL, can be costly and time-consuming to implement. Indeed, they may require additional financial resources over and above what would normally be available for a new development or renovation. As a result there may be a 'funding-gap' that needs to be bridged.

While this deliverable has highlighted many funding options for follower buildings, in some instances this funding is only available after the completion of works. In normal circumstances, this might require followers to take on unnecessary short-term loans or other debts in order to act a stop-gap while funding is being allocated. For some building owners, this may not be possible. Thus, pre-financing for schemes should be considered.

A linked issued, is the need for 'post-financing'. Many of the circular solutions being used in the HOUSEFUL pilot sites are technical and may be costly to maintain over the medium-to-long term. While Horizon 2020 and other funding programmes can help to fund initial installations of solutions in buildings, they do not help to fund maintenance.

Table 50: Issues and potential solutions – need for pre-financing

Issue raised by	Issue	Possible solution
AHC	In the Demo 2 site, reimbursement for the installation of the PV system came after installation - **reimbursed for the costs, rather than provided with financing up-front.** This happens unfortunately with the rest of the aids analysed as well, and **provides a hurdle to many potential circular projects**.	- In order to minimise the uncertainty, AHC recommends the **availability of pre-financing** (before the implementation or in different stages of the implementation). This is particularly the case for projects with an observable funding gap between use of linear and circular solutions. - AHC has noted that in Catalonia, **special short-term loans are available** to tide organisations using NGEU funding over until they can access funding allocations at the end of their project (e.g., bridging loans). Such short-term loans may help to make up for the lack of pre-financing from some funding providers.
ALCN	When reviewing funding options, ALCN found that there was a lack of pre-payment (payment after the realisation of actions only). This made the other financing options effectively untenable, which is a barrier for implantation.	In order to minimise the uncertainty, ALCN recommends the **availability of pre-financing** (before the implementation or in different stages of the implementation). This is particularly the case for projects with an observable funding gap between use of
Housing Europe	Maintenance of circular solutions not eligible under most EU funding programmes. This may undermine the business case for using circular solutions.	When it comes to innovate solutions that will be used for several decades, life-cycle maintenance costs should also be considered when the EU grants funding. **Funds could be set aside to help meet these costs over time**. EU innovation funding (including Horizon Europe) could also be allocated to projects seeking to

		develop new technologies that are easier to maintain.

7.3 Greater obligations on providers of finance

While much of this report has addressed the use of existing sources of financing for HOUSEFUL-type projects, it has also indirectly looked at holes in existing structures or areas for improvement. One of the main areas for improvement is in the obligations that are currently placed on providers of finance, especially private providers. In particular, they must be required to take active steps to think about how they can play a greater role in the transition to a circular economy, especially in terms of the built environment.

Table 51: Issues and potential solutions – greater obligations on providers of finance

Issue raised by	Issue	Possible solution
Housing Europe	A number of representative bodies related to the provision of finance for construction and renovation were contacted (Section 5.3) for this deliverable. However, the issue of circularity was not on the agenda for them. Indeed, most bodies considered circularity to be a simple sub-component lending for the development and renovation of housing.	Given that circularity is not only about environmental sustainability, but also reducing costs over the life-time of a building, circularity needs special consideration from financing institutions. For example, loans from public banks or ethical banks could be structured to be repaid in line with the savings generated from using circular solutions, rather than linear solutions. Thus, the more innovative and efficient a building, the quicker the loan is repaid and the lower the overall cost of financing (i.e., principle + interest). Currently, no such **'circularity loan'** products are available. The Corporate Sustainability Reporting Directive (CSRD)[120], currently under review by the EU, could be an opportunity to **oblige providers of finance to report on how they will directly support the transition to a circular economy**, including through offering specific financial products aimed at achieving this goal.
European Mortgage Federation / Housing Europe	The EMF was very enthusiastic about the possibilities for the new rule allowing that: "*…Modifications made to the property that improve the energy efficiency of the building or housing unit shall be considered as*	This represents a "massive capital charge discount" for mortgage institutions. In other words, the more homes are renovated, the less precautionary capital (i.e., capital buffer) banks have to hold. This in turn means that banks can lend more money. Thus, the new rule would actively incentivise mortgage providers to get their clients to renovate their homes and buildings.

