



CHALMERS
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A Matter of Relief

Sanitary Conditions on Austrian Construction Sites

Master's thesis in the Master's Programme Design and Construction Project Management

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CHALMERS UNIVERSITY OF TECHNOLOGY

Gothenburg, Sweden 2026
www.chalmers.se

MASTER'S THESIS ACEX30

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Examensarbete ACEX30
Institutionen för arkitektur och samhällsbyggnadsteknik
Chalmers tekniska högskola, 2026

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ABSTRACT

Research on sanitary conditions on construction sites remains limited, and despite occupational health regulations, insufficient sanitary and hygiene conditions remain common on Austrian construction sites. Therefore, this study investigates why inappropriate hygiene conditions persist and identifies structural and cultural factors that hinder improvement. The study focuses on sanitary facilities and hygiene practices on Austrian construction sites, including toilets, handwashing facilities, and showers. Applying a qualitative and exploratory research design, data were collected through a visit to sites and semi-structured interviews with workers, management and regulatory actors. Furthermore, structural and cultural reasons for insufficient conditions were analysed using principal-agent theory and the safety culture theory. The key findings of the thesis include that while regulations are mostly sufficient, gender considerations as well as regulatory enforcement are weak. Furthermore, complex accountability structures and a cost focus complicate monitoring and communication, and few external incentives shift the quality of compliance and monitoring largely to intrinsic motivation. This is further complicated by poor hygiene conditions being culturally normalised and hygiene taking low priority in the health and safety context. The study demonstrates that adequate hygiene conditions are not yet embedded in the underlying assumptions of safety culture and require cultural change as well as structural improvements. These findings provide a foundation for future research and the practical improvements of hygiene conditions on Austrian construction sites.

Key words: hygiene, sanitary facilities, construction, health and safety, Austria, principal-agent theory, safety culture

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Acknowledgement

This thesis would not have been possible without the feedback, guidance and support of several people, to whom I would like to express my sincere gratitude.

First and foremost, I would like to thank my supervisor and examiner, Martine Buser. Your suggestions, ideas and ability to inspire critical thinking were invaluable throughout this process and enabled me to develop this thesis in a structured and thoughtful way.

I would further like to express my gratitude to all interviewees who participated in this study. Beyond contributing valuable insights to this thesis, your perspectives shaped my understanding of the topic and reinforced my intrinsic motivation for it. From childhood neighbours to strangers, I am sincerely grateful for the openness and time you shared with me.

I am also very thankful to my opposition group for your feedback, support and for helping me become aware of my own biases. Your encouragement and discussions were especially valuable whenever I felt the absence of a thesis partner.

Lastly, I would like to thank my friends and family, who were always open to discussions, sparked new ideas, and provided constant moral support. I am sincerely grateful for your encouragement and for creating the conditions that allowed me to focus fully on my work.

Göteborg June 2026

KATHARINA BERNROIDER

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List of Abbreviations

HSW	Health, Safety, and Well-being
ILO	International Labour Organisation
IOHA	International Occupational Hygiene Association
LUTS	lower urinary tract symptoms
SHP-plan	Safety and Health Protection Plan (Sicherheits- und Gesundheitsschutzplan, SiGe-Plan)
UTI	urinary tract infection

1 Introduction

The reason for writing this thesis about hygiene on construction sites in Austria lies in personal experiences collected during internships in the past ten years. Avoiding portable toilets due to feelings of disgust was a daily practice, leading to reduced fluid intake and scheduling voiding (urination) after breaks and possibilities to use facilities off-site. The topic was never discussed, but no coercion to use on-site facilities was practised, and alternative options were suggested by colleagues if requested. This indicated that the issue extended beyond individual experiences and raised an interest in the experiences of other people affected by hygiene conditions on construction sites.

Appropriate sanitary facilities are necessary to meet the basic needs and ensure the well-being of construction workers. However, hygiene and sanitary conditions on construction sites may not always receive sufficient attention. Since working conditions can influence worker satisfaction, health and the perception of the construction industry as a workplace, it is important to discuss this topic. As sanitary facilities are influenced by project planning, site management and organisational priorities, they represent an important aspect of construction management practice.

1.1 Background

The topic around toilets (Molotch & Noren, 2010) remains socially sensitive and is often avoided in everyday communication. Although hygiene is rooted in biology (Curtis, 2007), the feeling of disgust, the process of toileting (Hebert-Beirne et al., 2021) and even the facilities themselves (Molotch & Noren, 2010) are culturally shaped. Therefore, the culture on construction sites frames the behaviour of workers and responsible actors and further influences hygiene practices as well as the provision and cleanliness of sanitary facilities.

In this context, hygiene on Austrian construction sites is regulated through several laws and acts, and the responsible actors are monitored by relevant institutions. Nevertheless, implementation gaps such as inconsistent provision of facilities and maintenance persist. Workers may be reluctant to raise concerns, and issues may be tolerated. The effects of inadequate hygiene include not only risks for the health and well-being (W. S. Reynolds et al., 2019) but also economic consequences such as productivity loss due to reduced motivation or time spent accessing alternative facilities.

Existing literature primarily addresses health and well-being outcomes associated with inadequate sanitation and cultural aspects connected to hygiene and toileting. However, there is limited empirical research examining the actual condition of sanitary facilities on construction sites, the reasons for underlying potential deficiencies, and how different stakeholders perceive these. In particular, cultural and structural explanations for the lack of hygiene on construction sites in Austria and comparable developed countries are under-researched, highlighting the need for a more comprehensive understanding of these factors in practice.

1.2 Problem statement and purpose

While regulatory requirements for hygiene and sanitary facilities on construction sites in Austria are well defined, their implementation and on-site conditions remain

underexplored. Existing academic literature has largely focused on health and well-being consequences of coping behaviour and cultural normative aspects of hygiene and toileting, rather than practical site conditions, reasons for inadequate sanitation, or stakeholder perceptions. As a result, empirical evidence on hygiene and sanitation facilities on Austrian construction sites remains limited.

The purpose of this thesis is therefore to assess how hygiene and sanitary requirements are implemented, identify factors contributing to these conditions, and analyse different stakeholder perceptions, both of men and women. Through this empirical study, the thesis aims to contribute to an under-researched area of occupational health and construction management.

The following research questions guide this study:

1. Why do insufficient hygiene and sanitary conditions persist on Austrian construction sites, despite existing regulatory requirements?
 - a. How are hygiene and sanitary requirements implemented in practice on Austrian construction sites?
 - b. How do different stakeholders (construction workers, site managers, and occupational health and safety inspectors) perceive and experience hygiene and sanitary facilities on construction sites?
 - c. What organisational-economic, structural-regulatory and cultural-behavioural factors contribute to the current state of hygiene and sanitary facilities on construction sites in Austria, and how can the principal-agent theory and the safety culture theory help explain these factors?

1.3 Contribution of the study

The thesis makes an empirical and analytical contribution to the limited existing research on hygiene and sanitary conditions on construction sites in Austria. It is based on original qualitative data collected through interviews and a visit to sites. The study identifies and categorises legal, structural, cultural, and organisational factors contributing to inadequate sanitary conditions. In addition, the thesis applies principal-agent theory and the concept of safety culture as analytical lenses to understand the underlying mechanisms behind the structural and cultural issues. This enables a deeper explanation of root causes.

The primary audience of this research includes scholars in construction project management and occupational hygiene, as well as practitioners such as construction managers, health, safety and well-being professionals, and regulatory actors responsible for monitoring and enforcement, including labour inspectors and planning coordinators. The findings are particularly relevant for improving the working conditions of employees on construction sites.

The outcomes of this thesis include the identification of key barriers for sufficient hygiene on construction sites, a structured categorisation of these factors, and an analysis of their underlying causes. These insights provide a basis for more targeted interventions and improvements in hygiene conditions on construction sites in Austria.

1.4 Thesis outline

The thesis is structured as follows. Following the introduction, the method chapter outlines the research design, data collection, and analytical approach. The subsequent literature review scrutinises relevant prior academic literature, documents and regulations connected to hygiene on construction sites. In the theoretical framework chapter, the literature about theoretical lenses is reviewed and presented. The results chapter then presents the empirical findings from interviews and observations, which are discussed in relation to the literature, documents and regulations in the discussion chapter. Lastly, in the conclusion, the key findings are summarised, implications and limitations outlined, and recommendations for future research provided.

2 Methods

This master's thesis adopts a qualitative, exploratory, practice-oriented research design. The study is based on a literature review, a multi-stakeholder analysis through expert interviews, and a visit to sites. This combination of methods enables the investigation of real-world hygiene conditions on construction sites in Austria as well as stakeholder perceptions and experiences.

This chapter outlines the methodological approach, defines the scope and research context, includes definitions, and provides an overview of the data sources. It then describes the literature review, the selection and conduct of interviews and the visit to the sites. Subsequently, the procedures for data analysis are explained, followed by a discussion of ethical considerations and methodological limitations.

2.1 Methodological approach

The research design follows a qualitative approach in which perceptions, experiences and organisational practices related to hygiene and sanitary facilities on Austrian construction sites are examined. The study is exploratory and practice-oriented, aiming to contribute to the comparatively under-researched field of hygiene conditions in the Austrian construction sector. To gain empirical insights, interview data were collected from multiple stakeholders. In addition, a visit to sites was conducted to contextualise the interview findings. Data collection was conducted iteratively, allowing the research process to remain flexible and responsive to emerging insights.

The methodological strategy consists of a literature review, a theoretical framework, expert interviews and a visit to sites. The literature analysis includes academic publications, relevant regulations and selected grey literature issued by organisations and authorities. The literature review provided background and contextual information that helped establish an initial understanding of the topic and, together with prior experiences, informed the development of the first interviews. Eight expert interviews were conducted with individuals holding different professional positions connected to hygiene management on construction sites in Austria. The inclusion of professionally diverse stakeholder perspectives enables a broader understanding of responsibilities, experiences and challenges. The visit to the sites served as an illustrative example to better situate and reflect upon the interview data. The theoretical lenses were chosen based on insights from the first interviews and drew on established academic sources. It informed the design of the later interviews and guided the analysis of the empirical findings.

Table 1 summarises the data types used in the study and their respective purposes to ensure transparency of the methodological approach, and Figure 1 explains the iterative research procedure.

Table 1: Data types used and their purposes. (Table created by the author)

Data type	Purpose
Laws and standards	Normative and regulatory requirements
Scientific literature	Theoretical and scientific background
Grey literature	Contextual and practice-oriented information
Interviews	Practical experience and stakeholder perceptions
Visit to sites	Illustration of real-site conditions and contextualisation

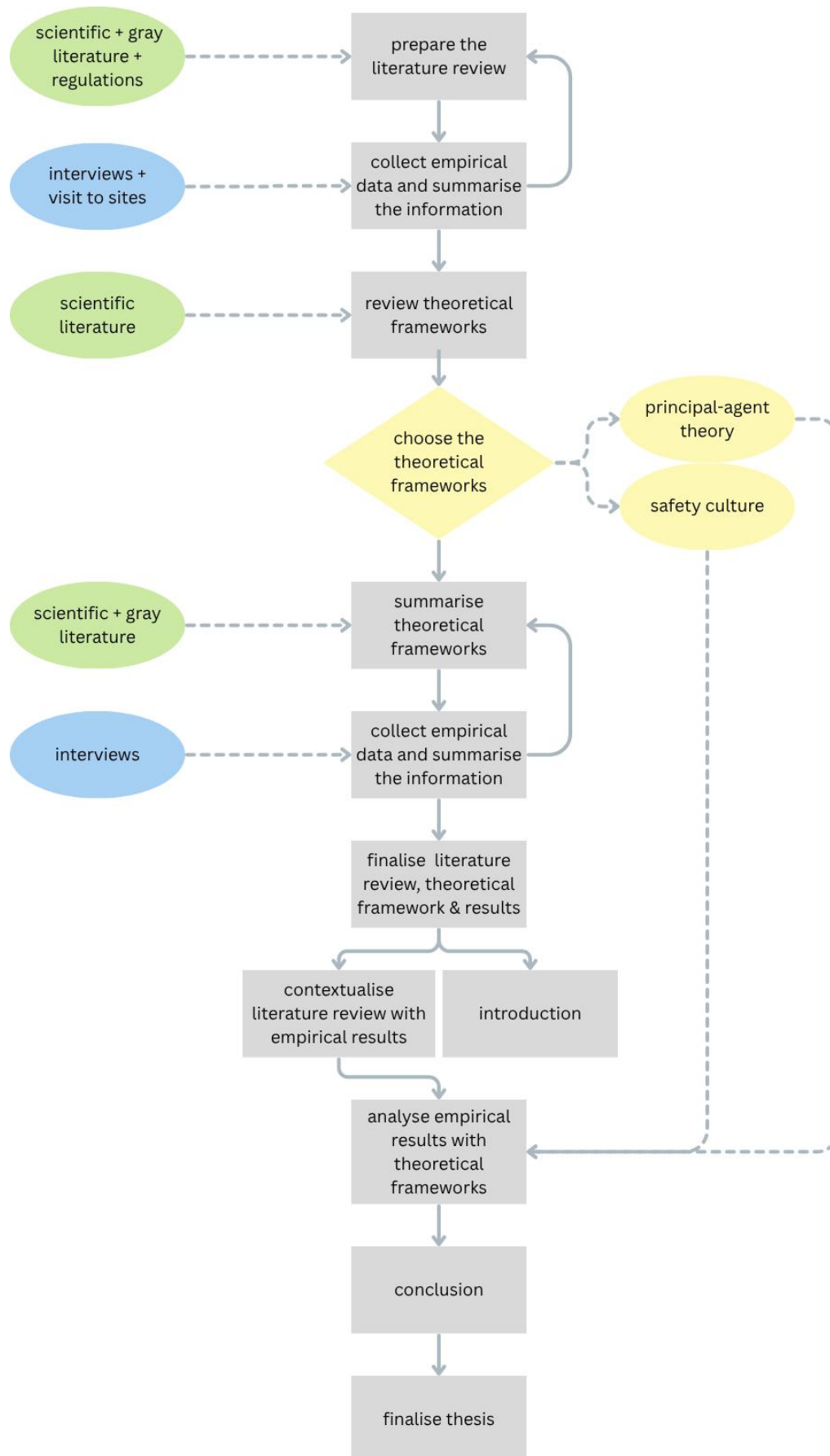


Figure 1: Thesis procedure including the various steps taken as well as the information which informs the steps. (Figure created by the author)

The chosen methodological approach is appropriate for answering the research questions because, as Luker (2008) argues, methods should be selected according to the type of knowledge sought. Since the research questions focus on perceptions, experiences and implementation practices, qualitative methods such as interviews and qualitative site visits are particularly suitable. Furthermore, triangulation of interviews, the visit to the sites and the literature review was applied in order to reduce method-related bias and strengthen the credibility of the findings (Heale & Forbes, 2013). Stebbins (2011) identifies exploration as a preferred methodological approach when a topic has received little systematic empirical attention. Given the limited empirical research on hygiene implementation and stakeholder experiences on Austrian construction sites, an exploratory design was therefore considered appropriate. As hygiene conditions on construction sites are shaped by multiple actors, it is necessary to consider the perspectives of different stakeholder groups involved in or affected by these conditions. Data collection and analysis were conducted iteratively, allowing insights from interviews, the visit to the sites, and the literature review to inform each other throughout the research process. This approach is supported by Luker (2008), who emphasises that literature reviews should be revisited repeatedly throughout the research process.

The objective of the research was to identify and understand discrepancies between stakeholders' needs regarding workplace hygiene, existing regulations on hygiene and sanitary facilities on construction sites, and the actual implementation of hygiene practices on site. This understanding provides a basis for identifying opportunities to improve hygienic conditions for employees on construction sites in Austria.

2.2 Scope, delimitations and research context

The empirical scope of this master's thesis includes hygiene practices, sanitary and washing facilities, as well as their condition and use on Austrian construction sites. The analysis focuses specifically on the provision, condition, and use of sanitary infrastructure, including toilets and handwashing facilities. As the study concentrates on sanitation-related hygiene and its implications for workers and site management, broader aspects of occupational hygiene, such as exposure to hazardous substances, dust, or noise, are excluded. In addition, the analysis is limited to hygiene conditions on construction sites themselves and does not consider worker accommodations. These boundaries reflect the study's focus on hygiene in the work environment and its relevance for occupational health and site management.

Data from interviews and the visit to the sites were collected between January and April 2026, primarily through convenience sampling, leading to a focus on Salzburg and Upper Austria, complemented by interviews with stakeholders from other regions of Austria.

The study covers a range of project types, including building and infrastructure projects, new construction and renovation, and various construction phases. The experiences shared by interviewees relate to projects for both private and public clients, small and larger construction sites, as well as urban and rural contexts. Perspectives were gathered from multiple female and male stakeholders, including construction workers, foremen, occupational physicians and labour inspectors.

2.3 Literature review and theoretical framework

Given the underexplored nature of the topic and the practice-oriented, qualitative and exploratory character of the thesis, a narrative literature review was chosen. According to Baumeister and Leary (1997), this represents a suitable method for surveying and synthesising the existing state of knowledge on a topic. To allow flexibility in identifying relevant sources, no predefined search strings or strict inclusion and exclusion criteria (such as a timeframe) were defined. Instead, sources were selected based on their relevance to the research questions and their contribution to understanding regulatory requirements, historical developments, health-related implications, as well as structural and cultural issues related to hygiene on construction sites. Sources were limited to English and German.

For the literature review and the theoretical framework, relevant scientific literature for conceptual understanding was identified via databases such as PubMed, Google Scholar and Scopus. In addition, grey literature from trustworthy international organisations, professional associations, trade unions and official legal databases was used for the literature review to get a practice context and information where scientific research is limited. The principal-agent theory framework in this study is grounded in a limited number of highly cited and foundational sources, as the theory is well established. For safety culture, sources providing foundational theory, as well as sources for applications in construction, were chosen. Overall, recent sources for validation and current developments, as well as older sources for theoretical grounding, were reviewed and selected based on their contribution to explaining cultural and structural reasons for insufficient hygiene conditions. These sources provide theoretical, regulatory and conceptual perspectives that enable a comprehensive analysis of hygiene conditions on construction sites in relation to the research questions.

2.4 Interviews

Expert interviews were conducted to capture the practical implementation of hygiene on construction sites, stakeholders' perceptions and needs, and challenges concerning hygiene on Austrian construction sites. The interviews were semi-structured, providing both a guiding framework and flexibility to pursue relevant topics. With the consent of the participants, interviews were recorded and transcribed to facilitate later analysis and ensure accurate reproduction of responses.

2.4.1 Selection of interviewees

A combination of purposive and convenience sampling was used to ensure that interviewees had relevant expertise and perspectives. In total, 8 interviews were conducted, although 13 interview requests were sent out. Each interview involved one to two participants; one of the interviews was conducted in the form of a written interview, including e-mails with questions, answers, follow-up questions and answers to those; and two of the interviews were conducted with the same interviewee. The following stakeholders were interviewed:

- A health, safety, and well-being representative (male) and an occupational physician (male) from one of Austria's largest construction companies, providing insight into internal control and strategic planning related to hygiene.

