

BIM for public authorities

Basic research for the standardized implementation of BIM in the building permit process

Sustainable Built Environment D-A-CH Conference 2019

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Daniel Piazza^{1,2}, Martin Röck¹, Giada Malacarne², Alexander Passer¹, Carmen Marcher^{2,3}, Dominik T. Matt^{2,3}

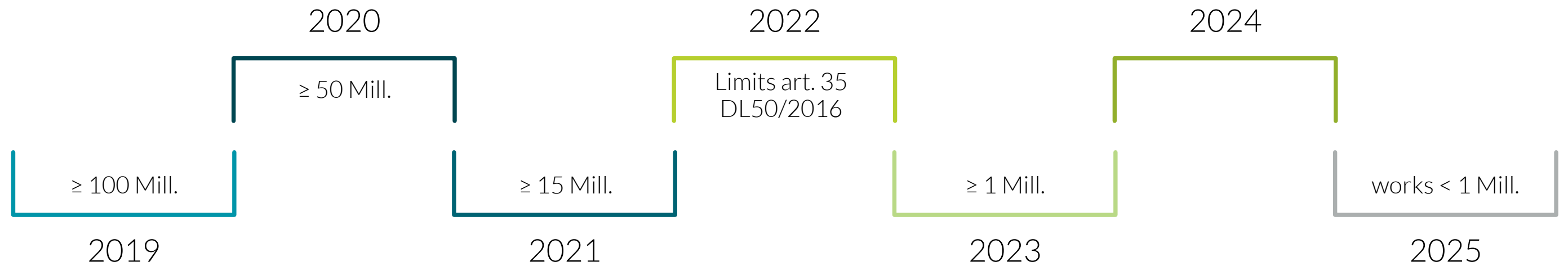
¹ Working Group Sustainable Construction, TU Graz (AT)

² Fraunhofer Italia Research (IT)

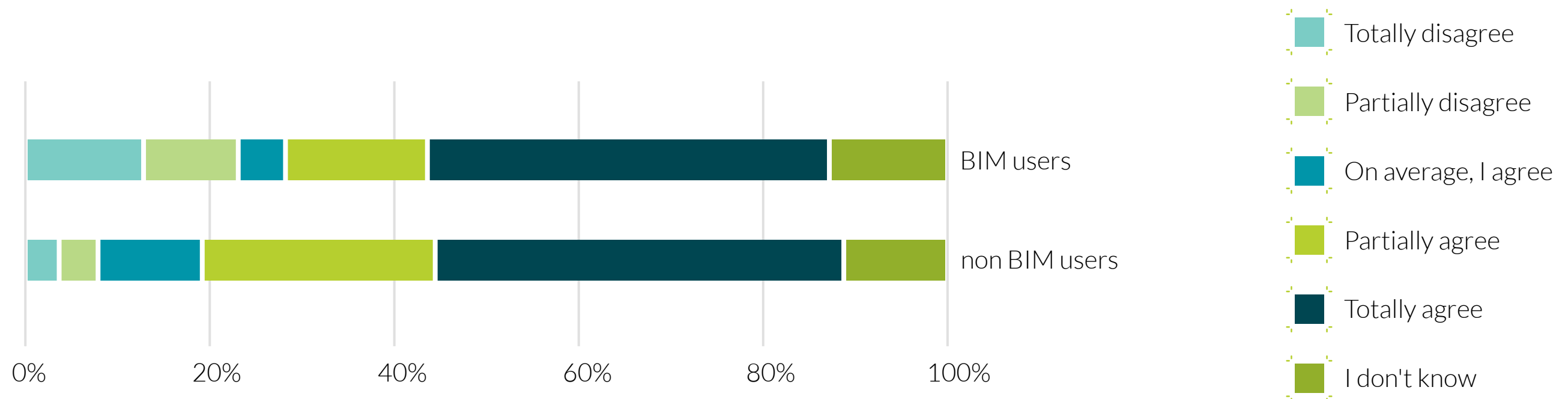
³ Free University of Bozen-Bolzano (IT)

introduction

Roadmap Italy



Will the public authorities increasingly request the use of BIM?



Data source: BIM-Report Alto Adige 2018

methodology

phase 1: building permit research of the current as-is process

legal background research and BPMN analysis of the current building permit process research



phase 2: statistical evaluation of past building permit applications

evaluation of building permits of the last 5 years



phase 3: information requirements analysis

requirements determination for the implementation of BIM in the application process



building permit process research

[legal research & process analysis]



National Legislation

Italian Consolidated Building Law (Testo Unico per l'Edilizia)

Public Procurement Code (Decree-Law no. 50/2016)

Provincial Legislation

Regional Planning Law (No. 13/1997)