[120] See : https://www.consilium.europa.eu/en/press/press-releases/2022/02/24/council-adopts-position-on-the-corporate-sustainability-reporting-directive-csrd/

	unequivocally increasing its value".[121]	However, while there is a clear benefit to banks from doing this, it is also in the interest of the EU to ensure that they **have a clear and credible roadmap to achieve this increased lending for renovations**. Again, the CSRD may provide an avenue for reporting on this.
European Long-term Investors Association	ELTI members tend to see circularity as part of its larger focus on the development and renovation of affordable housing, rather than a standalone issue. Thus, while circularity may be part of the buildings that ELTI members may provide funding for (especially in terms of renovations), circularity is not a specific ambition at this point.	Given their role as public actors, many members of ELTI are bound to deliver the policy objectives set by policymakers in their region or member state. Thus, in the event that increased circularity was mandated in the future, then this would become a standalone issue. Thus, **a greater focus on circularity from policymakers will have a knock-on effect to those who provide financing in the EU**.

7.4 Use of financial intermediaries

One of the barriers identified by this deliverable is that of 'scale'. By that it is meant that for some providers of finance, they are not willing to support projects below a certain threshold. This includes the EIB, as well as many public investment banks, which can set minimum borrowing thresholds in excess of €20 million. Thus, projects on the scale of HOUSEFUL will struggle to access this valuable funding.

Aware of this issue, many member states have seen the establishment of so-called financial intermediaries. These are typically state-backed public institutions that borrow at scale from the likes of the EIB, and then re-lend the money to smaller projects. Some examples of such financial intermediaries are the Housing Finance Agency[122] in Ireland, and the Official Credit Institute[123] (*Instituto de Credito Oficial*) in Spain, both of which accept financing from the EIB on behalf of providers of social housing. The use of theses financial intermediaries is, therefore, a good opportunity for replication of HOUSEFUL-type solutions on a small-to-medium scale. Financial intermediaries can also include regional governments, who can accept loans and redistribute to a number of smaller local projects.

Table 52: Issues and potential solutions – use of financial intermediaries

Issue raised by	Issue	Possible solution

[121] Amendment to Article 208, contained on page 120 of the 'Proposal for a amending Regulation (EU) No 575/2013 as regards requirements for credit risk, credit valuation adjustment risk, operational risk, market risk and the output floor'. See: https://eur-lex.europa.eu/resource.html?uri=cellar:14dcf18a-37cd-11ec-8daf-01aa75ed71a1.0001.02/DOC_1&format=PDF#=page121

[122] https://hfa.ie/

[123] https://www.ico.es/

European Long-term Investors Association	Circular renovation projects akin to HOUSEFUL may be too small for providers like the EIB and many of ELTI's members, who only provide funding above a minimum level, which means that a project would have to be operating at a reasonably large scale, with several buildings or housing blocks renovated at once. ELTI also noted that the EU Renovation Wave is based on the assumption that there are 220 million homes built before 2001, which likely need renovation. ELTI members will need projects with real ambition (scale) to get involved.	The **use of financial intermediaries can help to unlock financing** from lenders who only provide financing at scale, such as the EIB. Where such intermediaries do not exist, or are under-resourced, efforts should be made to increase their role.
European Federation of Ethical and Alternative Banks & Financiers	There can be a 'funding gap' associated with moving from linear to circular, especially for small-scale housing providers, like cooperatives.	Febea suggest two ways of dealing with this gap. 1. Provide resources from **domestic social investment funds**, which would help to reduce the capital requirement from so-called "own resources" 2. Implement **state guarantees** for 'riskier' lending. For example, a 20% guarantee would allow banks to more easily lend up to the 80% mortgage LTV limit, though assuming less of the risk In this way, **the state can act as a form of intermediary between the banks and the recipient of funds**, though if it uses guarantees, then it will not have to provide any actual funds in most cases. This will help to make more projects viable, and provide improved borrowing terms for smaller housing providers.

7.5 Creating a secondary-market for materials

One of the ways in which the additional cost of using circular solutions can be financed is by selling the future right to reclaim building materials and products in a secondary-market; a so-called 'Residual Value' model. By this it is meant that the inputs used in the construction or renovation phase (e.g., bricks, claddings, fixtures, heating/cooling systems) can be removed when they are no longer needed in one building and re-used or re-manufactured in another, or for another purpose. Thus, the role of the primary market (e.g., purchase directly from supplier) is reduced going forward, with the reuse and upcycling of building materials (e.g., secondary-market) promoted.

This concept is already active in HOUSEFUL, through the use of building materials passports. If this concept is normalised and integrated into future circular buildings, it can help to provide an additional source of financing and bridge any potential funding gap.