- A foreman and bricklayer (male) from a small-to-medium-sized construction company, offering the perspective of a site user of sanitary facilities and partial responsibility for cleaning.
- A labour inspector (male) responsible for construction and mining was interviewed twice, providing information on regulations and enforcement of hygiene standards on construction sites.
- A construction controller (female) working in a construction management company with approximately 25 employees, offering the perspective of a former user and architect with special interest and prior knowledge about the topic
- A carpenter apprentice (female) in her third year working in a small-to-medium-sized construction company, providing a perspective of a young user of sanitary facilities.
- A project manager (male) involved in several small housing, agricultural and renovation projects in a small construction company with 45 to 50 employees, offering insights about the management of hygiene on construction sites.
- An owner of a planning and construction coordination company (male), contributing insights about the integration and coordination of sanitary facilities across multiple construction sites.

Interviewees included both male and female participants. Due to limited access to potential participants, perspectives of non-binary and transgender individuals could not be included in the study.

2.4.2 Interview procedure and guide

Interviews, lasting approximately 30-60 minutes, were conducted partly in-person and partly online in German and recorded with MS Teams. The interview structure began with an introduction including notes on publication and anonymisation, followed by a brief presentation of the interviewee. Eleven to sixteen open questions tailored to the expertise of each interviewee were asked, with follow-up questions encouraged. Questions were based on literature findings, and additionally, prior experience and observations of the researcher. This approach allowed the exploration of practical aspects of hygiene that may not be fully represented in existing literature and regulations. The interview questions were designed to address the research questions, and the full interview guides are provided in the Appendix.

2.5 Visit to sites

The visit to the sites was conducted together with the labour inspector and the responsible planning and construction coordinator on Monday, 16 February 2026, lasting approximately one hour. Three construction sites within a public hospital complex, which consists of several buildings, were visited. The construction sites included one new building in the fit-out phase, one timber building in the assembly phase and one small renovation project that began on the day of the visit.

The visit focused on sanitary facilities with particular attention to equipment and cleanliness. No observations of user behaviour or organisation processes were conducted, but discussions with the labour inspector, the construction coordinator and other staff on site were encouraged.

The sites were suggested by the planning and construction coordinator and said to be purposefully in good condition, as well as the visit announced beforehand, as the labour inspector is not allowed to bring external visitors during regular inspections. This approach allowed an analysis of what is perceived as sufficient by inspecting parties and provided insights into the perspective of the planning and construction coordinator. The visited sites can be considered illustrative, but findings are not generalizable to all Austrian construction sites.

The procedure was unstructured, as only the location was known in advance. A few questions were prepared, primarily to clarify regulations and the reporting of misconduct rather than site-specific practices. Notes and photographs were taken systematically to document conditions for later analysis. Permission for the visit and the documentation was obtained from both the planning and construction coordinator and the labour inspector, with assurances that the anonymity of all persons and companies involved would be preserved. Images containing sensitive visual content were blurred to ensure academic appropriateness and avoid the inclusion of potentially disturbing visual material.

2.6 Data analysis

The data analysis followed a qualitative and theory-informed interpretive approach. Triangulation between different data sources (interviews, a visit to sites and literature) was used to reduce potential bias and strengthen the validity of the findings.

Recorded interviews were transcribed either manually or with automated transcription, followed by manual correction to ensure clarity and accuracy. The interview transcripts were reviewed, and relevant statements were colour-coded and grouped thematically according to the topics addressed in the research questions. Organisational and economic, structural and regulatory, as well as cultural and behavioural factors were selected as analytical categories due to their prevalence in both the literature and the interview data. Based on the interviews and the visit to the sites, ten problems and challenges concerning inadequate hygiene conditions on construction sites were identified, compared with the reviewed literature and discussed in the overall context.

In addition, the identified problems and challenges were interpreted through the theoretical lenses of principal-agent theory and safety culture in order to analyse structural and cultural factors that may contribute to the observed practices. Where the problems and challenges could not be meaningfully interpreted through these theoretical perspectives, no detailed theoretical analysis was conducted to maintain analytical focus.

2.7 Ethical considerations

Participation in this study was entirely voluntary. Anonymity was ensured by not disclosing the names of individuals or companies and by describing participants only in general terms, preventing clear identification. All participants were informed about the purpose of the study, the intended publication of the thesis, and the applied anonymisation procedures, and provided their informed consent prior to participation.

All data were stored locally, with regular backup copies created, and the collected data will be deleted after completion of the thesis. The study was conducted in accordance with the General Data Protection Regulation (GDPR).

2.8 Methodological limitations

The influence of the researcher on the research process is considerable. As the methodology relies on qualitative interviews and a visit to sites, the study is susceptible to researcher and respondent bias, which necessitated the use of triangulation. The author brings prior experiences related to hygiene and sanitary facilities on Austrian construction sites, which may influence interpretation and focus. This required continuous awareness and reflection throughout the research process. At the same time, these experiences motivated the choice of the research topic and methods and provided contextual understanding of the field.

One potential limitation related to bias arises from the interview structure and thematic focus. Hygiene-related needs were explored more explicitly in interviews with female participants, whereas the topic was less directly addressed in interviews with male participants. This may be related to the author's gender and associated assumptions about who is more affected by unmet hygiene needs. This may have influenced the depth of responses, as male interviewees were not systematically prompted to reflect on their needs. As a result, the findings may overrepresent the perspectives and articulated needs of female participants, while potentially underrepresenting those of male participants. It should therefore be considered that some of the hygiene-related needs identified in this study may also apply to male workers, but were not explicitly verbalised within the scope of the conducted interviews.

The study relies on subjective accounts from a limited number of interviews and sites visited. Furthermore, interviewees mainly consisted of people using the facilities, having responsibilities connected to it or making decisions, as well as people involved in oversight and control. No interviews were conducted with people connected to the law and standard-making, as the focus of the work is not on the law specifically, and therefore, no person was contacted for interviews. Also, facility providers and clients were excluded, mainly due to no responses to interview requests. Interviews were conducted with people from different federal states in Austria, and even though the regulations are the same, the practice might vary, which needs to be taken into consideration when making conclusions.

Additionally, the visit to the sites was conducted under announced and favourable conditions, which may limit insights into everyday practices. Due to this and the limited number of sites visited, the findings are not statistically generalisable. However, given the qualitative and exploratory aim of the study, the focus lies on gaining in-depth insights rather than producing generalisable results. The findings should therefore be understood as illustrative and context-specific.

As no official English versions of the Austrian legal acts cited in this thesis exist, they are referenced by their official German titles and abbreviations. Furthermore, all titles and the content of the regulations are translated into English by the author for clarity.

2.9 Use of artificial intelligence

Artificial intelligence tools, such as ChatGPT and Grammarly, were used to support language quality by improving the flow, grammar, and spelling of the text. Furthermore, discussions with AI tools were occasionally used for brainstorming and to highlight potential content-related inconsistencies or unclear phrasing. However, all suggestions were evaluated by the author and verified against data sources. All content, such as analyses, interpretations, and conclusions are the author's own.

3 Literature review

In this chapter, relevant prior literature, documents and regulations are reviewed. Six different topics are included in this literature review, which are only loosely connected, but all provide relevant aspects for later analysis. The review begins with the history of hygiene and sanitation to understand how the concept of hygiene has developed, and continues with occupational hygiene and its link to health and safety. Subsequently, the regulatory structure for hygiene and sanitary facilities on construction sites in Austria is reviewed, and a cultural perspective of toilets is taken. Lastly, statistics of gender on construction sites and initiatives related to that, as well as the consequences of inadequate hygiene and hygiene-related coping behaviour, are reviewed to understand people's reactions to a lack of sanitation.

3.1 History of hygiene and sanitation

Curtis (2007) defines hygiene as behaviours used by humans and other animals to avoid infection, while Mantovani and Marques (2020) describe it as a synonym of cleanliness and trace its origin to the Greek *hygeinos*, which means healthy. This chapter reviews the history of hygiene and sanitation to understand its biological and cultural roots as well as the link between historical developments and modern occupational hygiene, in which sanitation and safe practices are formalised in workplace standards.

3.1.1 The roots of hygiene

According to Curtis (2007), the origins of hygiene have often been attributed to scientists such as Hippocrates, who led people from unsanitary conditions to hygienic practices, by some historians and anthropologists, while others believed it to be a social or cultural construct. She argues that neither explanation alone is sufficient as the link between dirt, disgust, hygiene and disease even predates *Homo sapiens* and therefore must be anchored in biology. Animals tend to behave in a way that makes them avoid things and events associated with disease, and those genes that made animals behave hygienically outperformed those that didn't. Curtis (2007) explains that disgust is culturally shaped, but hygienic behaviour is rooted in biology. She further states that cave paintings with beardless men may suggest that the beard was removed to get rid of facial parasites, and toilet structures and drainages from 3000 BC have been found. The author also argues that ideas that intuitively make sense and those that align with existing beliefs are trusted more, like the idea that disease could be passed on from person to person.

3.1.2 Development from personal to social hygiene and reforms

Hygiene in ancient Greece (Mantovani & Marques, 2020) and again in the Renaissance was seen as the knowledge to prolong one's own life, including balanced diets and avoidance of excesses. In the 1700s, hygiene became part of the political strategy due to depopulation in Europe, and personal hygiene became social hygiene, which was the beginning of public health, a tool for governing the political economy. This shift, as explained by the authors, involved increased government intervention in individuals' hygiene practices, reflecting the view that reducing disease and mortality was essential to maintaining a productive labour force and supporting national economic stability.

Building on this development, in the 19th century, it was increasingly argued that high mortality and disease were linked to poverty and uncleanness, which gave rise to sanitary reforms (Mantovani & Marques, 2020). Tulchinsky and Varavikova (2014) argue that the sanitary revolution, which dealt amongst others with urban sanitation and health conditions and started in the second half of the 19th century, is the most basic of the public health foundations.

Social, political and economic reforms in the 18th and 19th centuries (Tulchinsky & Varavikova, 2014) contributed, amongst others, to sanitation and improved nutrition, which improved longevity. Additionally, mortality was decreased in the beginning of the 20th century due to improved public health standards, despite medical disease treatments being rare. According to the authors, the focus has been on non-infectious disease prevention since the 1960s, which increased when infectious diseases decreased around World War II due to improved nutrition and living standards, vaccines and antibiotics. Even today, a lack of sanitation and hygiene can cause death. The importance of sanitation is also highlighted by a British survey in 2007 (Tulchinsky & Varavikova, 2014), which found the most important medical innovations of all time to be the sanitary revolution.

3.2 Occupational hygiene

Occupational hygiene (International Labour Organization [ILO], 2011) is next to occupational medicine and nursing, ergonomics and work psychology, one of the disciplines of occupational health. It is defined as the science of anticipating, recognising, evaluating and controlling dangers at workplaces that might negatively affect the workers' health and well-being. Additionally, it also considers impacts on the environment and the surrounding (ILO, 2011). In this chapter, the role of occupational hygienists is explained, and occupational health organisations are stated.

3.2.1 Occupational hygienists

The tasks of occupational hygienists (ILO, 2011) include, amongst others, the following. The anticipation of health risks at workplaces and planning and design advice; recognising and understanding the stresses, such as chemical agents, and interactions with other factors which could affect worker health and well-being; as well as the evaluation of work processes aiming at eliminating or reducing exposures to stresses, as well as the design and evaluation of control strategies.

According to ILO (2011), occupational hygiene is not a universally recognised profession. In Austria (Arbeitsinspektion, 2020), companies receive support from preventive services. Workers have to be looked after by an occupational physician and safety specialist, and if necessary, also other specialists such as occupational psychologists, chemists or ergonomists. The tasks of preventive specialists include, amongst others, the planning of workplaces, introduction and change of work equipment, processes and agents, issues related to occupation psychology, ergonomics and hygiene at work, as well as risk assessment, the organisation of fire protection and first aid (Arbeitsinspektion, 2020).

Hazards (ILO, 2011) dealt with in occupational hygiene can be chemical, such as corrosion, cancer or reproductive effects; biological, like biogenic allergens, viable organisms and biogenic toxins and infectious hazards; or physical including noise,

vibration, ionising and non-ionising radiation. According to the Arbeitsinspektion (2025), ergonomical and psychosocial impacts are occupational hygiene factors as well.

3.2.2 International and national occupational hygiene organisations

The International Occupational Hygiene Association (IOHA) (International Occupational Hygiene Association [IOHA], 2025b) aims at improving, promoting and developing occupational hygiene internationally to ensure a safe and healthy working environment. The NGO represents its 42 member organisations worldwide (IOHA, 2025a), including organisations from Sweden, Germany and Switzerland. So far, no Austrian organisation is part of the IOHA.

Relevant Austrian organisations include:

- The Labour Inspectorate (Arbeitsinspektion) (Arbeitsinspektion, 2024), the main statutory body responsible for enforcing occupational health and safety regulations in Austria.
- the Austrian Society for Hygiene, Microbiology and Preventive Medicine (Österreichische Gesellschaft für Hygiene, Mikrobiologie und Präventivmedizin) with a focus on research and education and goals such as encouraging cooperation among hygienists, microbiologists and preventive physicians.
- and the General Accident Insurance Institution (Allgemeine Unfallversicherungsanstalt, AUVA), the largest provider of statutory accident insurance in Austria, which is involved, amongst others, in the prevention of occupational accidents and diseases.

These institutions aim at ensuring sufficient health and safety measures, including hygiene, which are for the Austrian construction industry regulated as described in 3.3.

3.3 Hygiene and sanitation regulations for construction sites in Austria

In this chapter, the four legal acts connected to occupational health and safety on construction sites are reviewed. The Employee Protection Act (ArbeitnehmerInnenschutzgesetz, ASchG) is the Austrian law for safety and health at work and applies to most employees, including those in the construction industry (ASchG, 1994). Additionally, the Construction Work Coordination Act (Bauarbeitenkoordinationsgesetz, BauKG) is an Austrian law for ensuring the health and safety of employees on construction sites through coordinating the preparation and implementation of construction work (BauKG, 1999). Furthermore, the Construction Workers Protection Ordinance (Bauarbeiterschutverordnung, BauV) is an ordinance for safety and health on construction sites and external workplaces (BauV, 1994). Lastly, the Workplace Ordinance (Arbeitsstättenverordnung, AStV) is an ordinance which determines requirements for workplaces, including certain buildings on construction sites, and introduces amendments to the Construction Workers Protection Ordinance (AStV, 1998). Overall, all four regulations contain requirements for hygiene and sanitary facilities or their coordination, but they differ in scope and application. The Employee Protection Act provides the general legal framework for occupational health and safety, while the Construction Work Coordination Act complements it by

introducing organisational and coordination obligations for construction projects. The Workplace Ordinance and the Construction Workers Protection Ordinance both represent *lex specialis*¹ in relation to the Employee Protection Act. Between those two acts, no hierarchical relationship exists, but as the Workplace Ordinance is less specific for construction sites, it will not be focused on in this chapter, even though it might become relevant on construction sites under certain circumstances.

Compliance with the occupational health and safety regulations is ensured by the Labour Inspectorate (ArbIG, 1993), which has to comply with the Labour Inspectorate Act (Arbeitsinspektionsgesetz, ArbIG).

Additionally, to the health and safety-related regulations in Austria, other laws can play a role on construction sites as well. Similarly, to the prohibition on urinating outdoors for people in New York City, as mentioned by Norén (2010), urinating outdoors in Austria is seen as a breach of decorum (e.g. *LVwG-I-311/2018-R4 (public urination / indecent conduct)*, 27.09.2018) and is fined differently depending on the federal state, for example, with up to 500€ in Salzburg (S.LSG, 2009).

3.3.1 Employee Protection Act

The following paragraphs regulate hygiene and sanitary facilities relevant to this thesis in the Employee Protection Act (ASchG, 1994).

§ 7 (Principles of risk prevention) regulates that employers need to consider general principles of risk prevention, such as the avoidance of risks, prioritising collective risk protection over individual risk protection, providing appropriate instructions to employees and more.

According to § 29 of the Employee Protection Act (Sanitary facilities and social amenities on construction sites), the employees need to be provided with drinking water or other non-alcoholic drinks, washing facilities, toilets, recreation rooms, lockers, changing rooms and accommodations to the extent necessary, considering the location of the construction site, local conditions, the duration of activities and the number of employees. Employers can also jointly provide such facilities for all employees together.

§ 130 (Penal provisions) explains that a breach of this obligation is an administrative offence, which is fined with 166 € to 8 324 € or 333 € to 16 659 € if repeated.

3.3.2 Construction Work Coordination Act

This section summarises the Construction Work Coordination Act (BauKG, 1999). No specifically hygiene or sanitary facility-related paragraphs are included in this law, but rather responsibilities of clients, project managers, planning and construction coordinators are regulated, and their tasks are described.

According to § 3 (Appointment of health and safety coordinators), the client needs to appoint a planning coordinator for the preparatory phase and a site coordinator for the

¹ Lex specialis or lex specialis derogat legi generali means that the special provision overrides the general provision Iking (n.d.). This is regularly applied in Austrian case law, for example in the OGH 400b80/23b OGH 19.12.2023, 4 Ob 80/23b, 19.12.2023

execution phase, if on his construction site employees from several employers work simultaneously or successively.

Additionally, according to § 4 (Preparation of the construction project), they need to ensure that general principles of risk prevention, which are listed in § 7 of the Employee Protection Act, are taken into account in the project planning and preparation.

§ 6 (advance notice) determines that the client has to give an advance notice, among others, to the Labour Inspectorate if the project exceeds 500 person-days or more than 20 employees work simultaneously for more than 30 days.

According to § 7 (safety and health protection plan), if an advance notice is required, the client also needs to ensure that a Safety and Health Protection Plan (SHP-plan; German: Sicherheits- und Gesundheitsschutzplan, SiGe-Plan) is created.

Lastly, according to § 8 (documentation for future work), the client is responsible for ensuring the development of documents for future work.

All the duties mentioned in the paragraphs above can be delegated to a project manager. The planning coordinator and construction coordinator are responsible for preparing the safety and health protection plan and for ensuring its implementation in accordance with § 4 and § 5, respectively.

3.3.3 Construction Workers Protection Ordinance

In the Construction Workers Protection Ordinance (BauV, 1994), hygiene and sanitary facilities are regulated in the following paragraphs:

In § 33 (Drinking water), it is not only determined that hygienic drinking water or another anti-alcoholic drink needs to be provided, but also that the drinks or water need to be cooled, drinking water outlets and drinking vessels need to be hygienic, and that non-drinkable water needs to be marked as such.

§ 34 (Washing facilities) defines that, except for short activities, flawless washing water needs to be provided at every construction site. At every washbasin, cleaning agent and means for drying need to be available. For removing heavy soiling of the skin, warm, running water needs to be given, with some exceptions. If workers are exposed to very heavy soiling or dust, toxic, corrosive, easily decomposable, nauseating, or infectious substances or excessive heat, showers are necessary. If a company employs more than ten employees for more than two weeks, washrooms have to be provided if the permanent establishment of the company or accommodation is not reachable within 30 minutes. Further regulations for washrooms are defined, including a temperature of 21 °C, lighting, ventilation, flooring and so on. Additionally, men and women need to get separate washrooms if at least five people of each gender are present.