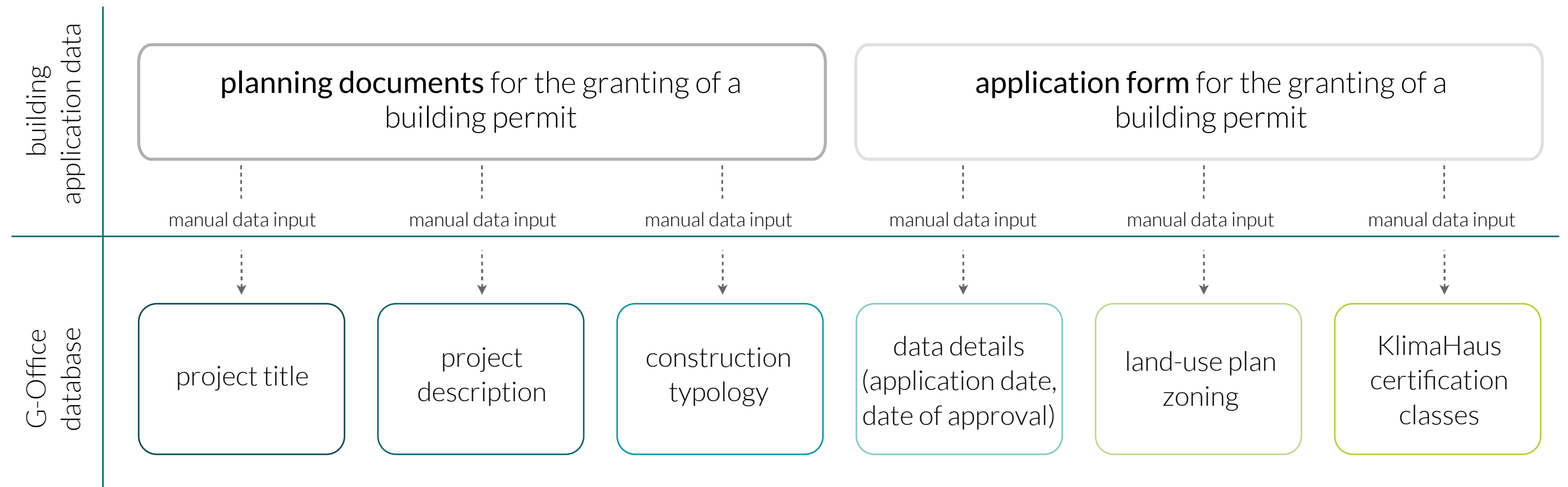
Public Procurement Regional Law (No. 161/2015)

Municipal Legislation

Municipality building code

evaluation of past building permit applications

[data information flow of the data analyzed in G-Office]



[area of investigation]

administrative/geographical circumstances



2 large municipalities
> 10.000 inhabitants



3 medium municipalities
3.000 - 10.000 inhabitants



3 small municipalities
< 3.000 inhabitants



data sets

11.860 investigated data entries

information requirements

[source documents]



application form for the granting of a building permit



municipal **building code** (regolamento comunale edilizio)



