

Why does the EU care about the quality of buildings?

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The quality of buildings and retrofit projects have a direct impact on the energy consumption of building during the operational phase, which increases the financial risks for investors & building owners.

The European research project QUEST has mapped the financial impact of (lack of) quality in building projects and created a tool that shows the cost-benefit of investing in measures related to the quality management of construction.

Uptake of investments in construction

The EU's multiannual budget for 2021 - 2027 contains the largest stimulus package ever funded from the EU budget. The EU allocates a total of 240 billion EUR to rebuild Europe after covid-19 and simultaneously making it greener.

The EU wants to increase the uptake of investments in, among other things, real estate to go in a more sustainable direction. To accomplish this the EU has introduced a classification system, the EU Taxonomy (see fact box). Property owners must include investments and income from the properties in a sustainable flow and report this in accordance with the guidelines of the taxonomy. This implies that energy consumption figures must be reported to prove that the investments bring true sustainability. Investors who choose to disregard the taxonomy, the green cash flows and the reporting requirements, are prevented from receiving a share in green funds in general.

Buildings account for around 40% of EU energy consumption and 36% of greenhouse gas emissions from energy but each year only 1% undergoes energy-efficient renovation. If we are to live up to the goal of making Europe climate-neutral by 2050, drastic changes need to happen.

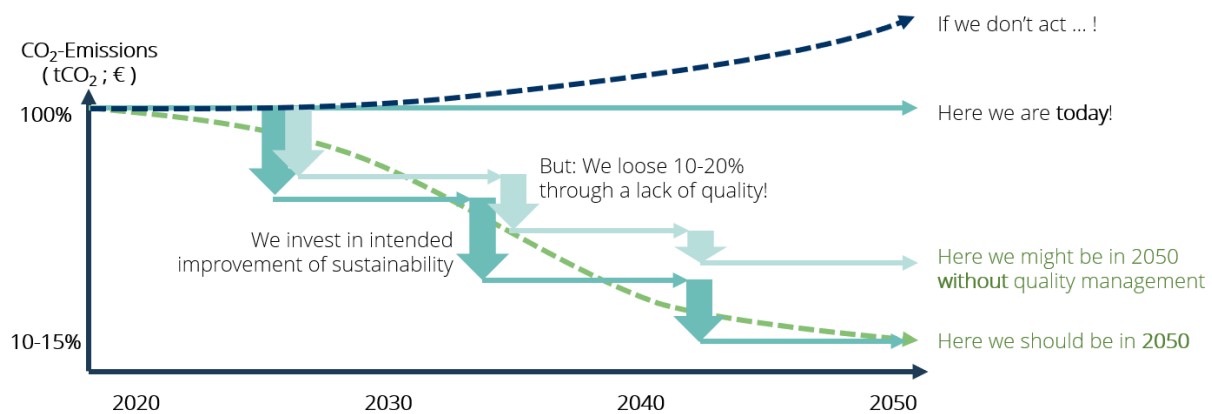
As part of the covid-19 recovery plan, the European Commission has announced its strategy for a renovation wave to improve the energy performance of buildings. By 2030, the goal is to renovate at minimum 35 million buildings.¹

This, together with massive public and private investment in sustainability, will mean that new technologies will be implemented in the buildings quickly and on a large scale.

¹ https://ec.europa.eu/energy/sites/ener/files/eu_renovation_wave_strategy.pdf

We have seen before how a boom in construction affects the quality of these projects. Everyone who works with real estate has anecdotes about poor quality in construction projects. There are several technical risks, each of which can affect the difference between what is expected during the pre-design phase and what is delivered during the operational phase of the buildings - the so-called 'Performance Gap'. Danish studies of this have documented on this before.²