According to § 35 (Toilets), at or close to every construction site, appropriately equipped sanitary facilities with water flushing or equivalent equipment have to be installed. Those have to be separated by gender (men and women), provided that at least five people of each gender are present. For every 20 men or 15 women, one toilet must be provided. The anteroom to the toilet has to be equipped with a washing facility if there is none close to the toilet facilities. If one employer employs more than 15 male employees at one construction site, for each 15 of them, one urinal has to be provided, which must fulfil sanitary requirements. Toilet paper and a clothes hook need to be available in every toilet. Furthermore, ventilation and lighting need to be appropriate.

In addition to that, § 150 (Maintenance) states that sanitary facilities need to be kept in a good and safe condition, and according to § 153 (Cleaning), it needs to be ensured that they are cleaned and, if required, regularly disinfected. While no cleaning interval is specified in the Construction Workers Protection Ordinance, the Bundesinnung Bau & Wirtschaftskammer Österreich (n.d.), recommend daily cleaning of toilets and washing facilities.

In § 155 (Special obligations of the employer) of the Construction Workers Protection Ordinance (BauV, 1994), it is specified that all of the things mentioned above are the responsibility of the employer.

3.4 Gender in construction – an international perspective

When looking at the gender ratio, the proportion of women working in construction in Austria in 2023 (Grieger & Wach, 2024) was 13% compared to 47% viewed over all branches together. 99% of brick layer apprentices in Austria are male (Schmid, 2025), showing that the construction industry is male-dominated. Countries such as Germany, the USA, the UK and Canada have established organisations that provide platforms for networking, mentoring, education and professional development for women in construction (Schmid, 2025). The author argues that, in Austria, efforts are also needed to overcome gender barriers and role stereotypes in the workplace.

In addition to these organisational efforts, some countries have incorporated specific measures for women into construction site regulations and standards. As described in 3.6, women are not yet on an equal footing with men when considering toilets. In the United Kingdom (Health and Safety Executive [HSE], n.d.), it is required to provide suitable means on construction sites for the disposal of sanitary products in facilities used by women. Furthermore, Construction for Women CIC (2026) developed a governance-led national framework for safe and inclusive construction environments, which is currently voluntary. The standard includes, amongst other things, requirements for welfare facilities and specifies provisions such as the availability of menstrual hygiene products. Also in Queensland, Australia, the provision of amenities such as sanitary facilities and a sanitary bin specifically for women on construction sites is regulated (WorkSafe.qld.gov.au, 2024). In Austria, as can be seen in Chapter 3.3.3, the measures are limited to separated facilities if more than five female and five male workers are on site simultaneously.

3.5 Consequences of inadequate hygiene and coping behaviour

Sources such as Trades Union Congress (TUC, 2024) and Bruckner and Pressinger (2024) have identified several grievances related to toilet availability and hygiene reported by workers in various sectors, including the construction industry and call for improvements. Bruckner and Pressinger (2024) argue that discussions of basic human needs, such as access to toilets, should no longer be necessary. As this is not the case, this chapter reviews the consequences of inadequate hygiene that workers may face. Most of the reviewed literature discusses female workers, especially related to health issues. Nevertheless, behavioural changes were identified independently of gender.

3.5.1 Unhealthy toileting behaviours and alternative coping behaviours

W. S. Reynolds et al. (2019) found that women who most of the time limit the use of restrooms at work are less satisfied with the facilities than women who never or only sometimes limit restroom use. Cleanliness and privacy were the aspects the participants, especially those who limited their restroom use often or most of the time, were least satisfied with. Being busy was the most common reason for not using the toilet, even though people limiting restroom use reported this slightly less as a reason than people rarely limiting restroom use. The authors also found that women who limited restroom use had more unhealthy toileting behaviours like delayed voiding and straining during voiding, as well as worrying about the cleanliness of public toilets and crouching over the seat rather than sitting. In a study about challenges to access hygiene facilities of mobile workers, which includes construction workers, in the UK, Rutter et al. (2023) found that if no sanitary facility is accessible, mobile workers may ignore urges. Unhealthy toileting behaviours, as described in 3.6, can also be rooted in cultural and social norms and the connected fear of judgement (Hebert-Beirne et al., 2021).

W. S. Reynolds et al. (2019) reported that a third of the women participating in their study limited fluid intake at least sometimes, but no difference between participants limiting and not limiting restroom use was found. On the other hand Winchester et al. (2023) found, in a study on the impact of lacking restroom access on fluid consumption and health of teachers, that teachers who could not use the bathroom freely tended to drink significantly less water than others. Fluid and food restriction as a coping behaviour when no sanitary facility is accessible was also identified by Rutter et al. (2023).

Rutter et al. (2023) found that mobile workers plan their day around known adequate sanitary facilities or even travel, for example, to commercial premises like supermarkets, public premises, public toilets, their own home or work base, risking wasting time. Participants reported using their own hygiene kits such as gloves, sanitiser and temporary sanitary facilities. The authors also identified going to the toilet outdoors or even soiling their clothes in extreme situations as alternative actions.

3.5.2 Consequences of hygiene-related coping behaviour

The literature review of Yoo et al. (2023) indicates that, amongst other occupational risk factors, restricted restroom use at work is associated with lower urinary tract symptoms (LUTS). Delaying urination is reported to be connected to urinary urgency, stress incontinence, urinary incontinence, burning sensation and infection. Additional risks for LUTS identified in the review include restricted fluid intake and a lack of adequate toilet facilities. The authors also mention that LUTS is common in women, especially between the ages of 40 and 60 and almost 60% of women in Canada, Germany, Italy, Sweden, and the UK are affected. There are also indications that female employees with LUTS have lower work productivity due to frequent toilet visits and concentration problems (Yoo et al., 2023). Lee et al. (2025), also found that lower access to toilets at workplaces leads to a higher incidence of LUTS and health-related productivity losses for female workers.

Additionally, a correlation was found by Winchester et al. (2023) between the ability to take bathroom breaks and fluid intake with hypertension and urinary tract infections (UTIs). The authors stated that in case participants reported being able to take bathroom

breaks when needed, the probability of having frequent UTIs was 70% lower, and the probability of high blood pressure was about 45% lower.

Taylor and Tripathi (2025) describe that an imbalance between fluid intake and losses resulting in dehydration of adults can manifest with many different symptoms, such as mild thirst and weakness, as well as more severe issues. The authors explain that inadequate fluid intake and other causes can lead to a hypertonic dehydration, where water loss exceeds sodium loss, which can lead to neurological symptoms such as delirium, confusion, seizures and even coma. Nevertheless, they point out that dehydration is uncommon in adults without medical problems and unrestricted access to water and is rather an issue among older adults.

Pierce et al. (2019) summarise the relation between suppressing one's urge to void and limiting fluid intake with health issues such as UTIs, adverse bladder sensations and symptoms, as well as the connection between chronic mild dehydration and health issues such as kidney stones, bladder cancer and cardiovascular disease. The main aim of the study was to examine the relationships between workplace bladder practices, urinary symptoms and work productivity of female nurses and midwives. Similar to other studies cited, the authors found delayed voiding to be associated with LUTS and stated that participants who restricted toilet access were more likely to report anxiety or depression. In addition to findings reported in other studies cited by Pierce et al. (2019), which identified a negative correlation between the level of incontinence and workers' ability to concentrate, perform physical activities or complete tasks without interruption, the authors found that participants delaying the urge to void are more likely to have impaired mental concentration. Furthermore, those who limited fluid intake were less likely to maintain good time management.

3.5.3 Illness-related absenteeism

Vardoulakis et al. (2022) reviewed literature about the transmission of infectious diseases in public washrooms with a focus on COVID-19. The authors found that, despite only a few cases of disease originating from public washrooms being reported in the scientific literature, certain toilet designs and practices can result in washroom contamination. Especially when heavily used or not frequently cleaned, contamination with bacteria or viruses can occur. A few cases reported faecal-oral transmission and the contamination of washroom surfaces connected to intestinal diseases. The risk of novel infection for healthy individuals was nevertheless described as low (Vardoulakis et al., 2022). As key preventive measures, the authors identified correct handwashing and drying after toilet use and recommended frequent cleaning of surfaces and good air ventilation.

Additionally, Sevil et al. (2013) found, in a study about the relationship between genital hygiene practices and genital infection in university students, that genital infections were least frequent amongst participants who washed their hands before and after using the restroom and most frequent amongst those who did not always pay attention to washing hands. The authors describe handwashing with water and soap as the simplest practice for infection prevention. It was also pointed out that pads need to be changed frequently during menstruation to lower the risk of infections. Furthermore, even though the literature review of Wang et al. (2017), with a focus on elementary schools, urges caution against overreliance on their findings, their review indicates that hand-

hygiene interventions, the use of hand sanitisers and soap can have an effect on reducing absenteeism associated with acute gastrointestinal illness.

3.6 Cultural and social norms about toilets

According to Douglas (2003), dirt is disorder and a “matter out of place”. It is the by-product of a structure. It is not objective, and the extent of our cleaning behaviour is not solely driven by the fear of illness. The author describes cleaning as an act of restoring order to fit our ideals. In situations like on the construction site, where the users’ expectations of cleanliness vary considerably, and the users are usually not responsible for cleaning themselves, the ideal of every person might not be met. Furthermore, it is argued that boundaries are considered particularly vulnerable and potentially dangerous points in a system of order. As an example, the author argues that body orifices are very vulnerable points where blood, urine and faeces cross the body’s boundaries. No specific evidence was found about which excretions are considered taboo on Austrian construction sites, but it emphasises that, depending on the culture, different excretions are perceived as more or less polluting and therefore more or less taboo.

While Douglas (2003) explains why people aim for cleanliness and the role of taboos, Hebert-Beirne et al. (2021) describe how social norms develop. They show in a study on social processes that inform women’s toileting behaviour that toileting is socially regulated. While toilet usage can usually only be observed in family settings, the authors found that women tend to observe how often and under which circumstances other people go to the toilet to learn about the social norms. Furthermore, participants in the study mentioned not expressing the need to void before others do and similar adaptive behaviour. Additionally, people are aware that their own toileting behaviour is observed, including concerns about what other people think. Lastly, the authors mention that people benchmark their own toileting behaviour against the perceived social norms. According to the authors, the fear of judgment and shame can lead to coping behaviour such as delaying voiding until after work. This suggests that hygiene behaviour, such as using the toilet facilities, urinating outdoors, or using the washing facilities on construction sites, may therefore be shaped by the observation of peers.

In addition to the development of social norms described above, Molotch and Noren (2010) explain the various aspects of toileting that are culturally shaped. One of these aspects is the design of public toilets, which Serlin (2010) describes as often reflecting assumptions of able-bodied male users. Greed (2010) further argues that this includes inequitable distribution of male and female facilities, as well as that urinals are frequently available for free, while other toilets are charged. The author explains that public toilets were originally mainly made for men, while the lack of toilet provision for women was part of systematically hindering women from accessing the cities as men do. She highlights that while 52% of the UK’s population are women, less than 10% of the toilet providers, such as professionals, designers and managers, are female. These figures refer to the general population and toilet provision (Greed, 2010). However, gender imbalances are also characteristic of the construction industry, where female use of site facilities is becoming increasingly relevant.

Beyond the inequity between facilities for men and women, privacy is another topic discussed in that context. According to B. Reynolds (2010), toilet stalls ensure privacy to some extent, while lined-up urinals lead to the exposure of the men’s penises, which

is described as a symbol of male power. He explains that, therefore, the men are made vulnerable, and some even prefer to use toilet stalls instead. Otherwise, the author argues, the codified etiquette for urinals includes not to look at other people, speak with them or touch them as the facilities are constructed as heterosexual spaces. While shared urinal spaces are widely accepted due to their efficiency, as described by Greed (2010), seated toilets without sufficient privacy, as shown by B. Reynolds (2010), tend not to be used. For women, Greed (2010) requests more privacy and considers the gap between floor and door, which are presumably intended to discourage sexual or otherwise socially inappropriate behaviour in men's facilities, as unsuitable for female facilities. While B. Reynolds (2010) and Greed (2010) discuss public toilets more generally, this is likely also relevant for privacy on construction sites in Austria, when looking at the habit of urinating outdoors, shared facilities between men and women, as well as the topic of sound and smell.

Related to this, Barcan (2010) highlights that bodily smell and sound are associated with disgust and shame, so people try to mask and hide them. According to the author, touch becomes more and more stigmatised as a cause for contamination, though everyday objects such as phones do not raise disgust as much as toilet seats, even though the former are found to have more bacteria. She argues that only unwanted connections are stigmatised. According to Greed (2010), the term toilet and the related activities tend not to be used, but rather terms associated with it, like using the bathroom, or to wash one's hands, to obscure the dirty nature of the activity. She describes toilets as a stigmatised subject of general discourse and explains that in architecture, designing toilets is sometimes compared to doing latrine duty in the army. Furthermore, she states that while it is common in Europe today to view human waste as dirty and cleaning it as a form of punishment or at least as a low-prestige task, in some societies excrements are valued as fertiliser, urine is used to treat insect bites, and providing toilets was once considered an honourable profession. The intimacies, privacies and taboos of public washrooms discussed above lead, according to Braverman (2010), to difficulties with direct human inspection. The author further states that government agencies tend to only inspect in response to complaints. Building on the discussion in the literature, the stigmatisation of toilets, their usage and their cleaning leading to a lack of discourse may also hinder improvements of hygiene conditions on construction sites.

Considering all of this, Greed (2010) mentions that the provision of appropriate public toilets is often claimed to be expensive, while other extravagant facilities are still built. She interprets this as an issue of prioritisation, shaped by cultural perspectives and the experience of the decision-makers. While she described this issue in connection with public toilets, it may also be visible in the cost-pressured construction industry.

This literature review suggests that hygiene on construction sites is shaped by structural factors, such as regulations and fragmented responsibilities, as well as cultural aspects, including stigma and coping behaviours. Therefore, two different lenses, principal-agent theory and safety culture theory, are introduced in the next chapter.

4 Theoretical Framework

In this chapter, the theoretical frameworks for analysing potential reasons for insufficient sanitary conditions on construction sites are introduced. These include the principal-agent theory covering structural issues and the theory of safety cultures. Despite both theories aiming to explain behaviour, they do so in very different ways, and therefore combining them might appear contradictory at first. In this thesis, principal-agent theory is used to explain hygiene-related structures in construction projects, as well as conflicting interests between actors based on economic rationality and the assumption of self-interested behaviour, and how incentives and monitoring shape hygiene-related behaviour. The safety-culture framework, on the other hand, follows a more constructivist perspective and explains the influence of cultural norms, values, and shared assumptions on behaviour. Together, they provide complementary perspectives on why hygiene practices on construction sites may deviate from expectations.

4.1 Principal-agent theory

The core idea of the agency theory, according to Eisenhardt (1989), lies in the relationship between the principal and the agent. The so-called agency relationship involves a principal who delegates work to an agent. Nevertheless, Shapiro (2005) points out that the common assumption that the relationship is dyadic is too simplistic to describe the complex network structures that usually occur. The author describes that principals can at the same time be agents and vice versa, and multiple agents and principals are involved, so agents might have several principals to respond to.

Eisenhardt (1989) distinguishes between a positivist agency stream, which mainly focuses on the relationship between owners and managers, and the more mathematical and abstract principal-agent stream, which can be applied to multiple agency relationships. This thesis draws on the broader principal-agent perspective as applied in organisational and sociological contexts. Shapiro (2005) explained that despite the theory originally coming from economics, it is applicable for many different disciplines and argues especially for its use in sociology.

As described by Eisenhardt (1989), the problems the theory is concerned with are those of conflicting desires or goals between the principal and the agent and difficulties in verifying the agent's behaviour, as well as the risk-sharing problem occurring due to differing risk preferences. Additionally, the theory addresses information asymmetries between principals and agents, as well as governance mechanisms. In addition to these assumptions about organisations, human assumptions such as self-interest and risk aversion and the assumption that information is a purchasable commodity are part of this theoretical framework.

The principal-agent theory, as explained by Eisenhardt (1989), helps to determine whether behaviour- or outcome-oriented contracts are more effective in a certain principal-agent relationship. Shapiro (2005) describes the compensation based on time spent (behaviour-oriented, such as salary) or for what is delivered (outcome-oriented, such as piece rate, commissions, equity ownership or bonuses) as part of the incentive alignment. The author also points out that how well specific incentives work differs between agents. The aim, according to Eisenhardt (1989), is to align the agent's

interests with those of the principal, thereby reducing opportunistic behaviour and improving outcomes.

As described by Shapiro (2005), all agency relationships come with agency costs, and the principal aims to minimise them. Sources of agency costs include costs of recruitment, adverse selection, the specification of preferences, the design of incentive mechanisms to address agency problems, monitoring, insurance, moral hazard (a lack of effort of the agent as explained by Eisenhardt (1989)) and many more. Eisenhardt (1989) describes that information is seen as a purchasable commodity in agency theory, therefore, monitoring and information systems reduce asymmetry and costs associated with it, but on the other hand, add costs themselves. As Shapiro (2005) explains trade-offs between different agency costs can be made, but they cannot be eliminated. Jensen and Meckling (1976) define agency costs as the sum of monitoring expenditures by the principal, bonding expenditures by the agent and residual loss. The monitoring expenditures are all costs arising from monitoring the agent's behaviour. Furthermore, bonding expenditures are costs incurred by the agent to assure the principal that they will act in the principal's interest, for example, through contractual commitments or guarantees. Finally, the residual loss consists of costs coming from the remaining divergences between the agent's behaviour and the behaviour which would bring the most benefit for the principal.

As already indicated above Shapiro (2005) explains that information asymmetries are characteristic of many agency relationships. According to the author, information asymmetries include that the principal does not know the agent well enough to select a suitable one, nor do they know what the agent is actually doing. This leads to worries about shirking, opportunism, moral hazard and other selfish behaviour of the agent. In this case Eisenhardt (1989) argues that, especially for behaviour-based contracts, information systems for monitoring, such as budgeting, boards of directors, reporting procedures or managerial supervision can help to curb such behaviour.

However, Shapiro (2005) points out the difficulty of monitoring, especially in complex network agency relationships due to information asymmetries and the opacity of the relationship. The author, therefore, refers to self-regulation as playing an important role in monitoring. Additionally, it needs to be considered that many of the self-regulatory and regulatory monitoring arrangements involve additional agency relationships such as auditors, government regulators and insurance companies, which come with additional agency problems leading to a cycle of agents monitoring agents. Also, those agents can be prone to shirking, mistakes or selfish behaviour.

This perspective provides a useful lens for analysing hygiene conditions on construction sites, as it highlights how complex principal-agent relationships, fragmented responsibilities, information asymmetries, and misaligned incentives may contribute to suboptimal outcomes.

4.2 Safety culture

According to Schein (2010), culture is defined by shared learning experiences leading to shared, taken-for-granted basic assumptions among group members. The author identified different culture categories, including macrocultures such as nations, ethnic or religious groups; organisational cultures in private, public, nonprofit, and governmental organisations; subcultures, such as occupational groups in organisations; and microcultures within or outside organisations. Guldenmund (2000) further defines

safety culture as the elements of organisational culture that shape attitudes towards risk and guide behaviour that may either reduce or increase it.

