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The delivery challenge of NBRPs

Joint NBRP assessment

Belgium-Wallonia · Bulgaria · Denmark · Portugal · Romania · Spain

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In a nutshell:

National Building Renovation Plans (NBRPs) are a central instrument to implement the EPBD recast. This assessment of six Member States examines their robustness as delivery frameworks, beyond formal compliance. It shows that a solid foundation is in place: all plans embrace long-term decarbonisation objectives and include innovative and transferable instruments. At the same time, the current stage offers a clear opportunity to strengthen their operational quality.

A consistent finding emerges: the main challenge is no longer defining ambition but organising delivery. While strategic direction is broadly established, its translation into integrated delivery systems remains partial. Across plans, similar gaps recur: limited conversion of targets into operational pathways, insufficiently structured financing, under-dimensioned delivery capacity, and lack of predictability for key actors.

Strengthening NBRPs would provide clearer conditions for industry investment, capital mobilisation, workforce planning and local delivery, enabling public and private actors to scale their contribution.

Five conclusions emerge: a solid foundation exists; the current process offers a concrete opportunity to improve plans; the gap is operational; bottlenecks are systemic; and EU-level coordination can accelerate convergence and impact.

With targeted improvements, NBRPs can become a credible delivery backbone for Europe's building improvement and modernisation.

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Executive Summary - From plans to delivery: a decisive step forward, with a clear opportunity to strengthen implementation

National Building Renovation Plans (NBRPs) are a central instrument to operationalise the EPBD recast and structure Europe's building decarbonisation agenda. Across the six analysed Member States — Belgium (Wallonia), Bulgaria, Denmark, Portugal, Romania and Spain — the plans establish national policy frameworks covering targets, policy instruments and priority areas.

The assessment conducted for this report goes beyond a compliance check. It examines the robustness of NBRPs as delivery frameworks: their capacity to translate long-term objectives into actionable, scalable and socially robust implementation systems.

The analysis shows that a solid foundation is already in place. Each plan includes innovative and transferable elements, and together they provide a rich base of approaches that can support large-scale renovation. At the same time, the current draft stage of NBRPs represents a key opportunity to strengthen their operational quality. The two-step process towards final plans creates the conditions to refine, align and reinforce existing measures.

A consistent finding emerges: the main challenge is no longer defining ambition but organising delivery. Addressing this challenge does not require fundamentally redesigning the plans. It requires building on existing elements, improving their articulation, and combining them into coherent delivery systems — a step that is both feasible and already partially demonstrated across Member States.

A shared gap: from ambition to operational systems

All analysed NBRPs embrace long-term decarbonisation objectives in line with the EPBD. However, their translation into integrated delivery systems remains partial.

The gap is not in the direction of travel, but in its operationalisation. In particular:

- Long-term objectives are not consistently translated into annual renovation trajectories, renovation depth assumptions or clearly prioritised segments
- Financing is often described through individual instruments, but rarely as a coherent architecture mobilising and directing public and private investment
- Delivery capacity — including one-stop shops, workforce and programme management — is not systematically dimensioned against the scale of transformation required
- Regulatory trajectories and triggers remain, in several cases, insufficiently explicit to provide long-term visibility

Strengthening quantified delivery capacity — including workforce, financing flows and project pipelines — and aligning it with renovation targets would significantly reinforce the real-life impact and credibility of the plans.

What already works: a strong base to build on

A key finding of this analysis is that many of the required solutions already exist within current NBRPs.

Across the six plans, highly relevant practices are already being developed:

- structured one-stop-shop systems and emerging integrated, area-based renovation approaches
- diversified financing instruments combining public and private resources
- targeted mechanisms addressing energy poverty and vulnerable households
- initial frameworks for whole-life carbon and climate resilience
- early integration of industrialisation and innovation considerations

These elements demonstrate that delivery-ready components are already available. However, they are unevenly distributed across countries and topics and not yet combined into coherent systems within individual plans.

This fragmentation represents a significant opportunity for targeted improvement and cross-fertilisation.

Strengthening NBRPs to enable scaling

Where operationalisation remains partial, NBRPs provide limited visibility to key actors required for large-scale delivery. Strengthening their operational dimension would create clearer conditions for all stakeholders to contribute effectively:

- **Industry** would benefit from clearer signals on future demand, enabling investment in industrialised and innovative solutions
- **Financial actors** would benefit from more structured and predictable pipelines, facilitating capital mobilisation
- **Workforce development systems** could better align training efforts with quantified needs
- **Local authorities and intermediaries** could position themselves more clearly within a structured delivery framework
- **Households would benefit from stable and predictable conditions**, supported by appropriate tools and frameworks for both landlords and tenants, enabling informed investment in housing improvements

In this perspective, well-designed and operational NBRPs can act as **coordination frameworks**, enabling public and private actors to align their contributions and share the effort of Europe's building upgrade and renovation effort.

Five conclusions

1. **A solid foundation is already in place.** The analysed NBRPs provide structured policy frameworks and include a range of innovative and transferable instruments. Across topics, many of the building blocks required for large-scale renovation are already present.
2. **There is a clear opportunity to step up quality in final NBRPs.** The current plans represent an intermediate stage. The two-step process towards final NBRPs offers a realistic and actionable opportunity to strengthen their robustness — not by redesigning them, but by building on existing elements and improving their operational articulation.
3. **The gap to delivery is primarily operational.** Ambition and strategic direction are broadly in place. The main challenge lies in translating them into executable systems, with clear trajectories, financing structures and delivery mechanisms.
4. **Key bottlenecks are systemic and recurring.** Across Member States, similar challenges appear: incomplete translation of targets into operational pathways, insufficiently structured financing, under-dimensioned delivery capacity, and gaps in social and regulatory frameworks. These recurring patterns point to shared solutions.
5. **EU-level coordination is a powerful accelerator.** Best practices are already distributed across Member States. The current phase of NBRP development — with draft and final versions — creates a unique window to organise peer learning, converge on effective approaches and accelerate improvement across all plans. Leveraging this collective dynamic can significantly enhance the overall quality and impact of NBRPs.

From plans to delivery: a feasible step-up for final NBRPs

The finalisation of NBRPs represents a critical and realistic opportunity to strengthen their effectiveness as delivery frameworks. Building on existing practices, three priorities stand out:

1. **Translate targets into operational pathways:** define annual renovation rates, expected renovation depth, and prioritised building segments, ensuring alignment with long-term objectives and the worst-performing stock.
2. **Build integrated delivery systems**, moving beyond individual measures to structure: financing architectures combining public and private resources, aggregation mechanisms enabling scale, performance-managed one-stop shops and delivery infrastructure and alignment between targets and delivery capacity (workforce, finance, pipelines).
3. **Strengthen market-shaping and social frameworks:** Provide clear and predictable signals through regulatory trajectories, strategic use of public buildings, and robust social safeguards — ensuring that renovation is both scalable and inclusive.

A collective opportunity

No analysed NBRP yet constitutes a fully delivery-ready model. However, all provide valuable building blocks. The key opportunity is to **connect, operationalise and scale these elements within coherent systems**.

With targeted improvements and strengthened coordination between Member States, the European Commission and stakeholders, NBRPs can evolve from strategic documents into **a credible and effective delivery backbone** for Europe's building modernisation and transition.

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Introduction

This assessment reviews six National Building Renovation Plans (NBRPs) — Belgium (Wallonia), Bulgaria, Denmark, Portugal, Romania and Spain — selected to reflect a diversity of geographical contexts, building stocks and levels of policy maturity.

The plans are analysed across **19 topics grouped into five streams**:

- S1 Targets, standards and regulatory backbone;
- S2 Delivery architecture and implementation capacity;
- S3 Finance and political attractiveness;
- S4 Social robustness;
- S5 Long-term quality and future-proofing, including life-cycle carbon (LCA) and climate resilience.

Each topic is assessed across **eight dimensions** — Explicitness, Maturity, Quantitative ambition, Delivery credibility, Social robustness, Scalability, Integration and Evaluability — using a **0–3 scale** (0 = absent; 1 = intentional; 2 = partially operational; 3 = fully operational). A score of **2.0 is used as the "delivery-ready" threshold** throughout the analysis.

The assessment is based strictly on the content of the NBRPs ("ground truth"). Policies or instruments existing outside the plans are only considered where they are **explicitly referenced**, ensuring comparability across Member States.

The work was conducted by a coalition of eleven industry and civil society organisations, with analytical support and cross-country harmonisation provided by CLIMACT.

Document architecture

This is the third and final document of the NBRP assessment. It is designed for executive reading and synthesises the detailed work carried out in Documents 1 and 2.

- Document 1 — Country-by-country analysis (6 three-page country fiches).
- Document 2 — Transversal thematic analysis (cross-country patterns by stream, with structural gaps and priority improvements).
- Document 3 — Executive narrative (this document): context, executive summary, inspiring practices from the 6 plans, and recommendations for next steps.

1 Where NBRPs stand

1.1 Ambition is not the issue, operationalisation is

Across the six analysed NBRPs, Member States define clear long-term objectives aligned with EU decarbonisation goals. However, this ambition is not yet translated into delivery-ready frameworks.

Overall maturity scores range from **0.79 (Portugal) to 1.93 (Spain)** on a 0–3 scale, with none of the plans reaching the **2.0 "delivery-ready" threshold**. The gap is therefore not strategic, but operational.

Plans describe where to go, and provide initial elements on how to get there, but these remain to be consolidated into fully operational systems.

Figure 1 — Overall scores by country and stream
(stream averages stacked; global average shown above each bar)

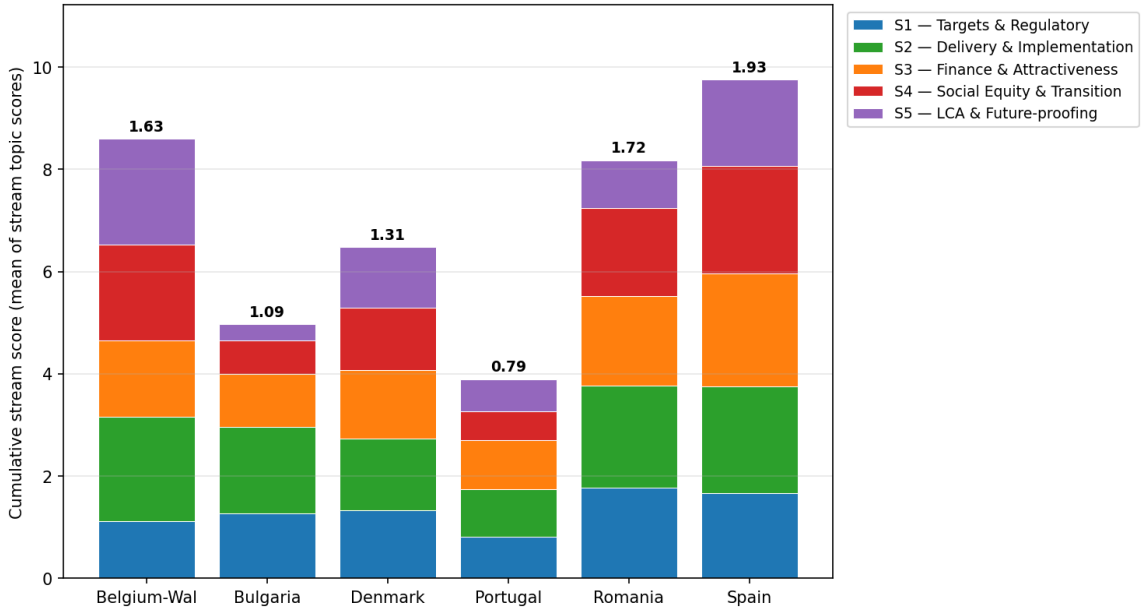


Figure 1 — Global scores by country and stream. Stream averages stacked; global average shown above each bar. Spain is the only plan close to the 2.0 delivery-ready threshold.

1.2 From targets to execution: a missing system

The central limitation across all plans is the absence of a fully articulated delivery system. In most cases, key components remain insufficiently specified or disconnected:

- **Targets are not translated into annual renovation rates or depth assumptions**, limiting visibility on future demand
- **Financing strategies are not sequenced**, with unclear articulation of differentiated products answering different socio-economic profiles
- **Delivery capacity is underplanned**, with limited quantification of workforce needs, OSS resources, deployment strategies aligned with territorial vulnerabilities, or implementation costs
- **Regulatory trajectories remain incomplete or non-binding**, with missing thresholds or unclear timelines

Some plans partially address these gaps:

- **Spain and Romania** provide quantified trajectories, offering clearer visibility on expected volumes
- **Romania** defines a structured regulatory backbone and plans the expansion of a national OSS network
- **Belgium–Wallonia** outlines integrated delivery mechanisms, including area-based approaches and structured accompaniment

However, these elements remain **isolated** and are not yet combined into coherent systems.

1.3 Consequence: weak signals to the market

Because operational frameworks remain incomplete, **NBRPs do not yet consistently provide the level of visibility needed by market actors**.

This has direct implications:

- **Industry lacks visibility on future demand**, slowing investment in industrialised renovation solutions, medium/deep renovation capacity and the fabric-performance improvements needed to deliver sustained savings (e.g. prefabrication, modular approaches)
- **Financial actors face unstructured pipelines**, limiting the mobilisation of private capital
- **Workforce development is not aligned with demand**, as quantified needs are not translated into training capacity
- **Innovation pathways remain unclear**, with limited indication of which technologies, standards or solutions will be prioritised

As a result, the plans do not yet fulfil their potential as **market-shaping instruments**, capable of structuring investment and accelerating scale.

1.4 What already works — but remains fragmented

Despite these limitations, all six plans include **promising and transferable elements**.

Each Member State demonstrates more advanced approaches on specific dimensions:

- **Spain** combines quantified targets, a diversified financing toolbox and a structured social framework
- **Romania** provides detailed regulatory provisions and a nationwide OSS deployment strategy
- **Denmark** stands out for its integration of life-cycle carbon (LCA) considerations
- **Belgium–Wallonia** develops integrated delivery models, including multi-level OSS and area-based renovation schemes
- **Bulgaria** includes elements of workforce planning and regulatory detail

These examples show that **solutions already exist**. However, they remain **distributed across countries** and are not yet assembled into comprehensive national systems. Section 2 provides a selection of high-impact practices with replication potential.

1.5 Systemic gaps and missed opportunities

Across all plans, several structural gaps persist — not as isolated issues, but as **system-level weaknesses** that directly affect delivery.

- **Financing is not structured for scale**, with limited earmarking and insufficient addressing of upfront costs and repayment capacity for the most vulnerable groups, limiting bankability and the mobilisation of private investment
- **Social frameworks remain partial**, creating risks of unequal access and potential backlash, particularly in the rental sector
- **Public-building renovation is underused as a market-shaping lever**, despite its potential to structure demand, drive innovation, support industrialisation and send clear market signals.
- **Decarbonisation pathways are insufficiently integrated**, with limited articulation between building renovation, heating systems and energy infrastructure

These gaps are not only technical — they translate into **missed opportunities to accelerate Europe's building stock transition, improvement and modernisation**.

1.6 Implication: a coordination challenge

The patterns observed across the six NBRPs point to a broader structural issue: **fragmentation of approaches across Member States**.

While similar gaps recur — in trajectories, financing, delivery capacity, social safeguards and market signals — relevant solutions already exist in individual countries.

This creates a strong case for:

- **faster diffusion of best practices**,
- **clearer expectations on operationalisation**,
- and **stronger EU-level coordination** to support convergence.

Without such coordination, Member States risk advancing in parallel, rather than building on each other's progress.

1.7 Section takeaway

NBRPs are structurally aligned with EU objectives but remain **operationally incomplete**. The challenge is no longer to define ambition, but to **translate it into coherent, scalable delivery systems**.

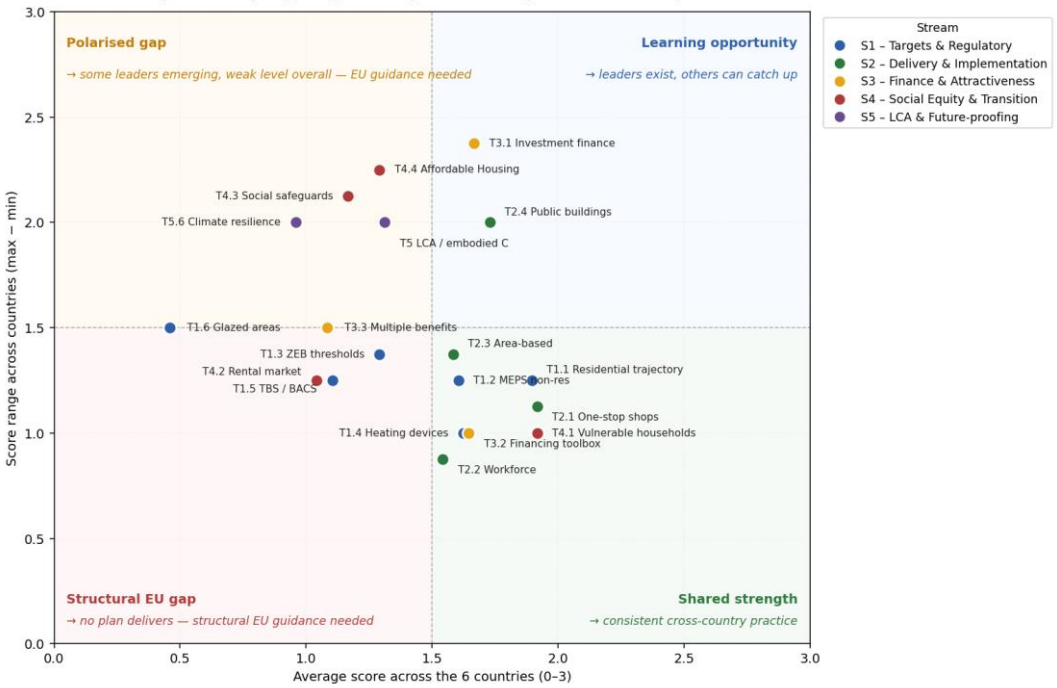
The building blocks are already present. What is missing is their **integration into functioning systems that can guide markets, mobilise investment and deliver at scale**.

Importantly, the elements required to close this gap are already partially implemented across Member States, confirming the feasibility of this step-up.

2 High-impact practices with replication potential

The figure maps the 19 topics assessed across the six NBRPs along two axes: the **average score across countries (x-axis)** and the **spread between the highest and lowest performer (y-axis)**. Scores should be read as **directional signals**, not precise measurements.

Figure 8 — Topic typology: convergence vs divergence across the 6 plans



Source: NBRP_final_v3_audited.xlsx. X-axis: avg topic score across the 6 countries. Y-axis: score range (max−min) across countries. Quadrants split at avg=1.5 and range=1.5.

Three patterns emerge:

- **Converging topics**, where Member States show similar levels of maturity and peer learning can raise overall quality
- **High-dispersion topics**, where a small number of frontrunners contrast with less developed approaches, creating clear opportunities for targeted transfer
- **Structurally weak topics**, where no plan reaches operational maturity, pointing to the need for EU-level guidance and common frameworks

The practices below focus on high-dispersion areas, where **solutions already exist and can be transferred or combined** to close the gaps identified in Section 1. Each practice illustrates how specific gaps identified in Section 1 can be addressed in practice, and how combining these approaches can form coherent delivery systems. In most cases, no single Member State provides a complete model; delivery-ready systems emerge from the combination of complementary approaches across countries. The practices presented span different levels of maturity — from operational deployment to pilot and design-stage approaches — but all provide actionable insights for scaling.