questionnaire of the **National Statistics Institute**



regulation concerning the **removal of architectural barriers**

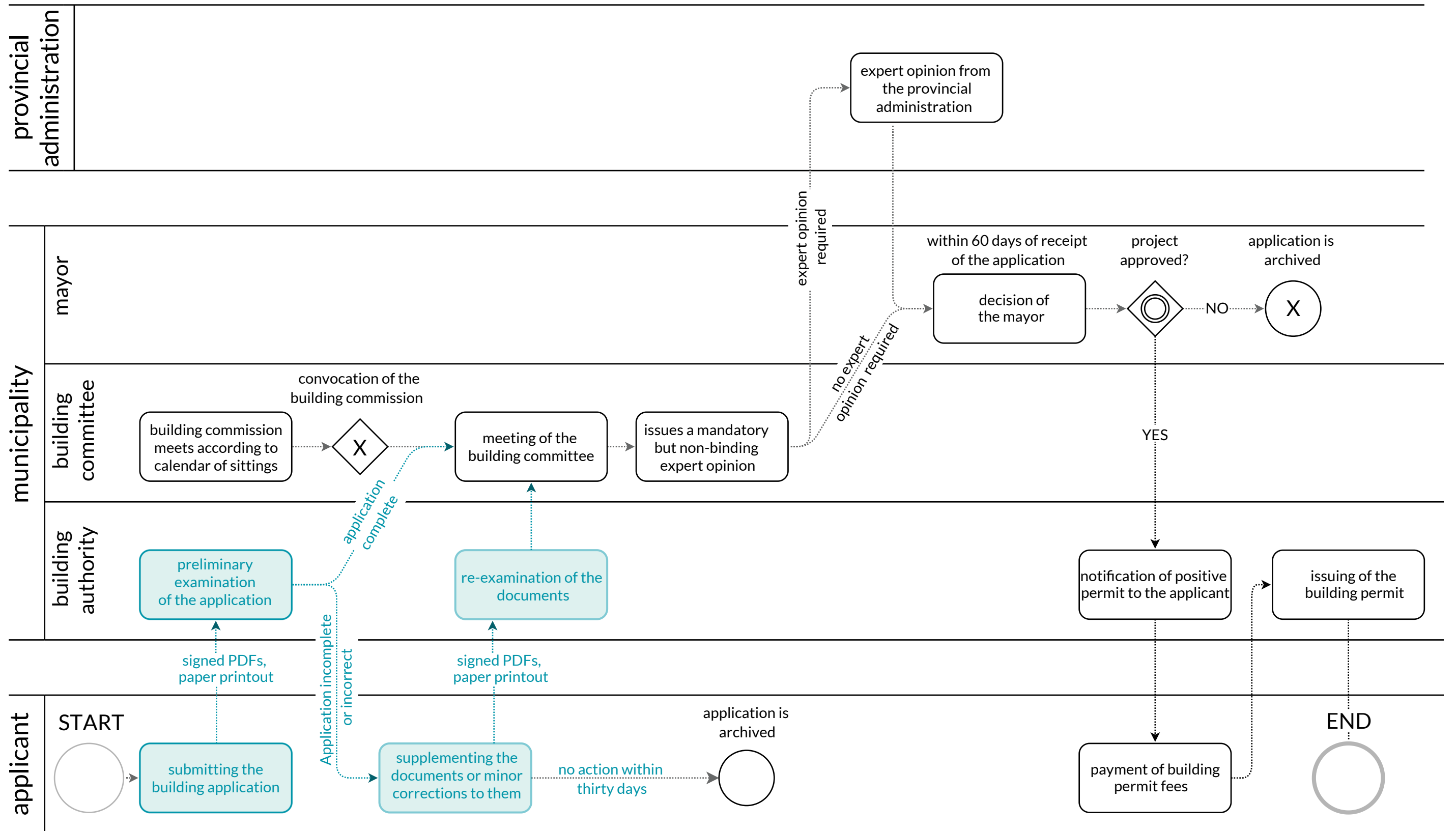


regulation on **hygiene and health standards**



KlimaHaus technical guideline for new constructions

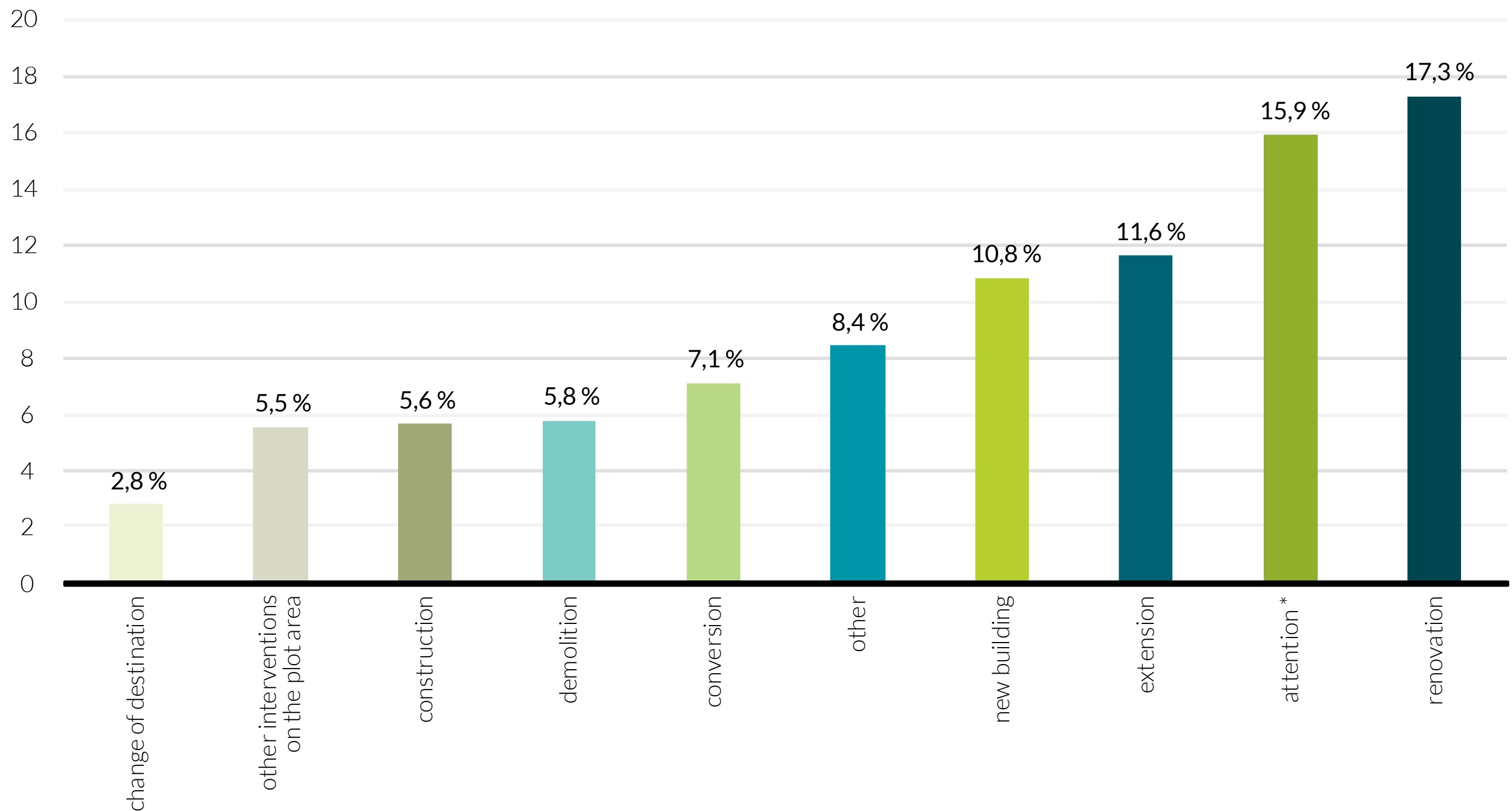
results - building permit process research



results - evaluation of past building permit applications

Typology:

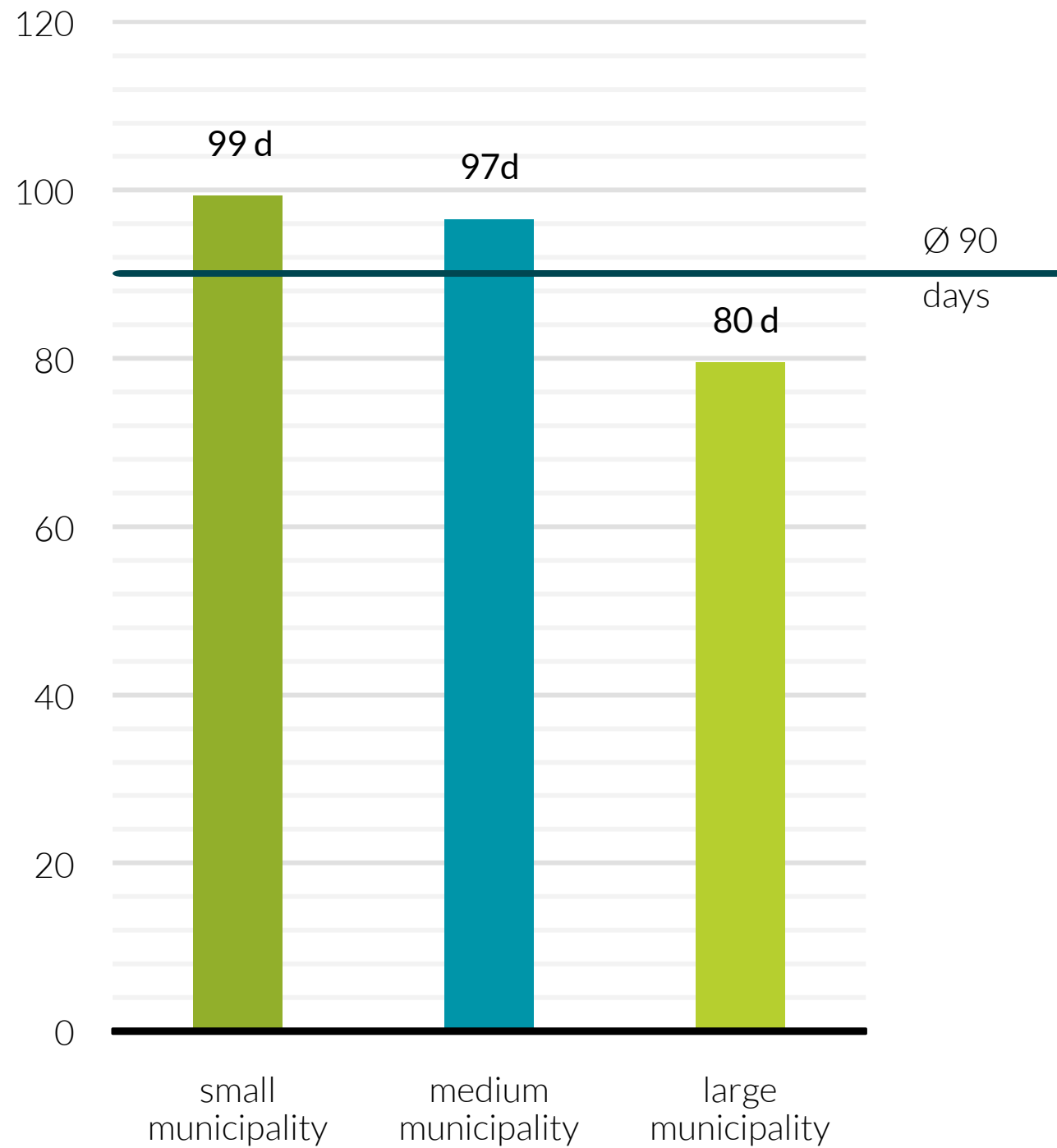
top 10 distribution



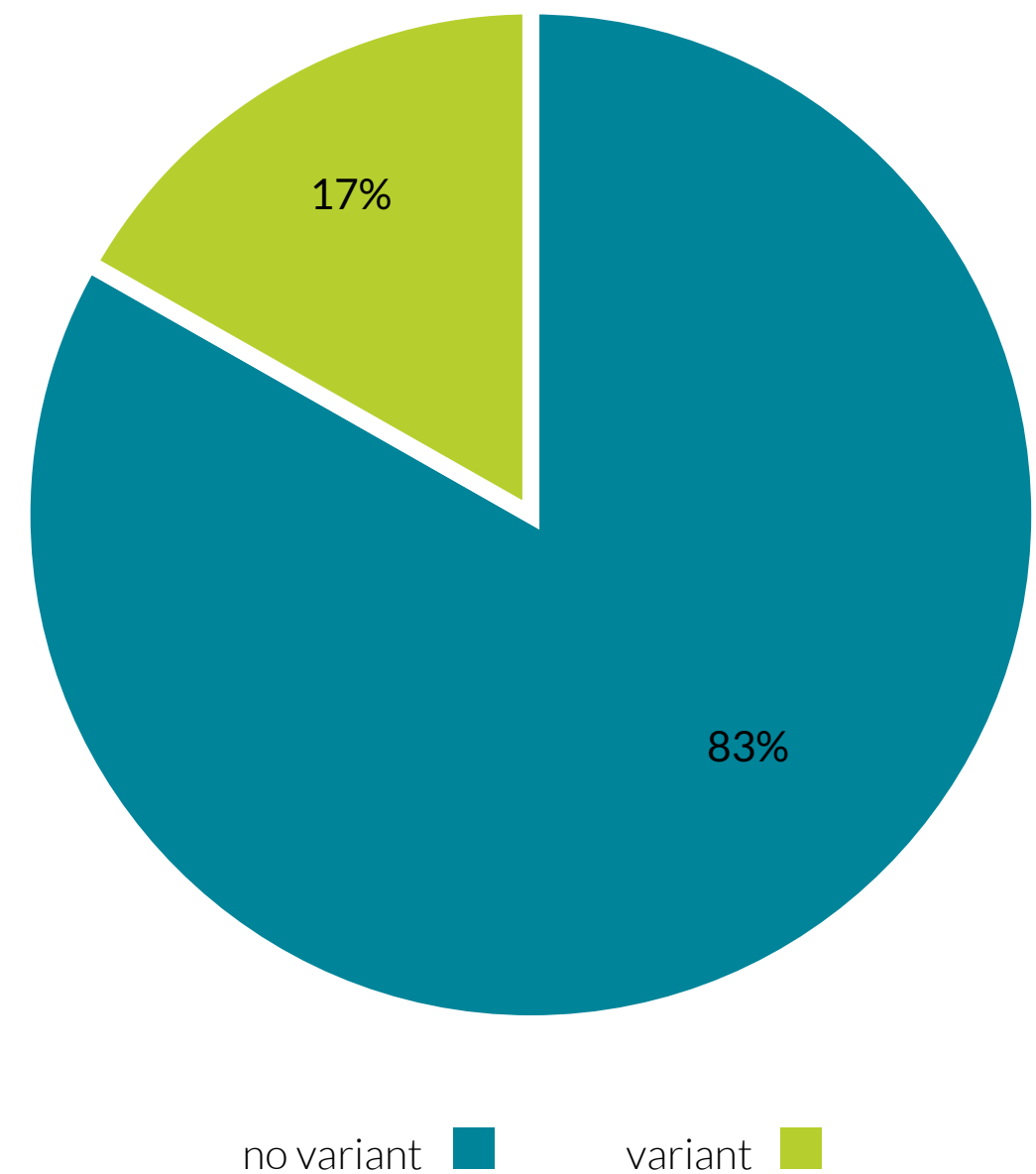
* building typology was **not accurately specified**, and a **placeholder** was used instead.

