

COVID-19 guidance for the Swedish construction and real estate sectors – results from a survey study



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Buildings Post Corona is a Swedish collaborative research project between Chalmers, KTH Royal Institute of Technology, Lund, and Umeå Universities. The project intends to provide knowledge related to designing, maintaining and operating sustainable buildings with a healthy and good indoor environment. The project aims to contribute to the knowledge and processes needed for the construction and real-estate sectors to meet the needs of the post-pandemic era. The COVID-19 crisis has stressed the importance and urge of this research, which is financially supported by FORMAS (FORMAS is a Swedish Research Council for Sustainable Development, formas.se).

Covid 19 guidance and practice

One of the initial steps of the Buildings Post Corona project has been to collect experiences among various actors within the construction and real estate sectors during the recent COVID-19 pandemic. This step was conducted by developing and using a questionnaire survey study. The aim was to create a picture of how the COVID-19 pandemic influenced various stakeholders and entities.

One set of questions deemed especially important relates to the advice provided by authorities and trade organisations, e.g., to what extent such advice was utilized and if it led to any actions. In line with the overall objective of the research project, there was a special focus on indoor air quality and air handling measures.

The survey study in brief

The questionnaire is web-based, and can be accessed on the project homepage and via this link (<https://www.kth.se/form/6268ff115f387cf0ec9ebf2e>). As long as the link works, we are grateful for more answers.

The survey was widely disseminated and targeted respondents through multiple channels, including the reference group of the Buildings Post Corona project, the Swedish Energy Agency's network of non-residential real estate owners (BELOK belok.se), the exhibition Nordbygg (nordbygg.se) 2022 - directed to the building and construction industry in the Nordic countries. It was also announced via influential associations such as SWESIAQ (swesiaq.se) and the trade organization Svensk Ventilation (svenskventilation.se).

The questionnaire was initially published in Swedish, but an English translation was made available. The results will be published in a report available for download from the project homepage (buildingspost-corona.se).

Summary of results

The following is a summary of the survey study results obtained until end of 2022. The questionnaire was completed by 35 respondents, most of which represent building construction and management within the healthcare sector in Sweden. This may indicate a stronger motivation to utilize general information and specific guidance when working with buildings specifically targeting healthcare compared to other types of buildings, such as offices, schools and residential buildings. Most respondents work with entire property portfolios or premises with multiple buildings. Over one-third of the respondents represent management and decision-making; a category expected to be informed about any guidance from authorities and relevant trade organizations.

The respondents were mainly involved in the requirements specification, selection of technical solutions, construction, and operation. Real-estate owners were the major single professional category represented, followed by building operators, technical property managers, developers/procurers, contractors, and consultants.

The process towards taking action

- Over 90% of the respondents decided to implement – or not implement – changes or measures

to respond to the pandemic based on risk analysis or dialogue.

- According to 20% of the respondents, the risk analysis/dialogue was initiated by the tenants.
- With one exception, the risk analysis/dialogue led to implementing one or more changes or measures.

The sources of guidance

- 70% of respondents based their actions on guidance from authorities.
- The use of guidance from the authorities in summary:
 - 94% of the respondents followed guidance from Swedish Public Health Authority.
 - According to about one-third of the respondents, Public Health Authority was the only source of guidance.
 - 49% of respondents used additional guidance provided by the Work Environment Authority.
 - 17% of the respondents used additional guidance from the Swedish National Board of Housing, Building, and Planning.
- 34% of the respondents used internal, already existing routines applied in the organization.
- 25% of the respondents stated that guidance from trade organizations was used.
- Information from technology suppliers resulted in action, according to one respondent only.
- The guidance from authorities was judged as clearer, more realistic, and more accessible compared to guidance from trade organizations.
- The guidance from authorities and trade organizations were judged as being, to a great extent, in harmony by 6% of the respondent only.

Implemented measures and their assumed effect

- 71% of the respondents reported that improved cleaning, hand hygiene, and limitation of the number of people in close contact were among the actions undertaken.
- 54% of the respondents implemented ventilation-related actions, and only 17% replied that ventilation was the only category of action undertaken.
- A list of ventilation-related measures has been extracted from the questionnaire results.
- 68% of the respondents assumed that the implemented measures had a good impact, at least partly, on reducing the risk of disease transmission.
- 79% of respondents assumed that the measures had a good impact, at least partly, on creating a sense of safety and security.

Reflections on the result: Identifying Imbalances in Guidance Provided during the Pandemic

Results from the survey study highlights an imbalance in the guidance provided during the pandemic, as illustrated by the diagrams in **Figure 1**. Specifically, guidance from the Public Health Authority dominated strongly over any other guidance, with daily press conferences emphasizing physical distance and hand hygiene, while overlooking the possible importance of ventilation and air cleanliness. In contrast, the Swedish Work Environment Authority provided guidance primarily via their web portal, highlighting ventilation as an essential factor for air quality and for reducing the risk of indoor disease transmission.

Other trade organizations, such as Svensk Ventilation and the Nordic Ventilation Group (NVG scanvac.eu/nordic-ventilation-group-nvg.html) also provided guidance in this regard, which mainly corresponded to guidance provided by the European Federation of Heating, Ventilation, and Air Conditioning Associations (REHVA rehva.eu).

The survey shows that although some respondents worked along the lines of the ventilation-related safety precautions provided by trade organizations, this was not the direction pointed out by the influential Public Health Authority. Therefore, different Swedish authorities and trade organizations provided partly

different guidance on how to limit disease transmission in indoor environments.

A final remark is that it is crucial to harmonize guidance from all relevant sources, including authorities, trade organizations, industry, and academia, and efficiently distribute the message to all stakeholders to improve our ability to handle future pandemics or similar events efficiently.

In summary, the current setup with multiple sources for guidance and information appears to result in a low implementation rate of guidance not directly proposed by the Public Health Authority. Thus, it is crucial to establish a more coordinated approach to reduce imbalances in guidance and better protect public health.

The project continues

The findings of this survey study hold significant implications for building owners, planners, and contractors. Based on the results, updated guidelines and checklists are recommended to ensure better preparedness for similar pandemics in the future.

This effort is ongoing with a broad scope. The Building Post Corona team (buildingspostcorona.se/participants) invites all relevant networks and consortiums, including REHVA and its members, to join efforts, share ideas and explore collaboration opportunities. ■



Figure 1. The replies regarding the perceived value of the guidance provided by trade organizations (left) and authorities (right).