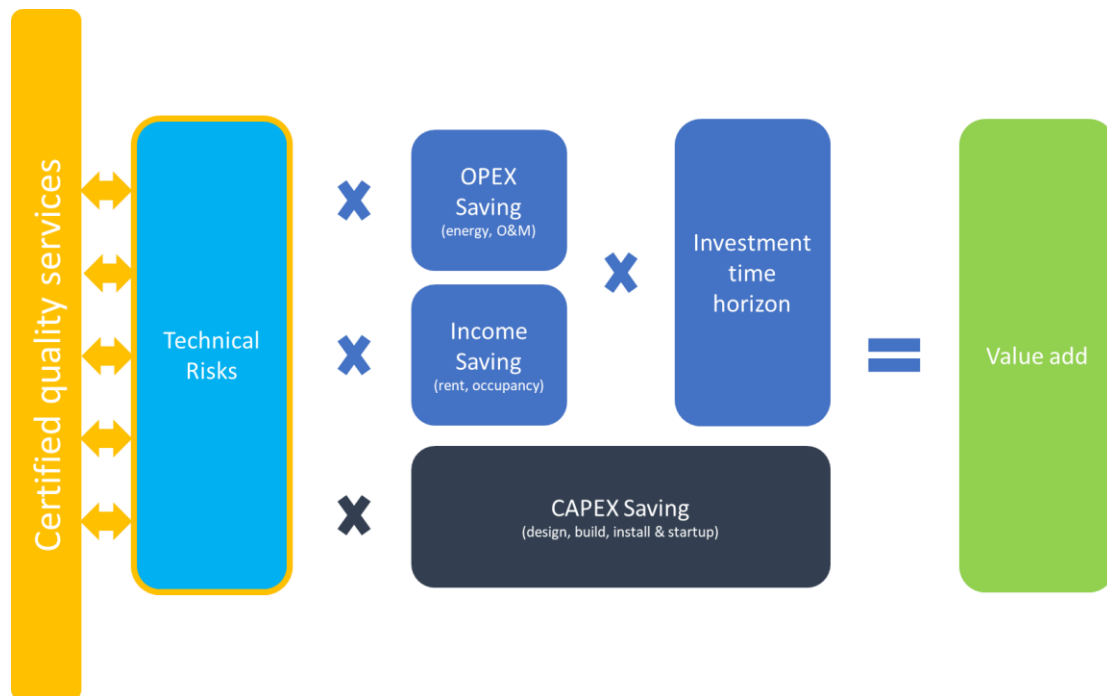
In the European research project QUEST we are trying to find scientific evidence for the value of the quality deficiency that these risks trigger. According to our findings it turns out that this corresponds between 10 and 15% of performance loss of the investments. If we are to get the expected return on all future investments in sustainable properties, it is necessary to manage the quality of both renovations and new construction projects.



QUEST has used collected data on the 'Performance Gap' and data from construction projects that have undergone thorough quality management processes to develop the '[QUEST Tool](#)'. The tool helps investors to calculate which quality management service will provide the greatest added value on a given construction project. The investor needs to enter key figures for the financial preconditions of the construction and the use of the building. QUEST Tool will then combine the financial and building project information with the technical risks for the building type and calculate the added value of investment in quality management services for your projects.

The calculation itself can be illustrated as shown below:

² Rasmussen H.L. and Jensen P.A. (2020), "A facilities manager's typology of performance gaps in new buildings", Journal of Facilities Management, Vol. 18 No. 1, pp. 71-87:
<https://orbit.dtu.dk/en/publications/a-facilities-managers-typology-of-performance-gaps-in-new-buildin>



We work with 3 types of Quality Management Services:

- [Technical Monitoring according to AMEV 135³](https://www.rehva.eu/fileadmin/Newsletter/Newsletter_material/AMEV_Tmon_2017_eng_1.pdf)
(Measured performance of the building related to desired values)
- [Commissioning-process certified by Copilot⁴](https://copilot-building.com/lets-de-risk-building/)
(Commissioning-process as described by IEA in ECBCS Annex 47)
- Sustainability certification according to DGNB, LEED, BREEAM or HQE

QUEST Tool has been developed with a friendly and non-technical user interface, as it is intended for investors and other financial stakeholders, who might not have insights into the technical details of their building projects. As investors often work under time-pressure leading up to construction projects, they must be able to have quick budget figures for the added value of these services. We have pilot tested this tool in Denmark, Germany, Italy and France and used data from these pilot projects to continuously optimize the calculation core of the tool.