4.2.1 Schein's model of organisational culture

Schein (2010) developed a framework consisting of three levels of culture that differ in their visibility. This framework is visualised in Figure 2. Guldenmund (2000) views the framework, despite being about organisational culture in general, as valid for safety culture.

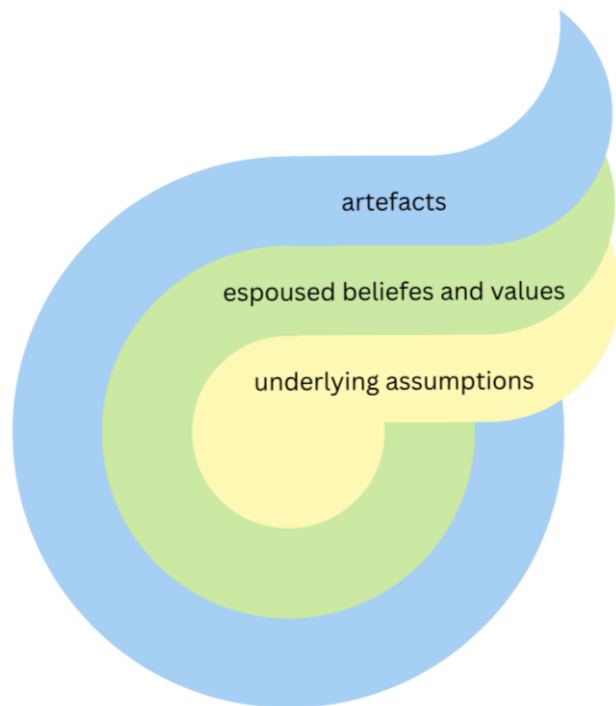


Figure 2: Edgar Schein's framework of organisational culture (Figure created by the author)

The different levels of Schein (2010) are as follows:

The first level comprises artefacts, which include all observable aspects of a group's culture, such as physical environment, language, behaviour, and formal structures. This level is easy to observe but difficult to decipher, meaning that one can sense artefacts, but the meaning for the group cannot be easily derived. Deriving deeper assumptions from artefacts is considered problematic as personal interpretation may project the observer's own feelings and reactions.

The second level consists of espoused beliefs and values. These are consciously articulated principles that aim to guide behaviour and provide orientation for group members. Espoused beliefs and values can, but do not have to, transform into shared assumptions if the actions associated with them are repeatedly successful, or if they are socially validated by members reinforcing each other's beliefs and values.

The third level includes underlying assumptions, which develop when certain beliefs and values are repeatedly successful. These assumptions are taken for granted, largely unconscious, and strongly influence how individuals perceive, think and act. As they provide stability and orientation, they are difficult to change and rarely questioned. Understanding these underlying assumptions is therefore essential for interpreting both espoused values and observable artefacts.

4.2.2 Formal rules vs. informal norms

According to Schein (2010), observed behaviour can deviate from the beliefs and values of a group if they do not correlate with effective performance. Espoused values may therefore reflect desired rather than actual behaviour. As reviewed by Antonsen et al. (2008), the literature shows that actual work procedures are often not fully aligned with formal work procedures. Neal and Griffin (2006) refer to Zohar's work on safety climate, which views the safety climate as the priority of safety in an organisation relative to other production goals, such as time. He argues that actual behaviour deviates from formal policies because employees prioritise what they expect to be rewarded for. Another concept explained by Pinto (2014), connected to the deviation between formal rules and informal norms, is the normalisation of deviance. It describes the process of tolerating deviation from a standard procedure repeatedly until the deviation is seen as normal.

4.2.3 Leadership and safety culture in the construction industry

Schein (2010) argues that the espoused beliefs and values of a group derive from individuals' assumptions. Those individuals are usually the leaders or founders of the group. Berglund et al. (2025) also highlight the importance of management and leadership when developing a safety culture, especially by setting examples and through active involvement of the formal or informal leaders.

In addition to the importance of management and leadership in creating a safety culture, Berglund et al. (2025) identified several structures and processes that influence safety culture in the Swedish construction industry. The authors found that regulations interplay with cultural change and pressure, particularly for small firms, to adapt. Also, the size of the company is relevant, as larger companies usually have more resources for safety work. Challenges were seen with subcontractors due to language barriers, cultural differences and safety knowledge. Furthermore, safety training with a focus on managers and their responsibility was perceived as shaping behaviours and supporting safety culture. Lastly, cleanliness was identified as an artefact of safety culture.

Berglund et al. (2025) point out that in construction, a shared safety culture is difficult to create due to the complexity of the projects in this fragmented industry and the involvement of many different companies and cultural diversity. According to Madsen and Chen (2024), the construction industry is characterised by a high health and safety risk, including falls, cuts, noise, vibration, ergonomic, chemical, musculoskeletal, psychological and biological risks. Long working hours, non-standardised work, temporary workers, including those from abroad, the sector's temporality and focus on subcontracting, as well as mobile work and the associated uncertainty, are typical in the construction industry as well. Furthermore, the authors explain that due to the industry being project-based and tendering processes focusing heavily on costs, economic pressures can exacerbate unsafe behaviours.

5 Results

The results of the interviews and the visit to the sites are going to be structured along three analytical levels. First, the existing conditions and structures (“what is”) including the description of the sites visited and the interviewees’ descriptions about conditions, responsibilities and tasks, regulations, as well as priorities are summarized, second, the regulatory framework in practice, as well as practices and implementations on site (“what is done”) are collected, and third, the perceptions and needs of workers (“what is said”) are stated.

5.1 Description of the sites visited

During the visit to the sites, three construction sites were observed together with the planning and construction coordinator and the labour inspector. The observations focused on the availability, condition and organisation of sanitary and hygiene facilities.

5.1.1 First site

For the approximately 25-30 construction workers present on this site, a container with two toilets, visible in Figure 3, two showers as shown in Figure 4, two urinals visible in Figure 5, and five sinks as shown in Figure 6 and Figure 7, was provided. The smell was perceived as unpleasant, but not extreme. The cleanliness was acceptable, and heating, soap, paper towels, and warm water were available. Additionally, a portable toilet, as pictured in Figure 8, was present, which would not have fulfilled the hygiene requirements on its own. According to the coordinator, it is common practice that a portable toilet is delivered at the very beginning and remains on site until the end, despite containers being delivered at some point.

Showers were required for the employees of one company because it was located more than thirty minutes from the site. In this case, the construction company was listed in the Safety and Health Protection Plan (SHP-plan; German: Sicherheits- und Gesundheitsschutzplan, SiGe-Plan) as responsible for the facilities.

The planning and construction coordinator noted during the visit to the sites that he is sometimes shocked by the condition of sanitary facilities on certain sites. At the first site, he mentioned that cleaning, which the construction company was responsible for, had not been carried out sufficiently at the beginning of the project.



Figure 3: One toilet in the sanitary container on site 1.
(Picture taken by the author)



Figure 4: Showers in the sanitary container on site 1.
(Picture taken by the author)



Figure 5: Urinals in the sanitary container on site 1.
(Picture taken by the author)



Figure 6: Sink in the sanitary container on site 1.
(Picture taken by the author)



Figure 7: Sinks in the sanitary container on site 1.
(Picture taken by the author)

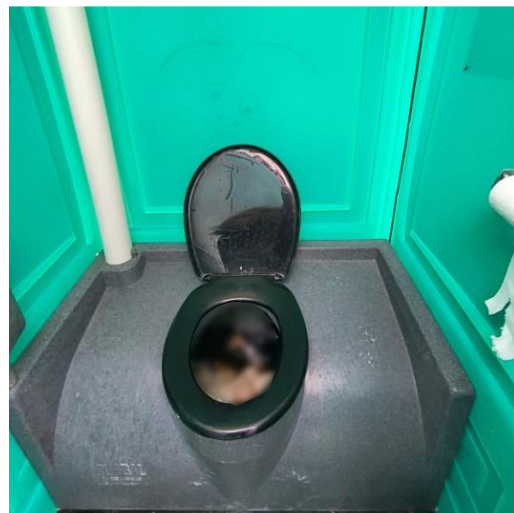


Figure 8: Portable toilet on site 1 (image partly blurred to ensure academic appropriateness).
(Picture taken by the author)

5.1.2 Second site

At the second site, in addition to two portable toilets, of which the interior is pictured in Figure 9, a container with separate sanitary facilities for men and women, as visible in Figure 10, was provided, equipped with a toilet, a urinal and a sink for the men as shown in Figure 11 and a toilet and a sink for women visible in Figure 12. The sanitary containers were very clean, and warm water and heating were available. However, paper towels, soap, and toilet paper were missing from all facilities. In such cases, the coordinator ensures that the shortage is identified and communicated promptly.



Figure 9: Portable toilet on site 2. (Picture taken by the author)



Figure 10: Sanitary facilities on site 2. (Picture taken by the author)



Figure 11: Men's toilet in sanitary container on site 2. (Picture taken by the author)



Figure 12: Women's toilet in the sanitary container on site 2. (Picture taken by the author)

5.1.3 Third site

Only one portable toilet visible from the outside on Figure 13 and from the inside on Figure 14 was provided at the third site for the two present construction workers. The facility was very clean and included toilet paper, but no soap or running water was available. The coordinator planned to discuss with the client whether workers could use sanitary facilities in the building, including sinks that are not affected by ongoing construction, as the workers were unsure if this was allowed.



Figure 13: Portable toilet from the outside on site 3. (Picture taken by the author)



Figure 14: Portable toilet from the inside on site 3. (Picture taken by the author)

5.1.4 General observations

As visible in several figures above, the floors in the facilities on all sites were wet and dirty. This creates a need for hangers and shelves to put things on, but equipment like that was only available to little extent.

An overall benefit at the construction sites of this client is that sufficient space for sanitary and hygiene facilities is generally available, as they are situated in a low-density urban area. Additionally, the client is often willing to provide access to facilities in existing buildings for construction workers.

The coordinator emphasised the importance of separate sanitary facilities for women and men as soon as at least one woman is present on site. Regarding the specific client, he stated that when no separate facility is provided, female workers are usually allowed to use toilets in an existing building. However, he noted that this arrangement is not always clearly communicated and therefore may not be known to all personnel on site.

5.2 Interviewees' descriptions of hygiene conditions on construction sites

This chapter includes the interviewees' descriptions of the conditions of sanitary facilities and their organisation. Furthermore, aspects influencing hygiene conditions on construction sites and organisational as well as technical options for dealing with them are highlighted.

5.2.1 Description of the organisation and conditions of sanitary facilities

For contextualisation, the foreman and bricklayer reported working on 20 to 30 construction sites per year, with the bricklayers' project duration on site ranging from one to five weeks. All sites are located within a travel time of a maximum of 30 to 40 minutes from the company.

Portable toilets are almost exclusively used as experienced by the interviewees, except in rare cases where clients allow the use of toilets in nearby buildings or when working on larger projects together with other companies, where containers with water connections equipped with multiple toilets, sinks and sometimes showers were reported to be present. They were described to usually arrive on the first or, at the latest, the second day after the start of on-site work, together with containers, electricity, and water connections, and usually also sewage connections.

A second toilet is noted to be already provided if 10 people work on site, which aligns with the experience of the labour inspector who reported compliance with requirements regarding the number of toilets and washing facilities. The portable toilets are not located next to the containers used for eating and are equipped with chemicals to reduce odours. Cleaning intervals range from twice per week to every other week by the company providing portable toilets or company-owned sanitary containers by in-house cleaning personnel.

Differences between the interviewees' descriptions mainly concern the equipment. The project manager described that their projects are always equipped with a suitable number of toilets and hand-washing facilities with warm and cold water, soap and towels. Furthermore, the sanitary containers include wash basins, but in case portable toilets are used, either the client provides facilities or provisional solutions are found. The two construction workers, on the other hand, indicated that heating in sanitary facilities is generally not provided on small construction sites, and portable toilets usually do not include hangers or sinks. While toilet paper was reported to be usually available, especially in early construction phases, warm water and skin care products (e.g. soap, hand cream) are usually not provided; however, a nearby water tap or a water hose providing running water (described by some as drinking water) is available on site.

Three different organisational options for the provision of sanitary facilities were described by the project manager. For client-managed projects, toilets are sometimes provided by the client or rented portable toilets are used, and during contractor-managed projects, the companies' own sanitary containers are usually used.

Another topic discussed was the COVID-19 pandemic. Both the labour inspector and the health, safety and well-being (HSW) representative referred to the increased focus on hygiene during this time, in which measures such as disinfectant dispensers or warm, running water were widely implemented, as work was only permitted under additional

hygiene requirements. However, according to the interviewees, the conditions are gradually returning to pre-pandemic levels.

5.2.2 Factors influencing sanitation conditions on construction sites

Several factors were identified as influencing sanitation conditions on construction sites and affecting the provision of clean and well-equipped hygiene and sanitary facilities.

Both the size and duration of construction sites were described as shaping sanitation conditions. Smaller sites and mobile work crews, which operate across multiple short-term or changing workplaces, were described as typically having fewer facilities, whereas larger sites tend to be subject to higher specifications regarding sanitary infrastructure. Several interviewees, including the HSW representative, the labour inspector and the owner of the coordination company, associated larger sites with better hygiene provision.

The type of construction emerged as another relevant factor influencing sanitation conditions. Large, stationary building projects with longer durations were described as easier to equip with adequate sanitary facilities compared to small, linear construction sites, where mobile sanitary units are usually used. This was emphasised by both the HSW representative and the occupational physician.

The location of the construction site was also identified as an important aspect. Urban environments, particularly densely populated city areas and remote sites, such as avalanche barrier projects in mountainous areas, were described as difficult to equip with adequate sanitary facilities. These logistical and organisational challenges were highlighted by the occupational physician, the owner of the coordination company and the labour inspector.

Next to the location, seasonal conditions were identified as an organisational challenge. The foreman and bricklayer explained that sanitary containers connected to the water system had been used in the past, but maintaining them during winter requires a lot of effort due to the risk of frozen pipes. The project controller further mentioned increased requirements during winter, such as the need for shelves and adequate lighting, due to dirt, reduced daylight and the need for more clothes.

Diverging views emerged regarding the influence of company size. While the HSW representative argued that the company size should not influence sanitation conditions, as the same legal regulations apply to all companies, the labour inspector described a tendency for hygiene conditions to improve with increasing company size. He further noted that larger companies are more likely to provide structured health and safety training, including aspects related to sanitary facilities, whereas smaller companies tend to rely on standard papers referring to basic safety measures.

The role of the client was also described as influencing sanitation conditions, although the reported impact varied. Large institutional clients such as railway or motorway companies were reported to establish additional requirements, for example, regarding the provision of shared containers, safety devices or infrastructure, as noted by the HSW representative. At the same time, the owner of the coordination company emphasised differences between public and private clients, stating that public clients often care about strict documentation, while the hygiene standards of private clients are often driven by cost pressure. In contrast, the labour inspector also acknowledged the

influence of the client, but he did not perceive a difference between public and private clients in this regard.

Beyond organisational and project-related factors, interviewees also referred to workforce-related aspects influencing sanitation conditions. Especially, the number of workers and different companies on site was described as a major practical challenge for maintaining adequate sanitation conditions. In addition, both the occupational physician and HSW representative further noted that workers from different cultural backgrounds may be accustomed to different types of sanitary facilities, which can make adaptation to commonly used facilities in Austria more difficult. This view was also expressed by the labour inspector, who stated that ensuring adequate hygiene conditions on construction sites has become slightly more challenging as the cultural diversity of the workforce has increased. In contrast, the project manager attributed this less to cultural factors and more to individual habits, which he especially experienced when subcontractors are involved.

5.2.3 Availability of adequate facilities and alternative solutions

Both the HSW representative and the occupational physician described measures aimed at accommodating different hygiene practices. Upon request, squatting toilets can be provided to ensure more comfortable use for workers from different cultural backgrounds. In the example of a large construction company, it was explained that an internal equipment department is operated through which required containers and sanitary facilities can be selected via an internal digital configuration platform. A wide range of container solutions was described as available, including units equipped with tanks for fresh and wastewater, which do not require direct connections to the water supply or sewage systems. Additionally, fully equipped and mobile sanitary units on trailers (referred to by the interviewee as “circus trailers”) as well as stainless steel containers, which were described as particularly easy to clean, were mentioned. The interviewees emphasised that technical solutions for social and sanitary facilities on construction sites are continuously evolving.

In addition to various technical solutions, organisational options were mentioned in the interviews. To address space limitations in urban areas, renting apartments close to construction sites as an alternative to containers was suggested. Furthermore, it was mentioned that parts of buildings, such as basements or first floors, can be completed at an early stage and subsequently used to accommodate certain facilities for the remainder of the construction period.

5.3 Responsibilities and tasks

The interviews revealed that responsibilities and tasks related to hygiene on construction sites are distributed among several actors. These include roles within construction companies, such as employers, managers, and employees, as well as external actors, including clients, coordinators and public authorities. A division is made between formally assigned responsibilities, responsibilities that can be contractually transferred, and responsibilities that emerge informally, as well as the practical division of tasks on construction sites.

5.3.1 Employer

The Construction Workers Protection Ordinance was described as regulating the responsibilities of the employer. In cases where no specific arrangements are defined, each company is considered responsible for its own employees and therefore required to provide its own hygiene facilities. In cooperation with the coordinator, employers are required to ensure appropriate cleaning schedules that are adapted to the employees working on site.

In many cases, especially big construction projects, the construction company (sometimes general contractor) or the client is contractually obliged to provide hygiene facilities for the workers of all contractors present on site, as indicated in several interviews. The SHP-plan was described as a key document in this regard, as it specifies which company is responsible for the provision and maintenance of sanitary facilities. If conditions are not satisfactory, contractors are expected to contact the responsible company. A contractor can also provide a planning and construction coordinator, though this is not very common anymore.

In practice, employers were further reported to make decisions regarding the calculation and provision of sanitary facilities for construction projects and to act as role models in this context. Overall, the descriptions of the responsibilities and tasks of the employer were largely consistent across the interviews with the labour inspector, the owner of the coordination company, and the project manager.

5.3.2 HSW representatives and occupational physicians

Despite the labour inspector highlighting the importance of company internal health, safety and well-being (HSW) actors, their tasks were only explained by the interviewees possessing the roles themselves. In practice, the HSW representative was described as taking a steering role, amongst others, regarding hygiene-related topics. The preventive personnel, such as safety officers and occupational physicians, act as advisors to the employer. As part of their duties, they conduct inspections during which they also assess hygiene conditions and report deficiencies to the site manager or site foreman.

5.3.3 Executive staff

While legal responsibility remains with the employer, “acting persons” were described as operationally responsible for organising cleaning activities and using available resources and given specifications to ensure adequate provision of sanitary facilities. While the term “acting persons” itself was not clearly defined, it was consistently used to refer to those implementing hygiene-related measures on construction sites. This executive staff, including site foremen, assistant foremen, and construction managers, the latter particularly if only subcontractors are on site, was mentioned to also monitor hygiene conditions and communicate employees’ responsibilities. In addition, site managers and foremen are reported to be involved in implementing corrective measures based on issues identified by preventive personnel. Project managers’ tasks include planning the site set-up, selecting appropriate sanitary facilities, determining required quantities and arranging their provision and maintenance if not supplied by the client.