2.1 Structuring delivery systems at scale

These practices address the central delivery challenge: moving from fragmented support to **organised, staffed and scalable renovation systems**.

[Belgium–Wallonia] Tiered one-stop-shop architecture with targeted outreach

What it does: Defines a **three-tier OSS model** (information, personalised support, delegated delivery), combined with vulnerability mapping and referral networks involving social and health actors, ensuring households are directed to the appropriate level of support.

Why it matters: Most NBRPs refer to OSS without specifying how services differ by household needs. A tiered model creates a structured service portfolio that can be progressively staffed and funded. It also enables targeted support for vulnerable households, rather than relying on uniform, generic assistance.

Gap-closing for: In Bulgaria and Portugal, OSS are still at pilot or design stage and lack a defined service structure, making it difficult to plan staffing and resources. In Denmark, the approach remains largely digital and does not provide a comparable physical support network. The Belgian model offers a way to move from "presence" of OSS to **operational design of services**.

Complementary for: Romania has already deployed a nationwide OSS network, but without a formalised service-tier structure. Spain has extensive territorial coverage, but service differentiation remains implicit. The Belgian tiering logic could strengthen both by introducing a clearer matching between household needs and service intensity.

[Romania] Operational OSS network with legal basis and cost benchmarks

What it does: Establishes a legally backed national OSS network under GEO 92/2024, with 42 offices already operational, though currently understaffed, and expansion planned to 100 offices by 2035. The model is not limited to information provision: it includes end-to-end support and publishes explicit cost assumptions for setup and operation.

Why it matters: This is the clearest example in the six plans of OSS moving from concept to infrastructure. It shows not only what a network looks like on paper, but what it costs to consolidate, expand and operate over time. While OSS are widely referenced across NBRPs, Romania is the only case where a network is already operational at national scale, with explicit cost parameters. This makes delivery infrastructure tangible, budgetable and replicable.

Gap-closing for: In Bulgaria, Denmark and Portugal, OSS remain either conceptual or insufficiently specified. The Romanian model addresses the gap between policy intention and physical deployment by demonstrating how a network can be structured, funded and expanded over time.

Complementary for: Belgium–Wallonia and Spain have advanced OSS designs but do not publish unit costs. Romania's cost benchmarks provide a missing piece: the ability to translate conceptual architectures into **investment needs and rollout strategies**.

[Belgium–Wallonia] "Renovation trains" and industrialised neighbourhood delivery

What it does: Introduces "renovation trains": coordinated, simultaneous works on similar dwellings at neighbourhood level, supported by a regional platform building on Reno+. The format combines building renovation with heat-network and climate-adaptation logic; targets include at least 10 trains by 2029 and 2,000 dwellings renovated by 2030. The approach is still in preparation, including pilot inspiration from industrialised social-housing renovation.

Why it matters: Area-based approaches are often mentioned but rarely operationalised. This model introduces a concrete delivery format that aggregates projects, aligns interventions across buildings and infrastructure, and enables more industrialised execution.

Gap-closing for: In Denmark, Bulgaria and Portugal, area-based approaches remain at the level of general principles without a defined delivery mechanism. The "renovation train" concept fills this gap by providing a **replicable execution model** at neighbourhood scale.

Complementary for: For Romania, this adds an execution format to district-level indicators. For Spain, it adds logistics and standardisation to neighbourhood-scale programming.

2.2 Making financing work for scale

These examples show how financing evolves from a collection of instruments to a **structured system capable of supporting large-scale renovation**.

[Spain] Diversified financing toolbox with scaling logic

What it does: Combines operational instruments — notably CAE monetisation, unsecured loans, green mortgages, guarantees and co-investment logic — with a broader feasibility pipeline for PACE-style, on-bill and HEVA-type products still at pilot-design stage.

Why it matters: Many plans list financing instruments but do not explain how they interact. Spain demonstrates how instruments can be combined into a coherent toolbox, enabling projects to be financed according to their characteristics and increasing overall uptake. Its strength is not only diversity, but sequencing by maturity: some instruments are already usable, while others are being prepared to broaden coverage across ownership and income profiles.

Gap-closing for: In Portugal and Bulgaria, financing remains fragmented, with limited articulation between instruments. In Denmark, financing is less central in the plan. The Spanish approach provides a framework to **organise financing flows and mobilise private capital**.

Complementary for: Other Member States with existing instruments but limited coordination could use this approach to improve targeting and coherence, particularly where different schemes operate in parallel without integration.

[Romania] Delivery infrastructure explicitly budgeted

What it does: Within a €122–125bn investment envelope, Romania separates a dedicated "Other Funding" stream covering OSS, technical assistance, vulnerable households and other enabling costs, rather than treating delivery as an implicit overhead of renovation works.

Why it matters: Delivery infrastructure is often underfunded because it is not explicitly accounted for. By isolating these costs, the Romanian approach makes them visible, fundable and creates an auditable funding commitment for the non-works components of renovation at scale — exactly where many plans remain vague.

Gap-closing for: Portugal does not define an overall investment envelope, while Denmark and Belgium–Wallonia do not separate delivery costs from works. Bulgaria also lacks a dedicated funding line for delivery infrastructure. Romania addresses a key blind spot: the **cost of making renovation happen**, beyond construction itself.

Complementary for: Spain defines a large investment envelope but segments it by policy area rather than by function (works vs delivery). Romania's approach could strengthen Spain's by clarifying how much is allocated to enabling delivery.

[Bulgaria] National Decarbonisation Fund with deep-renovation pilot

What it does: Establishes a national fund in law as the anchor vehicle for deep renovation, though product design and partnerships are still pending. The NBRP proposes a pilot blending up to 49.9% grants with loans and guarantees for deep-renovation packages.

Why it matters: Public support is often fragmented across programmes. The key value is not only blending, but the creation of a single national de-risking architecture that can standardise products for private lenders.

Gap-closing for: Portugal lacks both an investment envelope and an anchor financing vehicle. Denmark and Romania do not provide a dedicated mechanism for deep renovation. The Bulgarian model offers a pathway to move from fragmented schemes to a **coherent financing architecture**.

Complementary for: Spain has a wide range of instruments but no single fund dedicated to deep renovation. The Bulgarian approach could complement Spain's by strengthening support for the most ambitious renovation segments.

2.3 Building credible regulatory and policy backbones

These practices strengthen **predictability, visibility and alignment between targets and implementation**.

[Romania] Regulatory backbone with quantified trajectories

What it does: Defines explicit renovation trajectories, timelines and regulatory elements, including the development of MEPS.

Why it matters: Targets without operational pathways do not provide sufficient signals to markets. Romania's approach translates long-term objectives into measurable milestones, improving credibility and enabling planning.

Gap-closing for: In Portugal, Bulgaria and Denmark, targets are not consistently translated into annual trajectories. Romania addresses the gap between ambition and implementation by linking objectives to **time-bound regulatory pathways**.

Complementary for: Spain combines strong targets with financing but could further reinforce predictability through more explicit regulatory anchoring.

[Denmark] Binding integration of life-cycle carbon (LCA)

What it does: Building Regulation BR18 already embeds binding whole-life-carbon values differentiated by building type, including construction-site emissions, with tentative tightening steps signalled for 2027 and 2029.

Why it matters: LCA is often mentioned but rarely operationalised. Binding requirements create clear expectations for industry, influencing material choices and construction practices.

Gap-closing for: In all other Member States, LCA remains at roadmap or conceptual level. Denmark provides a concrete example of how to move from intention to regulatory implementation.

Complementary for: This is especially complementary for Belgium-Wallonia, where TOTEM is already operational and a regional GWP roadmap is planned, but binding limit values are still pending. Denmark offers the missing template for moving from tool-and-roadmap to binding values.

2.4 Ensuring social inclusion and market access

These examples demonstrate how plans can move from recognising social barriers to **removing them through operational mechanisms**.

[Spain] Direct contractor payment for vulnerable households

What it does: Implements a €3bn vulnerable-household architecture with five sub-actions, differentiated subsidy intensity by vulnerability level, and direct payment to contractors, thereby removing the liquidity barrier created by reimbursement-based schemes.

Why it matters: Many schemes rely on reimbursement, excluding households without upfront capital. Direct payment removes this barrier and ensures that support reaches those most in need. This is not just targeting; it is delivery design. It converts eligibility into actual access by removing the need for households to advance the money themselves.

Gap-closing for: In Bulgaria, Denmark and Portugal, support schemes do not address liquidity constraints in a comparable way. Spain provides a mechanism to translate targeting into **effective access**.

Complementary for: Belgium–Wallonia and Romania have structured support systems but rely largely on reimbursement. The Spanish approach could strengthen their inclusiveness by removing upfront cost barriers.

[Bulgaria] Legal definition and monitoring of energy poverty

What it does: Establishes a legal definition of energy poverty (Art.38e), complemented by a household-status determination decree and annual SEDA monitoring, with 1.83 million people quantified and an annual indicator of 28.47%.

Why it matters: Energy poverty is often described but not formalised. A legal definition, combined with systematic monitoring, turns vulnerability into a monitorable policy category rather than a narrative concern, enabling both rights-based targeting and ex-post accountability.

Gap-closing for: Denmark, Portugal and Belgium–Wallonia do not have equivalent legal and monitoring frameworks. Bulgaria addresses the need for a **structured and measurable approach** to vulnerability.

Complementary for: Spain and Romania have operational targeting mechanisms, but Bulgaria's monitoring system provides a more systematic basis for tracking outcomes and adjusting policies.

2.5 Section takeaway

Across the analysed NBRPs, the building blocks of delivery-ready systems already exist but remain **unevenly distributed across countries and policy areas**.

These practices show, in concrete terms, how key gaps identified in Section 1 can be addressed. Their value lies not only in their individual design, but in their **potential to be transferred and combined**.

Strengthening NBRPs now depends less on inventing new instruments than on **connecting existing ones into coherent systems and accelerating their diffusion across Member States**.

3 What should be strengthened before final NBRPs

The analysis shows that moving from strategy to delivery **requires targeted strengthening of a limited number of critical elements**. These improvements are well identified, and in several cases already partially implemented in some Member States. The priority is therefore to **consolidate, connect and scale existing approaches**, rather than introduce entirely new policy directions.

3.1 Strengthening delivery foundations

A first priority is to translate strategic objectives into **operational delivery frameworks**. While most plans define long-term targets, these need to be systematically complemented by clearly defined **implementation pathways**, including annual renovation rates, expected renovation depth and prioritised building segments.

In addition, regulatory frameworks should provide **clear and predictable signals**. Where binding thresholds (e.g. MEPS or ZEB definitions) are not yet fully specified, plans should include **explicit timelines and processes for their definition and implementation**. This is essential to give visibility to market actors and ensure consistency between long-term objectives and short-term action.

Several plans already provide initial elements in this direction by outlining progressive tightening of standards or linking regulatory evolution to broader policy frameworks. These approaches could be further generalised and made more explicit.

3.2 Structuring financing and implementation for scale

A second priority is to move from a collection of financing instruments to **coherent and scalable financing strategies**. This implies clarifying how different instruments are **combined and targeted to different building types, renovation depths and household profiles**, and how they interact along the renovation process.

Several plans already include elements of diversified financing toolboxes, combining grants, loans and, in some cases, private capital. However, these elements are rarely articulated into a clear system. Strengthening this dimension requires:

- **clarifying the role of each instrument** within the overall strategy
- **ensuring that financing solutions are adapted to different target groups**, including vulnerable households and the rental sector
- **designing instruments with scalability in mind**, including the mobilisation of private finance

At the same time, financing strategies need to be complemented by a more explicit consideration of **implementation capacity**, including the resourcing of one-stop shops, programme management, and supporting services. Without this, even well-designed financial instruments may not translate into actual renovation activity.

3.3 Mobilising public demand to drive market transformation

Public building renovation and public procurement represent a largely underused lever in the analysed plans. Beyond their direct impact, they can play a central role in **structuring markets, aggregating demand and accelerating innovation**.

By organising renovation at scale across public building portfolios, public authorities can provide stable demand signals to the market, support the development of industrialised and standardised solutions and accelerate the uptake of low-carbon and circular practices.

Some plans already include elements of public building strategies, but these are not always framed as a **market-shaping instrument**. Strengthening this dimension would contribute not only to public sector decarbonisation, but also to the broader transformation of the renovation market.

3.4 Developing integrated, place-based decarbonisation approaches

Scaling renovation requires moving beyond individual, building-by-building interventions toward more **integrated, place-based approaches that combine building renovation with energy system transformation, while embedding social safeguards within these approaches**. In particular, these approaches are essential to align building renovation, heat decarbonisation (district and individual solutions) and local planning and infrastructure development.

Several plans refer to area-based or neighbourhood-level initiatives, and in some cases link them to local authorities or specific programmes. However, these approaches are often presented as complementary instruments rather than **core delivery mechanisms structuring the transition at scale**.

At the same time, the articulation between renovation strategies and **heating system transformation** remains uneven. Plans would benefit from more clearly defining the respective roles of district heating and individual solutions, how these choices are spatially differentiated and how renovation interacts with infrastructure development and local heat planning.

Strengthening this dimension implies clarifying where and how place-based approaches will be deployed, how they are supported (financially and institutionally), and how they connect to local heat planning and infrastructure choices.

This integrated perspective also creates an opportunity to embed **climate resilience considerations** directly into renovation strategies, for instance by prioritising vulnerable areas, adapting building design to extreme weather, and aligning with broader territorial resilience planning.

In this respect, some plans — including elements identified in the Walloon context — provide useful examples of how renovation, heating and territorial planning can be more closely integrated, although such approaches remain uneven across Member States.

3.5 Strengthening social safeguards and addressing the rental market

Ensuring that the renovation transition is socially equitable requires moving from general objectives to **operational social frameworks**.

While most plans recognise the importance of addressing energy poverty, important gaps remain in the definition and implementation of clear targeting mechanisms for vulnerable households, adequate levels and forms of support and safeguards to prevent adverse effects.

This is particularly critical in the **rental market**, where split incentives between landlords and tenants can significantly limit renovation uptake and create risks of rent increases or displacement.

Strengthening this dimension implies developing more explicit and operational approaches to identify and prioritise vulnerable households, align financial support with their needs and capacities and introduce safeguards that prevent unintended social consequences.

Without such measures, there is a risk that renovation policies reinforce existing inequalities rather than contributing to a just transition.

3.6 Integrating multiple benefits into policy design

Beyond energy and carbon performance, renovation-related multiple benefits — including health, comfort, energy poverty reduction, productivity and resilience — are acknowledged in most analysed plans but remain only partially mobilised in policy design and decision-making frameworks.

This gap is visible in practice: several plans link renovation to comfort, indoor environmental quality, health and productivity, but these dimensions are still rarely translated into measurable indicators, funding criteria, prioritisation mechanisms or monitoring frameworks, and remain insufficiently connected to other sectoral policies.

Further development in this area would allow Member States to better capture the **full value of renovation policies** and strengthen their implementation.

3.7 Strengthening the operationalisation of technical and cross-cutting requirements

Several technical and cross-cutting dimensions are already present in the plans but remain insufficiently translated into **operational frameworks that can guide implementation at scale**.

This includes, for instance the deployment of building automation and control systems (BACS / TBS), specific aspects of building performance (including envelope improvements and renovation depth) and the integration of climate resilience into renovation practices. The challenge is less about introducing new topics than about ensuring that existing priorities are translated into clear requirements, standards or incentives, integrated into support schemes and regulatory frameworks and aligned with delivery mechanisms (e.g. OSS, procurement, programmes).

For BACS/TBS, recurring gaps concern the definition of thresholds, trigger points, minimum functionalities and links to existing policy instruments (such as EPCs, MEPS, renovation passports, procurement frameworks and renovation support schemes). For building performance and envelope-related measures, recurring gaps concern the lack of clear delivery signals on renovation depth, support conditions, and the role of fabric performance in sustained energy savings, comfort and resilience outcomes.

Strengthening this operationalisation is necessary to ensure consistency between high-level objectives and on-the-ground implementation.

3.8 Section takeaway

To become operational, NBRPs must move beyond individual measures and define **integrated delivery systems**. Across the analysed plans, the same structural components are either missing or only partially developed:

- **A financing architecture**, clarifying how investments are mobilised, blended and fairly allocated across actors
- **Aggregation mechanisms**, transforming fragmented demand into scalable and investable project pipelines
- **Performance-managed one-stop shops**, with clear capacity, territorial coverage and outcome indicators
- **A quantified alignment between targets and delivery capacity**, including workforce, financing flows and project pipelines
- **Integration of industrialisation and workforce strategies**, to address productivity constraints alongside skills shortages
- **Strategic use of public buildings as market-shaping demand**, to structure supply chains and accelerate innovation uptake
- **Integration across policy domains**, ensuring coherence between renovation, housing, energy and spatial planning policies
- **Clear governance and accountability frameworks**, defining roles, coordination mechanisms and delivery responsibility

Without these elements, plans risk remaining **analytical or aspirational rather than operational**.

4 Implications for action

The analysis highlights that strengthening NBRPs is not primarily a matter of increasing ambition, but of **improving delivery readiness through targeted and coordinated action**. The nature of the gaps identified calls for differentiated roles across Member States and the European Commission.

4.1 For Member States: moving from strategy to delivery systems

For Member States, the priority is to translate existing strategies into **fully operational delivery frameworks**. This requires moving beyond the definition of targets and instruments, toward a structured articulation of how renovation will be implemented at scale.

In particular, final NBRPs should:

- translate long-term objectives into **clear operational pathways**, including annual renovation rates, defined renovation depth, evolution of the heating energy demand and technology mix and prioritised segments, so that public and private actors have clear visibility on the needed market activities. *Elements of quantified trajectories and prioritisation approaches are emerging in several plans, including Denmark and Spain.*
- clarify **regulatory trajectories**, including binding thresholds where available, or explicit timelines and processes for their definition. This includes ensuring that technical requirements across building systems are translated into clear and actionable provisions – with defined scope, thresholds, trigger points, minimum functionalities and verification routes — so that they effectively support implementation through regulatory and support frameworks. *Some plans already outline progressive regulatory frameworks or refer to evolving standards (e.g. Denmark, Wallonia), but often without operational detail*
- develop **coherent and scalable financing strategies**, combining and targeting instruments to different building types, renovation depths and household profiles, and better integrate co-benefits such as health, comfort and indoor environmental quality into programme design, funding logic and monitoring. *Diversified financing approaches are present across multiple plans (e.g. Spain, Portugal, Wallonia), though not yet structured into fully coherent systems*
- ensure that **delivery capacity is planned and resourced**, including one-stop shops, workforce development and programme management. *Advanced one-stop-shop models and delivery structures are emerging in several contexts (e.g. Spain, Wallonia), but are rarely dimensioned against required renovation volumes*
- strengthen **integrated, place-based approaches**, linking renovation with heat decarbonisation, infrastructure and local planning, and **use public-building renovation more strategically** as a lead market for innovation, procurement, deeper renovation and delivery models. *Integrated territorial approaches, including links to heating and planning, are particularly visible in Denmark and in elements of the Walloon plan.*
- operationalise **social safeguards**, particularly in the rental market, and ensure adequate targeting of vulnerable households. *Targeting of vulnerable households and initial approaches to social safeguards are present in several plans (e.g. Spain, Portugal) but remain unevenly developed.*

These elements are already partially present in several plans. The key challenge is to **connect them into coherent systems that can deliver at scale**.