results - evaluation of past building permit applications

Duration of the building permit process:



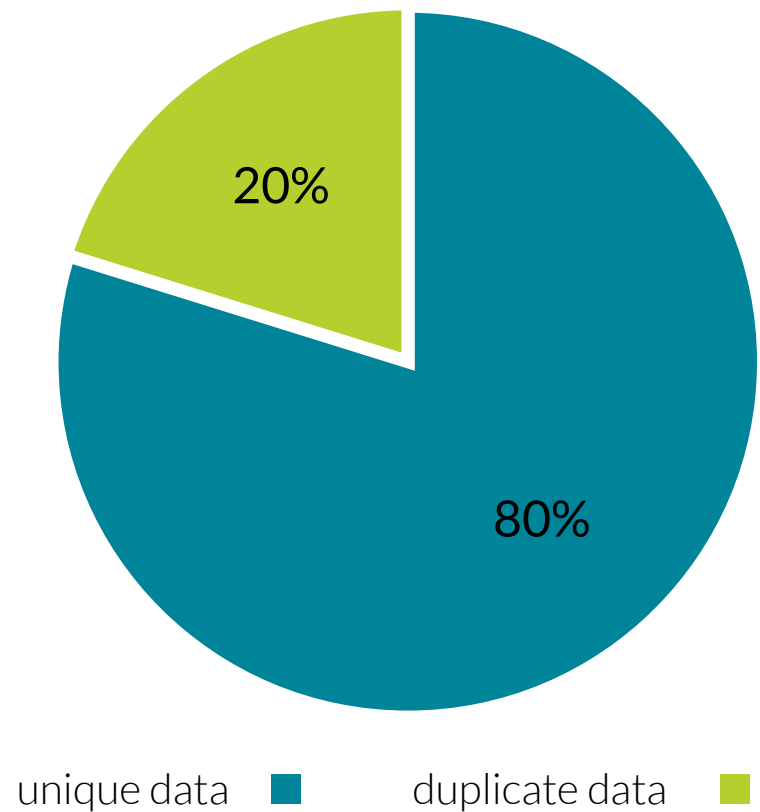
Presented as a variant:



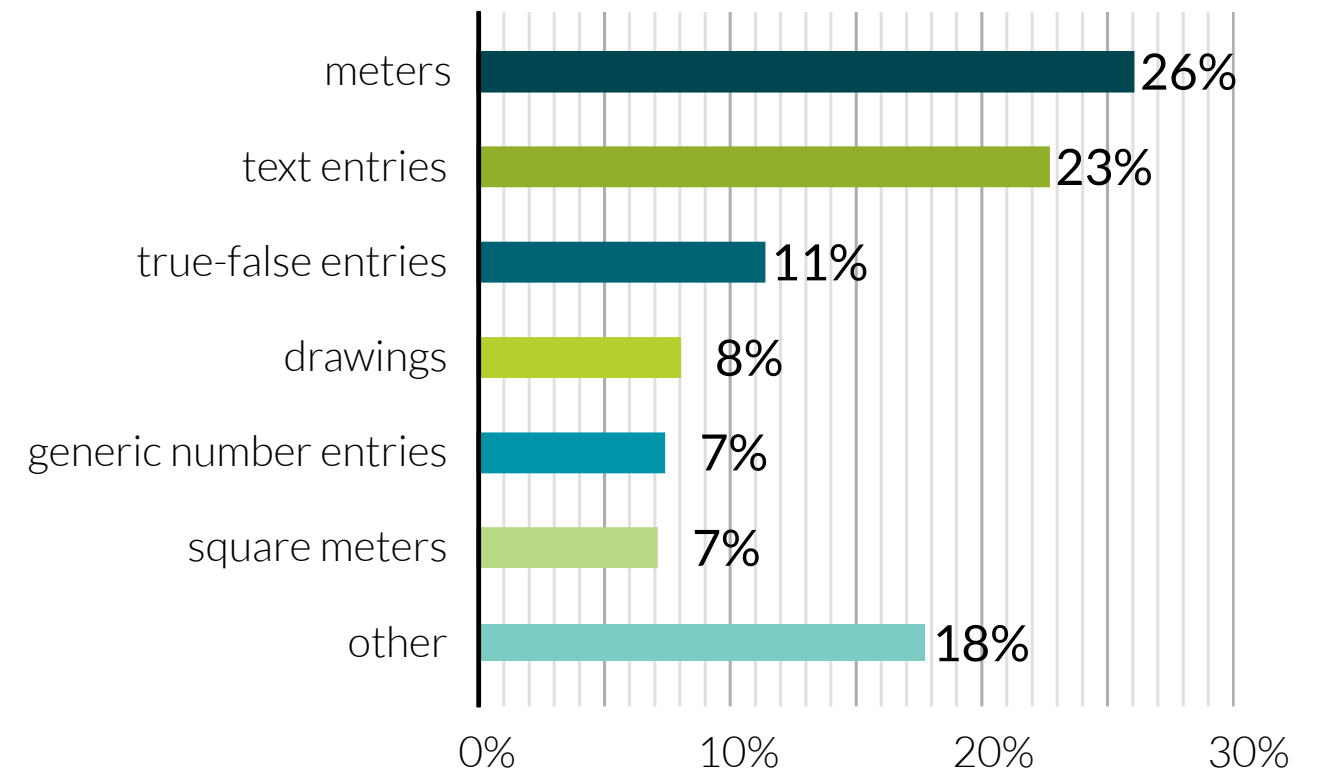
results - information requirement definition

3

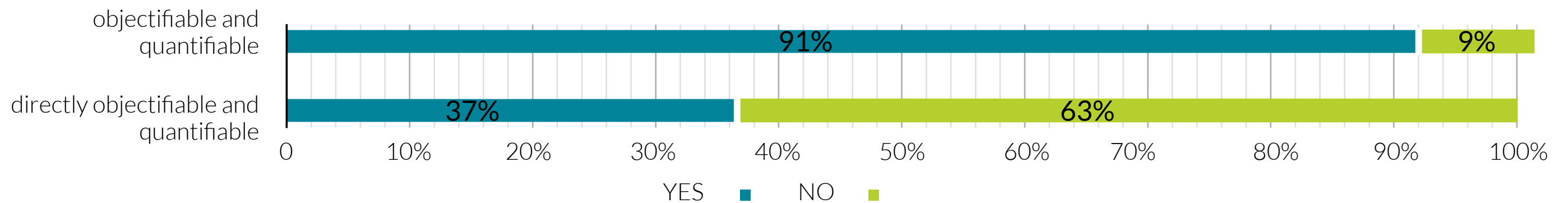
Redundant information requirements:



Unit of measurement of the information requirements:



Objectifiable and quantifiable information requirements:



discussion

building permit process research

[legal research & precoss analysis]

- **selective implementation** into the building permit process **possible**
- **poor role** of sustainability aspects
 - **insufficient consideration** of the **requirements**
- a **modest overall efficiency** of the process

1

evaluation of past building permit applications

[GOffice - evaluated data]

- the **status quo differs significantly** from the digital technical possibilities available today
- the dataset reveals a **medium processing time**, relatively high number of variants
- the **database is incomplete** - not fully representative **modest data quality**
- **poor sustainability aspects** (low number of KlimaHaus entries)

2

discussion

information requirement

[definition of set of parameters]

- **successful definition** of the information requirements
- **high number of objectifiable and quantifiable items** facilitate the introduction
- **high number of sustainability parameters**
- **confirmation of requested redundant information**
 - **high complexity of requirements** - data not available

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In the meantime,

thanks for your time.