Furthermore, foremen were characterised as the company’s “flagship”, reflecting their role as visible role models on site. Overall, the responsibilities and tasks of executive

staff were described in a largely consistent manner across interviews with the HSW representative, the carpenter apprentice, the foreman and bricklayer, as well as the occupational physician, the project manager and the project controller.

5.3.4 Every individual

In addition to the actors described above, it was emphasised that every individual on site bears an informal and shared responsibility for maintaining basic hygiene standards. Employees are expected to keep sanitary facilities clean and, in cases where no cleaning staff is hired, to clean them themselves. This responsibility was also described as extending beyond sanitary facilities. The individual responsibility was specifically highlighted in interviews with the occupational physician, and the foreman and bricklayer.

5.3.5 Client

Several interviewees highlighted the role of the client, referring to their duty of care for health and safety on construction sites. The client has held responsibility for various aspects of worker protection under the Construction Work Coordination Act since 2000, including the appointment of a planning coordinator. The Construction Work Coordination Act is valid for all construction work. Therefore, the client needs to ensure that the general principles of risk prevention are followed and that reference material for future work is provided. When interpreting the general principles of risk prevention, the client is required to ensure the provision of appropriate sanitary containers, according to one interviewee. Nevertheless, a planning and construction coordinator is only required if people from more than one company work on site. The example of a bathroom renovation, where usually many contractors are involved, was given to explain that in such a case, a coordinator would be required to be appointed by the client.

In practice, the client may occasionally assume the responsibility for sanitary facilities, depending on the agreements in the SHP-plan. It was explained that when clients organise construction projects themselves, they often take responsibility for ensuring the provision of adequate and hygienic sanitary facilities. In contrast, for turnkey, ready-to-move-in housing projects, the construction company is typically responsible for these facilities.

Some disagreements occurred regarding how common the legal possibility, that the client takes the role of the planning and construction coordinator, is used in practice. The project manager stated that this often occurs in client-managed projects. This was rejected by the labour inspector, who mentioned that this is only rarely the case, for example, if the client is a planning and construction coordination company. This is because the client would need to have construction-related education, three years of experience and knowledge about employee protection.

Furthermore, it was mentioned that the decision-making already starts in the tendering process, where it is often specified for how many people facilities need to be provided. The responsibilities and tasks of the client as described in this chapter were mainly addressed by the HSW representative, the labour inspector, the project manager and the construction coordinator during the visit to the sites.

5.3.6 Planning and construction coordinator

The planning and construction coordinator supports the implementation of the Construction Work Coordination Act, advising clients and monitoring compliance with health and safety standards on construction sites. The tasks of the planning and construction coordinator were described as including the coordination and development of practical solutions for health and safety issues, such as hygiene, particularly when multiple companies are working on the same construction site. Coordinators are preparing the SHP-plan, where they specify the necessary facilities in accordance with the regulations. During the construction phase, coordinators coordinate the shared use of the facilities and carry out inspections to ensure that standards are met.

These tasks and responsibilities were mainly described by the owner of the coordination company, the construction coordinator from the visit to the sites, the occupational physician, and the labour inspector.

5.3.7 Labour inspector

The responsibilities and tasks in this subsection were explained solely by the labour inspector himself.

The Labour Inspectorate is a public authority responsible for monitoring compliance with statutory employee protection regulations. Their main tasks, as defined by the Labour Inspectorate Act, include unannounced routine inspections of workplaces and external work locations as well as participating in proceedings with trade and building authorities when issues relating to employee protection are involved. In trade authority proceedings, the Labour Inspectorate holds party status, whereas in building authority proceedings, it assumes an advisory role. The Labour Inspectorate is also responsible for investigating work accidents and responding to reports of misconduct. As hygiene facilities are regulated under the Construction Workers Protection Ordinance, their inspection forms part of these duties. According to the Labour Inspectorate Act, labour inspectors must report all defects to those affected on site and send the results of the inspection to the responsible parties, including the employer and, e.g. if sanitary facilities are concerned, also the construction coordinator.

Especially for smaller construction sites, it was stated that the Labour Inspectorate seeks to influence the client from an early stage and to remind them of their obligations, including the implementation of the general principles of risk prevention. Construction sites are selected for inspection based on perceived urgency, considering previous experiences with clients and companies. Construction sites below a certain threshold of working hours, such as small, detached housing projects, are not required to be reported to the Labour Inspectorate. However, as clarified during the visit to the sites, labour inspectors are nevertheless authorised to inspect these sites. Such inspections are not carried out regularly but usually occur in response to reports of deficiencies or when obvious grievances are observed on site. It was further stated that hygiene-related aspects have the same priority as all other health and safety aspects. Nevertheless, immediate threats to life and health are prioritised over administrative offences, like most hygiene-related breaches.

5.3.8 Other actors involved

Furthermore, the labour inspector referred to tasks of the General Accident Insurance Institution, which acts in an advisory capacity. Therefore, no legal action is taken if identified deficiencies are not corrected.

The carpenter apprentice attributed responsibility for adequate cleaning and the provision of sanitary supplies, such as toilet paper, to the cleaning company or the service provider responsible for the sanitary facilities, which typically provides, maintains and cleans portable toilets. This was also highlighted by the owner of the coordination company by pointing out that the responsibility for cleaning and maintenance differs between projects and can be carried by a special company or also the client (see 5.3.5), who usually have differing engagement for maintaining the facilities, leading to a wide variety of practices.

An additional legal responsibility for all experts involved, including planners and contractors, is the duty to warn and inform. In relation to hygiene responsibilities, this is especially relevant regarding the client's duty to adhere to the Construction Work Coordination Act. Clients who are not knowledgeable in this area need to be informed about that responsibility, otherwise no penalty can be imposed on them.

Table 2 summarises the most important responsibilities of the actors mentioned.

Table 2: Summary of responsibilities regarding sanitary conditions on Austrian construction sites of various actors. (Table created by the author)

Responsibility/Task	Legal duty	Contractual allocation	Execution	Notes
Provision of sanitary facilities	Employers	Often main contractor, sometimes client	Construction company (construction managers, foremen), facility provider, or client	Depends on company size and type, and size of the construction project
Cleaning and provision of consumables	employers	Main contractor, client, facility provider or external cleaning company	Often facility providers, otherwise external cleaning companies, cleaning staff of contractor, or client	Responsibility for cleaning depends heavily on the responsibility for provision
Coordination	Client needs to appoint a planning and construction coordinator if required by regulations	Often planning and construction coordinator consultant, sometimes client or main contractor	Planning and construction coordinator	Especially for small projects the client often does not appoint a coordinator as required
Inspection/control	Labour Inspectorate	-	Labour inspectors	

Advise	-	General Accident Insurance Institution, Labour Inspectorate, HSW representatives, occupational physicians ...	General Accident Insurance Institution, Labour Inspectorate, HSW representatives, occupational physicians ...	Internal or external advisors depend on company size
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5.4 Regulatory frame

The first part of this chapter focuses on the quality control and capacity for monitoring worker protection, and the second part includes interviewees' assessments of the existing regulatory framework rather than a detailed discussion of its legal content, which is covered in the literature review in Chapter 3.3. The last part covers the awareness of interviewees about the regulations.

5.4.1 Regulatory oversight and enforcement capacity

According to the labour inspector, consistency in the monitoring of worker protection in Austria is ensured through conferences as well as internal audits and inspections by the central Labour Inspectorate. Furthermore, labour inspectors need to have relevant professional training and need to complete a two-year in-house training programme and pass a final examination before being allowed to work independently. Additionally, regular professional development, training courses and conferences to facilitate the exchange of experiences need to be attended.

In addition to aspects of consistency, monitoring capacity was discussed as well. According to the labour inspector, hygiene conditions on construction sites could be improved through increased inspection capacity. In his view, more personnel within the Labour Inspectorate would allow for more frequent controls. He further expressed the perception that, in practice, compliance is often achieved primarily through external pressure to adhere to regulatory requirements. Currently, the Labour Inspectorate faces limitations in enforcement and control due to only being five inspectors tasked with inspecting construction sites while also performing other duties, in one federal state, which makes comprehensive inspections difficult. According to him, between 10 and 15 inspectors would be required to focus exclusively on construction site inspections. Under current conditions, he reported that approximately 20% of the roughly 5000 registered construction sites can be inspected annually. The owner of the coordination company similarly mentioned that inspections by the Labour Inspectorate are rather on a sample basis.

5.4.2 Regulatory framework assessment

The regulations and especially the Construction Workers Protection Ordinance are described as adequate, sufficient and comprehensive by the interviewees. They are not perceived as requiring further tightening or specification, as more rigid rules could limit the flexibility needed to address the unique characteristics of construction projects. Only a desire for more concrete regulations for external workplaces was expressed. In

this context, it was mentioned that discussions are ongoing about a new version of the Construction Workers Protection Ordinance, which could introduce additional requirements about sanitary and social facilities and first aid at external workplaces. Furthermore, despite first calling the regulations sufficient, the owner of the coordination company stated that the regulation about separate hygiene facilities for men and women being only required if five people of each gender are on site is outdated.

The Labour Inspectorate Act is described as providing the labour inspectors with a tool to ensure employee protection and many possibilities to act as an authority. The interviewee mentioned that it leaves some flexibility in prioritisation and setting penalties, but otherwise provides a clear guideline. The actions required of labour inspectors, such as advising, setting deadlines and imposing sanctions, are defined by law.

No issues were reported with the Labour Inspectorate Act by the labour inspector, who, together with the owner of the coordination company and the HSW representative, provided the interview input for this subsection.

5.4.3 Regulatory awareness

While interviewees like the labour inspector, the HSW representative and the owner of the coordination company referred to and assessed the regulations, the carpenter apprentice and the project manager showed limited regulatory awareness. The carpenter apprentice reported not knowing about regulations for sanitary provision at all, while the project manager did not mention any specific regulations by name but rather referred to the free biannual training from the General Accident Insurance Institution. How in-depth the hygiene-related paragraphs are covered in the training was not mentioned.

According to the labour inspector, this lack of knowledge is addressed in the educational field, for example, in higher technical schools for construction, universities for civil engineering and foreman's training. Therefore, managers and foremen should be educated sufficiently. For workers in construction, training must be provided, giving them an overview of the health and safety regulations in construction, including hygiene-related aspects. These trainings, though, were stated to not always be conducted sufficiently, language barriers may occur, and the employees are perceived as often not interested in participating. It was mentioned that no tests are usually carried out to ensure understanding, but only a signature from each worker is required. It was noted that it still has not yet been fully internalised by all workers, that worker protection and health and safety measures are good for themselves. It was explained that only 10 to 15 years ago, a carpenter or roofer who secured themselves to the roof would have been called a coward.

5.5 Priorities and conflicts

While some interviewees did not report any conflicting interests between different actors, the labour inspector and owner of the coordination company mentioned several situations in which conflicts arise. Furthermore, cost considerations and the temporality of construction projects were described in this context of conflicting interests as well as responsibility conflicts highlighted by the interviewees.

5.5.1 Types of conflicting interests

Conflicting interests in several situations and between various actors were described. For example, in the case described in chapter 5.8.5, trade-offs had to be made between the regulations and continuing the construction work. Closing the construction site due to insufficient provision of hygiene facilities was seen as too extreme a measure by the labour inspector, and therefore, a solution was found that did not fulfil the regulatory requirements but met the communicated needs of the workers.

Another example of conflicting interests identified includes the situation when the construction company provides the planning and construction coordinator. This is due to the company having to enforce protective measures upon itself.

Furthermore, it was stated that conflicts of interest can arise between the client and the construction company or the project managers. While the construction company needs to ensure employee protection, the client tends to aim at keeping costs low.

Lastly, conflicting interests between the employer and the legislator were identified. These arise if employers focus mainly on short-term costs, because while the health and safety measures cost in the short term, they bring benefits in the long term. Additionally, it was pointed out that there are employers who exploit their workers, and in such cases, workers' protection is often neglected.

5.5.2 Cost and time considerations

When explaining conflicts of interest, cost considerations were commonly mentioned. Additionally, it was stated that the choice of sanitary facilities is often influenced by financial aspects and that the cheapest solution is still frequently regarded as the best by clients in Austria. Also, cost pressure was referred to as a major difficulty for the practical implementation of adequate hygiene measures by the owner of the coordination company. The labour inspector further stated that a planning and construction coordinator for a detached house costs around 3000€, which is relatively low compared to overall project costs, but just like ensuring cleanliness and facility provision, still represents an immediate expense.

A similar perspective was also illustrated by the foreman and bricklayer. He calculated that maintaining a sanitary container during winter, such as ensuring that water does not freeze in the pipes, may require approximately two working days per year. This results in costs of around 1000€, considering that one construction worker costs around 500€ per day. He noted that this amount is almost equivalent to the annual cost of a portable toilet, which is described as quite cheap, costing approximately three euros per day and requires significantly less effort to maintain.

A contrasting but related perspective was provided by the project manager, who has never had an issue with freezing pipes. He mentioned that portable toilets cost 4,65€ per day, including weekends. He further explained that on a one-and-a-half or two-year-long construction site, this becomes quite cost-intensive. He stated that the companies' own sanitary containers are usually used during contractor-managed projects, which are typically fixed-price or lump sum contracts, as they are cheaper due to already being depreciated. However, in client-managed projects, where billing is typically based on actual costs, mainly rented portable toilets are used. Rented sanitary containers are not used due to cost reasons, and for portable toilets, only the standard version is used.

In addition to the cost considerations, the temporality of construction projects was pointed out by the owner of the coordination company. High fluctuation on the construction sites, due to subcontractors often working only for a couple of days, was described as common, and often, the effort for stationary social facilities is seen as too high. In practice, the mobility of workers was mentioned to often take priority over regulatory standards. Aspects related to the temporary nature of construction projects are connected to costs as well.

5.5.3 Responsibility conflicts

In addition to the previously described conflicting interests, and despite clearly defined responsibilities (see Chapter 5.3), interviewees described challenges arising from overlapping and fragmented accountability structures in practice.

The owner of the coordination company stated that the client has the ultimate responsibility according to the Construction Work Coordination Act and delegates this to a construction coordinator, who mainly struggles with reminding the contractors about their employer obligations according to the Employee Protection Act.

When talking about the case described in Chapter 5.8.5, the labour inspector mentioned that he made the construction coordinator take care of the issue, because it concerned a facility that everyone on site had to use. However, it would have fully been the responsibility of the employers, rather than the client, who nevertheless managed the immediate improvements.

In this context, the owner of the coordination company also stated that the question about cost-sharing for the cleaning of shared facilities often causes conflicts if not set out in a contract. Based on the experience of the owner of the coordination company, if responsibilities for cleaning and consumables are not clarified at the beginning, the hygiene quality of the facilities tends to decline rapidly.

Additionally, the project manager pointed out that if issues with subcontractors occur, sanitary facilities are sometimes locked for external people, as the employers are legally responsible for their own employees, and often, no contractual agreement is made. Subcontractors would have to provide their own facilities, which was not reported to be the case.

5.6 Regulatory framework in practice

This chapter describes how the regulatory framework works in practice. This includes monitoring, enforcement and consequences, as well as incentives influencing actor behaviour.

5.6.1 Monitoring practices

As described in Chapter 5.3, various actors are supposed to monitor the conditions to ensure regulatory compliance. Nevertheless, the project manager reported not experiencing any sign that labour inspectors and construction coordinators inspect hygiene conditions at all. This was denied by the labour inspector, who stated that the regulations are the same for the whole country, and even though practice might differ

between the federal states in Austria, if a labour inspector in any federal state does a comprehensive construction site inspection, hygiene facilities are inspected as well.

However, especially on small construction sites, it is still quite common that no planning and construction coordinator is appointed. During the visit to the sites, it was explained that coordinators are generally expected to inspect each construction site at least once per week. In practice, site visits by the coordinator tend to be carried out weekly in bigger sites and three times a month for smaller sites. They try to set the dates irregularly to get a realistic picture. The focus at the beginning of a project is if enough facilities are provided, while later the inspections mainly rely on visual checks of the hygiene and functionality of the facilities.

Furthermore, the project manager admitted that he himself does not check sanitary facilities if no issue is reported, but he experienced that during the General Accident Insurance Institution's annual prevention inspections on two construction sites, an occupational health professional and a health and safety officer monitor and report lacking hygiene conditions to the company internally.

5.6.2 Enforcement and consequences

Building on these monitoring practices, enforcement and consequences were explained by interviewees. As explained by the owner of the coordination company, means of pressure to comply are used regularly. Defect reports with a grace period are used by default. As a last measure, they give advance notice that they will report the matter to the Labour Inspectorate, which leads in 90% of the cases to immediate compliance due to the fear of penalties and construction halts.

Furthermore, inspectors and coordinators, as well as construction companies and their project managers, face consequences when not following the regulations or directives from higher authorities. For example, the labour inspector, though not having been affected by it himself, stated that if they do not reach their inspection numbers of 250 construction site inspections a year, the head of the department would try to find out why. Furthermore, if the Labour Inspectorate Act is not followed, for example, by sharing confidential information, it would lead to warnings or even disciplinary proceedings. Similarly, in the event of an accident or incident linked to insufficient oversight by the coordinator, the construction coordinator may face legal consequences. Lacking documentation of hygiene deficiencies by the construction coordinator is seen as a breach of the duty of care, which damages the reputation of the company and could lead to liability issues. However, when asked about an example for liability issues related to hygiene, he referred to the Labour Inspectorate, as he had never heard of any.

Similarly to the monitoring actors, the project manager mentioned that he himself never experienced any legal issue related to sanitary facilities, as he always ensures their provision. Nevertheless, he pointed out that there are managers who do not provide sanitary facilities, and then it can happen that the construction site is closed if the lack of facilities is discovered during an inspection, especially when it comes to public projects. The owner of the coordination company noted that theoretically, administrative penalties can be imposed following a report from the Labour Inspectorate, but in practice, usually, first a warning with a deadline is issued. Compared to safety deficiencies, high fines are rarely imposed.

5.6.3 Positive incentives

In addition to the discussion about how compliance is ensured, interviewees also described incentives influencing why actors ensure compliance. Concerning incentives, the labour inspector only mentioned having personal incentives and an intrinsic motivation to consequently control employee protection. He wants people to come home from work as healthy as they went to work, and referred to accidents and work-related illnesses, which reinforce his perception that his work is meaningful. He further assumed that his colleagues share this motivation for the job, as the financial incentives to become a labour inspector are not very high. Similarly, the owner of the coordination company mentioned that while their most important incentive is the legal certainty for the client and prevention of sick leave, they care that employees are provided with reasonable conditions, as no one would like to be reliant on dilapidated toilet facilities. They therefore rely on self-reflection by asking themselves if they would like to use this facility.

5.7 Practices, behaviours and site culture

Practices are also reflected in other parts of this thesis, but this chapter focuses explicitly on on-site behaviour, behaviour related to women on site, and collaboration and enforcement practices mentioned during interviews.

Regarding behaviour on the construction sites, working-to-rule was, in general, mentioned to be rare on small construction sites. Furthermore, urinating outdoors rather than using the portable toilet was seen as a common practice by many interviewees, especially in summer. Furthermore, it was reported that handwashing facilities are seldom used even before eating. Complaints regarding hygiene were noted to occur rarely, but if, they usually occur when they sit together after work rather than during the day.