4.2 For DG ENER: focusing assessment and guidance on delivery readiness

For the European Commission, and in particular DG ENER, the analysis suggests that the greatest added value lies in **focusing assessment and feedback on delivery readiness**, alongside compliance with the Directive.

This implies placing particular emphasis on:

- the translation of targets into **measurable and monitorable trajectories**
- the **operationalisation of regulatory frameworks**, including clarity on thresholds, timelines and enforcement, and their translation into actionable delivery conditions (e.g. renovation depth, building performance requirements and technical specifications)
- the robustness and scalability of **financing strategies**, including their ability to mobilise private capital
- the adequacy of **delivery systems**, including workforce, OSS and implementation capacity
- the integration between **building renovation and energy system decarbonisation**, notably through heat planning and infrastructure alignment

Beyond assessment, DG ENER can play a key role in supporting convergence by:

- providing **clarified complementary guidance** on complex or unevenly addressed topics , in particular where operationalisation challenges are recurrent across Member States (e.g. financing frameworks, LCA methodologies, climate resilience, and the operationalisation of technical requirements across building systems, including digital and smart-readiness aspects)
- facilitating **structured exchange between Member States**, building on the most advanced practices identified, e.g. via the coordination activities foreseen under AccelerateEU, the Concerted Action and/or topic specific fora such as the European Energy Efficiency Financing Coalition.
- encouraging a shift from compliance-driven reporting toward **implementation-oriented planning**

4.3 Section takeaway

The finalisation of NBRPs represents a critical opportunity to move from strategic intent to effective implementation. The gaps identified are well understood and, in many cases, already addressed in part by individual Member States.

Bridging these gaps builds on existing elements and requires a **stronger focus on delivery systems, clearer articulation of policy instruments, and enhanced coordination across levels of governance**.

With targeted improvements and continued exchange, NBRPs can become a **robust foundation for scaling building renovation across Europe**.

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NBRP Assessment

Document 2 — Transversal thematic analysis

Cross-country analysis across 6 Member States — Stream by stream

Belgium-Wallonia · Bulgaria · Denmark · Portugal · Romania · Spain

⚠ Source of scores and methodological note

All scores in this document are derived from the NBRP PDFs (ground truth), post-audit — NBRP_final_v3_audited.xlsx. Scores assessed on a 0-3 scale across 8 dimensions (Explicitness, Maturity, Quantitative ambition, Delivery credibility, Social robustness, Scalability, Integration, Evaluability) for each of 19 topics. Topic scores are arithmetic means across the 8 dimensions. Stream averages are means across topic scores within each stream. Scores reflect what the NBRP documents contain, not the maturity of national policies outside the NBRP.

0. Purpose, scope and how to read

- **Purpose.** This document synthesises cross-country patterns across the 6 NBRPs analysed, organised by stream (S1 → S5). Country-specific fiches are in Document 1; the executive narrative, flagship practices and conclusions are in Document 3.
- **Scope.** The analysis is based exclusively on the content of the NBRP PDFs. National policies that exist outside the NBRP (building codes, financing funds, digital tools) are only credited when the NBRP references them. This materially affects Denmark in particular — see the reading note below.
- **Structure.** Each stream section is built around four elements: (i) Observation (cross-country synthesis with scores and quanti), (ii) What works (country-anchored examples tested for genuine specificity), (iii) Structural gaps (precise, not vague), (iv) Transversal priority improvements (each tested cross-country; only those that apply to ≥4 of 6 plans are retained as transversal).
- **Cross-country rule.** A country-specific callout may be given only if a measure is genuinely specific to that country across the 6 plans. Universal gaps and universal strengths are stated as transversal. Advocacy priorities that apply to ≥4 of 6 plans are stated once here and not repeated in country fiches.

⚠ Reading note on Denmark and Portugal

The Danish NBRP is deliberately concise and cross-references pre-existing legislation (Building Code BR18, Landsbyggefonden, Sparenergi.dk) rather than re-detailing it. Where the score of a stream or topic appears low for Denmark, this often reflects what the NBRP document itself contains rather than the maturity of Danish policy. Climate resilience (T5.6 = 0) is the sole topic genuinely absent from the Danish plan.
The Portuguese NBRP is a draft-stage document; the plan itself repeatedly uses language such as "Por iniciar", "Por orçamentar", "A determinar". Low Portuguese scores reflect the declared draft-stage nature of the document rather than a country assessment.

1. Headline picture: five transversal messages

The five messages below summarise the patterns that emerge from scoring all 6 plans across 19 topics and 8 dimensions. Each message is anchored in the v3_audited scores. They are the backbone of the transversal analysis developed in Section 2.

Figure 1 — Overall scores by country and stream
(stream averages stacked; global average shown above each bar)

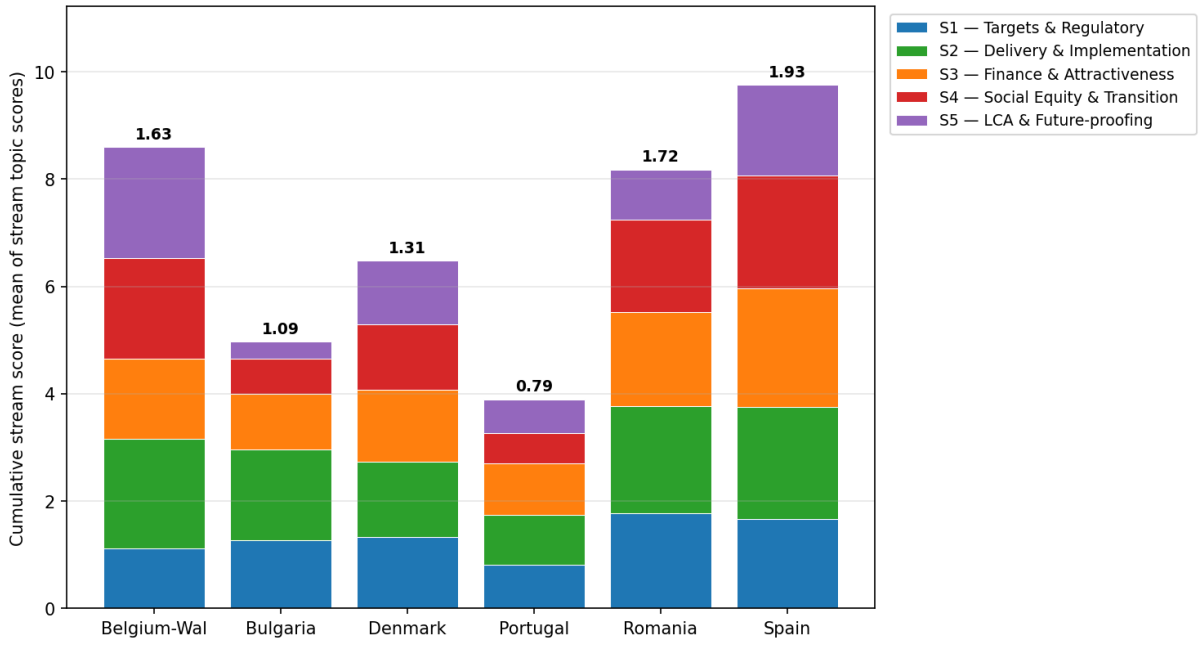


Figure 1 — Overall scores by country and stream (stream averages stacked; global average shown above each bar). Source: NBRP_final_v3_audited.xlsx.

Message 1 — None of the 6 plans is delivery-ready; differences lie in the depth of operationalisation

- Global scores range from 0.79 (Portugal) to 1.93 (Spain), below the 2.0 pilot/operational threshold on average.
- Only Spain (almost) exceeds the 2.0 threshold; Romania (1.72) and Belgium-Wallonia (1.63) approach it; Denmark (1.31), Bulgaria (1.09) and Portugal (0.79) sit materially below.
- The leading plans differ in profile: Spain is strongest on Delivery (S2 = 2.09), Finance (S3 = 2.21) and Social (S4 = 2.09); Romania is strongest on Targets (S1 = 1.77) and Finance (S3 = 1.75); Belgium-Wallonia is strongest on Delivery (S2 = 2.03) and LCA/future-proofing (S5 = 2.06).

Message 2 — The bottleneck is not ambition but implementation capacity

- Stream 1 (Targets & regulatory backbone) averages 1.34 across the 6 countries and Stream 5 (long-term quality) averages 1.14 — both below S2 Delivery (1.69) and S3 Finance (1.47).
- Ambition statements are widespread (endpoints, 2050 decarbonisation, vulnerable-household reduction targets). Operational translation into annual renovation rates, threshold values, unit costs, staffing levels and sequenced timelines is where the plans are thinnest.
- Only Spain and Romania publish fully quantified residential trajectories (T1.1 ≥ 2.5); 4 of 6 plans do not translate endpoints into annual rates and depth splits.

Message 3 — Four transversal blind spots are near-universal

- Glazed-area performance (T1.6): avg 0.46/3 across 6 plans; only Romania scores >1. Absent in BE-Wal and DK.

- TBS/BACS operationalisation (T1.5): avg 1.10; several plans reference smart or technical systems, but none translates them into a fully operational framework covering scope, thresholds, trigger points, minimum functionalities and verification routes..
- Multiple-benefits quantification as a funding-allocation criterion (T3.3): avg 1.08; Spain is the only outlier with MICATool ex-ante.
- Binding rental-market split-incentive instruments (T4.2): avg 1.04; 5 of 6 plans identify the issue but do not commit binding instruments.

Message 4 — Best practices exist but are fragmented across countries

- Spain: most quantified trajectory and widest financing toolbox (PACE-style, on-bill, efficient mortgages, CAE, SIF, HEVA, co-investment, guarantees).
- Denmark: binding LCA framework (BR18 since 2023 — whole-life-cycle GWP methodology, differentiated values, A4+A5 modules, tightening to 2029).
- Romania: most granular first-draft regulatory package (numeric MEPS T16 = 422 / T26 = 340 kWh/m²·y; ZEB thresholds per typology × 5 climate zones).
- Belgium-Wallonia: most developed climate-resilience integration (100% of audits integrate adaptation from 2030) and condominium architecture (10,000 renovated condominiums by 2035, "renovation trains" pilots).
- Bulgaria: typology-differentiated MEPS (9+ use-type categories) and the most structured workforce consortium (BUILD UP Skills Bulgaria 2030).
- No single plan combines more than 2–3 of these — the inspiration material is scattered.

Message 5 — There is a strong case for EU-level coordination

- The patterns above suggest 5 structural areas where EU-level learning would outperform 27 parallel MS attempts: (a) translating trajectories into annual rates, (b) sequencing financing instruments, (c) LCA methodology and GWP-limit convergence, (d) dedicated climate-resilience chapters with risk mapping, and (e) multiple-benefits monetization.
- In each of these areas, one or two countries have already developed an operable approach (Spain, Denmark, BE-Wal, Romania depending on topic) and 3–4 are materially behind.

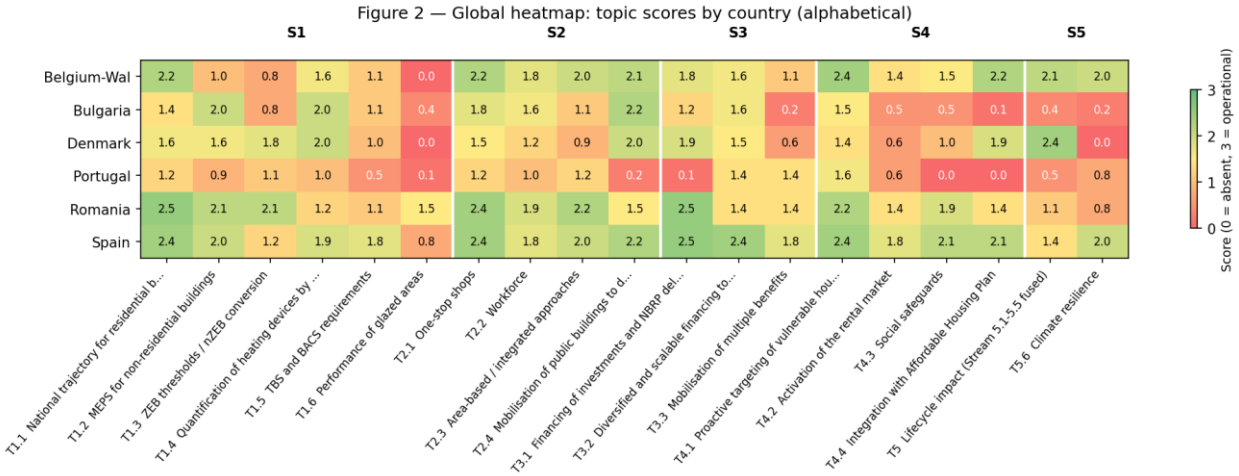


Figure 2 — Global heatmap: topic scores by country. Green ≥ 2.0 = operational/pilot-stage; Yellow 1.0–1.99 = intentional/partial; Red < 1.0 = absent or aspirational. Source: NBRP_final_v3_audited.xlsx.

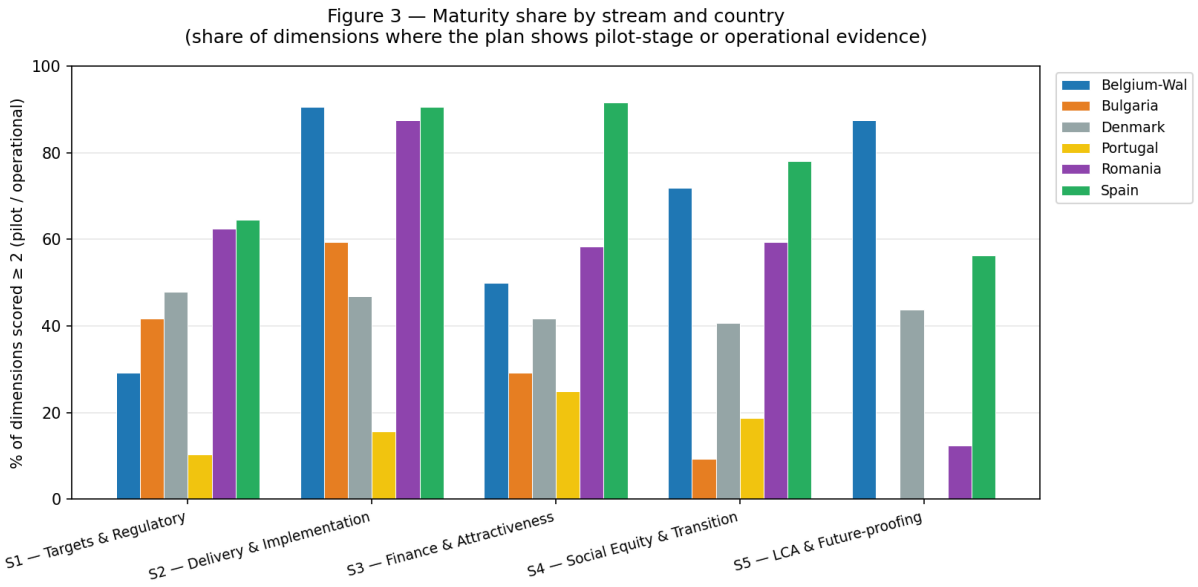


Figure 3 — Maturity share by stream and country (share of dimensions where the plan shows pilot-stage or operational evidence, i.e. scored ≥ 2). Spain passes 80% in S2/S3/S4; BE-Wal passes 85% in S2 and S5; Portugal is structurally below 25% in 4 of 5 streams; Bulgaria at 0% in S5.

2. Themes by stream

2.1 Stream 1 — Targets, standards & regulatory backbone

Stream averages — Belgium-Wal 1.13 · Bulgaria 1.27 · Denmark 1.33 · Portugal 0.81 · Romania 1.77 · Spain 1.67.

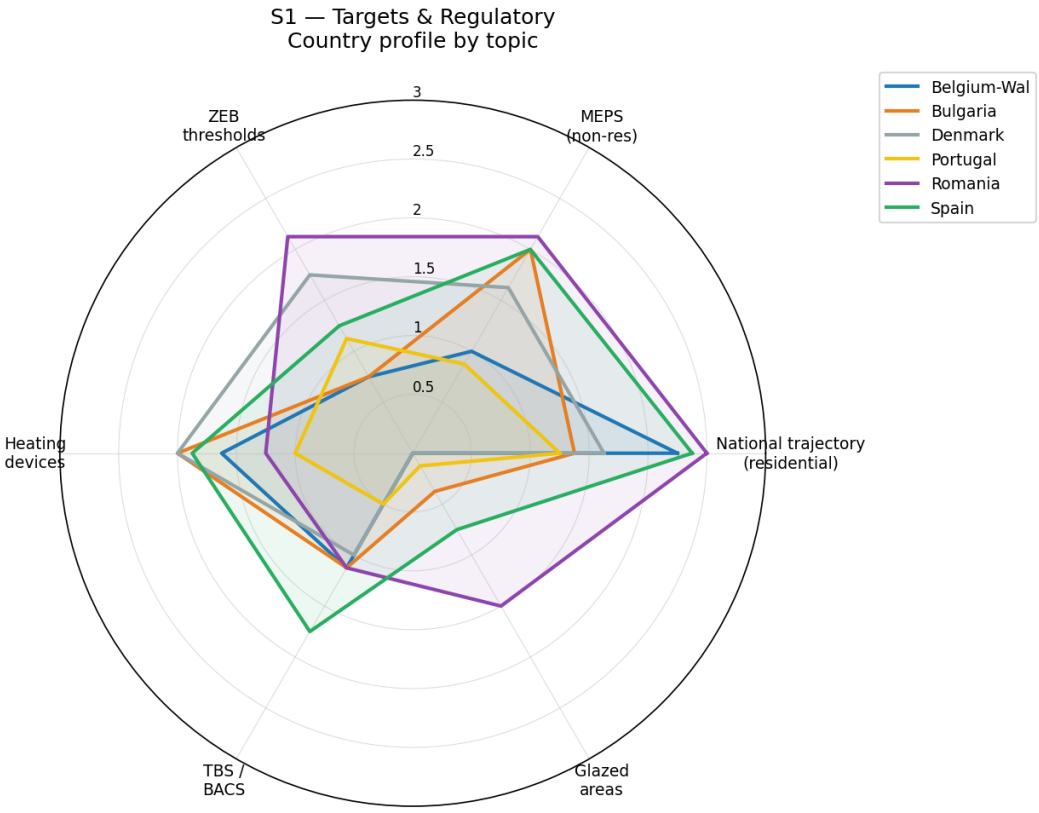


Figure 4a — Stream 1 country profile by topic.

