E C C R E D I

ECCREDI Strategy 2026









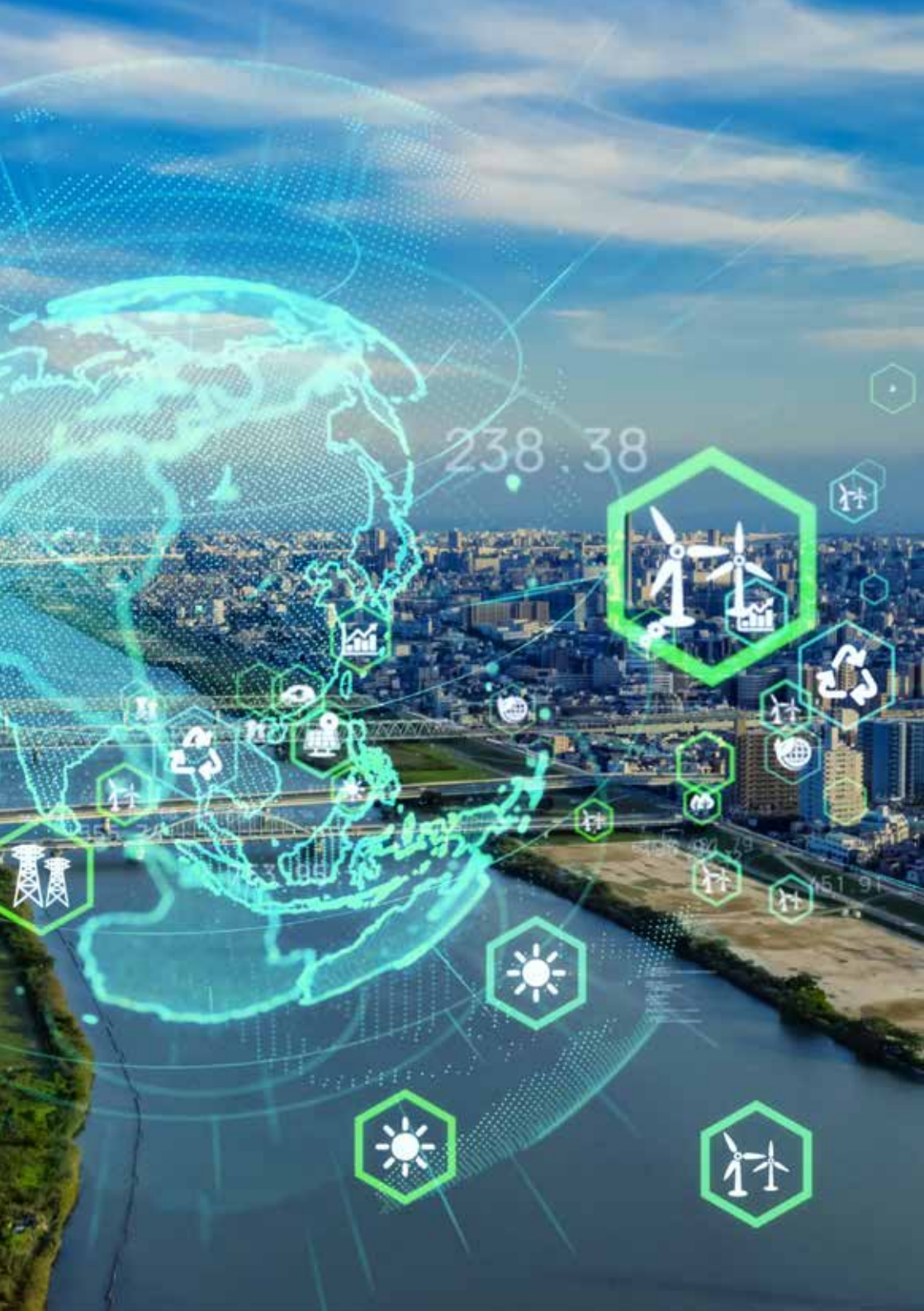












About European Council for Construction Research, Development and Innovation (ECCREDI)

ECCREDI is the European Council for Construction Research, Development and Innovation. It was created in Brussels in 1995 with the signing of a Memorandum of Understanding by representatives of European federations concerned with construction, in its widest sense.

The European federations participating in ECCREDI represent the interests of the whole construction value chain, with most companies being SMEs. This includes contractors, engineering, consultants, architects and designers, product and material producers, building control organizations and research bodies covering buildings, infrastructure and geotechnics.