In the project manager's company, there are currently no female construction workers employed, so separate facilities are not provided, and even the women's toilets in their own sanitary containers are used by men. For the carpenter apprentice, colleagues ensure that there is always a portable toilet on the site where she works. Furthermore, it was reported that hygiene is only discussed when sanitary facilities are extremely dirty.

Interviewees explained that clients increasingly tend to avoid letting workers use toilets in nearby buildings, due to concerns about dirt being brought into buildings and because portable toilets are relatively inexpensive. However, efforts are taken by executive personnel to ensure that facilities in general are kept clean, and companies providing portable toilets usually clean within one day of contacting them.

The labour inspector explained that he does not enforce certain regulations if the workers do not report issues when asked, and the overall sanitary situation is good. Concerning collaboration, he noted working together with planning and construction coordinators, as well as the General Accident Insurance Institution. In the area of responsibility of the labour inspector, the two people from the General Accident Insurance Institution responsible for construction inspections also report serious abuses to the Labour Inspectorate in certain cases.

5.8 Participants' accounts of hygiene conditions on construction sites

This chapter summarises what people said about hygiene conditions and practices, their perceptions and interpretations, as well as challenges and trade-offs mentioned in the interviews.

5.8.1 Evaluations of hygiene conditions

The foreman and bricklayer emphasised that sanitary facilities are extremely important, noting that urinating outdoors is no longer socially accepted, particularly in villages, while another interviewee explained that everyone likes it better if facilities are clean.

Portable toilets were described as facilities where one does not spend much time, especially during very hot or cold weather, suggesting a low level of comfort. This is reflected in the mentioned general reluctance to use these facilities. Additionally, specific words for faeces were avoided by the interviewees. Nevertheless, the project manager does not perceive the topic as a taboo but sees a lack of cleanliness as something that is tolerated until a certain threshold is reached before concerns are raised. In this context, the project controller reported a general perception that comfort is considered unnecessary on construction sites due to their temporary nature. According to her, this applies not only to sanitary facilities but also to site containers, which are typically equipped only with basic functional elements, without any intention of creating a pleasant working environment.

Nevertheless, except for the carpenter apprentice, interviewees perceived improvements in hygiene conditions on construction sites as generally feasible. The HSW representative, for example, stated that hygiene outcomes depend on numerous variables, some of which may be difficult to anticipate. However, good hygiene conditions on construction sites can be achieved if sufficient attention is paid to the issue. Similarly, the project controller described hygiene on construction sites as an area with potential for improvement. While hygiene conditions would not influence her choice of job or project, she stated that she would actively advocate for better conditions if the situation affected her to a greater extent.

5.8.2 Availability of sanitary facilities

Building on the general perception, the availability of sanitary facilities is overall viewed as good. Additionally, it was pointed out that in cases where sanitary facilities are not yet available, or one does not feel comfortable using them, public toilets can be found everywhere nowadays.

Access to these alternatives depends, nevertheless, on individual circumstances. The carpenter apprentice explained that since she has a driver's license, she can go to public toilets independently. However, when she was younger, she felt uncomfortable asking someone to drive her, even though this was never a problem for her colleagues.

At the same time, awareness of alternative sanitary solutions appears to be limited, as one interviewee reported not having known about options such as portable toilets with freshwater tanks.

5.8.3 Equipment and cleanliness of sanitary facilities

While the availability was reported to be sufficient, the implementation of hygiene-related regulations was perceived as highly variable, with cleanliness and maintenance described as often inadequate. Access to proper handwashing facilities with warm water, soap and similar equipment, especially on small construction sites where portable toilets are used, was rated insufficient. The owner of the coordination company stated that a critical point is that mobile portable toilets without a water connection are used for too long, often being the only sanitary facility for the whole project time, even though according to the Construction Workers Protection Ordinance, a flush with water or equivalent and handwashing facilities are required. Facilities such as the one shown in Figure 8, where the collection tank is directly visible when opening the toilet lid, are, according to occupational health specialists, not equivalent to a water flush, but a flap valve is needed. It was guessed that on about 40% of the small and medium-sized construction sites, portable toilets with such valves are used. The owner of the coordination company further mentioned that cleaning once a week or every other week is not enough to keep portable toilets hygienic if several companies use them intensively. Furthermore, the smell during summer was described as unacceptable.

Maintenance practices were described as depending on factors such as the number of users and whether women are present on site. Cleanliness in sanitary containers owned by the construction company was mentioned to only be an issue if the cleaning person is absent, but mostly good, whereas portable toilets maintained by the provider were described as consistently acceptable and the cleanest option, especially when compared to facilities provided by clients. In contrast, the project controller reported a different experience, stating that her most recent construction projects took place in a hospital, where sanitary facilities within the building were assigned and described as fully adequate, in contrast to the conditions of the portable toilet described in 5.8.8. This shows that interviewees' experiences depend on the project.

5.8.4 Prioritisation and challenges

Overall, the findings show that interviewees have differing views regarding which hygiene measures are necessary and which are optional. Accordingly, the labour inspector explained that hygiene provision on small construction sites often requires priority-setting. In practice, the labour inspector is often satisfied if his minimum requirement, a clean portable toilet and warm water, is provided, even though this does not represent the ideal solution.

It was also stated that on construction sites, one needs to compromise on standards compared to other workplaces, as people use the facilities with dirty shoes. The labour inspector mentioned that it has proven its worth to talk to the people on site and ask if they have a problem with something. However, he continuously highlighted that: "Construction workers are not people of second- or third-class" and emphasised that basic hygiene standards should not be compromised despite practical restraints (personal communication, February 2, 2026; April 1, 2026). Regarding handwashing, he found it not relevant whether water is provided directly within sanitary facilities or elsewhere on site. Overall, attitudes of the employer concerning hygiene are highlighted as causal to the conditions.

A further challenge mentioned was that often the construction coordinator is not updated about the number of people present each day, which makes it difficult to check

if the right number of facilities is provided. Particularly difficult is determining the number of female workers, which is relevant due to the requirement for separate sanitary facilities when at least five female and five male workers are present on site, as stipulated in the Construction Workers Protection Ordinance (see Chapter 3.3.3).

5.8.5 Differing perceptions and reporting

Another challenge arises from people having different views and expectations related to sanitary facilities on construction sites. The labour inspector reported that, when asking about hygiene conditions, he is sometimes advised not to inspect the facilities too closely. Nevertheless, reports of misconduct most commonly concern safety-related issues. When reports concern hygiene, they are usually submitted by workers and primarily address the absence or poor cleanliness of sanitary facilities. Deficiencies such as missing soap or other hygiene supplies are rarely reported.

The labour inspector gave a long and detailed description of a case where he experienced differing reactions to the hygiene conditions, varying from people saying they do not have a toilet to people being totally fine with the conditions. This was when a toilet did not have a door but only a fleece to ensure sight protection, as it was the toilet in the building being refurbished, and the door frames had not been delivered yet. The labour inspector then tried to find a solution with the involved parties that was satisfying for the people, but did not fulfil the law, as a door would be required. It was ensured that soap, towels and everything else needed were provided, and a movable partition with the sign “occupied” was installed, as well as double-checked that the door frames were delivered a couple of days later. This example illustrates both the practical constraints on construction sites and the variability in expectations among workers.

5.8.6 Hygiene habits

When talking about experiences of hygiene on construction sites, the occupational physician noted that negative experiences typically occur when the facilities are not adequately taken care of. He explained that sanitary facilities, which are treated with care, tend to remain clean for longer periods, thereby implying that this is not consistently the case. Furthermore, he stated the following concerning positive experiences: “Of course, there are positive experiences too, especially when the cleaning has just been done” (personal communication, January 30, 2026). The HSW representative similarly referred to upbringing, stating that people tend to behave at work in the same way they behave at home. In addition, both the foreman and bricklayer and the project controller reported that some users show little consideration for hygiene and do not take adequate care of shared facilities.

The foreman and bricklayer expressed the view that the effects of hygiene practices can be short-lived in construction work, noting that after returning from the toilet and resuming work involving dirt, mortar, or concrete, perceived cleanliness is quickly lost. Nevertheless, he emphasised that moving directly from the toilet to the meals without adequate hand hygiene is unpleasant. In this context, the project manager also highlighted the importance of role models. He stated that concerning handwashing habits, no difference between older and younger workers is noticeable, but that behaviour rather depends on the foreman, as the construction workers tend to follow what they observe the foreman does. He further mentioned that his superior promotes

cleanliness on the construction sites in general. It was emphasised that the cleanliness of the facilities often depends on the client. This was illustrated through the example of a client who requires facilities to be cleaned daily, which was reported to lead to better behaviour by the users.

5.8.7 Changes over time

Despite hygiene conditions still being partly insufficient, it was noted that they have improved significantly over the last 20 to 30 years, recalling that in the past, a small tin shack built over a hole in the ground was often used, which was stated would no longer be acceptable today. From a long-term perspective, employers' willingness to implement hygiene-related regulations was detected to have increased.

The HSW representative explained that, following the pandemic, hygiene measures have returned to what he described as a "manageable" level, and noted organisational challenges for cleaning the facilities due to staggered break times, which have been applied since the COVID-19 pandemic. The labour inspector, on the other hand, did not seem to be pleased that the conditions are returning to pre-pandemic standards.

5.8.8 Gender-related perceptions and experiences

General structural issues related to sanitary facilities and gender discussed included the symmetric planning of toilets for women and men, which was perceived as not adequately reflecting differing needs. Also, a lack of public toilets, particularly in the city of one interviewee, was mentioned, suggesting that gender inequality is apparent in many sanitary facilities, not only on construction sites.

Gender-related experiences on construction sites further illustrate differences in hygiene conditions. The project controller stated that women's needs are generally not sufficiently considered on construction sites. As an example, she described experiences from a large refugee shelter construction project in Germany in 2017. During this project, she was the only woman on site and shared a single portable toilet with approximately 30 construction workers and around 10 additional staff members. She described this facility as "disgusting". Although the toilet included a sink, no running water was connected, and therefore, no soap was available either. She described the odour as "manageable" and characterised the situation as unacceptable. Toilet paper or tissues were not reliably provided, which led her to bring her own supplies. Warm, running water was reported to be unavailable on site. The interviewee stated that she felt unlikely to receive a separate toilet if she had requested one. She reflected that requesting a water connection or more frequent cleaning might have led to improvements, but emphasised that one's position within the hierarchy influences the ability to raise such concerns. Overall, she reported a feeling of needing to protect herself and to avoid sharing personal information to not become a target of sexism. Therefore, she never addressed hygiene-related issues openly or discussed them with colleagues on construction sites.

In contrast, the carpenter apprentice, despite explaining that managing menstruation on site is unpleasant, described that her colleagues making sure that there is always a portable toilet available for her sometimes makes her feel uncomfortable, as it seems that the facilities are only provided for her. Additionally, even though she does not

personally do so, she says that she could openly talk about menstruation with her coworkers.

The carpenter apprentice explained that she chose the job herself, and the common sanitary conditions are part of it. She expressed the view that little can be changed. Furthermore, one interviewee perceived that there is little awareness and communication regarding hygiene conditions. Even though she heard some men complain about the conditions and is aware that some do care about hygiene and that individuals differ, she indicated that she is mainly unaware of men's perspectives on this matter.

From a regulatory and organisational perspective, the labour inspector stated that, in practice, he actively encourages the provision of separate facilities even when fewer than five women are employed on the site. Similarly, the owner of the coordination company noted that, with an increasing number of female technicians and workers on site, he believes that separated, lockable facilities become more relevant, although they are often perceived as a luxury rather than a necessity. Additionally, the lack of possibility for women to discreetly dispose of hygiene products and shared facilities for changing clothes were criticised.

5.9 Hygiene-related needs

Building on gender-related perceptions, hygiene-related needs were primarily discussed by female interviewees, which may partly stem from differing interview foci; nevertheless, some aspects were also mentioned by male participants. For example, one male interviewee reported disliking washing his hands with cold water. Another, without stating it explicitly, implied that portable toilets are uncomfortable due to their small size, suggesting a need for more space. A third male interviewee, who regularly uses sanitary facilities on site, reported general satisfaction with the conditions. Despite being accustomed to clean environments at home and highlighting the importance of cleanliness due to the amount of time spent at work, he indicated that his needs were sufficiently met.

In contrast, female interviewees highlighted a broader range of aspects they perceived as important in relation to sanitary facilities and described differences between men's and women's needs. One interviewee noted that, in her view, men generally need to use toilet facilities less frequently than women. It was further stated that men often have fewer requirements, as they do not need to sit down to urinate and do not experience menstruation. Women, by contrast, need to remove more clothing when urinating and therefore require cleaner environments. Urination was perceived as generally easier for men, particularly outdoors, as women need to crouch down and may feel exposed. Following that, a personal need for privacy and visual protection was reported. One interviewee described using men's toilets due to long queues at women's facilities and reported substantial differences in cleanliness. As a result, she expressed a perceived need for separate sanitary facilities on construction sites, while also acknowledging that gender distinctions are becoming less clear.

The need for adequate hygiene conditions during menstruation was also emphasised. It was explained that having a sink in the toilet cabin would be particularly important, especially when using menstrual products such as menstrual cups. However, it was noted that this is rarely the case in sanitary facilities in general. Without access to a sink, individuals may need to touch door handles with contaminated hands if one did

not bring wet wipes oneself. Furthermore, the importance of having a waste bin for the disposal of menstrual products was highlighted.

Beyond gender-specific aspects, several more general hygiene-related needs were identified by the female interviewees. When discussing interviewees' personal needs, it was stated that the most significant deficiency on construction sites is the lack of opportunities to wash hands with water and soap. Regarding water temperature, one interviewee explained that she personally washes her hands with cold water at home and therefore does not consider warm water essential for herself, while acknowledging that others may have different preferences.

Finally, when asked to describe an ideal sanitary facility on a construction site, the interviewees listed cleanliness, access to cold water, soap and paper towels as essential features. Heating in the winter was mentioned, although it was considered a luxury rather than a necessity. A flushable toilet was desired, and additional needs included a hook for hanging jackets and a surface for placing helmets. The absence of shelves in portable toilets was described as problematic, as users do not want to place items on dirty floors, which shows similarities between reported experiences and the conditions visible in Chapter 5.1. It was also noted that locking mechanisms are not always functional and that there is sometimes concern that doors may not reopen. Therefore, the ability to lock the cabin securely was identified as important. Furthermore, a preference was expressed for sanitary facilities to be in areas that provide sufficient privacy, as sound insulation in portable toilets is often weak.

Despite most of the needs being stated by women, and strongly shaped by the accounts of one interviewee, some of these aspects might also be relevant for male workers, but were not explicitly expressed in the interviews. Overall, the findings suggest that hygiene requirements are shaped by general conditions as well as gender-specific experiences.

5.10 Effects of inadequate hygiene on construction sites

Building again on the topic of gender, the effects of inadequate hygiene and sanitary facilities reported especially differed between male and female interviewees. Differing perceptions regarding the effects on employees' working days, their drinking habits, breaks, travelling distances and so on were revealed. Also, the further impact on health, work satisfaction, concentration and productivity was seen differently by the interviewees.

The brick layer and foreman reported no perceived effects of inadequate hygiene and sanitary facilities on his working day or well-being. He nevertheless mentioned that, in his experience, female employees tend to have more claims regarding sanitary conditions, while also noting that he personally values cleanliness. Also, the female carpenter apprentice stated during the interview that the condition of sanitary facilities does not influence her working day, including drinking habits and the choice of menstrual products, nor her efficiency or concentration.

On the other hand, the female project controller provided several examples of coping behaviours in response to inadequate sanitary facilities. One example listed was urinating outdoors, which aligns with the example of the labour inspector mentioned during the visit to the sites. He described that once at a construction site, the sanitary

facilities provided were so dirty that workers urinated outdoors. However, the carpenter apprentice thinks that it is simply faster and is not necessarily a coping behaviour.

Furthermore, the project controller reported changing her menstrual product choice due to the lack of handwashing facilities and further gave the example of restricting fluid intake to avoid using the toilet, which she described as happening even subconsciously. Despite first reporting no impact of bad sanitary conditions on her drinking habits, the carpenter apprentice at a later stage of the interview, when the conversation became more informal, and experiences were further discussed, added that she generally does not consume large amounts of fluids, which she noted is not solely related to the sanitary situation at work. However, she stated that, when anticipating the need to leave the site to access sanitary facilities, she tends to reduce her water intake, however, rather subconsciously, which fully aligns with the issues reported by the project controller. However, both the HSW representative and occupational physician reported no perceived impact of sanitary conditions on drinking habits.

Additionally, the Health HSW representative mentioned that mobile work crews organise their working day around breaks, as washing facilities are available at their branch location rather than directly on site. On rural construction sites, employees often rely on nearby restaurants for lunch breaks. The occupational physician added that workers usually remain within one region and are familiar with the available infrastructure. Fitting to that, the project controller mentioned choosing lunch locations based on the availability of clean restrooms.

Regarding work satisfaction, the HSW representative emphasised that one is thankful for clean facilities and describes hygiene as a basic need, although he did not specify the extent of its influence on satisfaction. Similarly, the occupational physician believes that the overall satisfaction decreases if sanitary facilities do not meet employees' expectations. Additionally, the project controller stated that the overall situation negatively affected her work satisfaction, describing it as uncomfortable, particularly in combination with environmental conditions and team dynamics. She further explained that, given the project duration of six months, she accepted the situation but indicated that for a longer project duration, she would have sought an arrangement with a nearby cafe to use their restroom facilities.

Despite explaining the dependence of workers on public sanitary infrastructure and the impact of bad hygiene conditions on work satisfaction, the HSW representative stated that he did not perceive any impact on productivity. Also, the project controller did not explicitly list effects on productivity, but the project manager, on the other hand, mentioned that people tend to lose motivation if cleanliness is not prioritised and also leave the site to use other facilities. These aspects were reported to have an economic impact. This aligns with the statements of the labour inspector who mentioned that even having only to walk 200 m to the toilets takes time, and time is money, and good hygiene conditions lead to better work satisfaction and motivation, which leads people to do their job better and more engaged than if they are less satisfied with working conditions. The labour inspector further referred to EU-level research suggesting that investing 1€ in worker health and safety at least 1,60€ is the economic return to the company on a mid-term perspective.

Health and concentration issues were not explicitly mentioned as effects of a lack of hygiene on construction sites by any of the participants.

5.11 Summary of the interview results

To sum up the interview results, the main problems and challenges related to hygiene conditions on construction sites, as reported by the interviewees and observed during the visit to the sites, are presented in Table 3.