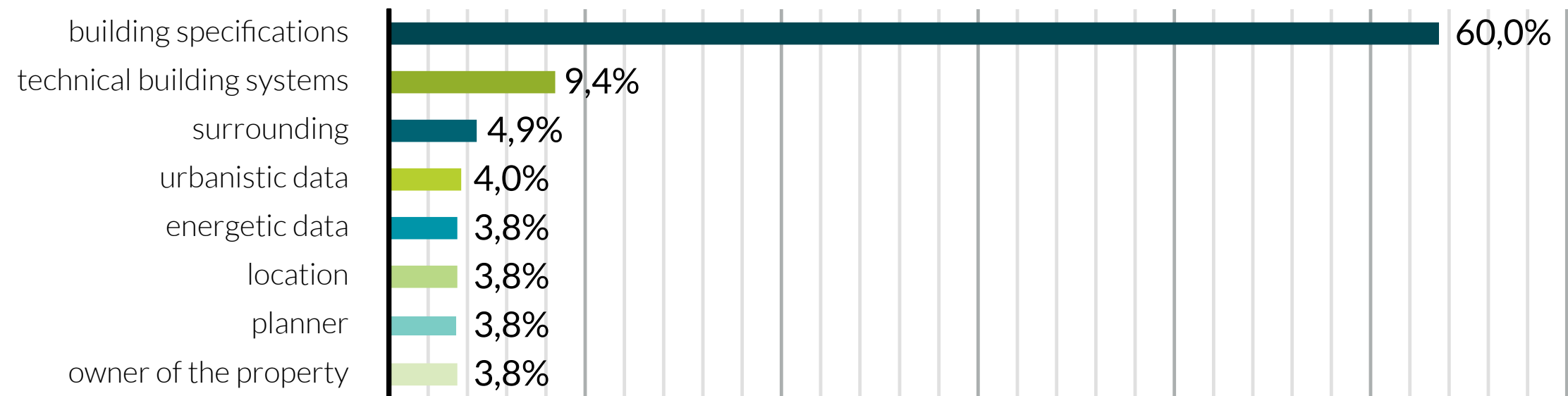
Suggestions are welcome.

reference list

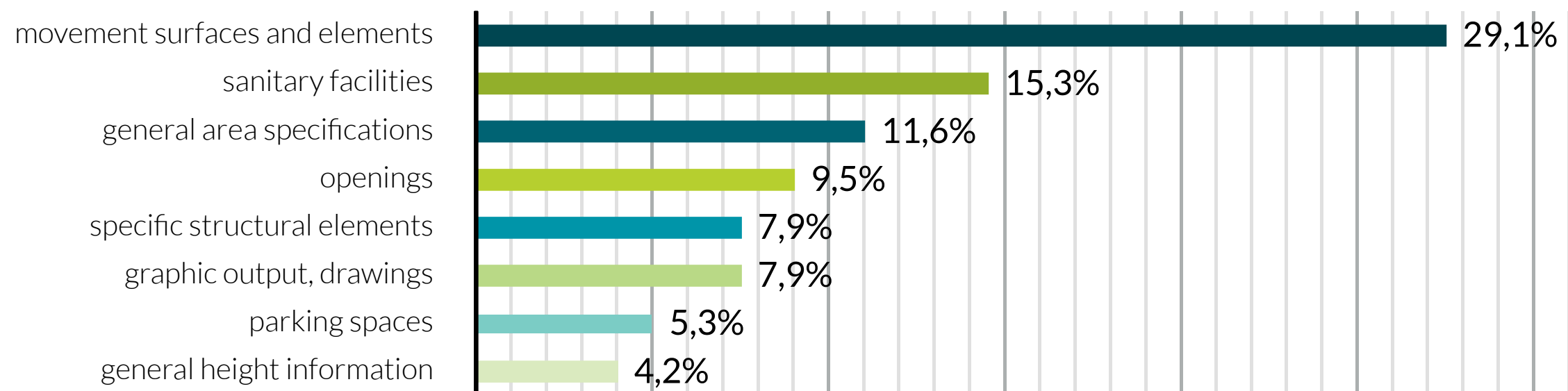
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- Agentur für Energie Südtirol - KlimaHaus 2017 **KlimaHaus technical guideline for new constructions**. Bolzano
- 2010 **Regulation concerning the Removal and Overcoming of Architectural Barriers**, Decreto del Presidente della Provincia 9 novembre 2009 , n. 541, Bolzano.
- 1977 **Regulation on Hygiene and Health Standards** Decreto del Presidente della Giunta provinciale 23 maggio 1977, n. 22