The aim of ECCREDI is to contribute to the competitiveness, quality, safety and environmental performance of the construction sector and to the overall sustainability of the built environment – all urban and transport infrastructures - by advocating for effective design & construction research, technological and process development and innovation.

This strategy is structured around 6 key chapters, which are

1. Workforce Transformation & Wellbeing in the Age of a Digital and Clean Construction Industry
2. Climate Adaptation: Disaster Resilience, Safe, and Healthy Built Environments
3. Climate Mitigation: Net-Zero & Climate-Positive Construction with focus on Whole Lifecycle Carbon Reduction & Energy Efficiency
4. Smart & Integrated Digital Construction encompassing Industrialisation of Construction
5. Future-Proof Affordable & Circular Built Environment
6. Competitive & Sustainable Construction Ecosystem

ECCREDI activities are eventually seeking to ensure that relevant EU ambitions, such as the circular economy, energy efficiency, competitiveness and many more, take into account the ideas and needs of the construction industry, which has a major role in the successful implementation of EU policies.

1. Workforce Transformation & Wellbeing in the Age of a Digital and Clean Construction Industry

Key Challenges & Opportunities:

- The transition to a **digital (BIM, AI, robotics, automation)** and **clean construction industry (circular economy, low-carbon materials, energy efficiency, renovation, remodelling and extension of existing building stock)** requires **reskilling and upskilling of the workforce**.
- **Labour shortages persist** due to the cyclical nature of construction activities, an ageing workforce and low attractiveness of the sector to younger generations and underrepresented groups (f.i. women, migrants). At the same time an increasing cross-border mobility of the workforce requires linguistic skills and a specific approach to guarantee the required technical skills at the workplace.
- The **Clean Industrial Deal** highlights the relevance of skills for the clean transition and puts forward the **"Union of Skills"** as an overarching skills strategy. It also announces the **"Skills Portability Initiative"** (mutual recognition of qualifications) and the **"Quality Jobs Roadmap"** (to support workers in transition from declining sectors to growing sectors).
- Construction workers are confronted with constant challenges related to the nature of work on the construction site and contact with machinery, hazardous materials and components. Moreover, new worksite (e.g. health and safety related) challenges arise from **automated systems, AI-driven construction, advanced materials, and the trend towards the use of building systems, off-site developed components and kits**.

Research Needs:

- **AI & knowledge capture:** Mapping of areas of application for AI in design, construction and use. How to codify "tacit knowledge" from experienced workers into AI-driven support systems?
- **Human-machine collaboration:** Understanding how workers interact with AI, robotics, and digital tools, such as VR, AR and others.
- **Innovative Design & Co-design:** Energy and material savings, up to 20-30%, are possible when the latest research findings and innovations are applied very early in the construction process, as early as in the design phase, certainly if you take into account circularity principles and end-of-life.

Market Uptake Efforts:

- Large-scale deployment of **modular and accessible training schemes for digital & sustainable construction**. Those must allow some degree of flexibility to appropriately consider new construction products and materials (e.g. building systems and kits) as well as innovative construction methods. Including an entrepreneurship perspective that addresses challenges related to costs, availability, and time demands, will help grow an understanding for innovation in the sector. Existing standards (e.g. on health & safety) must not risk being compromised.
- Expand **vocational education partnerships** between industry and schools, including aspects of adult and lifelong learning and "learning by doing" schemes.
- Develop protocols for **first responders** and systemic engagement of the design and construction industry value chain in mitigating adverse impact of climate change.
- Facilitate cross-border mobility by improving mutual recognition of competences of construction workers at the EU level.

2. Climate Adaptation: Disaster Resilience, Safe, and Healthy Built Environments

Key Challenges & Opportunities:

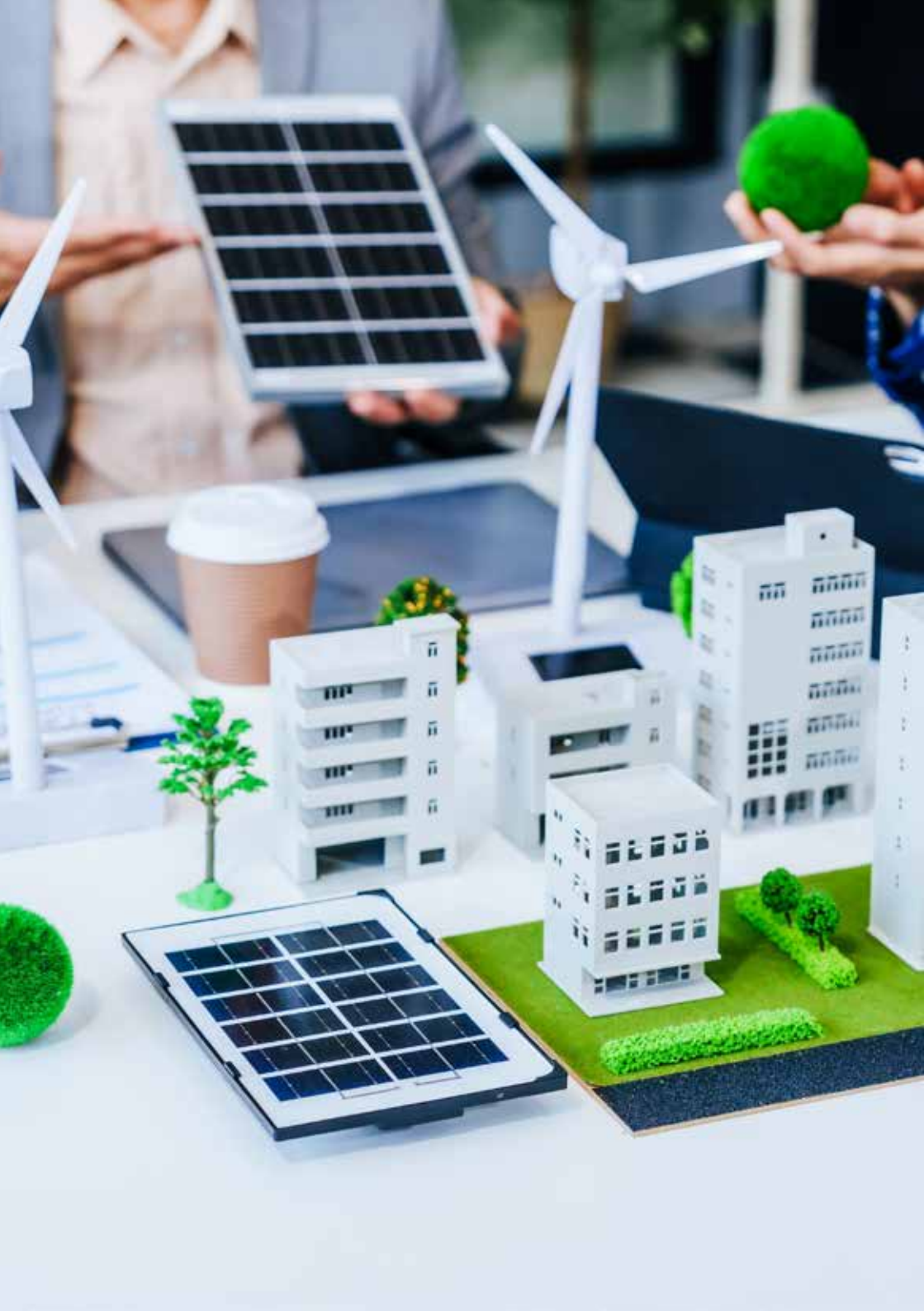
- Climate change manifests with the frequency of **extreme weather events** (heatwaves, flooding, wildfires) necessitating new approaches to construction of infrastructure and buildings, as well as new approaches to maintenance, renovation, upgrade and reconstruction of existing structures affected by the impact of climate change and wear- and-tear.
- Growing **security risks** (cybersecurity, terrorism, …) impact urban planning, as well as building and infrastructure design and management. The increasing demand for electrification and (smart) grids increases the vulnerability and needs to be addressed.
- **Indoor environmental quality** (air quality, thermal comfort, daylight access) is critical for health, productivity, and social wellbeing, as well as the long-term value of the built asset. The importance of IAQ has been confirmed by the recent Covid-19 pandemic.
- **Ageing infrastructure & lack of maintenance** pose increasing risks to safety and sustainability. At the same time there is a demand for life extension solutions and predictive maintenance approaches.
- Providing shelters for **defense** situations in new projects and adapting existing buildings to be used as shelters.

Research Needs:

- **Climate-resilient designs, techniques, materials & structures:** How can infrastructures and buildings contribute to biodiversity, air quality and micro-climates? How can they better withstand floods, heat stress, and seismic events?
- **Sustainable technologies and models:** Solutions for making existing infrastructures and buildings healthier, safer and more resilient whilst addressing their Lifecycle Global Warming Potential.