Observation

- Most plans define a long-term endpoint but few translate it into annual renovation rates, floor area and depth assumptions, which weakens the market signal for medium/deep renovation and the associated envelope improvements needed to deliver durable savings. Only Romania (T1.1 = 2.5) and Spain (T1.1 = 2.38) publish a fully operationalised residential trajectory; Belgium-Wal (2.25) anchors in label-class endpoints (2036/2041/2050) but without annual rates; Denmark (1.63), Bulgaria (1.38) and Portugal (1.25) remain at trajectory-outline stage.
- Numeric MEPS thresholds for non-residential exist in 3 of 6 plans: Bulgaria (typology-differentiated, 9+ categories: Administrative 488, Schools 188, Hotels 550, Commercial 813 kWh/m²·y), Romania (T16 = 422, T26 = 340 kWh/m²·y) and Spain (per use category × 4 climate zones). Belgium-Wallonia has a MEPS structure without kWh/m² thresholds (T1.2 = 1.0); Portugal remains conceptual (T1.2 = 0.88).
- ZEB thresholds: Denmark already binding in Building Code BR18 Table 31 (<27 kWh/m²·y residential, <33 non-residential; mandatory 2028 public / 2030 all — T1.3 = 1.75). Spain tentative pending EU harmonised methodology (T1.3 = 1.25). Romania (T1.3 = 2.13) publishes thresholds per typology × 5 climate zones with explicit NZEB-10% conversion method. Belgium-Wallonia (0.75), Bulgaria (0.75) and Portugal (1.13) are unformed.
- Heating-device inventories are strongest in Bulgaria (district heating prevalent in multi-family, quantified) and Denmark (heat-pump rollout quantified) — both at T1.4 = 2.0. Romania (1.25) and Portugal (1.0) acknowledge data gaps explicitly; Belgium-Wal (1.63) quantifies fuel mix but not replacement trajectory.
- Measures supporting market innovation remain limited across all plans. For glazed areas (T1.6), Romania (1.5) is the only outlier with dedicated provisions. For smart and technical systems (T1.5), references are somewhat more common, but mostly remain weakly operationalised; Spain is the only relative outlier with 1.75.

What works

- Bulgaria — most detailed typology-differentiated MEPS thresholds (9+ use-type categories: Administrative 488, Schools 188, Hotels 550, Commercial 813 kWh/m²·y). Specific: no other plan provides this level of use-type differentiation.
- Denmark — binding ZEB thresholds already in the Building Code (BR18 Table 31, <27/<33 kWh/m²·y; mandatory 2028/2030). Specific: the only plan in the 6 with a legally binding ZEB framework.
- Romania — numeric MEPS (T16 = 422, T26 = 340 kWh/m²·y) and ZEB thresholds per typology × 5 climate zones (Table 5.2.3), including for renovated buildings with explicit NZEB-10% conversion method. Specific: most granular first-draft regulatory package among the 6.
- Spain — backcast trajectory with 17.8M dwellings cumulative by 2050; 1.57M equivalent deep renovations 2020–2030 (above NECP's 1.38M). Specific: most quantified long-term trajectory.

Structural gaps

- Translation of endpoints into annual renovation rates and depth splits: absent or partial in 4 of 6 plans (BE-Wal, BG, DK, PT).
- Little to no measures regarding the development and support of market uptake of innovations in renovation, including building envelope solutions and technical systems; where such elements appear, they are rarely connected to a clear delivery or market-development logic.
- Heating-device stock inventories with replacement trajectories incomplete in 3 of 6 (BE-Wal, PT, RO); data gaps explicitly flagged by RO and PT.
- ZEB threshold status ambiguous in 4 of 6 (tentative in ES; aspirational in BE-Wal, BG, PT).

- Where smart-readiness tools are referenced, they are rarely linked to compliance, funding, permitting or prioritisation logic.

Transversal priority improvements

- **PI-1.1** In order to make the ambitions more operational, the trajectory endpoints should be translated into annual renovation rates, floor area and depth assumptions by segment — applies to BE-Wal, BG, DK, PT (4 of 6).
- **PI-1.2** Move ZEB thresholds from tentative or aspirational to binding with an explicit timetable — applies to BE-Wal, BG, PT, ES (4 of 6).
- **PI-1.3** Provide a dedicated plan that acts also as a market-development signal for renovation solutions, including medium/deep building envelope renovation and relevant technical systems, by linking innovation support more clearly to regulatory trajectories, procurement, support schemes and delivery programmes. (all plans).
- **PI-1.4** Complete heating-device inventories (stock by fuel/technology by building segment) and quantified replacement trajectories — applies to BE-Wal, PT, RO (3 of 6 — borderline transversal, but a material gap where it applies).

2.2 Stream 2 — Delivery architecture & implementation capacity

Stream averages — Belgium-Wal 2.03 · Bulgaria 1.69 · Denmark 1.41 · Portugal 0.94 · Romania 2.00 · Spain 2.09.

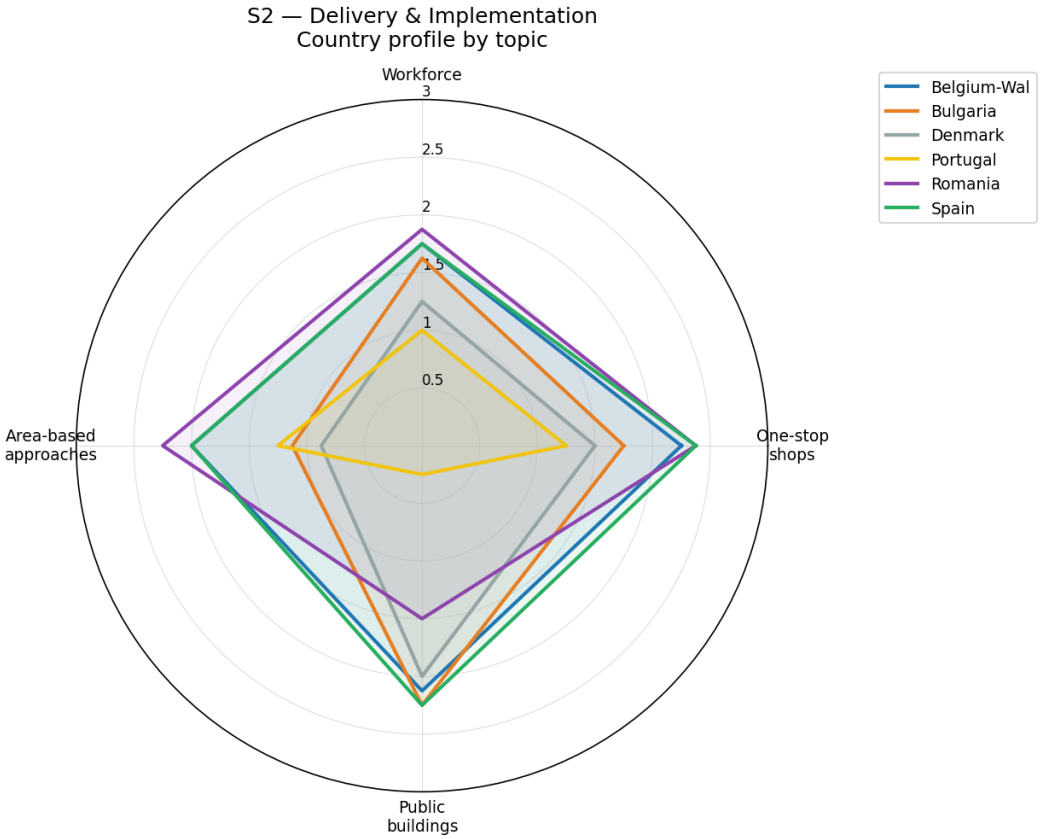


Figure 4b — Stream 2 country profile by topic.

Observation

- Delivery is the relative strength across plans (stream avg 1.69, highest of the 5 streams). Three plans pass the 2.0 operational bar: Spain (2.09), Belgium-Wal (2.03), Romania (2.00).
- OSS architectures are quantified in Spain (≥1 OSS per 80,000 inhabitants + per region + in areas with older stock + in neighbourhood renewal areas + <90 min travel), Romania (42 existing county OSS + Bucharest, legal anchor GEO 92/2024, transparent unit cost €250k, expansion target 100 offices by 2035) and Belgium-Wallonia (3-tier service model; 80k-inhabitant / 90-min territorial coverage target; ~614 OSS indicative by 2030 in ES). Denmark operates digital-first (Sparenergi.dk + Energi- og Bygningsanalysen). Bulgaria has no OSS network referenced in the plan — the structural outlier of the 6 (T2.1 = 1.75 reflects non-OSS delivery measures; the OSS topic itself is absent).
- Workforce gaps are quantified in 5 of 6 plans: Belgium-Wal 64,000 jobs required + 71,000 additional jobs in supply chain; Bulgaria ~52,000 via BUILD UP Skills (198,200 → 249,500 workers, +25%); Portugal 80,000; Romania >160,000 workers to upskill including 79,963 unskilled; Spain ~700,000. None of the 6 plans translates these headcount figures into annual training output targets by profile, region and role. Denmark does not quantify.
- Area-based / neighbourhood approaches are emerging as a shared pattern: Belgium-Wallonia deploys "renovation trains" (industrialised on-site works on similar dwellings in a neighbourhood); Romania publishes district-level annual indicators 2026–2030 (renovated floor area, average depth, share of area in worst-performing segment); Spain has a State Aid within AGE for renovation actions

at neighbourhood or district level (60% MIVAU / 40% CCAA financing split). Denmark, Bulgaria and Portugal are at generic-reference stage.

- Public-building strategy is articulated as a market-shaping lever in 5 of 6 plans: Belgium-Wal (T2.4 = 2.13), Bulgaria (2.25 — comprehensive inventory by 2025, 1.9%/y energy reduction, 3%/y renovation of buildings >250 m²), Denmark (2.0 — 3.9M m² + 3%/year + EED Art.6 agreement, EPC class B target by 2040), Romania (1.5) and Spain (2.25). Portugal (0.25) is a country-specific outlier: no binding annual renovation rate, no market-shaping role articulated.

What works

- Belgium-Wallonia — 3-tier OSS architecture with territorial density target (80k-inhabitant / 90-min coverage) and a condominium renovation pillar (100% EPC by 2030, 10,000 renovated condominiums by 2035, "renovation trains" pilots). Specific: only plan combining 3-tier OSS logic with a formal condominium focus.
- Denmark — Sparenergi.dk mature national digital OSS (segmented digital mail to home-owners, 5-region public meetings by DEA, Energi- og Bygningsanalysen tool free to all municipalities). Specific: only plan with an operational national digital-first OSS model.
- Romania — operational 42-office OSS network (1 per county + Bucharest) with legal backing (GEO 92/2024), transparent unit cost €250k, expansion plan to 100 offices by 2035. Specific: only plan with an operational OSS network that covers the full territory and offers more than information-type of support.
- Spain — OSS territorial-density formula combining ≥1 per 80k inhabitants + per region + older stock + neighbourhood renewal areas + <90 min travel. Specific: widest combined coverage criteria among the 6.
- Bulgaria — BUILD UP Skills Bulgaria 2030 consortium (Enext, CMB, AUER, NAVET, BAIS): quantified 25% employment growth target (198k→250k), 5 priority areas, VET modernisation project, inter-ministerial coordination. Specific: most structured multi-actor workforce consortium.
- Romania — district-level annual indicators 2026–2030 (floor area, depth, worst-performing share). Specific: only plan with quantified district-programme indicators for the first NBRP period.

Structural gaps

- Translation of quantified workforce gap into annual training output by profile / region / role: universal gap (6 of 6). Even Spain (700,000 CNC workforce gap) does not translate into per-year training throughput.
- OSS staffing, budget and service blueprint: incomplete in Portugal, Bulgaria, Denmark (digital focus, limited tailor-made recommendations) even where concept is present.
- Public-building renovation rates and specifications (LCA, TBS): specified in DK and ES, partially in BG/RO/BE-Wal, absent in PT.
- Area-based programmes rarely scaled beyond pilots: only Romania publishes binding district-level annual targets for 2026–2030.

Transversal priority improvements

- **PI-2.1** Provide a clear roadmap for OSS evolution that embeds clear targets and role definitions for relevant actors, by translating OSS concepts into staffed, budgeted and time-bound deployment (unit cost, target volumes, geographical coverage formula, service blueprint) — applies to BE-Wal, BG, DK, PT (4 of 6).

- **PI-2.2** Provide a clear roadmap for workforce readiness to equip the sector players with the relevant signals for developments, by translating quantified workforce gaps into annual training output targets by profile, region and role — applies to all 6 plans.
- **PI-2.3** Structure area-based / neighbourhood programmes with binding district targets (floor area, average depth, share of area in worst-performing segment) applies to BG, DK, PT (3 of 6 — transferring from RO/ES/BE-Wal).
- **PI-2.4** Better frame the public-building strategy as an explicit market-shaping lever, to send signals to sector players, through a set of clear ambitions , binding annual renovation rates and procurement specifications, including for deep renovation, fabric performance, integrated technical systems, controls and performance-based operation — applies to PT (priority); partial reinforcement BG, RO.

2.3 Stream 3 — Finance & political attractiveness

Stream averages — Belgium-Wal 1.50 · Bulgaria 1.04 · Denmark 1.33 · Portugal 0.96 · Romania 1.75 · Spain 2.21.

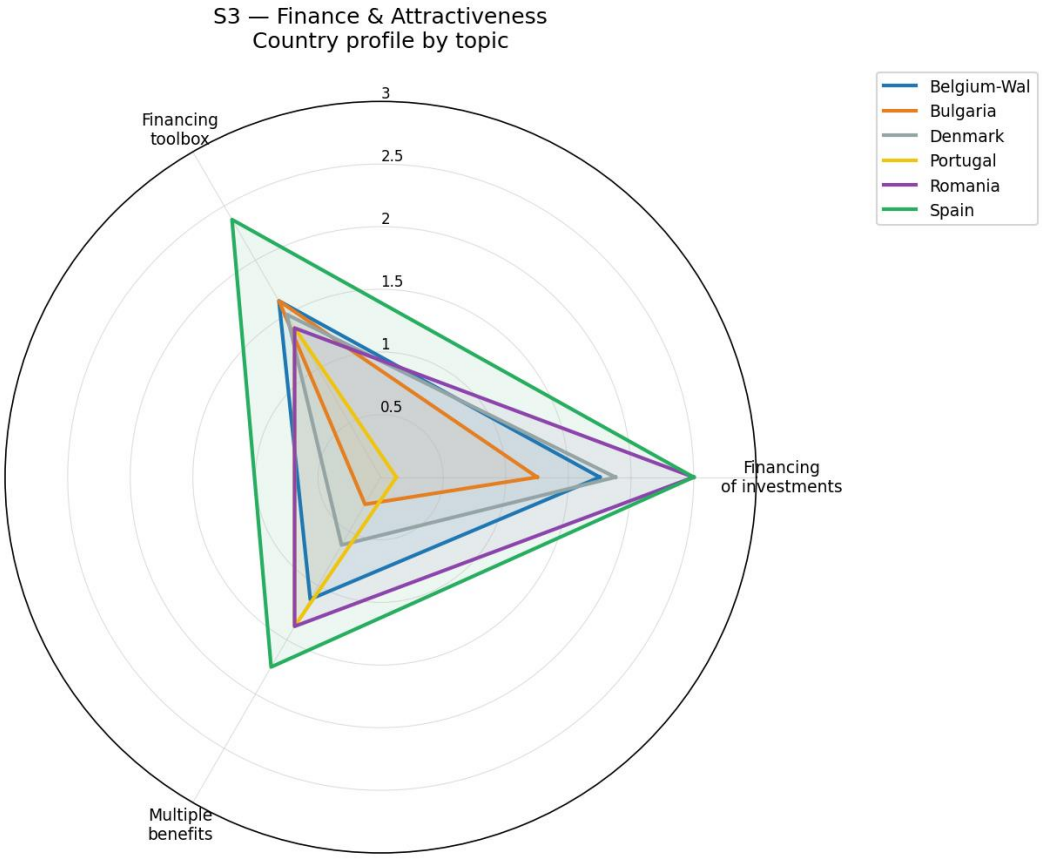


Figure 4c — Stream 3 country profile by topic.

Observation

- S3 shows the largest inequality among the 5 streams: Spain at 2.21 vs Portugal at 0.96 — a 2.3× gap. T3.1 (Financing of investments) ranges from 0.13 in Portugal (no envelope, no split, no period disaggregation) to 2.50 in Spain and Romania.
- Investment envelopes quantified in 4 of 6 plans: Spain (€39.35bn 2026–2030, with €11.31bn public / €28.04bn private split + 7-policy breakdown + ETS2/PSpC integration); Romania (€122–125bn total to 2050, €31bn by 2030, full period breakdown Table 4.2.4 + dedicated "Other Funding" stream for OSS, vulnerable HH, technical assistance); Denmark (€1,889M residential 2026–2030 + €964M private, but private funds not disaggregated); Belgium-Wallonia (€110bn to 2050, €33bn 2025–2030 slice). Bulgaria envelope partial; Portugal has no envelope.
- Financing toolbox: Spain dominates with 7+ instrument families (PACE-style, on-bill, efficient mortgages, CAE certificate market, SIF, HEVA census, co-investment, guarantees). Other plans describe 2–4 instruments without sequencing. Bulgaria has the National Decarbonisation Fund (NDF) as an anchor — pilot deep-renovation scheme blending ~49.9% grants + loans + guarantees. Denmark operates via grants, tax instruments and a revolving fund while green loans are available in the private market through commercial banks.
- Multiple benefits (T3.3): Spain is the outlier at 1.75 with MICATool ex-ante quantification (≈2M beneficiaries, HEP, deaths avoided, GDP effects). Other plans acknowledge co-benefits without monetising them — Bulgaria 0.25 near-absent, Denmark 0.63, Belgium-Wal 1.13 (quantifies ~30% energy cost increase but does not use it as funding-allocation criterion), Romania 1.38 (references

but does not monetise), Portugal 1.38. Indoor environmental quality is a useful illustration: health, comfort, air quality and productivity are increasingly cited, and in Portugal are already linked to indicators and support programmes, but these benefits are still rarely embedded in funding-allocation logic or verification.

What works

- Romania — €122–125bn total envelope with period-by-period breakdown (Table 4.2.4) and a dedicated "Other Funding" stream specifically for OSS, vulnerable households and technical assistance. Specific: only plan with a dedicated delivery-cost funding line.
- Bulgaria — National Decarbonisation Fund (NDF) anchor financing vehicle with pilot deep-renovation scheme blending ~49.9% grants + loans + guarantees. Specific: only plan anchoring structural market shift on a dedicated national deep-renovation fund.
- Spain — widest financing toolbox (PACE-style, on-bill, efficient mortgages, CAE certificate market, SIF, HEVA census, co-investment, guarantees) with ETS2 / Social Climate Fund / PSpC integration. Specific: most diversified toolbox with explicit market-activation instruments.
- Spain — MICATool ex-ante multiple-benefits quantification (≈2M beneficiaries, HEP, deaths avoided, GDP). Specific: the only plan using quantified co-benefits in its design argument.
- Denmark — Landsbyggefonden + Green Housing Agreement €3.6bn referenced in the NBRP as the anchor for non-profit housing renovation (integration of housing financing with renovation pathway). Specific among the 6: mature social-housing anchor fund explicitly linked to NBRP.

Structural gaps

- Public / private split + period disaggregation: incomplete in Belgium-Wal (only 2025–30 slice), Bulgaria, Denmark (private funds not disaggregated), Portugal (no envelope).
- Sequencing the financing toolbox from description to pilot deployment (which instrument, which institution, which timeline): universal gap (5 of 6) — only Spain approaches sequencing.
- Multiple-benefits quantification as a funding-allocation criterion: universal gap except Spain.
- Ex-post tracking of co-benefits: gap in all 6 (even Spain's MICATool is ex-ante only).