Table 3: Summary of the problems and challenges identified in the interview results. (Table created by the author)

Problem category	Results of empirical research	Chapters
Structural and regulatory		
Regulatory design	No major regulatory design gaps were detected by the interviewees. The main issue was reported to be the gap between formal requirements and actual implementation	5.4.2; 5.2.1
Oversight and monitoring	Limited oversight capacity was described as an issue. Monitoring was partly mentioned to be weak, and the consequences were limited. Incentives for the actors were explained to be mainly intrinsic. Furthermore, communication and information gaps complicate monitoring	5.4.1; 5.6; 5.8.4
Accountability structures	Responsibilities and tasks are defined; nevertheless, in practice, responsibility ambiguities and conflicts arise, especially connected to the responsibility for provision and maintenance and the connected costs.	5.3; 5.5.3
Organisational and economic		
Priorities and interests	Conflicting interests detected concerning hygiene on construction sites mainly relate to costs, time and the aforementioned responsibilities.	5.5
Logistics and organisation	Logistical and organisational challenges were stated by the interviewees. However, solutions for some of those challenges were explained.	5.2.2; 5.2.3
Selection of sanitary facilities	While adequate sanitation facilities were described as available, the use of different facilities is limited mainly to the standard versions.	5.2.3; 5.2.1
Cultural and behavioural		
Hygiene perceptions	Varying hygiene perceptions concerning the facilities, the habits and much more, were reported and exemplified. Insufficient conditions were often tolerated.	5.8
Regulatory awareness	Regulatory awareness was detected as limited amongst some actors. A lack of training was suggested as the reason for this.	5.4.3
Communication within the site culture	Communication about hygiene issues on site was reported to be limited and informal. Similarly, reports to the Labour Inspectorate rarely occur.	5.7; 5.8.5
Expectations and gender differences	Expectations and needs regarding hygiene standards on construction sites varied between actors and indicate differences between men and women.	5.8.8; 5.9

6 Discussion

In this chapter, the problems and challenges identified in Chapter 5 and summarised in Table 3 are discussed. These challenges and problems are divided for the sake of the analysis, but some overlapping aspects might occur as all the topics are interconnected. Accountability structures, priorities, monitoring practices and cultural assumptions mutually reinforce each other and jointly shape hygiene conditions on construction sites. First, the literature review is contextualised and empirical results triangulated with the literature. Further, structural and organisational problems are grouped and analysed with the principal-agent theory, and cultural problems are analysed with the safety culture theory. Problems and challenges for which the chosen frameworks are not applicable are not further analysed.

6.1 Contextualisation and triangulation

This chapter aims to contextualise and triangulate the literature review with the empirical results. Similar to the structure in the literature review, history, occupational hygiene, the regulatory design and connected gender aspects, as well as norms and effects of lacking hygiene are discussed.

6.1.1 The development and priority of hygiene

Hygiene, as gathered from the interview data, is more than just cleanliness (Mantovani & Marques, 2020) and avoiding infection (Curtis, 2007), it also includes the feeling of cleanliness and well-being. And even if it is rooted in biology, cultural aspects are overly prominent in this study. Furthermore, when looking at regulations and responsibilities, what is meant with social hygiene (Mantovani & Marques, 2020) becomes apparent. However, varying hygiene practices suggest that limited communication keeps hygiene a personal topic. Hygiene on construction sites has developed as described by the foreman and bricklayer, but the conditions are still not ideal.

The historical development led to the rise of occupational hygiene. Considering the definition and description of ILO (2011), it becomes apparent that hygiene in the way discussed in this thesis is only a small part of occupational hygiene. This is also reflected in the regulations, such as the Employee Protection Act or Construction Workers Protection Ordinance and the responsibilities and tasks of relevant actors, such as the Labour Inspectorate and planning and construction coordinators, who are responsible for all health and safety measures. Even though the labour inspector mentioned that every aspect of the regulations is prioritised the same, it seems as if in practice this is not the case. Lower consequences than for safety issues, and the project manager mentioning a low focus on controlling sanitary facilities suggest that hygiene connected to sanitary facilities is seen as a side aspect with lower priority.

6.1.2 Regulatory gaps and practical consequences

In this context, regulatory design was perceived as largely sufficient for construction sites by the interviewees, except for the regulation about separated facilities if five people of each gender are present. Similarly, when comparing the regulations, especially the Construction Workers Protection Ordinance, to the reported needs of individuals, one can see that they are not fully aligned. Especially, needs related to

female workers and menstruation are not mentioned in the Construction Workers Protection Ordinance. Waste bins for disposing of menstrual products are not required according to the regulations, and washing facilities are only needed close to the sanitary facilities, but not within. As mentioned by the project controller, women face those issues not only on construction sites but also in public facilities or in other workplaces. Even though the number of women in construction is still low, the number is rising, as explained by the owner of the coordination company. This suggests that efforts to include women's needs in health and safety regulations should be undertaken. Other countries, such as the UK and Australia, could be taken as examples in this context. However, the majority of the needs reported (warm water, soap, cleanliness, paper towels, heating hangers, lockable doors and more) are covered by the Austrian regulations.

Despite good alignment of literature and empirical results regarding gender, effects were discussed in different ways. While coping behaviour, such as avoiding facilities (Rutter et al., 2023) and restricting fluid intake (W. S. Reynolds et al., 2019) were brought up in the interviews, no health issues such as LUTS, as explained by Yoo et al. (2023), were reported. This, however, does not mean that health issues do not appear in that context, but rather that the actors interviewed did not mention or experience them. Additionally, to coping behaviour, economic effects of lacking hygiene, such as time lost due to travelling to facilities further away and motivational loss due to insufficient conditions, were reported by the interviewees, even though literature only targets this topic to a very limited extent. This suggests that literature and practice have differing focal points. Furthermore, the literature was not specifically for construction, making it difficult to compare.

6.1.3 Cultural and social norms

Not only regulations but also cultural and social norms seem to influence hygiene on construction sites. Even though one interviewee explicitly stated that he perceives the whole topic around toilets as not taboo, the wording used in the interviews suggests something different. Specific words for faeces were avoided, aligning with Douglas (2003). The social regulation of behaviour mentioned by Hebert-Beirne et al. (2021) becomes apparent in the statement of the project manager that workers adapt their hygiene behaviour, especially washing hands, to the foreman. The culturally shaped aspects of toilets introduced by Molotch and Noren (2010) are partly reflected in this study as well. Gender imbalances were reported, and the design of especially portable toilets, including urinals, suggests a design for able-bodied, male users. Reported needs for privacy and the mentioning of sound and smell, as well as a lack of discourse about the topic and the prioritisation of economic aspects over hygiene needs and regulations, align with the authors' findings. Additionally, considering that urinating outdoors was reported to often be preferred over using sanitary facilities, suggests that efficiency is prioritised over privacy. These alignments with the literature indicate that sanitary facilities and hygiene habits on construction sites are influenced by general social norms.

6.2 Analysis with the principal-agent theory

Of the structural and organisational problems identified in Chapter 5.11, regulatory gaps or outdated regulations are not targeted by the principal-agent theory and don't

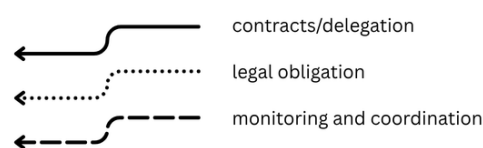
provide a major issue, so they will therefore not be further discussed. This is also the case for logistical and organisational challenges, which occur in some projects with difficult conditions, but cannot be seen as a general problem for hygiene on construction sites. Furthermore, several solutions were mentioned by the interviewees, suggesting that this is not an unsolved issue in practice. The third topic, which is not directly analysed any further, is the selection of sanitary facilities. This is due to the wide variety of facilities available, so the availability is not considered an issue. The problem of choosing mainly standard facilities is most likely due to the prioritisation of cost aspects, which is related to the context of priorities and interests and is therefore analysed in that context.

The issues analysed in this chapter are therefore complex accountability structures, conflicting interests and a focus on costs, as well as the limited oversight capacity, weak monitoring and consequences, and incentive structures.

6.2.1 Accountability structures

The provision of hygiene facilities is characterised by multiple overlapping delegation structures, depending on contractual arrangements between clients and contractors. Figure 16 and Figure 17 show the identified principal-agent relationship network structures. For simplification, only the most relevant actors in this context are included, while the General Accident Insurance Institution, further subcontractor chains and other actors are excluded.

Figure 16 shows the principal agent relationships in cases where the responsibility for the facilities for all workers on site lies with the main contractor, as is often the practice. Figure 17, on the other hand, shows the relationships in cases where no contractual agreement is made, and every employer is responsible for the facilities for their own employees. No separate graph is made for the case where the client is responsible for the provision and cleaning of the sanitary facilities for all workers on site, due to the similarity to the main contractor being responsible.



Colors show the different monitoring and coordination actors

Figure 15: Legend for the graphs showing the principal-agent relationships related to hygiene on construction sites in Austria. (Figure created by the author)

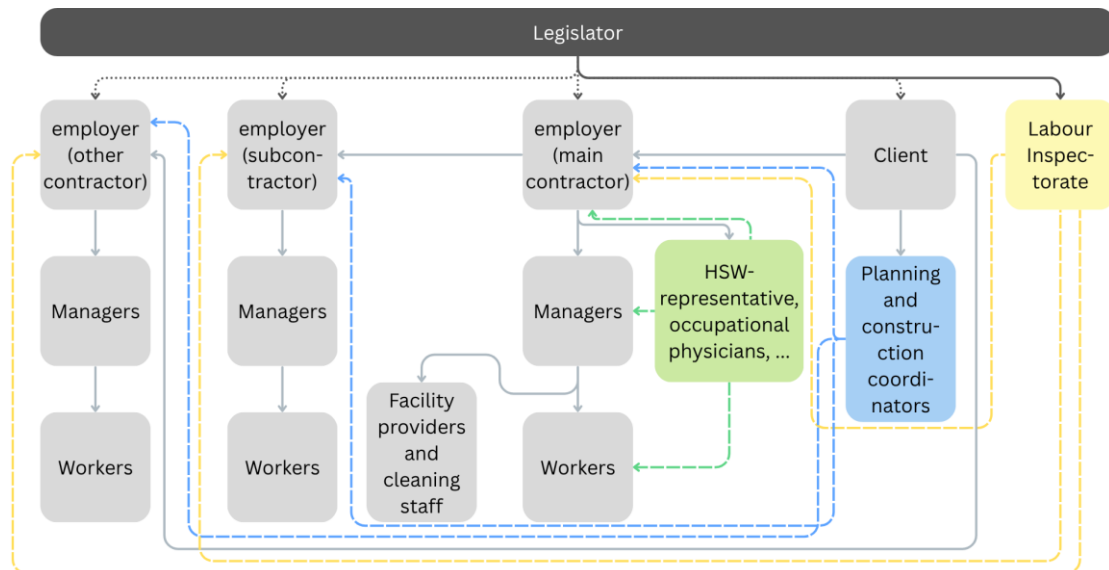


Figure 16: Graph about principal agent relationships; main contractor responsible for sanitary facilities. (Figure created by the author)

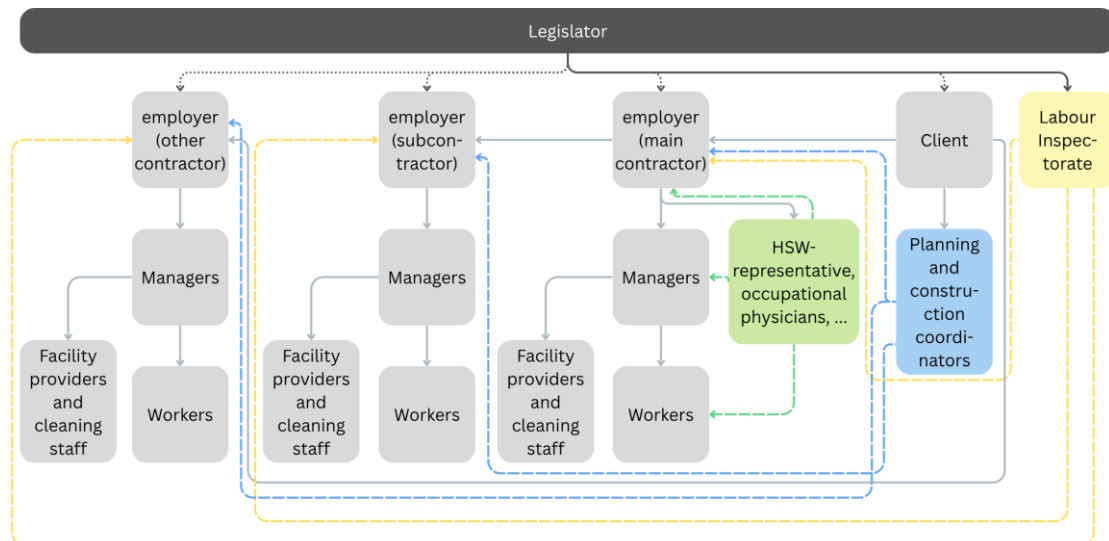


Figure 17: Graph about principal agent relationships; every contractor responsible for their own sanitary facilities. (Figure created by the author)

Consistent with Shapiro (2005), principal-agent relationships in the data appear as layered delegation structures in which responsibilities are distributed across multiple actors. This complexity creates communication and monitoring difficulties as well as conflicts and responsibility ambiguities between the actors.

Especially the split responsibility shown in Figure 17 may lead to a lack of provision, specifically for contractors carrying out only small tasks. Therefore, in addition to the existing regulatory framework, detailed contractual arrangements, for example, in the SHP-plan as mentioned in an interview, are needed to centralise and clarify responsibilities, which can improve hygiene conditions for workers while avoiding high costs.

6.2.2 Priorities and interests

In addition to the complexity of the structure, problems described by Eisenhardt (1989) became apparent. Conflicting interests and goals between the different principals and agents were reported in the interviews, for example, between the employer and the client, considering that hygiene provision adds costs, which the client aims to keep low. Appropriate sanitary provision, therefore, becomes a negotiated issue in which worker wellbeing competes with project efficiency, space limitations, limited time and other organisational aspects. Interviewees frequently referred to financial considerations when discussing hygiene provision. This suggests that financial interests are the main source of conflict regarding appropriate hygiene conditions.

This also reflects the assumptions about self-interest (Eisenhardt, 1989) of the client and the employers. However, the workers do not enforce their rights for hygiene on construction sites and even defend the conditions with cost arguments, suggesting a normalisation and limited expectations regarding sanitary conditions. Information asymmetries (Shapiro, 2005) such as not knowing the regulations, not knowing which sanitary solutions are on the market or what the opposite gender needs, shape expectations and interests and thereby further challenge appropriate conditions. Workers may furthermore lack knowledge about project-specific sanitary agreements or about who is responsible for sanitary provision and to whom complaints should be addressed. Furthermore, hierarchies in which decision makers often work in different places and under better conditions than the construction workers may hinder complaints, due to physical and experiential distance.

In addition to the priorities and interests of clients, contractors, and their employees, priorities related to monitoring and enforcement were also discussed. Despite hygiene aspects being described in one interview as equally prioritised compared to other health and safety aspects, experiences of other interviewees suggest a lower prioritisation due to the absence of immediate health or safety risks.

6.2.3 Oversight and monitoring

Related to the interests of the monitoring actors, positive incentives for labour inspectors and planning and construction coordinators are mainly their intrinsic motivation. Contract forms, as described by Shapiro (2005), were not discussed in the interviews for actors connected to hygiene on construction sites, but given that the salary of especially young labour inspectors is reported to be low, the system appears to rely on the labour inspectors as agents already sharing the same interests as their principals. Regarding the relationship between the client and the contractors, contract forms do not seem to be used to align the agent's hygiene interests with the principal's, as hygiene is not the focal point and rather other interests are aligned. The lack of hygiene-related positive incentives and weak negative incentives, such as penalties, may also explain insufficient monitoring and control by project managers and other actors, particularly where intrinsic motivation is low. These findings suggest that regulations alone are insufficient if no enforcement mechanisms and incentives aligned with the regulatory goals exist.

Furthermore, the importance of information systems for behaviour-based contracts, as highlighted by Eisenhardt (1989), is reflected in self-regulatory arrangements (Shapiro, 2005) within the Labour Inspectorate, where mechanisms such as internal audits, managerial supervision and reporting procedures are used to monitor labour inspectors,

ensure consistent monitoring, and enforce performance targets, such as a required number of construction site inspections. In line with the assumption mentioned in Eisenhardt (1989) that information is a purchasable commodity, the labour inspectors participate in conferences to gain and share information to improve health and safety in the industry.

Additionally, difficulties in verifying the agent's behaviour due to information asymmetries, as explained by Shapiro (2005), become most apparent in the relationship between client and employer. The client often has limited knowledge about the topic and the contractors. Therefore, the coordinator is used as a coordinating, advisory and monitoring actor to avoid selfish behaviour. Furthermore, the example of the construction coordinator not being informed about the number of workers on site shows information asymmetries in the governance mechanisms.

Many aspects referred to in this thesis, and specifically this chapter, such as monitoring as well as the recruitment of labour inspectors, specification of preferences related to the tendering process, and moral hazard, for example, if monitoring is not performed as intended, were discussed in the interviews, providing examples of agency costs, as explained by Shapiro (2005). A concrete example for agency costs identified in this study is the appointment of a planning and construction coordinator as a monitoring mechanism to address coordination and compliance issues, adding approximately €3,000 to the cost of a detached house, according to the labour inspector. Especially monitoring and the coordination for hygiene seem to be extensive, which, in line with Eisenhardt (1989), is intended to reduce certain agency costs, although it also generates costs itself. Just as Shapiro (2005) mentioned trade-offs between agency costs can be made, but costs always remain. The suggestion of the labour inspector to increase the number of labour inspectors controlling construction sites, to achieve better compliance, might therefore not be reasonable when considering the costs. In addition to monitoring expenditures, bonding expenditures as described by Jensen and Meckling (1976) could occur, for example, for the contractor when providing extra toilets for female workers, even though there is only one on site, or when committing to internal audits for hygiene, as well as for agreeing to penalties for missing hygiene standards, but they were not discussed in the interviews. Residual loss from remaining hygiene issues occurs, as shown by the economic effects mentioned, such as lower motivation and travel times. Another non-monetary loss is the well-being and dignity of workers.

6.3 Analysis with the safety culture theory

Cultural and behavioural issues identified in Chapter 5.11 and analysed in this chapter involve hygiene perceptions, regulatory awareness, communication of sanitation issues within site culture and expectations and gender differences. Furthermore, this chapter is strongly connected to Chapter 6.1.3.

The core of this analysis is the framework of Schein (2010). Therefore, hygiene-related artefacts, espoused beliefs and values, and underlying assumptions are first identified and, in further subchapters, used for the analysis. However, it needs to be considered that while artefacts, especially in the form of interviewees' behaviour and what they said and espoused beliefs in the form of articulated principles, were observed, the underlying assumptions cannot be derived from these with certainty. Even with articulated beliefs, carefulness is needed, as informal norms and practical behaviour might deviate from them.

Artefacts connected to hygiene on construction sites include the site conditions such as the weather, the temporality, the fragmentation and multiculturalism. Also, the used facilities themselves, such as portable toilets, are artefacts, as well as their condition. Language artefacts include the variety of languages, but also sexism and taboos. Behavioural artefacts further include urinating outdoors, seldom use of hand-washing facilities, people not keeping shared facilities clean and informal communication after work. Lastly, formal structures such as the hierarchy are artefacts. These artefacts communicate not only the complexity and challenges occurring in the construction industry but also a culture of low comfort expectations and acceptance of minimal sanitary standards, high diversity of languages and cultures, but not genders, and informality despite hierarchies. This aligns with previous experiences of the author, but nevertheless, should not be taken as certain.