results - information requirement definition

information categories of the information requirements - top 8 distribution



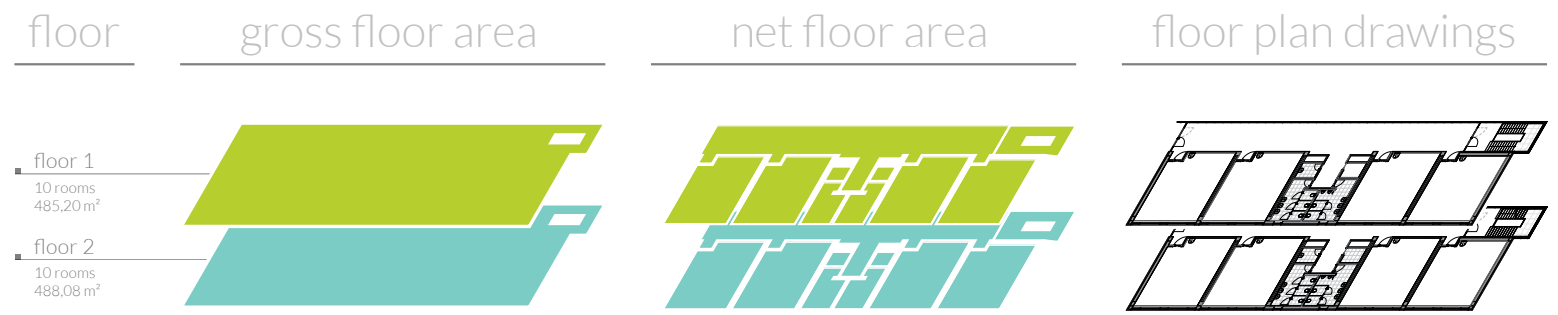
information categories of the information requirements - building specifications - top 8 distribution



case study - a first step...

case study: School for Economics Bolzano

Project status: completed

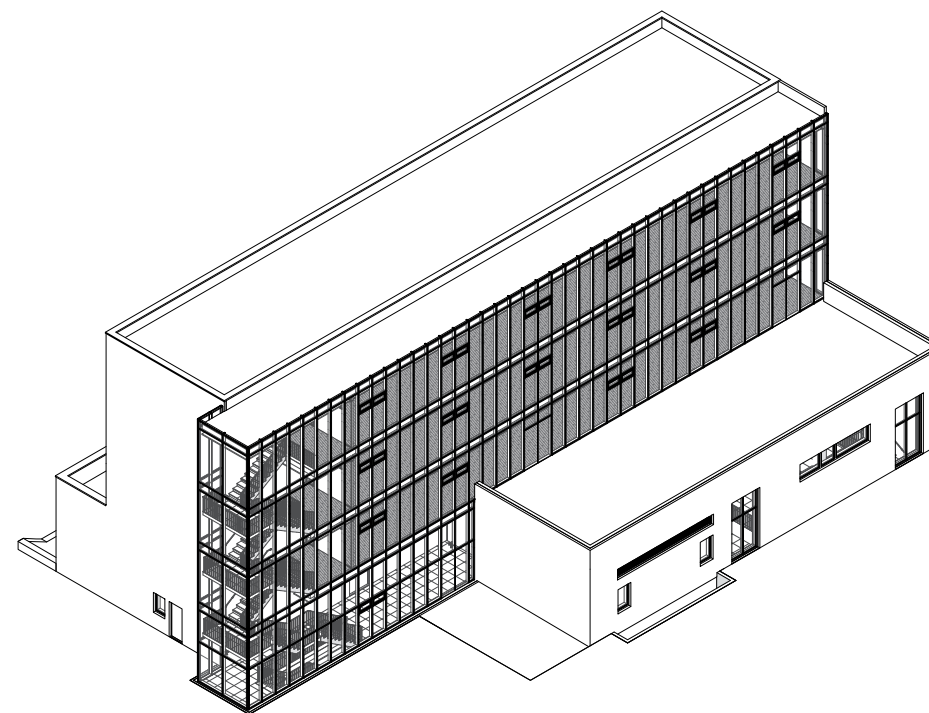


BIM model creation

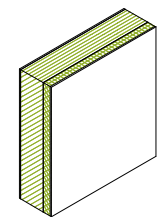
Remodelling of the project in BIM -
based on the information requirements

element classification

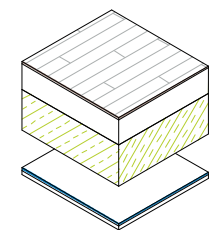
DIN 276|277[SOL/176/2.2]



exterior wall
[330]



ceilings
[350]



code and model checking

Configuration of a Solibri ruleset based
on information requirements

generic room

§ categorisation of spaces
[SOL/11/4.1]

§ not allocated rooms
[SOL/202/1.4]



size of the room

§ rooms requirements
[SOL/36/4.0]

§ room area rule
[SOL/132/1.3]



room height

§ minimum room height
[SOL/203/2.4]

§ height of floors
[SOL/220/2.1]

