

Building refurbishments – Challenges and Solutions

Welcome to our online survey for architectural designers in the construction industry*! This survey is conducted by the German Federal Environment Agency [Umweltbundesamt] as part of the research project "Advancing the New European Bauhaus: Sustainable Mobility and Resilient Urban Spaces for a Better Quality of Life."

The aim of this survey is to build on previous studies and gather information on existing attitudes and experiences regarding building refurbishments†. We will identify how architectural designers think about building refurbishments, how they perceive the challenges they encounter, and the resources and support they require to facilitate building refurbishments.

Your insights and experiences can provide valuable information about the most common obstacles encountered during building refurbishments and the strategies and tools that can be used to overcome these challenges. We are interested in hearing from architectural designers who have already gained practical experience in building refurbishments, as well as those who have not yet conducted building refurbishments.

We want to thank you in advance for your participation in this survey and look forward to learning from your knowledge and experiences!

Attitude towards building refurbishments

To which extent do you agree with the following statements?

Please indicate your tendency on a scale from "Strongly Disagree" to "Strongly Agree" using the slider.

- 1. It's more ecologically sustainable to build new than to build within the existing building stock.**

Strongly Disagree—Strongly Agree

- 2. It's easier to build within the existing building stock than to build new.**

Strongly Disagree—Strongly Agree

- 3. New buildings offer more creative opportunities than the existing building stock.**

Strongly Disagree—Strongly Agree

- 4. It is the responsibility of architectural designers to preserve existing buildings instead of allowing new construction**

* The term "architectural designers" [German original term "Planende"] refers to planning professions such as architects, civil engineers, and specialist planners.

† In this questionnaire, the term "building refurbishments" [German original term "Bauen im Bestand"] refers to construction measures on existing buildings, such as modernizations, energy and non-energy retrofits, renovations, and the addition of additional stories. It does not include other sustainable construction practices, such as infill development.

Strongly Disagree—Strongly Agree

- 5. Architectural designers have sufficient influence in their position to prioritize projects within the existing building stock over new construction.**

Strongly Disagree—Strongly Agree

Knowledge of sustainable construction practices and previous experiences in building refurbishments.

- 1. How would you assess your knowledge of sustainable building practices[‡]?**

Please indicate your tendency on a scale from „Very poor“ to „Very good“ using the slider.

Very poor—Very good

- 2. Do you have any additional qualifications in the field of energy efficiency and sustainable construction?**

Multiple options can be selected

- Energy consultant
- Expert on the German Efficiency-house
- German “Passive-House” planer
- Fire protection planner
- Construction biologist
- BNK (Evaluation system for sustainable small residential building) auditor
- DGNB (German Sustainable Building Council) auditor
- BNB (German federal assessment system for sustainable buildings) coordinator
- No further qualifications
- Other: _____

- 1. Have you already undertaken building refurbishments?**

- Yes
- No

- 2. When did you last work on a building refurbishment?**

- I am currently working on a building refurbishment
- In the past year
- In the past five years
- In the past 10 years
- Over 10 years ago

- 3. Which construction work was conducted in this project?**

Multiple options can be selected

- Non-energy retrofit
- Energy retrofit
- Modernisation

[‡] For example: life cycle assessments (LCA), life cycle costs (LCC), sustainability criteria, space efficiency, energy efficiency, etc.

- Renovation
- Addition of another story
- Other: _____

4. How satisfied were you with the result of your most recent building refurbishment?

Please indicate your tendency on a scale from „Very dissatisfied“ to „Very satisfied“ using the slider.

Very dissatisfied—Very satisfied

5. Who were the clients of your most recent refurbishment project?

- Private owners
- House management
- Project developers
- Housing cooperatives among owners
- Housing cooperatives among renters
- Public sector (but not housing cooperatives among renters)
- Business owners
- Other: _____

6. What was your most recent refurbishment project?

- Small apartment building
- Apartment building
- Large apartment building
- Office and administrative buildings
- Schools and kindergartens
- Commercial buildings
- Commercial real estate
- Retail real estate
- Hospitals
- Wasteland
- Other: _____

7. Where was your most recent refurbishment project?

- Abroad [outside of Germany] (please specify the country): _____
- In Germany (please specify the state): _____

Reasons for conducting building refurbishments

To what extent did the following reasons play an important role in your decision accept your most recent refurbishment project?

Please indicate your tendency on a scale from „Not at all“ to „Extremely“ using the slider.