Illustration of the tool's input field with 'default' input values:

³ https://www.rehva.eu/fileadmin/Newsletter/Newsletter_material/AMEV_Tmon_2017_eng_1.pdf

⁴ <https://copilot-building.com/lets-de-risk-building/>

| Your building project | |
|---|---------------------------------------|
| DE-RISK INVESTMENTS IN CONSTRUCTION & SUSTAINABLE BUILDINGS | Input values |
| What is the type of building? | Office |
| How do you rate the experience in the technical teams managing the project? | Medium confidence |
| What is the estimated project cost (per m²)? <i>Build/renovation/refurbishment/technical installation including design work</i> | 1.000 € €/m ² |
| What are the expected operating expenses per m² per year (OPEX/ m²/ year)? <i>Energy, operation & maintenance</i> | 20 € €/m ² /year |
| Define the time horizon that the rating should consider for your QM-investment (minimum 5 years, maximum 20 years) <i>This value is used to capitalise annual savings</i> | 10 years |

- And here is the result of the entries:

| De-risking solutions | | Value-add (per m ²) over investment lifetime of 10 years |
|---|--|--|
| CERTIFIED SERVICES * | Investment cost** (per m ²) | |
| Certified Technical Monitoring (ex. COPILOT) | 1 € €/m ² | 13 € €/m ² |
| Certified Building Commissioning (ex. COPILOT) | 10 € €/m ² | 63 € €/m ² |
| Certified Green Buildings (ex. LEED, BREEAM) | 20 € €/m ² | 20 € €/m ² |

QUEST Tool gives an indication of how large the investment is expected to be to achieve a given return. Inside the tool, it is calculated on the basis of the key figures and technical risks that the QUEST research has uncovered, and it has been taken into account that a building where quality is controlled must live up to the reporting rules in the EU Taxonomy.

In order to ensure a fairly uniform starting point for the results in the tool, it is assumed that certified processes used are performed by technically skilled persons who are independent of design or construction responsibility.

The QUEST Tool, can be tested here: <http://quest-tool.synavision.de/>

As a result of the research project, building owners are offered a digital and physical screening of their properties against the Taxonomy, so-called ESG Due Diligence. This gives building owners an opportunity to sort through their portfolios based on the individual buildings' opportunities to be part of the green circuit with green cash flows, and it provides valuable feedback that can contribute to the ongoing optimization of QUEST Tool.

The QUEST research consortium is constantly looking for pilot test projects that can help optimize the calculation core of the QUEST Tool. The tool will be provided freely, so that in future everyone can help secure the investments in quality management of construction projects that support the EU achieving its goals for 2030 and 2050.

EU Taxonomy:

In order to achieve the EU's climate and energy goals for 2030 and achieve the goals of the European Green Deal, it is important to direct investment towards sustainable projects and activities.

<https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal>

The current COVID-19 pandemic has reinforced the need to redirect capital flows to sustainable projects to make our economies, businesses and societies, especially health-related systems, more resilient to climate and environmental shocks and risks, as well as additional health benefits. To achieve this, a common language and a clear definition of what is sustainable is needed.

Therefore, the 'Action Plan on Financing Sustainable Growth' called for the creation of a common classification system for sustainable economic activities, an 'EU Taxonomy'.

<https://ec.europa.eu/info/publications/sustainable-finance-renewed-strategy>

QUEST:

The QUEST consortium consists of different actors in the fields of research and academia, building commissioning, energy consultancy and no-profit.

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<https://www.rehva.eu/eu-projects/project/quest>

<https://project-quest.eu/>

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