Market Uptake Efforts:

- Embedding resilience or other appropriate metrics into real estate valuation and procurement policies and learning from post-completion and post-occupancy analysis.
- Develop **local expertise hubs** gathering different expertise (technical, financial, operational, administrative) to support local actors transition to more sustainable and resilient buildings.
- Develop protocols for first responders and systemic engagement of the design and construction industry value chain in mitigating adverse impact of climate change.



3. Climate Mitigation Net-Zero & Climate-Positive Construction with focus on Whole Lifecycle Carbon Reduction & Energy Efficiency.

Key Challenges & Opportunities:

- The **carbon footprint** of materials and construction processes are a major challenge, requiring accurate assessment and mitigation strategies. The figures clearly show that a focus must be on low whole lifecycle carbon construction, while also considering other environmental impacts.
- The **energy efficiency** gap in existing buildings is one of the biggest barriers to climate goals.
- The built environment must move from "net-zero" to **climate-positive**, actively reducing CO_2 emissions over the entire life-cycle (construction, use, demolition).
- The **ageing and existing EU building stock** requires a major renovation exercise, as 80% of the existing buildings will still stand as the main assets by the 2050 outlook.
- **New digital tools** (e.g. AI-driven lifecycle assessment) can enable better carbon tracking and decision-making.
- **Data collection and assessment** is needed for a more circular and energy-efficient construction sector. However, data collection and assessment are not the main activity or expertise of construction contractors.

Research Needs:

- **Carbon-negative materials & technologies:** Scaling up low-carbon concrete (by decarbonising cement production or promoting alternatives to cement like novel binders), timber, and carbon-storing materials complementing the efficiency-first principle as guiding EED principle.
- **Infrastructure- and building-integrated energy production and use:** Enhancing solar façades, energy storage, and smart grids. Better understanding of passive design and construction strategies and district level solutions.
- **Integration of buildings and infrastructures in energy grids:** Electrification of all sectors will multiple the electricity demand and puts pressure on electricity generation and electricity grids. Increasing renewable energy generation requires energy storage to level volatile energy use. Buildings and infrastructures should be seen as part of a broader system. E. g. less energy consumption lowers the electricity demand from the grid, local storages helps buffering peak local energy generation from PV, building site bi-directional charging points contribute to the smart grid.
- **Circularity uptake in the value chain:** Develop methods and tools flexible enough to support circularity efforts in short circuits at local level.
- **Development of simplified and user-friendly carbon assessment tools** to widespread their use.

Market Uptake Efforts:

- Scaling up **affordable deep renovations** with smart financing models (e.g., performance-based contracts).
- **Lifecycle carbon regulations:** Shifting from energy-use standards to full lifecycle impact metrics.
- Scaling up **net-positive urban or infrastructure developments** that generate more energy than they consume. Promote the adoption of performance-based design and long-term service contracts.

4. Smart & Integrated Digital Construction encompassing Industrialisation of Construction

Key Challenges & Opportunities:

- The convergence of **BIM, AI, IoT, and digital twins** plus the link to Digital Product Passports for construction products, digital Building Logbooks and digitalisation of building permitting procedures creates opportunities for predictive design, automated monitoring, and lifecycle optimisation.
- **Industrialisation** of construction (modular, offsite, pre-fabricated, robotic assembly) is accelerating, but requires design, digital and logistical integration.
- AI & automation raise questions about **interoperability, data governance, and cybersecurity** in construction technology ecosystems.
- The sector lags in **data standardisation and digital adoption**, with many SMEs struggling to keep up. The sector still remains among the least digital-savy sectors, with a slow adoption of digital innovation.

Research Needs:

- Ensure the interoperability of **digital design and construction tools and processes**, and avoid vendor lock-in and fragmented systems. Developing secure and interoperable data standards and European platforms for data exchange across different stakeholders and lifecycle stages.
- **Autonomous construction systems:** Robotic assembly, automated logistics, and AI-based site management.