1. To reduce the building's energy consumption

Not at all—Extremely

2. To prevent demolition and new construction

Not at all—Extremely

3. To preserve green spaces, the natural environment and farmland

Not at all—Extremely

1. To reduce so-called „grey“⁵ emissions

Not at all—Extremely

2. Optional: Other reasons

Please provide further reasons that you consider important.

Social professional context

3. Roughly estimated—How many of the architectural designers you know regularly conduct building refurbishments?

- None
- The minority
- Approximately half
- The majority
- All

To which extent would the majority of the architectural designers you know agree with the following statements?

Please indicate your tendency on a scale from "Strongly Disagree" to "Strongly Agree" using the slider.

2. It's more ecologically sustainable to build new than to build within the existing structures.

Strongly Disagree—Strongly Agree

3. It's easier to build within the existing structures than to build new.

Strongly Disagree—Strongly Agree

4. New buildings offer more creative opportunities than the existing building stock.

Strongly Disagree—Strongly Agree

⁵Indirect greenhouse gas emissions that occur during the life cycle of a building, including the production and transportation of construction materials as well as the disposal of the building at the end of its life.

- 5. It is the responsibility of architectural designers to preserve existing buildings instead of allowing new construction**

Strongly Disagree—Strongly Agree

- 6. Architectural designers have sufficient influence in their position to prioritize projects within the existing building stock over new construction.**

Strongly Disagree—Strongly Agree

Attitude towards the environment

To which extent would you agree with the following statements? ** “I am concerned about environmental problems and climate warming because of the consequences for”:

Please indicate your response on a scale from „not at all important” to „very important” using the slider.

- **Plants**

Not at all important—Very important

- **Marine life**

Not at all important—Very important

- **Birds**

Not at all important—Very important

- **Animals**

Not at all important—Very important

- **Me**

Not at all important—Very important

- **My health**

Not at all important—Very important

- **My future**

Not at all important—Very important

- **People in my country**

Not at all important—Very important

- **All people**

** This scale is taken and adapted from the following publication: Schultz, P. W. (2001). The structure of environmental concern: concern for self, other people, and the biosphere. *J. Environ. Psychol.* 21, 327–339. doi: 10.1006/jevp.2001.0227."

Not at all important—Very important

- **Children**

Not at all important—Very important

- **Future generations**

Not at all important—Very important

Barriers – Part 1

In your opinion, what is the main obstacle for building refurbishments?

[For architectural designers who haven't yet conducted refurbishments]

To which extent do the following barriers^{††} prevent you from conducting refurbishments?

[For architectural designers who have already conducted refurbishments]

To which extent did the following barriers hinder you during your last refurbishment?

Please indicate your tendency on a scale from „Not at all“ to „Extremely“ using the slider.

1. The required total measures exceed the budget of the client

Not at all—Extremely

2. Cost risks are too high for the clients

Not at all—Extremely

3. A total renovation is not cheaper than demolition and new construction

Not at all—Extremely

4. A high liability risk for me

Not at all—Extremely

5. Measures do not prove cost-effective for the clients

Not at all—Extremely

6. Funding is inadequate

^{††} Some of the following barriers are taken from the following publication: Patz, C., Eder, V., Carl, C., Sethi-Rinkes, A., Korff, M., & Lill-Kuhne, I. (2020). Umfrage der Architects for Future an planende Kolleg*innen zu den Hindernissen beim Bauen im Bestand: Bericht über die Ergebnisse. Some formulations were taken directly from this study to ensure comparability of the results.

Not at all—Extremely

7. It is too complicated and/or time-consuming to apply for public funding

Not at all—Extremely

Barriers – Part 2

[For architectural designers who haven't yet conducted refurbishments]

To which extent do the following barriers prevent you from conducting refurbishments?

[For architectural designers who have already conducted refurbishments]

To which extent did the following barriers hinder you during your last refurbishment?

Please indicate your tendency on a scale from „Not at all” to „Extremely” using the slider.

1. Lack of qualified professionals

Not at all—Extremely

2. Refurbishment projects are not beneficial for my career

Not at all—Extremely

3. I do not have enough influence in my position to prioritize refurbishment projects over new constructions

Not at all—Extremely

4. I lack the necessary expertise

Not at all—Extremely

5. Refurbishment projects lack aesthetic appeal

Not at all—Extremely

6. Clients acts only based on urgency

Not at all—Extremely

7. Clients are afraid of unexpected issues during construction

Not at all—Extremely

8. Clients lack environmental consciousness

Not at all—Extremely

9. Refurbishment projects are not attractive to clients

Not at all—Extremely

Barriers – Part 3

[For architectural designers who haven't yet conducted refurbishments]

To which extent do the following barriers prevent you from conducting refurbishments?