Transversal priority improvements

- **PI-3.1** Quantify total investment envelope with public / private split and period disaggregation — applies to BE-Wal (partial), BG, DK, PT (4 of 6). Portugal-specific: quantify a total envelope at all.
- **PI-3.2** Sequence the financing toolbox from description to pilot deployment (which instrument, through which institution, on what timeline) — applies to BE-Wal, BG, DK, PT, RO (5 of 6).
- **PI-3.3** Embed multiple benefits into the full policy cycle (from funding allocation to post-renovation verification) by 1/ using them as an explicit criterion in funding allocation logic and 2/ build a structured ex-post measurement system into programme design, including for concrete dimensions such as health, comfort and indoor environmental quality where relevant – applies to all 6 plans

2.4 Stream 4 — Social robustness

Stream averages — Belgium-Wal 1.88 · Bulgaria 0.66 · Denmark 1.22 · Portugal 0.56 · Romania 1.72 · Spain 2.09.

> ⚠ **Reading note on Denmark (Stream 4)**
>
> Denmark's S4 score (1.22) is partly driven by low visibility of rental-market instruments (T4.2 = 0.63) and social safeguards (T4.3 = 1.0) in the NBRP itself. The country's Landsbyggefonden and Green Housing Agreement €3.6bn are referenced in the NBRP and explain the substantial re-scoring of T4.4 (Affordable Housing Plan integration) upward from the Word assessment (0.13) to the PDF audit (1.88). Low rental/safeguards scores nonetheless reflect genuine absence in the NBRP document.

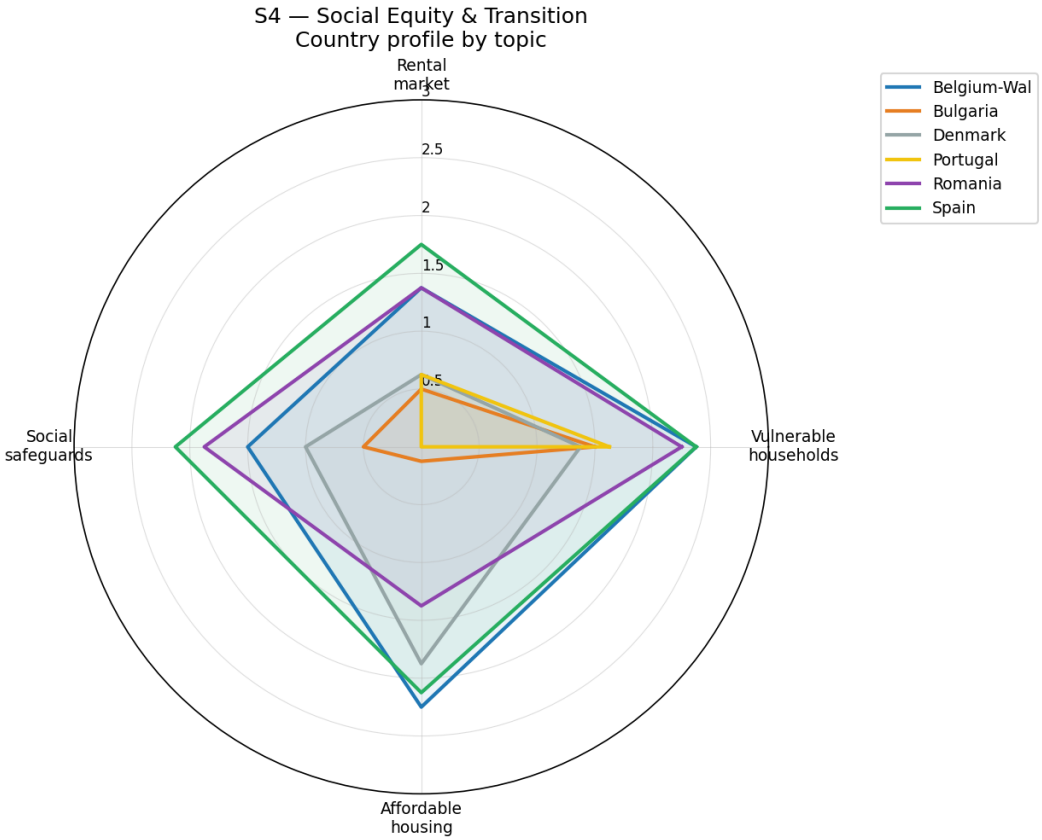


Figure 4d — Stream 4 country profile by topic.

Observation

- Most mature topic in S4: vulnerable-households targeting (T4.1). Five of 6 plans score ≥ 1.5: Belgium-Wal 2.38, Spain 2.38, Romania 2.25 lead; Bulgaria 1.50, Denmark 1.38, Portugal 1.63. All 6 define vulnerability; 3 quantify the energy-poverty population (Bulgaria 1.83M people, Spain ≈2M beneficiaries, Portugal 1.8–3M; Belgium-Wal partial).
- Weakest topic in S4: rental-market activation (T4.2). Max Spain 1.75; Bulgaria 0.5, Denmark 0.63, Portugal 0.63. Split-incentive is recognised by 5 of 6 but binding instruments (green-lease templates, rent caps conditional on renovation, cost-pass-through limits) are absent or embryonic in 5 of 6.
- Social safeguards (T4.3): binding in Spain (2.13) and Romania (1.88); partial Belgium-Wal (1.5); Denmark (1.0); absent in Portugal (0); near-absent in Bulgaria (0.5). Portugal is a country-specific gap: no anti-renoviction protection, no rent-retention mechanism, no affordability conditionality anywhere in the NBRP.

- Affordable Housing Plan integration (T4.4) is polarised: Belgium-Wal 2.25, Spain 2.13, Denmark 1.88 integrate (Denmark via Landsbyggefonden + Green Housing Agreement €3.6bn; BE-Wal via housing-policy coordination); Bulgaria 0.13 and Portugal 0 have no linkage at all.

What works

- Belgium-Wallonia — "trusted referent" model for vulnerable households + "loyer chaud" 100% safeguard (dual cap on rent + energy cost: 100% of rents above the rent limit where energy performance below target). Specific: dual cap approach not found in the other 5 plans.
- Spain — €3bn vulnerable-household envelope, 5 sub-actions, 21.88% reduction target, differentiated subsidy intensity by vulnerability level, and direct contractor payment (anti-Matthew logic). Specific: direct-payment anti-Matthew mechanism not present in other plans; €3bn is the largest dedicated envelope for vulnerable households in the 6 plans.
- Romania — I4/I7 voucher system + Social Climate Fund integration plan + Art.17(19) safeguards anchored in GEO 92/2024 energy-poverty definition. Specific: voucher-based direct targeting with EU SCF integration pathway.
- Bulgaria — Art.38e Energy Act legal definition of energy poverty (November 2023) + Council of Ministers Decree 24/2025 on household status determination + SEDA annual monitoring from 2024 (1.83M people, indicator 28.47%). Specific: most structured legal/monitoring architecture for energy poverty among the 6.
- Denmark — Landsbyggefonden (National Building Fund) + Green Housing Agreement €3.6bn referenced in the NBRP as the anchor for non-profit housing renovation. Specific: a mature social-housing financing vehicle explicitly linked to the NBRP (re-scored upward from Word 0.13 → PDF 1.88).

Structural gaps

- Binding rental-market split-incentive instruments beyond problem recognition: gap in 5 of 6 (Spain partial).
- Binding social safeguards and anti-renoviction: gap in Portugal (0), Bulgaria (0.5), Denmark (1.0).
- Affordable Housing Plan integration: gap in Bulgaria (0.13) and Portugal (0); concerns coordination governance and shared instruments (vacancy mobilisation, public tendering priority, etc.).
- Energy-poverty ex-post outcome tracking (beyond count of beneficiaries): gap in all 6 plans.

Transversal priority improvements

- **PI-4.1** Introduce binding rental-market split-incentive instruments (green-lease templates, cost-pass-through caps, renovation-conditional rent mechanisms) — applies to BE-Wal, BG, DK, PT, RO (5 of 6).
- **PI-4.2** Introduce binding social safeguards and anti-renoviction protections — applies to BG, DK, PT (3 of 6 — Portugal priority as score = 0; Bulgaria priority as score = 0.5; Denmark partial).
- **PI-4.3** Articulate linkage between the NBRP and the Affordable Housing Plan (governance + shared instruments — vacancy mobilisation, tendering priority, etc.) — applies to BG, PT (priority); DK should state the articulation explicitly.
- **PI-4.4** Introduce ex-post outcome tracking of energy-poverty reduction (beyond population count) — applies to all 6 plans.

2.5 Stream 5 — Long-term quality & future-proofing

Stream averages — Belgium-Wal 2.06 · Bulgaria 0.31 · Denmark 1.19 · Portugal 0.63 · Romania 0.94 · Spain 1.69.

> ⚠ **Reading note on Denmark (Stream 5)**
>
> Denmark has the strongest operational LCA framework of the 6 plans (T5 = 2.38; BR18 in force since 2023) but scores 0 on climate resilience (T5.6): the topic is genuinely absent from the NBRP — no risk mapping, no overheating/flooding criteria in renovation packages, no adaptation component. The low S5 average (1.19) therefore masks a split profile rather than an overall weakness.

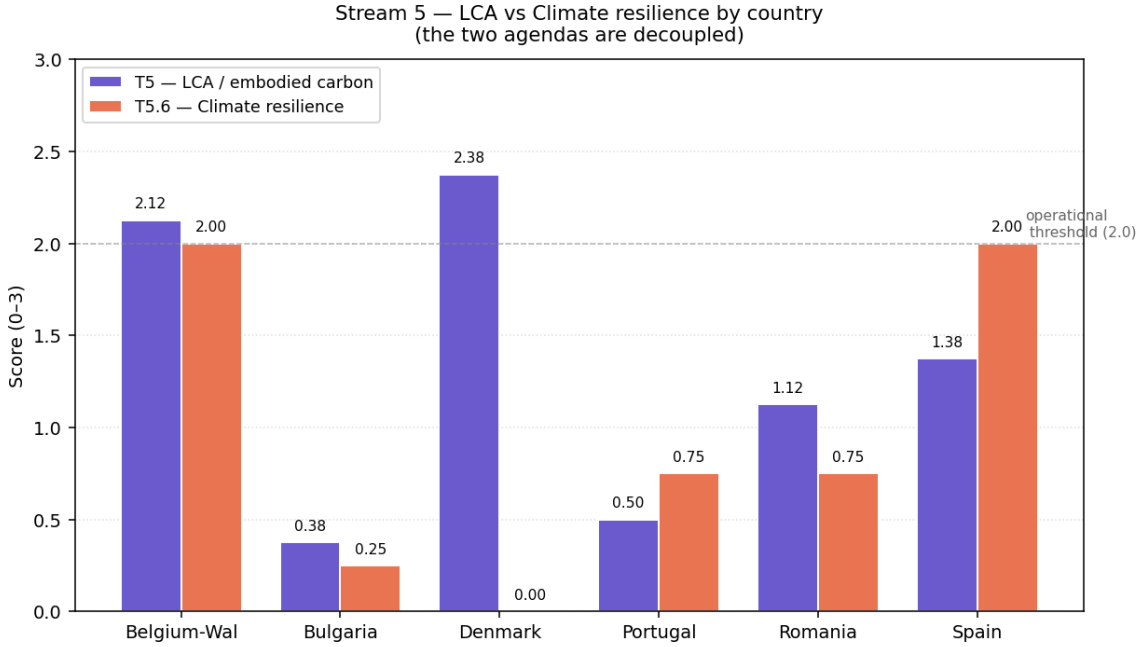


Figure 4e — Stream 5: LCA vs Climate resilience by country. The two agendas are decoupled: Denmark leads LCA and scores 0 on resilience; Belgium-Wal and Spain are the only plans strong on both.

Observation

- S5 hosts two separate agendas that do not correlate. Understanding the stream requires reading T5 (LCA) and T5.6 (resilience) separately.
- LCA / embodied carbon (T5): Denmark 2.38 (BR18 operational since 2023 — binding WLC GWP methodology, differentiated values, A4+A5 modules, tightening to 2029); Belgium-Wallonia 2.13 (TOTEM tool operational + Measure 24/Action 5 roadmap: regional observatory 2029, first report 2030); Spain 1.38 (EPBD Art.7 transposition route via Measure 6.3.x + PERTE industrialisation + circularity 6.2.x; GWP limit values pending National Roadmap); Romania 1.13 (Ch. 3.18 comprehensive on roadmap logic, but design-stage on metrics — no GWP limit values, data gaps explicit); Portugal 0.50 and Bulgaria 0.38 near-absent (EN 15804 alignment referenced but no timetable).
- Climate resilience (T5.6): Belgium-Wal 2.0 (100% of audits integrate adaptation from 2030 + PEB tool integration), Spain 2.0 (dedicated Section 8.1 + National Adaptation Plan integration + climate-shelter network); Denmark 0 — absent from the NBRP; Bulgaria 0.25, Romania 0.75 (handled piecemeal: overheating in envelope + seismic in PNRR C5 without coherent resilience track), Portugal 0.75 (nature-based solutions + urban heat recognised, but no dedicated chapter).
- The two agendas are not correlated: Denmark leads LCA and is last on resilience. Belgium-Wal and Spain are the only plans strong on both.

What works

- Denmark — BR18 binding LCA framework since 2023: whole-life-cycle GWP methodology, differentiated values, A4+A5 modules, tightening schedule to 2029. Specific: the only operational binding LCA framework in the 6 plans.
- Belgium-Wallonia — TOTEM LCA tool operational + regional GWP roadmap (Measure 24/Action 5): observatory in 2029, first report in 2030. Specific: only plan with a fully scheduled LCA roadmap governance structure.
- Belgium-Wallonia — climate-resilience integration in 100% of audits from 2030 + adaptation component in PEB tool. Specific: only plan with building-audit-level adaptation integration.
- Spain — dedicated Section 8.1 on climate resilience + National Adaptation Plan linkage + climate-shelter network. Specific: most structured dedicated resilience chapter in the 6 plans.

Structural gaps

- LCA metrics (GWP limit values, methodology finalisation, data infrastructure): gap in 5 of 6 — only Denmark has operational binding values. Belgium-Wal has roadmap timetable but metrics pending; Spain/Romania at design stage; Portugal/Bulgaria near-absent.
- Climate-resilience dedicated chapter with risk mapping: gap in 4 of 6 — Denmark absent (T5.6 = 0); Bulgaria near-absent (0.25); Romania piecemeal (0.75); Portugal partial (0.75).
- Circularity / embodied-carbon-in-renovation specifications: gap in 4 of 6 — only Denmark and Belgium-Wal treat circularity operationally.
- Integration of LCA into public-building procurement: partial in Spain (PERTE industrialisation) and Romania; gap in BG, PT, DK, BE-Wal beyond the general LCA framework.

Transversal priority improvements

- **PI-5.1** Define GWP limit values and publish an LCA roadmap with dated, binding milestones to send a market signal that allows sector players to position ahead of regulatory thresholds and support early movers in gaining structural advantage in the emerging EU low-embodied-carbon market. (all plans)
- **PI-5.2** Introduce a dedicated climate-resilience chapter with risk mapping (heatwaves, floods, extreme weather) + integration of resilience criteria into renovation packages — applies to DK (priority — score = 0), BG, PT, RO (4 of 6).

3. Quantitative cross-country snapshot

Quantification maturity in the NBRPs varies widely and is only weakly correlated with the overall scoring. Some lower-scored plans have strong quantification on their strengths (e.g. Bulgaria's workforce roadmap, Portugal's energy-poverty population); some higher-scored plans have quanti gaps on their weaknesses (e.g. Belgium-Wallonia's public/private investment split). The snapshot below gives the headline figures each NBRP makes available.

Figure 7 — Quantitative cross-country snapshot (selected NBRP indicators)

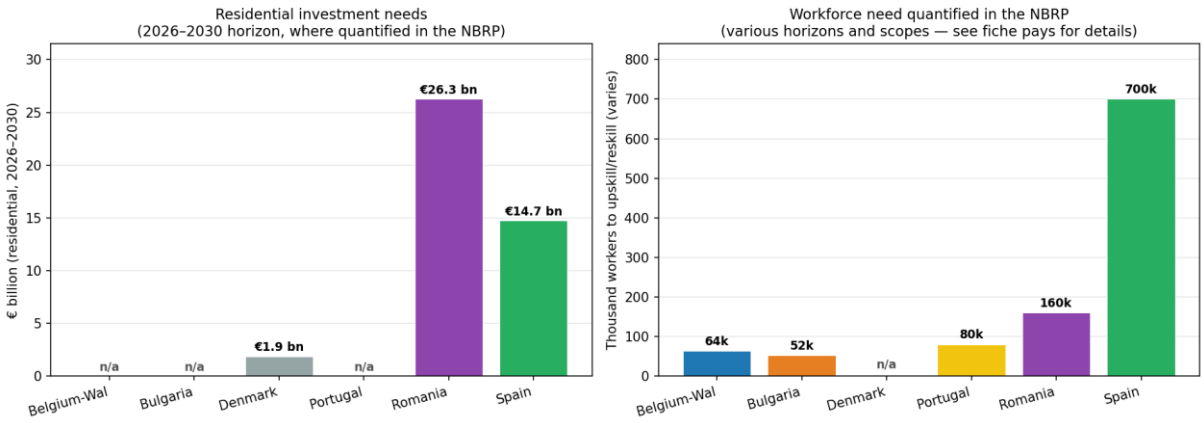


Figure 7 — Quantitative cross-country snapshot (selected NBRP indicators). Left: residential investment needs 2026–2030 where quantified. Right: workforce upskilling/reskilling need quantified in the NBRP (various horizons and scopes — see country fiches in Document 1 for details).

Snapshot table

Figures below are as published in each NBRP. "n/a" indicates the NBRP does not quantify this indicator; where multiple horizons are published, the most recent 5–10 year window is shown for comparability.