Indeed, as mentioned in Section 6.7, the EU is proposing to oblige manufacturers of construction sector inputs to provide much greater information on the potential re-cyclability, re-usability and recoverability of materials. This will give both those in the primary and secondary markets for construction materials a clearer idea of the likely future, or 'residual', value of materials and therefore facilitate the development of the secondary market. It will also incentivise the purchase of materials with high future residual values.

In order for such a secondary-market to function, the right to reclaim materials must be tradable. This means that the initial buyer has the option to re-sell their claim before the time when that claim becomes due (i.e., when the materials are no longer needed in the initial building). The value of these claims can of course increase of decrease over time. For example, if the materials are made from finite resources, like metals, scarcity might drive the value of the claim up.

Estimates produced by the Ellen MacArthur Foundation show that if the value of the futures contract associated with materials is 50% of the original price paid, and the cost of using circular principles during the installation/building phase is 5% above the cost of 'traditional' building, then the Net Present Cost (NPC)[124] saving is around 5% per year, based on a 10-year life-cycle for a given component.

Table 53: Potential NPC Savings from Selling Recovered Materials

SENSITIVITY	VALUE									
Futures contract value as % of original material cost	21%	25%	50%	75%	100%	125%	50%	50%	50%	50%
Additional design for deconstruction cost	5%	5%	5%	5%	5%	5%	7.5%	5%	2.5%	-
Net Present Cost (NPC) saving	**-**	**1%**	**5%**	**10%**	**15%**	**20%**	**3%**	**5%**	**8%**	**10%**

Source: Ellen MacArthur Foundation[125]

In addition to providing additional funds for building renovation and development, the secondary-market would also incentivise design standards and practices that

[124] The net present cost (or life-cycle cost) of a component is the present value of all the costs of installing and operating it over the project lifetime, minus the present value of all the revenues that it earns over the project lifetime.

[125] https://www.arup.com/perspectives/publications/research/section/realising-the-value-of-circular-economy-in-real-estate

favour the recovery of materials. For example, bricks can be laid without mortar to bind them, meaning they can more easily be recovered and reused later.

Table 54: Issues and potential solutions – creating a secondary-market for materials

Issue raised by	Issue	Possible solution
Ellen MacArthur Foundation	Too much waste from construction and renovation ends up in landfills each year. At the same time, bridging the funding gap between 'traditional' building techniques and 'circular' alternatives can be difficult for some projects to overcome.	Tradable **futures contracts for materials** in buildings would provide an additional source of funding for construction and renovation, while also incentivising building techniques that favour the recovery and reuse of scare resources
ALCN	We need to reuse materials at the end of life phase of a building. However, we also need to have confidence and legal proof that the materials meet minimum legal required standards, can be reused in a safe manner and can be easily recovered.	To guarantee the value preservation of material in the end of a buildings life cycle, a **new institution** or agency should be established covering standards and liability regarding reused materials. This could happen in tandem with new requirements for construction materials, as proposed by the revision of the Construction Products Regulation (CPR) – see: *Section 6.7*

7.6 Maximise the use of new EU rules

The EU's new Social Climate Fund (SCF) is simply not going to be in a position to close the current investment gap in the renovation of housing in the EU; with lower income households particularly exposed to higher energy prices related to the expansion of the ETS. Therefore, additional state interventions will be required.

The aforementioned CEEAG has the potential to play a vital role here, as it will help member states to step in an provide state aid to plug necessary investment gaps related to meeting the EU's green deal objectives, including the reduction of greenhouse gases coming from the built environment. However, justifying such state interventions will still be necessary, including the production of counter-factual analysis showing what the outcome would be in the absence of a public intervention. Despite this, the replication of HOUSEFUL-type solutions has the potential to benefit from state aid going forward, especially in social and affordable housing operated by housing associations and not-for-profit entities.

At the same time, the new rules on permissible rates of VAT in the EU are also welcome. They have the potential to reduce the cost of circular activities and technological components, such as solar panels. However, in order for the impact of future reductions in VAT rates to be maximised, member states will have to keep a close eye on the 'pass-through' reduction in prices. The pass-through rate refers to what proportion of a cut in VAT goes to the consumer, versus how much is absorbed by the supplier in the form of larger profit margins.

Recent analysis of cuts in VAT rates in the Eurozone, conducted by the International Monetary Fund[126] (IMF), found that the benefit for consumers is largest in markets with high levels of competition, and for products where there are large differences in quality between different suppliers.