[For architectural designers who have already conducted refurbishments]

To which extent did the following barriers hinder you during your last refurbishment?

Please indicate your tendency on a scale from „Not at all“ to „Extremely“ using the slider.

- 1. The submission and/or processing of building applications is too complex and/or time-consuming**

Not at all—Extremely

Optional: Can you give an example?

- 2. Unfavorable legal framework conditions for refurbishments in the respective [regional] building code.**

Not at all—Extremely

- 3. The requirements dictated by heritage conservation are too restrictive**

Not at all—Extremely

Optional: Can you give an example?

- 4. It is not economically feasible to fulfill the required fire protection standards**

Not at all—Extremely

- 5. Escape route widths are not feasible**

Not at all—Extremely

- 6. It is not economically feasible to fulfill the mandated requirements of the „*Building Energy Act*“ [Gebäudeenergiegesetz].**

Not at all—Extremely

- 7. It is not economically feasible to fulfill the mandated accessibility standards**

Not at all—Extremely

- 8. It is not economically feasible to fulfill the mandated parking space standards.**

Not at all—Extremely

- 9. It is not economically feasible to fulfill the prescribed setback distances**

Not at all—Extremely

- 10. It is not economically feasible to fulfill the mandated soundproofing standards**

Not at all—Extremely

- 11. Optional: Other reasons**

Please list any other barriers you consider to be important

Incentives – Part 1

[For architectural designers who haven't yet conducted refurbishments]

To which extent would the following incentives motivate you to conduct more building refurbishments?

[For architectural designers who have already conducted refurbishments]

To which extent would the following incentives motivate you to conduct more building refurbishments?

Please indicate your response on a scale from „Not at all” to „Extremely” using the slider.

- 1. The opportunity to use new technologies (e.g., serial renovations)**

Not at all—Extremely

- 2. Targeted funding for non-energy-related refurbishment measures**

Not at all—Extremely

- 3. Higher demolition costs**

Not at all—Extremely

- 4. Better consideration and taxation of embodied or „grey” emissions^{##}**

Not at all—Extremely

- 5. More critical discussion about the construction of new buildings**

Not at all—Extremely

^{##} Indirect greenhouse gas emissions that occur during the life cycle of a building, including the production and transportation of construction materials as well as the disposal of the building at the end of its life.

6. More ‚Best-Practice‘ examples (case studies of successful building refurbishment projects)

Not at all—Extremely

Incentives – Part 2

[For architectural designers who haven't yet conducted refurbishments]

To which extent would the following incentives motivate you to build within the existing building stock?

[For architectural designers who have already conducted refurbishments]

To which extent would the following incentives motivate you to build more within the existing building stock?

Please indicate your response on a scale from „Not at all“ to „Extremely“ using the slider.

1. More awards dedicated to building refurbishment projects

Not at all—Extremely

2. Greater consideration of Life-cycle assessments (LCAs) in the evaluation of projects

Not at all—Extremely

3. More expertise for other stakeholders in the construction process

Not at all—Extremely

4. More education and awareness for building authorities

Not at all—Extremely

5. More awareness about the value of the existing building stock for the general population.

Not at all—Extremely

6. Optional: Other incentives

Please list any other incentives you consider to be important

Personal Information

Gender

Please state your gender.

- Male
- Female
- Diverse
- Prefer not to reply

Age

Please provide your age (in years).

Are you active in the planning phase of the construction process?

- Yes
- No

Place of employment

Please specify your primary workplace.

Country: _____

State: _____

- Large city (population over 100,000)
- Midsized city (population between 20,000 and 100,000)
- Small city (population under 20,000)

Education

Please indicate your field of specialization (multiple selections possible).

- Architecture
- Interior Architecture
- Landscape Architecture
- Civil Engineering
- Building Physics
- Urban planning
- Other: _____

Profession

What is your current occupation? (Multiple selections possible)

- Architect
- Interior Architect
- Landscape Architect
- Civil engineer
- Specialist planner
- Urban Planer
- Energy Consultant

- Teaching/Research
- Other: _____

Professional Experience

For how many years have you been working in the construction industry?

Optional: Do you have any additional suggestions, comments, or questions?

Would you like to be informed about the results of this study?

If so, please send us a brief email to [REDACTED]."

Thank you very much for your participation!

We sincerely appreciate your active participation in this survey.