Indicator	BE-Wal	BG	DK	PT	RO	ES
Residential renovation rate (current)	3.0%/yr (2024–2030)	Light 0.01%, Medium 0.38% (2022)	n/a	4.1% (2023)	2.75% (18.06M m²/yr)	445,500 dwellings/yr
Non-res renovation rate (current)	3.78%/yr (2024–2030)	n/a	n/a	2.7% (2023)	3.76% (2.33M m²/yr)	0.69% (4.13M m²/yr)
Residential investment needs 2026–2030	part of €33bn total (2025–2030)	partial	€1.89bn	n/a	€26.25bn	€14.74bn
Total investment envelope to 2050	€110bn	partial	€9.45bn (residential)	n/a	€122–125bn	not fully combined (€39.35bn 2026–30)
Public / private split	partial (€38–64bn private est.)	partial	€1,388M pub €966M priv (all bldgs 2026–30)	n/a	part of €17.75bn private	€11.31bn pub €28.04bn priv (2026–30)
OSS network target	network planned	none referenced	Sparenergi.dk digital OSS	≥1 per 80k inhab	42 → 100 OSS by 2035	~614 OSS by 2030

	(no count)			(no staffing)	(€250k/OSS)	(derived)
Workforce gap (upskill/reskill)	64,000 +71,000 supply chain	198k→249.5k (+25%) via BUSBG2030	n/a	80,000	160,000 (incl. 79,963 unskilled)	700,000 (CNC)
Energy-poverty population quantified	partial	1.83M (SEDA 2024, 28.47%)	n/a	1.8–3M by 2050	yes (SCF integr.)	≈2M beneficiaries

What the quanti picture tells us

- Wide disparity in quantification maturity. Spain and Romania quantify both sides (targets + means); Belgium-Wallonia quantifies the rates but not the public/private split of the €110bn envelope; Denmark quantifies finance at aggregate level but not renovation rates or depth mix; Bulgaria quantifies depth and energy poverty but leaves the envelope partial; Portugal remains explicitly "to be determined" on finance.
- The quanti picture can diverge from the overall score. Bulgaria (global score 1.09) has among the most structured workforce quantification (BUILD UP Skills 198k→249.5k, +25%) despite a low global score; Belgium-Wallonia (global 1.63) has strong rate quantification (3.00%/yr residential → 5.12% post-2031) but finance split gaps.
- OSS cost transparency is concentrated: only Romania publishes a unit cost (€250k per new OSS, €250k annual operation), only Spain publishes targeted OSS volumes by criterion (~614 OSS derivable by 2030); the other 4 plans are qualitative.
- Workforce quantification exists in 5 of 6 but none of the 6 plans translates a headcount gap into annual training output targets by profile / region / role (see PI-2.2).
- Energy-poverty population is quantified in 4 of 6 plans (BG, PT, RO, ES) but none of the 6 plans set ex-post outcome tracking beyond beneficiary count (see PI-4.4).

NBRP Assessment

Document 1 — Country-by-country analysis

Belgium-Wallonia · Bulgaria · Denmark · Portugal · Romania · Spain

All scores are derived from the NBRP PDFs (ground truth), post-audit — NBRP_final_v3_audited.xlsx.
Scale: 0 = absent · 1 = intentional / implicit · 2 = preparation / pilot · 3 = operational / scaled.

How to read these country fiches

Each fiche follows the same 3-page structure to enable cross-country comparison:

- Page 1 — Snapshot: overall positioning, stream radar, topic × dimension heatmap, quantitative market snapshot.
- Page 2 — Plan narrative by stream (S1 to S5), with country-specific strengths and gaps (those shared with other countries are covered in Document 2 — Transversal Analysis).
- Page 3 — Flagship features (distinctive measures with short description) and likely advocacy priorities for the final version of the NBRP.

Critical reading note. The analysis focuses on what is contained in each NBRP PDF. Where a country has mature policies outside the NBRP that are not re-detailed in the plan (typical case: Denmark), this is explicitly flagged in a disclaimer.

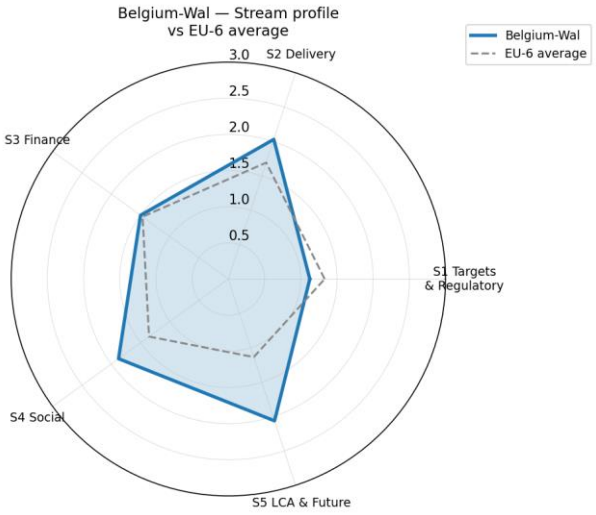
Cross-country observations and transversal priority improvements are developed in Document 2. To avoid repetition, they are not restated here unless particularly critical for a specific country.

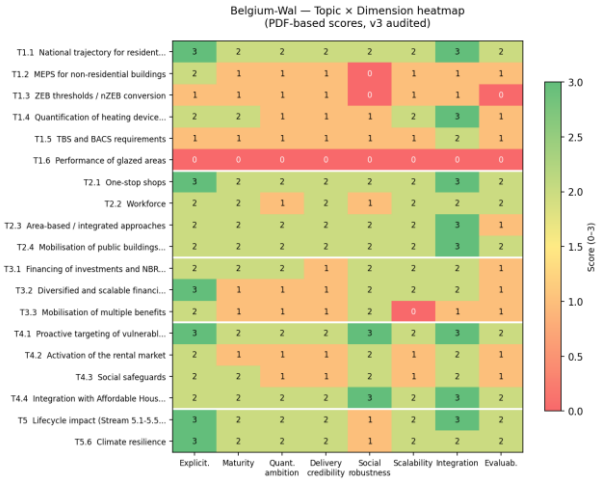
Belgium-Wal

Global score: 1.63 / 3 · Ranking: 3rd of 6

The Walloon NBRP is structured around the strongest delivery architecture among the 6 plans analysed, with a particularly mature design on social safeguards, one-stop shops, condominium renovation and area-based approaches. Regulatory and financing dimensions are less granular: several instruments are still at design or pilot stage, and quantified investment envelopes are not yet fully consolidated.

Stream profile vs EU-6 average





Quantitative market snapshot

Indicator	Annual / short-term figure	Decade / long-term figure
Residential renovation rate	3.00%/yr (2024-2030); 50,984 buildings/year	5.12%/yr (2031-2040); 5.18%/yr (2041-2050)
Non-residential renovation rate	3.78%/yr (2024-2030); 10,869 bldg/yr; 2.41M m²/yr	7.35%/yr (2031-2040); 21,516 bldg/yr; 4.69M m²/yr
Heating systems and buildings performance	44% of residential PEB units F or G	Full fossil boiler phase-out targeted 2040
Residential investment need	Estimation underway (Annexe 1 methodology)	€110 bn to 2050 (central estimate) €38-64 bn to 2050 for the non-residential stock, within which €19 to 31 bn are estimated for public buildings
Workforce need	n/a	64,000 additional jobs required (Walloon level) by 2050 71,000 additional BE-wide in supply chain by 2050
OSS network target	≥1 per 80,000 inhabitants, <90 min (2026)	Full 3-tier service by 2040

Plan narrative by stream

S1 — Targets, standards & regulatory backbone

The trajectory is strong on residential (label-class endpoints 2036/2041/2050, Measure 8), but the plan does not contain a dedicated measure on market activation for innovation practices, including smart or technical building systems (such as BACS/TBS); these are only touched indirectly, notably through Measure 9 on rebound effect. MEPS for non-residential remain design-stage (no kWh/m² thresholds yet). ZEB methodology is referenced but not operationalised.

S2 — Delivery architecture & implementation capacity

Delivery is the strongest stream (avg 2.03). One-stop shop architecture is one of the most developed across the 6 plans, with an all-inclusive service model (information → personalised support → delegated project management) and explicit territorial coverage targets (≥1 OSS per 80,000 inhabitants, <90 min travel time by 2026). Area-based approaches are operationalised through local heat and cooling plans for all >45,000 inhabitants municipalities (Measure 10), condominium Measure 14 (10,000 condominiums renovated by 2035) and Measure 16 ("renovation trains").

S3 — Finance & political attractiveness

Financing shows a credible envelope (€175bn to 2050 including residential and non-residential, €33bn 2025-2030) but lacks disaggregation of public vs private leverage. The innovative toolbox (zero-interest loan + social safety net combination) is distinctive, with one-third of households facing funding gap quantified.

S4 — Social robustness

Social robustness is the second-strongest stream (avg 1.88). The "trusted referent" model, the 100% "loyer chaud" safeguard (rent + energy cost cap) and the 25,000 public housing unit target to 2030 make this one of the most operational social frameworks.

S5 — Long-term quality & future-proofing

Climate resilience is presented in the Walloon plan through the integration of adaptation component in 100% of audits from 2030, making it a strong ambition comparatively to the other plans. TOTEM tool operational, and the Measure 24/Action 5 regional GWP roadmap is credible, but LCA for renovation remains design-stage (operational from 2028 for new-builds only).

Key country-specific strengths

- 3-tier OSS architecture with 80k-inhabitant / 90-min territorial coverage target.
- Operational "trusted referent" model for vulnerable households + "loyer chaud" 100% safeguard (rent + energy cost cap).
- Condominium renovation as a structured pillar: 100% EPC by 2030, 10,000 renovated condominiums by 2035, "renovation trains" pilots.
- Climate resilience embedded in audits from 2030 + PEB integration — the most advanced resilience integration in the 6 plans.
- TOTEM LCA tool operational + regional GWP roadmap via Measure 24/Action 5 (observatory 2029, first report 2030).

Key country-specific weaknesses

- Glazed area performance entirely absent (T1.6 score 0/3).
- No dedicated TBS/BACS measure — only an indirect mention in Measure 9 (rebound effects).
- MEPS for non-residential buildings remains without kWh/m² thresholds (T1.2: 1/3).
- Financing envelope (€175bn to 2050) not disaggregated by public/private contribution; one-third of households facing funding gap quantified but not fully resolved.
- Multiple benefits insufficiently leveraged: quantification of the ~30% energy cost increase present, but not used as a political argument or funding criterion.

Flagship features

- **All-inclusive one-stop shop model (Measure 17)** – This approach aims to offer broad and tailored support services to all households, with specific attentions to vulnerable ones, through layered service portfolio (3 levels, from information to project management), with specific territorial coverage (1 OSS per 80,000 inhabitants, <90 min access by 2026, Type 2 by 2028, Type 3 by 2040).
- **Collective renovation of condominiums (Measure 14) —** Collective EPC + multi-year building-level roadmap + accompaniment for co-ownership structures. Targets: 100% of condominiums with EPC by 2030; 10,000 renovated by 2035; 100 certified trustees by 2028.
- **"Renovation trains" (Measure 16) —** Simultaneous on-site works on similar dwellings in a neighbourhood, enabling industrialised and replicable renovation. Targets: 2,000 units renovated collectively 2026-2030; ≥10 renovation trains deployed by 2029; 25% of municipalities with a local pooled renovation strategy by 2030.
- **"Loyer chaud" safeguard (Measure 22 / social dimension) —** A dual cap on rent + energy cost (100% of rents above the rent limit where energy performance is below threshold are non-payable). Directly addresses rent inflation post-renovation.
- **Climate resilience integrated in audits (Measure 23) —** 100% of audits to include an adaptation component from 2030; PEB tool to integrate climate resilience criteria by 2030. Unique in the 6 plans analysed.

Likely advocacy priorities for the final version

- Define kWh/m² thresholds for MEPS on non-residential buildings, aligned with the 16% / 26% milestones (currently absent from the plan).
- Introduce a dedicated measure around market activation/development for the innovative practices (such as insulation materials, smart devices, or glazing solutions) to offer clear signal to sector players on the market opportunities — today only indirectly mentioned in Measure 9 on rebound effects.
- Disaggregate the €175bn investment envelope by public vs private contribution and by 5-year period (currently only the 2025-2030 €33bn slice is explicit).
- Use multiple benefits (energy cost savings, health, jobs) as an explicit funding allocation criterion, leveraging the quantified ~30% energy cost increase evidence.

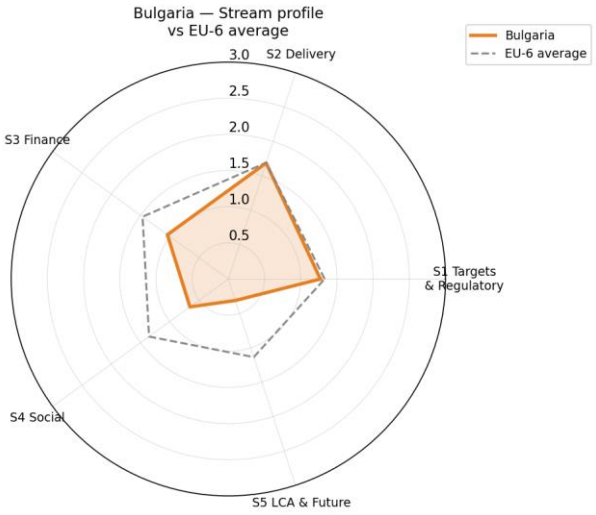
Note. Transversal priority improvements that apply to this country (e.g. operationalise trajectory into annual rates; move ZEB thresholds from tentative to binding; introduce ex-post tracking of multiple benefits) are developed in Document 2 — Transversal Analysis and are not restated here unless particularly critical.

Bulgaria

Global score: 1.09 / 3 · Ranking: 5th of 6

The Bulgarian NBRP combines a strong diagnostic foundation (detailed MEPS thresholds by typology, extensive energy-poverty infrastructure, comprehensive BUILD UP Skills roadmap) with a weak delivery infrastructure on social and financial instruments. Several key topics are either at conceptual/pilot stage only (one-stop shops) or near-absent (rental market activation) or near-zero (Affordable Housing Plan integration, climate resilience).

Stream profile vs EU-6 average



Quantitative market snapshot

Indicator	Annual / short-term figure	Decade / long-term figure
Residential renovation rate	Light 0.01% / Medium 0.38% / Deep 0.08%; Total ~0.47%/yr (1.43 M m²) as of now	n/s
Non-residential renovation rate	n/a — no national reporting system	n/s
Stock structure	>64% multi-family buildings built 1960-1999 Residential stock: 29,562 multi-family (79.98M m², 35.99% of stock)	n/s
Residential investment need	€2-35 bn in 2022 (indicative range in the draft)	n/s
Non-res investment need	n/s	~€48 bn to 2050 total
Public resource deployed	BGN 6.33 bn (NPEEMZHS 2bn + NRRP 1.14bn + NEPT 2.5bn planned) for ~6,790 large social units (~8.3% of 82k potential)	n/s
Workforce gap	198,200 (2022) → ~249,600 by 2030 (+25%, +52,368 workers) BUS4RoBOOST roadmap in place	n/s
OSS network	CCA/OSS concept defined (≥1/80 000 inhabitants criterion, NFC legal mandate, pilot structures via SHEERenov+); no operational national network — pilot mode only	n/s

Plan narrative by stream

S1 — Targets, standards & regulatory backbone

Bulgaria publishes the most detailed MEPS kWh/m² thresholds by building use in the 6 plans (e.g. 488 kWh/m² Administrative, 188 Schools, 550 Health, 813 Commercial). ZEB thresholds per typology are also explicit, although indicative. Heating device transition is strong (phase-out 2040 boilers, 2050 RES district heating). On smart and technical systems, the plan recognizes the value of BACS/BMS and points to future SRI integration, but does not yet define explicit TBS/BACS requirements, thresholds or enforcement mechanisms.

S2 — Delivery architecture & implementation capacity

Workforce is the stream's strong point, with the BUILD UP Skills Bulgaria 2030 roadmap quantifying the gap (198,200 → 249,500 workers, +25%, 52,368 upskilling) and identifying 5 priority areas. Public buildings strategy is solid (1.9% / year energy reduction, 3%/year renovation for buildings >250 m²). 28 Regional Information Centres for renovation are set to be replaced or complemented with a network of accredited private or public-private Integrated Services Centers, after successful pilot projects in 6 cities, with one center per >80,000 inhabitants.

S3 — Finance & political attractiveness

The National Decarbonisation Fund (NDF) is a cornerstone financing innovation, with pilot deep-renovation schemes combining ~49.9% grants with loans, guarantees and blending. However, multiple benefits are not operationalised (T3.3 = 0.25): the plan does not quantify health/social/economic co-benefits.

S4 — Social robustness

The plan states Bulgaria as one of the most energy-poor country in the EU. As an answer to this, vulnerable households targeting is meaningfully developed (legal definition of energy poverty, 1.83M people in energy poverty quantified as per annual monitoring of Bulgarian authorities), but rental market activation, social safeguards, and Affordable Housing Plan integration are near-zero. Rural depopulation (~41% vacancy rate in rural areas) creates a specific challenge where "inactive owners" matter more than classic rental issues.

S5 — Long-term quality & future-proofing

Both LCA/embodied carbon and climate resilience are largely absent (T5 = 0.38, T5.6 = 0.25). The plan references EN 15804/15897 methodology alignment but provides no 2027 commitment, no roadmap timetable, no risk mapping.

Key country-specific strengths

- Most detailed kWh/m² MEPS thresholds by use-type across the 6 plans (Administrative 488, Schools 188, Hotels 550, Commercial 813, etc.).
- BUILD UP Skills Bulgaria 2030 consortium roadmap: quantified workforce gap (198k→250k, +25%) with 5 priority areas and VET modernisation project.
- Legal and monitoring infrastructure on energy poverty: Art.38e providing the legal definition, 1.83M people quantified and annually monitored by SEDA from 2024 (28.47% of households being energy-poor, as per Bulgarian indicator).
- National Decarbonisation Fund (NDF) as an anchor financing vehicle, with deep-renovation pilots blending ~49.9% grants + loans + guarantees.
- Detailed public-building strategy: comprehensive inventory by 2025 (2-year updates), 1.9%/y energy reduction, 3%/y renovation of buildings >250 m².

Key country-specific weaknesses

- Multiple benefits near-absent (T3.3 = 0.25): co-benefits are not quantified, not monetised, not used as funding allocation criterion.
- Rental market and social safeguards near-absent (T4.2 = 0.5; T4.3 = 0.5): no split-incentive solutions, no anti-renoviction protections, no binding affordability safeguards.
- Missed opportunity in embedding affordable housing challenges into the plan (T4.4 = 0.125): no coordination with housing policy, no use of vacant dwellings as lever.

- LCA/embodied carbon and climate resilience barely addressed (T5 = 0.38, T5.6 = 0.25): EN 15804 alignment referenced but no 2027 commitment or timetable.
- No operational OSS network: CCA/OSS structures are extensively planned (coverage criterion ≥1/80,000 inhabitants, NFC legal mandate, EU-funded action 2026–2027) but exist only in pilot mode (SHEERenov+, Integrity Centres) without a national budget or confirmed staffing. The concept and legal framework are in place; the delivery infrastructure is not.

Flagship features

- **BUILD UP Skills Bulgaria 2030 roadmap —** Multi-actor project which quantified 25% employment growth target, 52,368 workers to upskill, 5 priority areas, VET modernisation project. Includes retirement trends and a structured pipeline.
- **National Decarbonisation Fund (NDF) —** Anchor financing vehicle designed for structural market shift. Pilot deep-renovation scheme with ~49.9% grant + loans + guarantees + blending. Differentiated rules for interventions >50% vs ≤50%.
- **Legal energy-poverty architecture (Art.38e Energy Act) —** November 2023 legal definition + Council of Ministers Decree 24/2025 on household status determination + SEDA mandated annual monitoring (deadline 31 March each year) + 76% structural vulnerability recognition for single-family dwellings.
- **Typology-differentiated MEPS thresholds —** The most detailed kWh/m² breakdown among the 6 plans: thresholds by use-type (9+ categories), consistent with 16% and 26% milestones, integrated with SEDA compliance framework and digital labelling.

Likely advocacy priorities for the final version

- Better embed the Affordable Housing Plan challenges into the plan (T4.4 = 0.125) to leverage ~39% vacancy rate + fragmented ownership, and target inactive owners and co-ownership structures.
- Develop binding affordability safeguards and anti-renoviction protections (currently absent): rental market and safeguards score 0.5 each.
- Operationalise multiple benefits: quantify health, social and economic co-benefits and use them as a funding allocation criterion.
- Develop a national climate resilience strategy linked to the NBRP (risk mapping for heatwaves, floods, extreme weather; integration of resilience into renovation packages).