In the event that pass-through from VAT cuts related to buildings renovation, solar panels and home biogas is small, and therefore not worth the reduction in exchequer funds, the IMF notes: "In the cases where pass-through is such that producer or consumer prices are unresponsive to VAT change, policy makers willing to achieve some targeted support could look for more cost-effective instruments than VAT changes".

Table 55: Issues and potential solutions – maximise the use of new EU rules

Issue raised by	Issue	Possible solution
Housing Europe	The opportunity presented by the CEEAG for increased state aid must be maximised, especially when it comes to renovation of social and affordable housing.	As already mentioned in Section 7.1, many of those who may be eligible for state aid are ill-equipped to conduct the necessary counter-factual analysis to justify such interventions. Governments should work to create **online tools** that will take available information (cost of 'linear' approach versus cost of 'innovative'/'circular' approach, expected climate impacts, available funds, beneficiaries) and use them to simply and quickly **generate standardised and acceptable counter-factual analysis**. This would help to drastically reduce the cost and time burdens potentially associated with maximising the use of the opportunities presented by CEEAG. Of course, the result of the analysis may be that a particular project is not eligible for state aid.
Housing Europe	The possibility to reduce VAT rates on a whole host of good and services necessary for HOUSEFUL replication is positive, but member states must make sure that the pass-through is effective and represents good value for money for the state	Member states need to have a **clear strategy for maximising the pass-through of any VAT cuts to final consumers**. This could include pre-cut negotiations with construction sector unions, and major suppliers of materials falling under the cut. In the event that an acceptable pass-through cannot be agreed, the Member States must weigh up the potential benefits of a cut versus what the retained tax revenues could achieve.

[126] https://www.elibrary.imf.org/view/journals/001/2021/061/article-A001-en.xml

8 Conclusions

This report has addressed both the opportunities and the challenges which exist for the financing of HOUSEFUL-type projects. This has been achieved through the following reviews:

1. The existing funding cases (i.e., the Demo 2 and Demo 3 sites)
2. hypothetical / counter-factual funding cases
3. additional funding sources; including SWOT analysis and consultation with external stakeholders
4. new opportunities created by changes in EU policy

Following these reviews, a number of related policy recommendations have been developed. These recommendations reflect areas for possible improvement in the use of finance to fund follower buildings. However, the realisation and implementation of most of these recommendations would require new or amended EU and/or national legislation. Having said this, the most commonly cited issue was a lack of available information on funding opportunities. Rectifying this problem would not require legislative action, and it therefore represents an example of an easily achievable improvement in the current system.

In the absence of such developments, however, progress towards replication of the HOUSEFUL circular solutions is still possible. This reflects the renewed will on the part of the EU and its Member States to tackle climate change, and achieve its obligations to reduce greenhouse gas emissions and create more sustainable economic systems. This will be reflected not only in the aforementioned new EU funding packages to support circularity and building renovations, but also in legislative changes that have recently been adopted.

However, while there is a clear will to act on the part of public institutions and agencies, this report suggests that this message has not yet been fully absorbed by private actors involved in finance. Consultations with external representatives bodies of private financial institutions showed that promoting the transition to a more circular economy does not yet feature on their agenda. This is despite the fact that providing finance for a circular construction or renovation project does have distinct differences versus lending for traditional linear developments; such as the fact that exposure to external shocks (e.g., spike in energy or water prices) are greatly diminished, and that circular buildings retain high levels of intrinsic value over their full life-cycle. This, in theory, makes lending for such projects less risky and should therefore merit special consideration from financial institutions.

Overall though, the momentum is clearly behind the replication of HOUSEFUL-type solutions. Many new funding schemes have been developed, including schemes focused completely on promoting circularity, even since the HOUSEFUL project first began. At the same time, changes in EU policy have also had the effect of creating potential additional financing for replication activities.

In addition, at the time of writing, near record high energy prices in most EU countries, as well as the war in Ukraine, is having the effect of providing additional impetus for the energy transition and energy self-sufficiency, which could in turn help to provide even greater funding, especially from newly created collective EU

programmes[127]. Member states are also showing greater interest in accelerating the pace of expansion of domestic renewable energy capacities and seeking greater energy efficiencies from the built environment.

[127] The European Commission has already made a tentative proposal for a new 'REPowerEU' funding package: "*The case for a rapid clean energy transition under the European Green Deal has never been stronger and clearer. Terminating our dangerous overdependence on fossil fuels from Russia can be achieved well before 2030*".
- https://ec.europa.eu/commission/presscorner/detail/en/fs_22_1513

Annex I - HOUSEFUL consortium financing options questionnaire

Confidential section: This section is only available to members of the consortium and Commission Services.