Market Uptake Efforts:

- Training incentives for **AI & automation adoption** in construction firms, keeping a human centric perspective not to deter the interest of new talent.
- **Raising awareness and building capacity** with regard to the added value of data gathering, BIM & digital twinning for the whole value chain, incl. the client.
- Take away **legal and contractual barriers** or digital solutions, to enable a streamlined procurement process and to ensure continuation of a human-centered design and construction sector.
- Ensure sufficient attention for the construction industry in the European Digital Innovation Hub calls.
- Public procurement reforms to support **digital workflows & data-driven decision-making** and to support the market uptake of construction products with higher recycled and bio-based content replacing virgin raw materials and paving the way to a more circular construction environment.

5. Future-Proof Affordable & Circular Built Environment

Key Challenges & Opportunities:

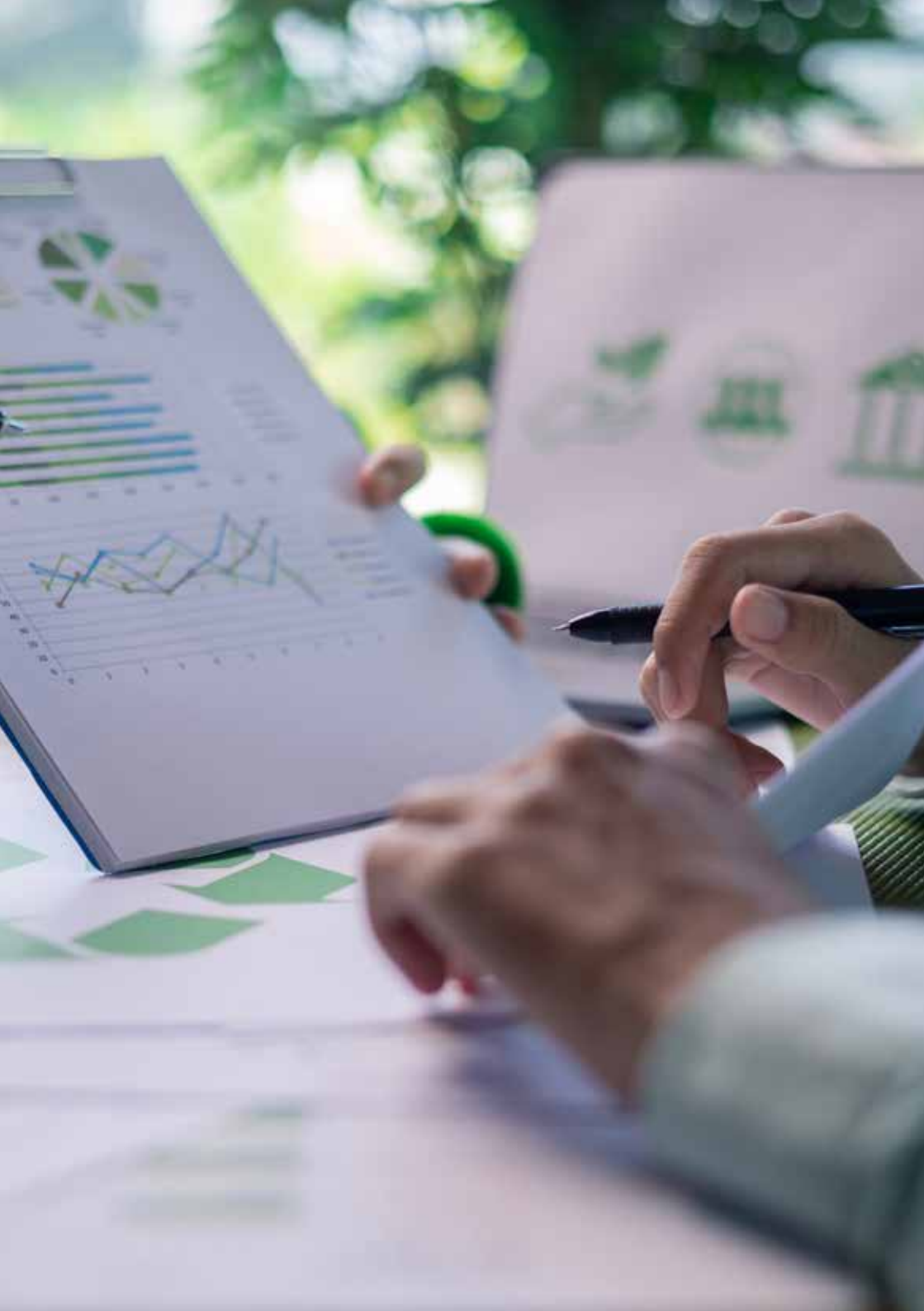
- **Demolition vs. renovation:** How to preserve heritage while reducing resource consumption? How to decide when to retrofit or remodel vs. rebuild? Or a combination of both.
- **Transformation of non-residential building stock to residential buildings** (repurposing or adaptive reuse) to close the lack of affordable housing whilst coping the challenges of less demand for office spaces and retail.
- **Densification of existing building stock** to limit land use and to preserve biodiversity: how to facilitate adding additional floor space?
- Material scarcity and secondary material management require **new business models for circular construction** and may be facilitated by mixed use structures and flexible, adaptable and multifunctional spaces.
- **Smart materials and bio-based alternatives** (e.g., mycelium insulation, carbon-capturing concrete) need further development and mainstream adoption.
- **Affordability** over the entire lifecycle comprising construction, use period and end-of-life should be key in the design considerations whilst avoiding erosion of durability and safety aspects.
- **Adaptability & deconstruction:** Designing buildings and relevant infrastructures for change and easy disassembly.