Note. Transversal priority improvements that apply to this country (e.g. operationalise trajectory into annual rates; move ZEB thresholds from tentative to binding; introduce ex-post tracking of multiple benefits) are developed in Document 2 — Transversal Analysis and are not restated here unless particularly critical.

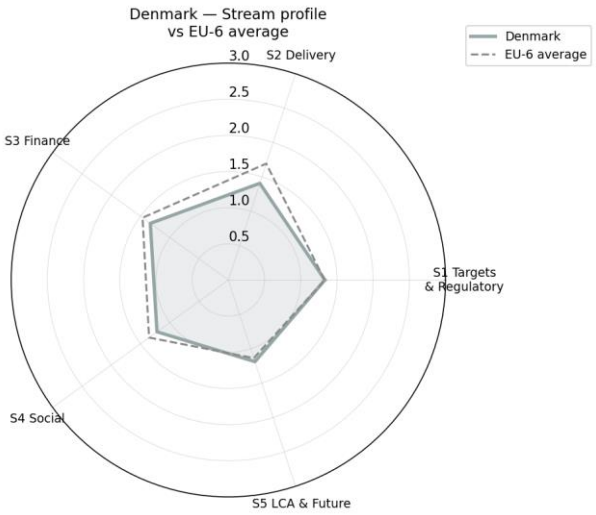
Denmark

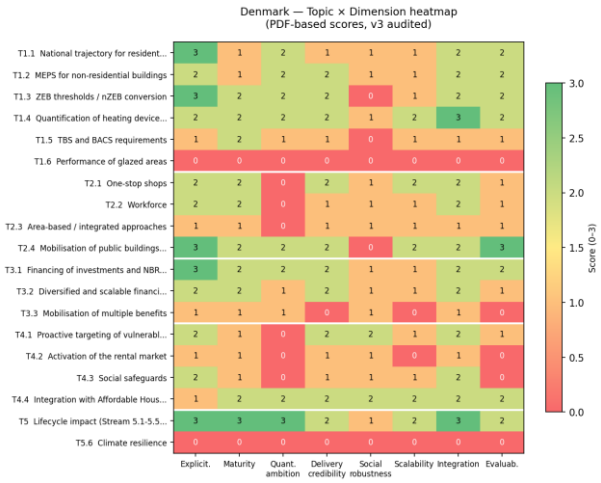
Global score: 1.31 / 3 · Ranking: 4th of 6

The Danish NBRP is a deliberately concise document that relies extensively on cross-references to pre-existing Danish legislation rather than re-detailing operational mechanisms. Its 1.31 global score reflects what the NBRP document itself contains, not the full maturity of Danish building policy, which is among the most advanced in the EU on several dimensions.

> ⚠ ***Reading note.*** *The Danish NBRP is deliberately concise and relies extensively on cross-references to existing Danish legislation (Building Code BR18, Erhvervspuljen, Sparenergi.dk, Landsbyggefonden, Green Housing Agreement) rather than re-detailing operational mechanisms. The global score of 1.31 reflects what the NBRP PDF itself contains. Denmark's broader building policy architecture is among the most advanced in the EU — notably on binding LCA (world-class), digital OSS, and public building renovation — and the v3 audit has corrected 7 dimension-scores upward to reflect this. Where the NBRP is genuinely silent (climate resilience, rental market instruments, Affordable Housing Plan integration), the gap is real; where it cross-references mature frameworks, the audit has adjusted accordingly.*

Stream profile vs EU-6 average





Quantitative market snapshot

Indicator	Annual / short-term figure	Decade / long-term figure
Residential renovation rate	n/s in NBRP PDF	n/s
Non-residential renovation rate	n/s in NBRP PDF	n/s
Heating systems	n/s in NBRP PDF	n/s
Residential investment need	€1.889 bn (2026-2030); WPB-43 €1.330 bn	€9.446 bn (2026-2050)
Non-res investment need	€464 M (2026-2030)	€3.734 bn (2026-2050)
Public financing	€1.388 bn total (local €940M / regional €52M / national €396M, 2026-2030)	Proportional public share maintained; no EU funds allocated
Private financing	€966 M total (2026-2030); sub-breakdown n/a	n/s
Workforce need	n/s in NBRP PDF	n/s
OSS network	n/s in NBRP PDF (Sparenergi.dk operational but volume targets absent)	n/s

Plan narrative by stream

S1 — Targets, standards & regulatory backbone

Building Code BR18 is operational and serves as the backbone (ZEB thresholds explicit in Table 31: <27 kWh/m²·y residential, <33 non-residential; mandatory 2028 public / 2030 all). Erhvervspuljen business scheme is operational. MEPS for non-residential have single thresholds (2030: 190 kWh/m²·y; 2040: 139 kWh/m²·y) rather than typology-differentiated. Glazed areas are minimally addressed in the NBRP itself, while TBS/BACS are present in a more fragmented way through Article 23(6) alternative measures, automation requirements for certain systems >290 kW, and QA/QC and commissioning provisions, rather than through a single coherent framework.

S2 — Delivery architecture & implementation capacity

Sparenergi.dk operates as a national digital one-stop shop (segmented digital mail to home-owners, 5-region public meetings by DEA, Energi- og Bygningsanalysen tool free for all municipalities). The audit corrected the OSS score upward (Scalability 1→2). Area-based approach is fragmented (Klimaalliancen voluntary + hospital sectoral). Public buildings strategy is substantive (3.9M m² + 3%/year + EED Art.6 agreement).

S3 — Finance & political attractiveness

Structured investment envelope (EUR 1,889M residential 2026-2030 + EUR 964M private) but private funds not disaggregated. The financing toolbox lacks innovative instruments (no PACE, no on-bill, no CAE-style market). Multiple benefits remain at study stage.

S4 — Social robustness

Vulnerable households targeting through Landsbyggefonden (National Building Fund) for non-profit housing. Rental market split-incentive explicitly acknowledged ("Paradoksproblemet", 2014 attempt documented) but no new instrument. Social safeguards weak in the plan despite Denmark's broader welfare architecture.

S5 — Long-term quality & future-proofing

LCA framework is the most advanced: Building Regulation BR18 operational since 2023 (binding WLC GWP methodology, differentiated values, A4+A5 modules, tightening schedule to 2029). The only country with binding LCA legislation. However, climate resilience is entirely absent from the NBRP (T5.6 = 0), confirmed as a genuine policy gap rather than a document artefact.

Key country-specific strengths

- Binding LCA framework (BR18, 2023 in force): differentiated GWP values, A4+A5 modules, tightening schedule to 2029. World-class — no other analysed country has binding LCA legislation.
- ZEB thresholds already explicit in the Building Code (Table 31: <27 kWh/m² residential, <33 non-residential); mandatory 2028 (public) / 2030 (all). Voluntary today, binding next.
- Sparenergi.dk — operational national digital one-stop shop, with segmented digital outreach and Energi- og Bygningsanalysen tool free for all municipalities.
- Landsbyggefonden — mature social-housing financing vehicle, with Green Housing Agreement €3.6bn, which the NBRP references for vulnerable-household renovation.
- Public buildings strategy substantive (3.9M m² + 3%/year + EED Art.6 agreement, EPC class B target by 2040).

Key country-specific weaknesses

- Climate resilience completely absent from the plan (T5.6 = 0): no risk mapping, no integration into renovation packages, no adaptation component.
- MEPS for non-residential use a single cross-building threshold rather than typology-differentiated thresholds (190 kWh/m² 2030; 139 kWh/m² 2040).
- Financing toolbox lacks innovative instruments beyond grants and schemes — no PACE, no on-bill, no CAE-style certificate market.
- OSS is digital-only: Sparenergi.dk recommendations are not sufficiently tailor-made — risk of not driving the most performance-effective works despite addressing individual cases.

- Affordable Housing Plan integration: the NBRP address affordable housing challenges via Landsbyggefonden, but these are not articulated as housing-policy integration.

Flagship features

- **Binding LCA framework (Building Regulation BR18) —** Operational since 2023, with binding whole-life-cycle (WLC) GWP methodology, differentiated values per building type, A4+A5 transport and construction-site modules, progressive tightening schedule to 2029. No equivalent in the 5 other plans analysed.
- **Sparenergi.dk national digital OSS + Energi- og Bygningsanalysen —** Mature national digital OSS providing segmented digital mail, 5-region public meetings via DEA, and the free Energi- og Bygningsanalysen tool for all municipalities. The only digital-first OSS architecture at national scale in the 6 plans.
- **Erhvervspuljen (Business Scheme) —** Operational national-scale grant scheme covering automation requirements for systems >290 kW (controls, monitoring, fault detection for cooling and ventilation).
- **Landsbyggefonden + Green Housing Agreement (€3.6bn) —** National Building Fund operating as anchor financing vehicle for non-profit housing renovation; provides a structural linkage between NBRP and social-housing renovation delivery.

Likely advocacy priorities for the final version

- Introduce a dedicated climate resilience chapter in the next NBRP iteration: risk mapping, integration of overheating/flooding criteria into renovation packages, Southern-Denmark heatwave provision.
- Move MEPS for non-residential from single thresholds to typology-differentiated thresholds (per use-type and per climate condition) — today at 168/139 kWh/m² single values.
- Introduce innovative financing instruments (PACE-style, on-bill, efficient mortgages) to complement the grant-based financing toolbox.
- Make Sparenergi.dk recommendations more tailor-made to the building and the household — increase performance-targeting of the digital OSS.
- Explicitly articulate the linkage between the NBRP and Danish affordable/social housing architecture (Landsbyggefonden) as a housing-policy integration, not only as a financing route.

Note. Transversal priority improvements that apply to this country (e.g. operationalise trajectory into annual rates; move ZEB thresholds from tentative to binding; introduce ex-post tracking of multiple benefits) are developed in Document 2 — Transversal Analysis and are not restated here unless particularly critical.

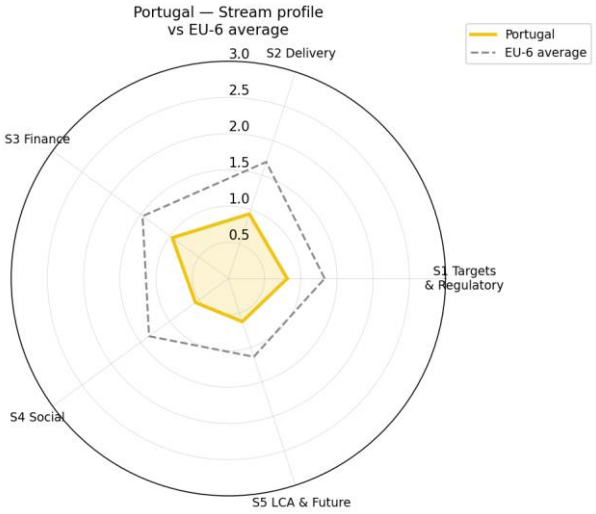
Portugal

Global score: 0.79 / 3 · Ranking: 6th of 6

The Portuguese NBRP is a draft-stage document that explicitly acknowledges its own incompleteness through recurring language such as "Por iniciar", "Por orçamentar", "A determinar". Several topics (financing of investments, social safeguards, Affordable Housing Plan integration) are close to zero because the plan itself is not yet quantified, rather than because of policy absence. This score must be read as a snapshot of the current draft and will likely evolve significantly in the next iteration.

> ⚠ ***Reading note.*** *The Portuguese NBRP is a draft-stage document: the plan itself acknowledges repeatedly that key provisions are "Por iniciar" (to be initiated), "Por orçamentar" (to be budgeted), or "A determinar" (to be determined). Several topic scores of 0 reflect this incompleteness, not a systemic policy absence in Portuguese building policy. This score should be read as a snapshot of the current draft and is likely to evolve significantly in the next iteration.*

Stream profile vs EU-6 average



Quantitative market snapshot

Indicator	Annual / short-term figure	Decade / long-term figure
Residential renovation rate	4.1% (as of 2023)	n/s
Non-residential renovation rate	2.7% (as of 2023)	n/s
Investment need	n/a in current draft	n/a in current draft
Workforce baseline	≈80,000 professionals (construction sector)	Needs: circularity, BIM, energy performance skills
Rental stock	~18% of housing stock is rental	n/s
OSS coverage criteria	n/s	Target: ≥1 per 80,000 inhabitants, vulnerable-area priority (EPBD-aligned) Progressive implementation 2027-2050

Plan narrative by stream

S1 — Targets, standards & regulatory backbone

Trajectory is outlined with 2030 -16% and ramps through 2035-2040-2045, but interim milestones to 2050 are not fully quantified and conversion to annual renovation rates is limited. MEPS and ZEB thresholds are referenced (16% by 2030 / 26% by 2033, aligned with EPBD Article 9) but not binding. TBS/BACS are only marginally addressed as binding requirements, although the plan does reference BACS promotion, interoperability and SRI as enabling tools; glazed areas remain absent.

S2 — Delivery architecture & implementation capacity

OSS coverage criteria (≥1 per 80,000 inhabitants, vulnerable-area priority) are defined but remain at conceptual stage: no staffing, no budget, no service-level quantification. Workforce needs are acknowledged (construction sector ≈80,000 professionals; circularity, BIM, energy-performance skills). Area-based approach is referenced. Public buildings is one of the weakest topics (T2.4 = 0.25) — no operational lead-by-example logic.

S3 — Finance & political attractiveness

Financing of investments scores the lowest of any topic across the 6 plans (T3.1 = 0.125): no total investment envelope, no public/private split, no period-by-period disaggregation. The financing toolbox shows interesting elements (explicit inclusion of condominiums; going beyond one-size-fits-all) but remains at design stage.

S4 — Social robustness

Vulnerable households targeted with 2030/2040/2050 energy poverty reduction goals (1.8 to 3 million people affected). Rental market (≈18% of stock) with split-incentive identification and tax incentives when buildings reach NZEB/ZEB. Social safeguards and Affordable Housing Plan integration, however, are entirely absent (T4.3 = 0; T4.4 = 0).

S5 — Long-term quality & future-proofing

Both LCA and climate resilience at very early stage. LCA topic (T5) = 0.5: no roadmap, no GWP limit values, methodology not fixed. Climate resilience shows some positive elements (nature-based solutions reference, urban heat / stormwater recognition) but without binding integration.

Key country-specific strengths

- Recognition of OSS national coverage criteria aligned with EPBD principles (≥1 per 80,000 inhabitants, vulnerable-area priority).
- Financing toolbox explicitly includes condominiums and collective decision-making structures — an acknowledgement of Portuguese building-stock specifics.
- Split-incentive on rental market (≈18% of stock) clearly identified; tax incentive for NZEB/ZEB buildings.
- Integration of nature-based solutions and recognition of urban heat / stormwater / microclimate issues in climate resilience (T5.6).
- Alignment with National Strategy to Combat Energy Poverty; vulnerable household targets set for 2030 / 2040 / 2050.
- Recognition of indoor environmental quality (IEQ), health and comfort as renovation co-benefits, with indicators and support-programme links under development.

Key country-specific weaknesses

- Financing of investments is the weakest topic across the 6 plans (T3.1 = 0.125): no total envelope, no public/private split, no period disaggregation.
- Social safeguards completely absent (T4.3 = 0): no anti-renoviction protection, no rent-retention mechanism, no affordability conditionality.
- Affordable Housing Plan integration completely absent (T4.4 = 0): no coordination with housing strategy, no joint instruments.
- Public buildings strategy weak (T2.4 = 0.25): no binding annual renovation rate, no market-shaping role articulated.

- Extensive "Por iniciar / Por orçamentar / A determinar" language throughout the plan: the NBRP explicitly flags itself as draft-stage, not yet quantified.

Flagship features

- **Condominium-explicit financing approach —** Rare among the 6 plans: financing toolbox explicitly includes condominiums and collective decision-making structures, acknowledging the structural specificity of Portuguese building stock.
- **Vulnerable household targeting aligned with National Strategy to Combat Energy Poverty —** 1.8 to 3 million people estimated in energy poverty; targets set for 2030 / 2040 / 2050; linked to the National Strategy to Combat Energy Poverty.
- **Rental market split-incentive architecture —** ~18% of housing stock identified as rental; tax incentives when buildings renovated to NZEB or ZEB. One of the clearer rental-market problem framings in the 6 plans.

Likely advocacy priorities for the final version

- Quantify total investment needs and public/private split — this is the single most critical gap in the plan (T3.1 = 0.125).
- Develop binding social safeguards and anti-renoviction protections (today T4.3 = 0).
- Establish Affordable Housing Plan integration with joint governance and shared instruments (today T4.4 = 0).
- Articulate the public-building strategy as a market-shaping lever with binding annual renovation rate (today T2.4 = 0.25).
- Translate the long-term trajectory into annual renovation rates, floor area and depth assumptions — currently only 2030/2035 milestones are explicit.

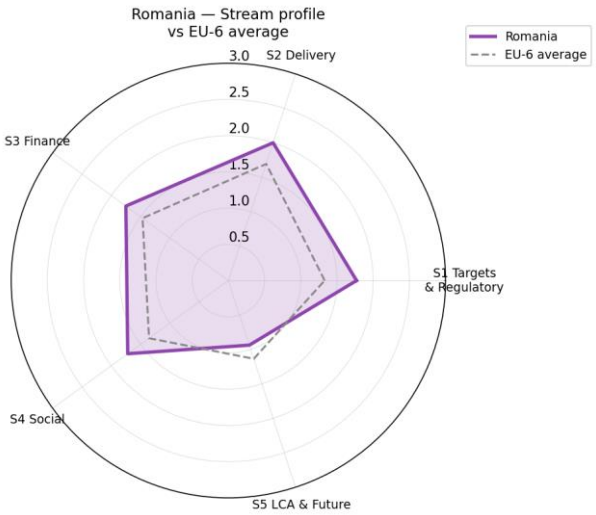
Note. Transversal priority improvements that apply to this country (e.g. operationalise trajectory into annual rates; move ZEB thresholds from tentative to binding; introduce ex-post tracking of multiple benefits) are developed in Document 2 — Transversal Analysis and are not restated here unless particularly critical.

Romania

Global score: 1.72 / 3 · Ranking: 2nd of 6

The Romanian NBRP is the most granular regulatory document among the 6 plans for a first draft. It publishes numeric MEPS thresholds (T16 = 422, T26 = 340 kWh/m²·y), ZEB thresholds per typology × 5 climate zones (new and renovated), and glazing U-values — a level of detail unusual at first-draft stage. Delivery and financing architecture is well sized (€122-125bn total to 2050; 42-office operational OSS network). Weaker on LCA, climate resilience, and innovative financing instruments.

Stream profile vs EU-6 average



Quantitative market snapshot

Indicator	Annual / short-term figure	Decade / long-term figure
Residential stock	5.05M buildings / 657.0M m² (2020); WPB-43: 2.07M / 282.5M m²	n/s
Residential renovation rate	18.06M m²/yr (2.75% of stock); WPB-43 14.58M m²/yr (2.22%)	~180.6M m² decade volume; WPB-43 ~145.8M m²
Renovation depth mix	2026-2030: light 5% / medium 57% / deep 38% (total stock)	n/s
Non-residential stock	62.0M m² / 242,455 buildings	n/s
Non-residential renovation rate	2.33M m²/yr (3.76%); worst-performing 1.95M m²/yr (3.15%)	~23.3M m² decade; WPB ~19.5M m²
Residential investment need	€26.251 bn (2026-2030); WPB-43 €24.461 bn	€39.906 bn (2026-2035)
Non-res investment need	€2.321 bn (2026-2030); WPB €1.941 bn	€4.406 bn (2026-2035)
Total public financing	n/s split by residential/non-res	€29.773 bn total (all buildings, 2026-2035)
Total private financing	n/s split	€17.754 bn total (all buildings, 2026-2035)
OSS network	42 offices (1 per county + Bucharest); €250k per new OSS; €250k/yr operating cost 2026-2035 then €100k/yr	Expansion to ~100 OSS by 2035
Workforce need	>160,000 workers to upskill/reskill by 2030 (incl.	n/s

	79,963 unskilled)	

Plan narrative by stream

S1 — Targets, standards & regulatory backbone

Romania publishes the most detailed numeric regulatory thresholds of the 6 plans: T16 = 422 kWh/m²·y and T26 = 340 for MEPS non-residential; ZEB thresholds per typology × 5 climate zones (NZEB-10% method explicit); glazing U-value ≤1.10 W/m²·K with triple-glazing warm-edge specifications in NZEB envelope. Trajectory fully quantified 2020-2050 with 5 milestones and 43% worst-performing buildings break-out. On TBS/BACS, the draft is also comparatively advanced in framework terms: it introduces a 290 kW BACS threshold, links smart controls to MEPS and renovation pathways, and relies on commissioning, inspection, metering and EPC-linked verification, although the BACS obligation itself is not yet fully settled. The quantified trajectory is also supported by a renovation-depth mix in which medium and deep renovation dominate, reinforcing the importance of building-envelope performance as part of the delivery logic.

S2 — Delivery architecture & implementation capacity

Operational OSS network: 42 existing offices (1 per county + 1 in Bucharest municipality), legal framework GEO 92/2024, unit cost €250k transparent, planned expansion to 100 offices by 2035 with €250k annual operating cost (2026-2035) then €100k (2036-2050). Workforce is a relative strength: BUS4RoBOOST roadmap with 160,000 upskill target and 79,963 unskilled workers focus. Area-based approach strong with district-level annual indicators 2026-2030 and PNRR Local Fund.

S3 — Finance & political attractiveness

Financing is comprehensive on needs quantification: €122-125bn total 2050 investment need, €31bn by 2030, full breakdown by period (Table 4.2.4) with dedicated "Other Funding" stream (OSS, vulnerable HH, TA, administration, awareness). Financing toolbox remains exploratory (ESCO, EPC, guarantees, green mortgages, state-guaranteed loans, utility on-bill recovery) — instruments are referenced but not yet sequenced with institutions and timelines.

S4 — Social robustness

Vulnerable households targeting is meaningful: OSS prioritisation, Art.17(19) safeguards, GEO 92/2024 energy-poverty definition, I4/I7 vouchers, Social Climate Fund integration planned. Social safeguards operationalised via Table 3.3.11. Rental market and Affordable Housing Plan integration remain lighter.

S5 — Long-term quality & future-proofing

Chapter 3.18 on whole life carbon (WLC) provides a real framework discussion, but remains early-stage and not well operationalised: no GWP limit values yet defined, and methodology and data still design-stage. Climate resilience is handled piecemeal (overheating in NZEB envelope; seismic integrated in PNRR C5) without a dedicated resilience chapter.

Key country-specific strengths

- Numeric MEPS thresholds published (T16 = 422, T26 = 340 kWh/m²·y) — exceptional for a first draft.
- ZEB thresholds per typology × 5 climate zones (residential + non-residential; new + renovated), with explicit NZEB-10% conversion method (Table 5.2.3).
- Fully quantified 2020-2050 trajectory with 5 milestones and 43% worst-performing buildings break-out.
- Operational OSS network: 42 offices today, legal backing (GEO 92/2024), €250k unit cost, expansion plan to 100 offices by 2035.
- BUS4RoBOOST workforce roadmap: 160,000 upskilling target, 79,963 unskilled workers focus, inter-ministerial memorandum in signing.
- €122-125bn total investment need quantified with period-by-period breakdown and dedicated "Other Funding" stream (OSS, vulnerable HH, TA).

Key country-specific weaknesses

- Financing toolbox remains exploratory (T3.2 = 1.375): instruments (ESCO, green mortgages, on-bill recovery) described but not sequenced with specific institutions and timelines.
- LCA / whole-life-carbon at design stage (T5 = 1.125): no GWP limit values yet, data gaps explicitly flagged.
- Climate resilience handled piecemeal rather than through a dedicated chapter (T5.6 = 0.75): overheating in envelope + seismic in PNRR C5 without coherent resilience track.
- Heating device quantification acknowledges data gap explicitly: household biomass ~3,140 ktoe + heat-pump/solar thermal "negligible" in 2020, no full device-stock inventory.
- Rental market split-incentive is recognised, but instruments remain weakly operationalised: the draft points to model clauses, HOA cost-sharing and landlord–tenant frameworks, but not yet to binding instruments with a clear implementation route.

Flagship features

- **Operational 42-office OSS network (GEO 92/2024) —** National OSS architecture with legal backing: 41 county OSS + 1 in Bucharest. Planned expansion to 100 offices by 2035. Transparent cost structure: €250k per new OSS, €250k/year operating cost 2026-2035, then €100k/year. End-to-end service (not information-only), with dedicated I4/I7 voucher channel.
- **BUS4RoBOOST 2030 workforce roadmap —** Quantified workforce gap: 160,000 workers to upskill/reskill by 2030 including 79,963 unskilled workers. Multi-ministerial memorandum in signing, linked to inter-ministerial coordination.
- **Numeric regulatory thresholds (MEPS, ZEB, glazing) —** Exceptional first-draft granularity: T16 = 422, T26 = 340 kWh/m²·y MEPS non-residential; ZEB thresholds per typology × 5 climate zones (Tables 5.2.1-5.2.4); glazing U-value ≤1.10 W/m²·K with triple-glazing warm-edge in NZEB envelope (Mc 001-2022). Romania is the only country with a dedicated glazing provision scoring above 1.
- **Quantified €122-125bn trajectory with "Other Funding" stream —** Most complete financing need quantification among the 6 plans: €122-125bn total to 2050; €31bn by 2030; full period breakdown; dedicated "Other Funding" stream (OSS, TA, vulnerable HH, administration, awareness).
- **District-level annual indicators 2026-2030 —** Strong area-based chapter with indicative district-programme targets for renovated floor area, average depth, share of area in worst-performing buildings, RES share in building or district demand, district-heating connections, public-private leverage, energy-poverty targeting.

Likely advocacy priorities for the final version

- Move the financing toolbox from description to sequenced pilot deployment: identify which instruments (ESCO, green mortgages, on-bill) move first, through which institutions, on which timetable.
- Define GWP limit values and an LCA roadmap timetable (today chapter 3.18 is comprehensive on logic but design-stage on metrics).
- Consolidate climate resilience into a dedicated chapter with risk mapping (today handled piecemeal: overheating in envelope, seismic in PNRR C5).
- Close the heating device data gap: quantified stock split by fuel/technology and by building segment (today acknowledged as gap).
- Strengthen the market signal for medium and deep envelope renovation by linking the quantified trajectory more explicitly to fabric-first performance improvements and support conditions.
- Move the rental-market split-incentive chapter from model clauses tand design concepts to concrete binding instruments, with a clear implementation route for landlord–tenant and HOA-related cases.

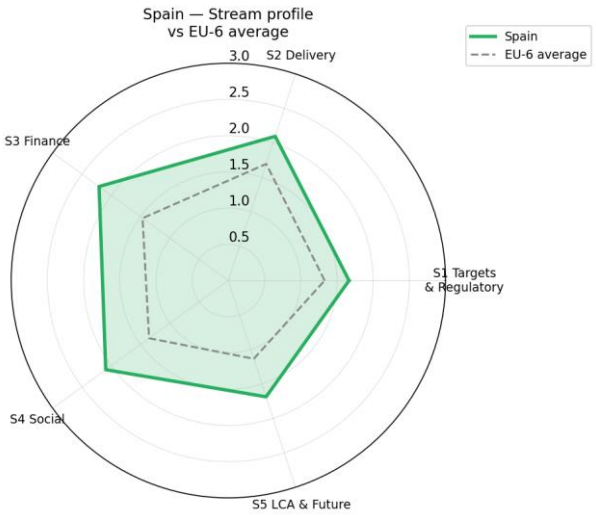
Note. Transversal priority improvements that apply to this country (e.g. operationalise trajectory into annual rates; move ZEB thresholds from tentative to binding; introduce ex-post tracking of multiple benefits) are developed in Document 2 — Transversal Analysis and are not restated here unless particularly critical.

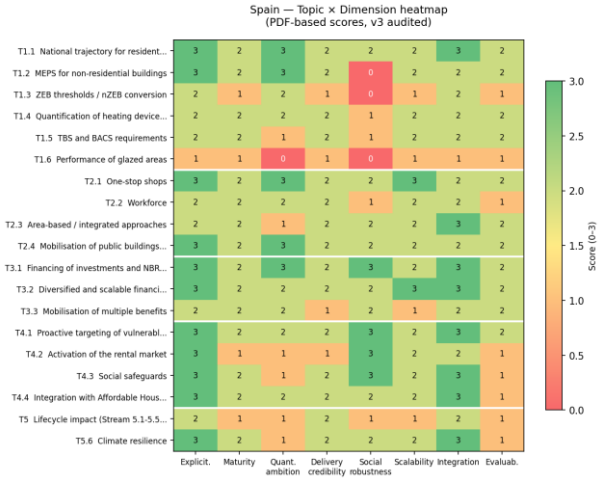
Spain

Global score: 1.93 / 3 · Ranking: 1st of 6

The Spanish NBRP (PNRE) is the most comprehensive and quantified of the 6 plans analysed. It articulates a fully backcast 2050 trajectory (17.8M dwellings cumulative, 22 kWh/m² endpoint), a €39.35bn 2026-2030 investment plan, a diversified financing toolbox unique among the 6 plans, and strong vulnerable-household architecture. Main gaps: ZEB thresholds are still "tentative" pending EU harmonised methodology; several Royal Decrees are at the early procedural stage.

Stream profile vs EU-6 average





Quantitative market snapshot

Indicator	Annual / short-term figure	Decade / long-term figure
Residential renovation rate	445,500 dwellings/yr; 148,500 buildings/yr; 47.4M m²/yr (2030)	5.46M dwellings; 1.82M buildings; 582M m² (2031-2040)
Renovation depth	30,000 deep / 91,695 medium / 323,805 light dwellings/yr (2030)	270,000 deep / 690,680 medium / 4,504,120 light (2031-2040)
Non-residential renovation rate	0.69% (2023); 5,686 bldg/yr; 4.13M m²/yr	Rate milestone 40.8% (2030) → 62.4% (2040); 79,729 bldg, 128.3M m² added
Residential investment need	€14.736 bn (2026-2030)	€30.048 bn (2026-2035)
Non-res investment need	€22.883 bn (2026-2030)	€46.659 bn (2026-2035)
Total public financing	€11.306 bn (all buildings, 2026-2030)	n/s
Total private financing	€28.044 bn (all buildings, 2026-2030)	n/s
OSS financing	Strategic planning €450k + reinforcement €51.0M (AGE €34.2M + CCAA €16.8M) + TA €2.0M €53.45 M total programmed across OSS measures	n/s
OSS target	≥1 per 80k inhabitants + per region + older stock + neighbourhood renewal + <90 min ~614 OSS nationally by 2030 (derived)	n/s

Workforce	~700,000 additional workers needed in construction (CNC estimate) ~740,000 job opportunities 2023-2035; ~200k VET to 2030	n/s

Plan narrative by stream

S1 — Targets, standards & regulatory backbone

Trajectory backed by backcasting to 2050 (17.8M dwellings cumulative, 22 kWh/m² endpoint; 1.57M equivalent deep renovations 2020-2030, above NECP's 1.38M). MEPS thresholds per use category × 4 climate zones (kWh/m²·y in 2030/2033/2040/2050) are explicit and operationalised. ZEB values, however, are labelled "tentative" pending EU Commission harmonised methodology (10% reduction vs 2024 nZEB cost-optimal). TBS/BACS addressed but BACS-specific operationalisation (≥70 kW threshold) missing.

S2 — Delivery architecture & implementation capacity

Delivery is strong (avg 2.09). OSS is the strongest-quantified of the 6 plans: territorial density formula (≥1 per 80,000 inhabitants + per region + in areas with older stock + in neighbourhood renewal areas + <90 min travel time), Observatorio Ciudad 3R diagnostic study underway, €53.45m programmed across OSS measures, national platform set up February 2025. Workforce: 700,000 additional workers needed (CNC estimate); 740,000 job opportunities in construction 2023-2035. Area-based: strong integration with Spanish Urban Agenda + Local Heating Plans + Sustainable Urban Mobility Plans. Public buildings: 3%/y renovation (EED-aligned) + Order PCM/466/2022 + FNEE/CAE/SNOEE financing channels.

S3 — Finance & political attractiveness

Finance is the top-performing stream (avg 2.21). €39.35bn 2026-2030 total (€11.31bn public, €28.04bn private) with 7-policy breakdown + ETS2/PSpC integration. Diversified toolbox: PACE-style, on-bill, efficient mortgages, CAE certificate market, SIF, HEVA, co-investment, guarantees. Multiple benefits quantified through MICATool ex-ante (2M beneficiaries, HEP, deaths avoided, GDP).

S4 — Social robustness

Strongest social architecture (avg 2.09): 5 sub-actions for vulnerable households with €3bn budget, 21.88% reduction target, differentiated subsidy intensity, direct contractor payment (3.5-8.1 million people in energy poverty quantified). Rental market: 6 sub-actions (split-incentive, eviction, vacant housing, 5-year social/affordable rent commitment). Social safeguards: rent increase allowed after renovation showing 30% energy savings (Law 12/2023 mechanism). Affordable Housing Plan: State Housing Plan 2026-2030 with 30% allocation and 260,000 dwellings target.

S5 — Long-term quality & future-proofing

LCA/embodied carbon: clear EPBD Art.7 transposition route (Measure 6.3.x) + PERTE industrialisation + circularity (6.2.x); GWP limit values pending National Roadmap. Climate resilience: dedicated Section 8.1, National Adaptation Plan integration, climate shelter network — among the stronger resilience provisions in the 6 plans (T5.6 = 2.0).

Key country-specific strengths

- Most quantified trajectory across the 6 plans: 17.8M dwellings cumulative 2050 backcast, 1.57M equivalent deep renovations 2020-2030 (above NECP 1.38M target).
- Most diversified financing toolbox among the 6 plans: PACE-style, on-bill, efficient mortgages, CAE certificate market, SIF, HEVA, co-investment, guarantees.
- Strongest OSS quantification of the 6 plans: explicit territorial density formula (≥1 OSS per 80k inhabitants + per region + older stock + neighbourhood renewal areas + <90 min travel time), €53.45m programmed envelope, national platform February 2025.
- Vulnerable households architecture with direct contractor payment (anti-Matthew logic) — €3bn budget, 5 sub-actions, 21.88% reduction target, differentiated subsidy intensity.
- MICATool ex-ante multiple-benefits quantification (2M beneficiaries, HEP, deaths avoided, GDP) — the most quantified co-benefit framing among the 6 plans.
- Dedicated climate resilience Section 8.1 with National Adaptation Plan integration and climate shelter network — one of the strongest resilience provisions in the 6 plans.

Key country-specific weaknesses

- ZEB thresholds still labelled "tentative" pending EU harmonised methodology — 10% reduction vs 2024 nZEB cost-optimal but not yet final (T1.3 = 1.25).
- Several Royal Decrees at early procedural stage (MEPS RD "in early stages of the procedure") — enforcement framework still under definition.
- Glazed areas treated as a renovation component rather than a dedicated performance topic (T1.6 = 0.75).
- BACS-specific operationalisation missing (≥70 kW already due per EPBD): typo in plan ("by 20230") flagged by Word assessor; thresholds without detailed scope.
- Workforce quantified (700k CNC) but not translated into annual training output targets by profile; women's segregation acknowledged but not addressed operationally.

Flagship features

- **Diversified financing toolbox (PACE + on-bill + HEVA + CAE + SIF + co-investment) —** The widest financing toolbox among the 6 plans. Includes property-assessed clean energy (PACE-style), on-bill financing, bill-based efficient mortgages, Housing Efficiency Valuation (HEVA), Energy Savings Certificates (CAE) market, State Investment Fund (SIF), co-investment structures, public guarantees. Most innovative instruments still at design/pilot stage — National Platform set up February 2025.
- **Anti-Matthew vulnerable-household architecture (€3bn) —** 5 sub-actions with €3bn budget, 21.88% reduction target, differentiated subsidy intensity by vulnerability level, direct contractor payment to remove liquidity barriers. Quantified population: 3.5-8.1 million people in energy poverty. Tightly linked with PSpC 2026-2032.
- **Strategic OSS design with nationwide coverage formula —** Unique among the 6 plans in combining multiple coverage criteria: ≥1 per 80,000 inhabitants + per region + in areas with older-than-national-average stock + in neighbourhood-renewal areas + <90 min travel time. Underpinned by Observatorio Ciudad 3R diagnostic study and €53.45m programmed across specific OSS measures.
- **MICATool ex-ante multiple-benefits quantification —** Quantified co-benefits integrated in plan design: ≈2M beneficiaries, HEP, deaths avoided, GDP. The most quantified co-benefit framing among the 6 plans, corroborated by NECP, ENPE and BC3 cross-studies.
- **Neighbourhood and district-level state aid programme —** State Aid within AGE for renovation actions at neighbourhood or district level; 60% MIVAU / 40% CCAA financing split; builds on Royal Decree 853/2021 PRR Investment 1, Component 2. Specifically designed to overcome the fragmented building-by-building approach.
- **Typology × climate-zone MEPS thresholds —** Most detailed MEPS architecture among the 6 plans: kWh/m²·y per use category (administrative-commercial vs other) × 4 climate zones (AB/C/D/E) for 2030/2033/2040/2050 (range 84-294 in 2030 down to 41-96 in 2050). Exemption threshold 65 kWh/m²·y in warm areas to avoid disproportionate demands.

Likely advocacy priorities for the final version

- Move ZEB thresholds from "tentative" to final and binding — today they await the EU harmonised methodology (Commission delegated act not yet published).
- Accelerate the legal procedure for pending Royal Decrees (MEPS RD "in early stages of the procedure") to operationalise the sanctions regime and enforcement framework.
- Introduce BACS-specific operationalisation at the ≥70 kW threshold (already due per EPBD), including clear scope, minimum functionalities, trigger points and verification route; also correct the in-plan typo on the effective date.
- Translate the 700k CNC workforce gap into annual training output targets by profile, region and role; operationalise the explicit acknowledgement of women's segregation.
- Introduce explicit ex-post tracking of multiple benefits beyond the MICATool ex-ante modelling.

Note. Transversal priority improvements that apply to this country (e.g. operationalise trajectory into annual rates; move ZEB thresholds from tentative to binding; introduce ex-post tracking of multiple benefits) are developed in Document 2 — Transversal Analysis and are not restated here unless particularly critical.