Research Needs:

- **Material passports & digital tracking:** Ensuring materials can be efficiently reused.
- **Service-life modelling & predictive maintenance:** Data-driven approaches to extend infrastructure and building lifespans.
- **Raising awareness and building capacity** with regard to the added value of secondary material use, the availability of and the access to them, and their use in construction.
- Develop **cross waste stream approaches**, focusing on open instead of closed circularity loops.

Market Uptake Efforts:

- **Facilitate the transition** towards reusable, recycled, secondary materials (e.g., waste collection points, waste storage)
- Incentivizing **circular construction business models** (e.g., material leasing, urban mining) to push demand for secondary materials on the regional/local level.
- **Design for disassembly:** Promotion of building life-cycle perspective in design and (re-)construction.
- Ensure a **legal and normative framework** for circular construction processes and reuse of local available materials after a war situation or disaster.



6. Competitive & Sustainable Construction Ecosystem

Key Challenges & Opportunities:

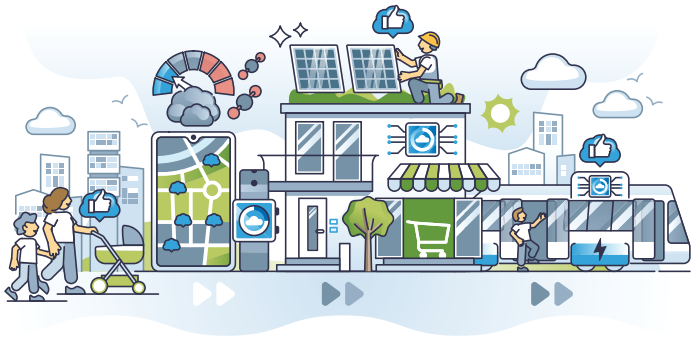
- **Procurement models** often fail to balance cost, quality, sustainability and overall long-term value.
- The transition to **circular & digital construction** requires updates in insurance, liability, and contractual frameworks.
- European standards can play a key role in reinforcing the **Single Market** and exporting **sustainable construction practices** globally.
- The rise of **"servitisation" models** (e.g. renovation-as-a-service or One-Stop-Shopping, building-as-a-service, light-as-a-service, energy-efficiency contracting, ESCO, …) is changing industry dynamics and business models.
- The **costs** of construction products, construction activity and procurement models are increasing, leading to major challenges on the housing and infrastructure markets and the affordability of housing and infrastructure overall. Addressing them will be key for a competitive and sustainable built environment in the future, while reaching the ambitious net-zero goal by 2050 and not forgetting the whole life-cycle perspective.
- Strengthening the **resilience** of our workforce, buildings and infrastructures against climate, man-made and natural risks is key.

Research Needs:

- **Non-technological aspects and barriers:** Assess and overcome non-technological aspects and barriers to create opportunities for innovative design, construction, maintenance, etc. processes and (business) models and foster market uptake.

Market Uptake Efforts:

- **Smart procurement & contract models:** Enabling circularity, innovation-friendly and simplified bidding processes, moving away from a model which mostly focusses on the lowest price. Investigating innovative procurement models and already implementing existing models that promote collaboration, quality, risk sharing, and use of the most economically advantageous tender (MEAT) criteria.
- **New insurance & liability models** for innovations in construction, e.g. low-carbon construction.
- Supporting **circular economy & full digital workflows** in design and construction tenders.
- Evaluating the **use of BIM-models** as contractual deliverables.
- Global promotion of **EU standards** to enhance international competitiveness.

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