Building on this, espoused beliefs and values partly seem to deviate from actual behaviour (Antonsen et al., 2008; Schein, 2010). Communicated beliefs include that sanitary facilities are important and necessary, and everyone appreciates cleanliness. However, facilities provided are often not sufficiently clean or equipped, and the most used option is the use of portable toilets, which are not ideal and people do not like to use. Furthermore, HSW aspects with more severe outcomes are prioritised, and due to the temporality of the construction projects, certain facilities are seen as economically unjustifiable. In addition, open communication, even about menstruation, was mentioned. However, actual behaviour differs, as the interviewee mentioned not talking about behaviour herself and hygiene in general being a topic that is only raised if conditions are severe. Another espoused belief is that hygiene behaviour depends on people's upbringing and foremen who act as role models. Subcontractors are described as causing issues with the cleanliness of sanitary facilities. Also, the belief that women's needs are not considered was communicated, as well as that the current hygiene conditions are part of the job. Similarly, one interviewee mentioned that comfort is perceived as unnecessary. Concerning regulations, those were described as not fully internalised by workers.

This connects to underlying assumptions which could, for example, be that hygiene is not critical to HSW, poor hygiene is normal and acceptable in construction due to the temporality and overall difficult conditions. If the sanitary facilities are not sufficient for someone, the person needs to adapt. This especially concerns women, because gender-specific needs may be perceived as exceptions rather than standard requirements. Hygiene practices are short-lived, and speaking up is possible but socially discouraged. These interpretations remain tentative, as underlying assumptions cannot be directly observed.

In the following subchapters, the cultural problems in the context of hygiene are discussed and possible underlying causes suggested. Across all themes, it becomes apparent that hygiene is formally acknowledged but practically deprioritised. This is reflected in artefacts, such as minimal facilities, contradicting espoused values, and underlying assumptions about its limited importance. In this discussion, the complexity of the organisational culture and safety culture construct does not always become explicitly visible due to the necessary fragmented structure. However, interconnections and dependencies between the levels of visibility as well as across the topics exist throughout the whole chapter.

6.3.1 Hygiene perceptions

Hygiene perceptions varied between the interviewees and show a clear gap between white- and blue-collar workers, as well as between the interviewees in construction companies and external people. The most visible pattern in the interviews is that people working in a construction company think that the conditions are mostly sufficient and appropriate, while external actors highlighted insufficient conditions. Even if internal interviewees describe conditions as not fulfilling the regulations, they tend to defend them. Furthermore, interviewees who are highly impacted by the conditions due to daily work on site tend to have less power and be lower in the hierarchy than people who are not working on site.

Taken together, these observations suggest that internal white-collar interviewees might either work in companies doing a good job concerning hygiene on construction sites or do not see or inspect the conditions regularly, while blue-collar workers appear to have adapted to the conditions and have normalised them. However, normalisation of deviance (Pinto, 2014) in this case does not mean that the conditions had been better and became worse, but rather, that the conditions had been worse and became better, but still do not live up to regulatory expectations. This might be because people compare the conditions to past conditions rather than to regulations or optimal conditions. Hardly anyone complains, and deviations from optimal standards are widely accepted as normal practice in construction, as shown by the statement of the foreman and bricklayer that working-to-rule is rare on small projects. External people might see the conditions from a different perspective, closer to regulatory standards. If considering the argument that people prioritise what they expect to be rewarded for (Neal & Griffin, 2006), it might also be that short-term financial or safety aspects are prioritised over the well-being of workers. The findings therefore suggest that sanitary conditions also mirror whose needs and dignity are prioritised. In addition, multiple factors (Madsen & Chen, 2024) contribute to making construction work difficult, uncomfortable and risky. Hygiene and sanitary facility provision in this context seems to be viewed as a necessity with low actual risks. This positions hygiene as an additional burden associated with costs and operational complexity.

When looking from the perspective of the framework in Schein (2010), artefacts such as the actual sanitary conditions suggest low prioritisation, partly conflicting with espoused values such as the statement that facilities are sufficient and hygiene is important. This suggests a contradiction between underlying assumptions and espoused values, as the stated importance of hygiene is not reflected in observable practices.

This misalignment indicates that hygiene is not yet embedded in the underlying assumptions of the safety culture in the construction industry. Considering that insufficient conditions are normalised and underlying beliefs, such as that hygiene is not an important part of HSW, remain, significant change efforts are needed to ensure sustainable improvements.

6.3.2 Expectations and gender differences

Similar to the discussion in Chapter 6.3.1 about perceptions, the interviewees who are the most affected and have the least influence also have the lowest expectations. Permanent inadequacy is legitimised with the temporary nature of construction projects by construction workers and the project manager. This becomes evident when comparing the expectations of the labour inspector and the foreman and bricklayer, as

well as when looking at the two female interviewees, where the white-collar worker mentioned concrete expectations while the blue-collar worker explained that it is not always nice for her, but she cannot expect more as the conditions are part of the job which she chose herself. This suggests that gendered norms shape expectations regarding hygiene standards. Especially the construction workers did not perceive the conditions as problematic, but at the same time explained the coping strategies they use or suggest.

Building on these observations, the findings not only suggest that personal needs and comfort are more prioritised by white-collar than by blue-collar workers, even though they are less affected. This further suggests that blue-collar workers adapt their expectations to common conditions, while white-collar workers do have higher expectations but do not commonly communicate them. This may reflect that comfort beyond sanitary facilities is deprioritised on construction sites, and its absence is normalised. Additionally, leadership (Berglund et al., 2025; Schein, 2010) and role models may not only shape behaviour but also expectations. As an example, if the superior does provide sufficient facilities for handwashing and the foreman always uses them, workers might start doing this as well, and for following projects, expect the facilities to be provided so they can continue with this behaviour. Furthermore, current hygiene provision primarily reflects male norms (see also Chapter 6.1.3) and needs, and while awareness of human and especially female needs exists, their fulfilment is not expected. The insufficient consideration of gender-specific hygiene needs, together with sexism, may contribute to broader challenges related to the inclusion of women in the construction industry.

Expectations are based on underlying assumptions (Schein, 2010), which indicates that for white-collar workers who do have certain expectations, hygiene is at least to a certain extent embedded in their assumptions. However, other assumptions, such as that a strong position in the hierarchy is needed to change the conditions or that female needs do not necessarily have to be fulfilled, might hinder speaking up. In addition, people might not enforce their personal expectations if they are not continuously and dependently affected themselves.

Highly affected people having low expectations, but less affected people having high expectations, creates a structural deadlock where no one is strictly enforcing better conditions. For safety culture, this creates a divide between groups with different expectations and levels of influence, both in which hygiene is underprioritised, but for different reasons. This suggests that strict enforcement, particularly by actors with higher authority, guided by regulations, may be necessary to raise the expectations of the affected people and therefore embed hygiene in their underlying assumptions.

6.3.3 Communication of sanitation issues within site culture

Despite the project controller having higher expectations than the conditions fulfilled, she did not communicate that. Similar information appeared in several interviews, showing that communication of sanitation issues within site culture is limited.

This limited communication can be explained by several factors, such as the prioritisation of other aspects or social norms related to the topic of toileting (See also 6.1.3). It might further be hindered by the fragmentation of construction projects, as explained by Berglund et al. (2025). The involvement of many different companies and cultural diversity makes it hard to communicate hygiene issues and, subsequently, as

suggested by the author, hinders the creation of a shared safety culture in the construction industry.

Language and communication are artefacts that are shaped by underlying assumptions. As long as social norms include the stigmatisation of topics related to toileting, such as menstruation and health issues, those will be avoided in communication. Needs related to those topics will not be communicated, and their fulfilment will not be expected. In addition, other artefacts, including the multi-nationality, varying languages spoken and responsible people not always being present, also influence communication. This shows that communication is closely linked to various topics of this discussion, such as the missing communication of expectations and needs (Chapter 6.3.2), which further shapes how people perceive the conditions (Chapter 6.3.1), influencing whether people complain or not, which closes the circle. Communication is also complicated by complex accountability structures (Chapter 6.2.1), which can cause information asymmetries that further lead to issues with monitoring (Chapter 6.2.3).

Concerning communication of sanitation issues, structural and cultural issues seem to be intertwined, making it even more difficult to create a shared safety culture. This makes it necessary to not only work on underlying assumptions but also target artefacts that impact other people and companies. Defining responsibilities clearly in contracts, using signs in various languages and facilitating open communication amongst contractors are relevant to make the prioritisation of hygiene visible at the level of artefacts, and thereby influence underlying assumptions over time.

6.3.4 Regulatory awareness

Most white-collar workers, with whom regulations were discussed, showed a good understanding of the legal framework, while the carpenter apprentice did not know the requirements at all, and the project manager only referred to second-hand knowledge rather than direct engagement with the regulations. The interview with the labour inspector further gave the information that workers must get HSW training, but they do not have an exam, they only have to sign, which does not ensure they understand the content.

Concerning managers, contrary to Berglund et al. (2025), safety training does not seem to have any specific impact on the provision and maintenance of hygiene facilities. While creating awareness for the topic is beneficial, the managers are not impacted by the conditions themselves, the provision of better but more expensive hygiene facilities is not incentivised, and consequences for insufficient conditions are low. Furthermore, for construction workers next to education, priorities play in when it comes to regulatory awareness as well. A lack of regulatory awareness could be caused by insufficient training, but also due to a lack of prioritisation by the workers themselves. If people still have not fully internalised HSW measures and their personal importance, hygiene, which is often perceived as having less immediate safety impact and more indirect health and well-being implications, might not be prioritised by both blue-collar workers and white-collar workers. Therefore, regulations, e.g. concerning falling and sound protection, might be communicated as well as read about more in safety trainings and folders than regulations about sanitary conditions. Furthermore, language problems (Berglund et al., 2025) might be a reason for limited regulatory awareness as described by the labour inspector.

Limited regulatory awareness of hygiene, therefore, reflects the underlying assumption of its low importance in the framework of Schein (2010).

Low prioritisation of hygiene in safety culture contributes to limited regulatory awareness. As a result, affected workers do not know how the conditions are supposed to be. This may limit their ability to compare actual conditions with regulatory optimal conditions. Linking back to the perceptions, this encourages people to compare the actual conditions to past conditions, which gives positive perceptions as they have improved over time.

Taking all the themes together, the analysis shows a fragmented safety culture in which hygiene remains insufficiently embedded at the deepest cultural level. A recurring pattern across all themes is that hygiene is formally acknowledged as important, but deprioritised in practice through structural fragmentation and cultural normalisation that reinforce each other. The findings suggest that improving hygiene conditions requires cultural change targeting underlying assumptions. This, however, requires carefully planned change management and even then, remains difficult and time-consuming. In an industry where no uniform safety culture exists but various differing cultures, and where many higher-priority challenges, such as safety and organisational demands, need to be dealt with, changing underlying assumptions is a difficult undertaking. The economic pressure in construction may further limit the willingness to change. Just as can be seen in the example of hand-washing, the provision of facilities alone does not ensure they are used, but role models are needed to spark such behavioural change. Therefore, cultural change should foremost be introduced in the lower management levels, targeting foremen and site and project managers who are seen as role models, so it can further spread across workers, facility providers, upper management, as well as external institutions and organisations.

7 Conclusion

To conclude, in this chapter, the most important findings and the answer to the main research question are stated. Furthermore, implications for theory and practice as well as the study's limitations and suggestions for further research are given.

7.1 Summary of findings

This thesis aimed to investigate the question: "Why do insufficient hygiene and sanitary conditions persist on Austrian construction sites, despite existing regulatory requirements?" The findings suggest that structural mechanisms produce insufficient sanitary conditions and cultural mechanisms normalise and sustain them.

Answering the subquestion "How are hygiene and sanitary requirements implemented in practice on Austrian construction sites?", the findings show that the conditions vary a lot depending on the project location, type and size, company size, the client, contractual arrangements and the priorities of the involved actors. Responsibilities are fragmented between various actors, and the practical implementation is influenced by organisational and economic considerations. Consequently, the actual provision ranges from sanitary containers with good equipment to portable toilets without hand-washing facilities, warm water and necessary consumables.

Concerning the subquestion "How do different stakeholders (construction workers, site managers, and occupational health and safety inspectors) perceive and experience hygiene and sanitary facilities on construction sites?", perceptions for sanitary conditions vary from satisfaction to complaints, especially about the cleanliness and lack of hand-washing facilities. The conditions challenge women more than men, and while people with thorough knowledge about the regulations compare the conditions to regulatory requirements, others seem to compare them to the past.

Regarding the subquestion "What organisational-economic, structural-regulatory and cultural-behavioural factors contribute to the current state of hygiene and sanitary facilities on construction sites in Austria, and how can the principal-agent theory and the safety culture theory help explain these factors?", the analysis with the principal-agent theory showed that responsibility for hygiene provision and monitoring on construction sites in Austria is fragmented across actors. These actors often pursue competing priorities and interests, with economic considerations frequently taking precedence. In addition, hygiene receives comparatively low priority within occupational health and safety practices. This leads to limited monitoring and consequences for insufficient sanitary conditions. As a result, both the provision and monitoring of sanitary conditions depend heavily on the intrinsic motivation of individual actors because external enforcement mechanisms remain weak. Furthermore, monitoring remains difficult due to information asymmetries and contributes to agency costs.

This intrinsic motivation is further closely linked to safety culture. Different hygiene perceptions, partly low expectations, limited communication and varying regulatory awareness concerning hygiene in construction in Austria were identified. Hygiene is formally acknowledged but deprioritised in practice. Issues persist due to a fragmented safety culture, with hygiene being only embedded in underlying assumptions to a limited extent.

These structural and cultural factors interact with each other. The implementation of existing regulatory requirements is weakened by distributed responsibilities, limited monitoring and competing economic priorities. At the same time, inadequate sanitary conditions have partly become normalised in everyday construction practice, resulting in low expectations and limited pressure for change. This interaction between structural weaknesses and cultural acceptance contributes to the persistence of inadequate hygiene standards in the Austrian construction industry. The cultural analysis helped explain aspects that could not be fully addressed through the structural perspective alone, particularly why construction workers often tolerate inadequate conditions instead of acting in a self-interested manner. On the other hand, structural conditions shaped the organisational context in which safety culture develops. In addition to structural and cultural reasons, indications of regulatory gaps, particularly concerning gender, were identified, and organisational challenges acknowledged.

Overall, insufficient hygiene conditions persist because fragmented responsibilities, weak enforcement mechanisms and the deprioritisation of hygiene interact with cultural norms to normalise inadequate sanitary standards on Austrian construction sites.

7.2 Contribution and implications for theory and practice

Data has been gathered in a qualitative and exploratory research process. This enabled in-depth insights into actual hygiene conditions and practices, involved actors' perspectives such as construction workers, project managers and labour inspectors, and possible underlying mechanisms which hinder sufficient sanitary provision. With empirical data and the analysis with the principal-agent theory, as well as the safety culture theory, this study contributes to the limited research on hygiene and sanitary conditions, specifically in Austria. The combination of principal-agent theory and safety culture theory proved particularly useful because although both explain why conditions are insufficient, they take different perspectives. Principal-agent theory helped identify structural issues such as fragmented responsibilities, information asymmetries and weak incentive structures. Safety culture theory complemented this perspective by highlighting the role of shared norms, expectations and underlying assumptions within the construction industry. The combination of both approaches, therefore, enabled a comprehensive understanding of how structural and cultural mechanisms interact so that inadequate sanitary conditions persist.

The contribution of this study builds a foundation for further research about solutions for improving sanitary conditions on construction sites. Although hygiene is a narrow and specific aspect of occupational health and safety, the findings suggest that it should not be understood merely as a compliance issue, but also as a reflection of broader organisational values, workplace norms and power structures within the construction industry. Furthermore, hygiene on construction sites does not exist in isolation, as the findings indicate connections to wider societal dynamics. These include the stigmatisation of toilet-related activities and vocabulary, gendered expectations and sexism, but also organisational priorities regarding wellbeing, dignity and comfort.

Next to its academic contribution, this thesis is also relevant for practitioners responsible for the provision, coordination or monitoring of hygiene conditions on Austrian construction sites due to explaining possible underlying causes that should be targeted to improve conditions. Especially, cultural change in construction companies is needed to embed hygiene in the underlying basic assumptions of blue- and white-

collar workers. Strengthening intrinsic motivation among involved actors, for example, through awareness campaigns, may contribute to improvements in hygiene conditions.

Appropriate sanitary facilities should, over time, become standard practice, as sanitary conditions are one aspect of many that make construction work less attractive. Therefore, safety training with examinations could be introduced, and external incentives, such as penalties, are needed to push for better conditions; however, for this, hygiene needs to be given higher priority by monitoring actors. Improvements are most needed in small construction companies and small construction sites. In addition to the fulfilment of regulatory requirements, gender-sensitive sanitary planning exceeding existing requirements should be considered to make the construction industry more attractive to workers. Due to the industry being strongly focused on financial aspects, strong integration of hygiene considerations and responsibilities into planning and contractual processes may create additional incentives for compliance.

7.3 Limitations and future research

Due to the limited and subjective nature of the gathered data, this study cannot be statistically generalised. Additionally, the study does not include all relevant perspectives, as no information was gathered from clients, facility providers or actors involved in the law-making. Furthermore, the analysis was limited to two suitable frameworks, which nevertheless could not fully capture all aspects identified as contributing to the insufficient sanitary conditions on Austrian construction sites. The study primarily aims to identify and analyse underlying mechanisms rather than develop structured implementation strategies. Additionally, as with qualitative research in general, the perspective and background of the researcher may have influenced aspects of data interpretation and the overall research process. This may be particularly relevant as no researcher triangulation was possible due to the study being conducted by a single researcher. In addition to researcher bias, interviewee bias and data gaps may have been introduced, as in interviews, participants might not feel comfortable speaking about every aspect of such an intimate topic. Despite this study's contribution, the limitations show that further research is needed.

Suggestions for further research include quantitative studies on causes for insufficient hygiene conditions to be able to generalise. A broader and larger interview sample would make results more reliable, as well as a multi-author study to reduce personal bias. Additionally, an analysis with different frameworks could give different perspectives on the topic, such as a gender-focused or macro-cultural perspective rather than organisational culture. Furthermore, cross-country studies to compare the conditions, structures and cultures are suggested, as well as case studies and comparative case studies to find out how companies handle sanitary conditions or how organisational challenges are dealt with. Further research could also investigate the effectiveness of existing interventions aimed at improving hygiene conditions on Austrian construction sites for optimising agency costs. The suggested research directions could further support the development of suitable solutions to ensure adequate sanitary provision on construction sites.

Overall, this demonstrates that hygiene on construction sites is a mirror of broader organisational priorities, workplace culture and perceptions of dignity within the construction industry. Improving sanitary conditions, therefore, requires not only compliance with regulations, but also cultural change, contractual agreements for

clearer accountabilities, stronger monitoring and greater recognition of hygiene as an important component of occupational health and safety. However, the findings also suggest that improving hygiene conditions is not a simple technical or regulatory challenge, but a long-term cultural change process shaped by economic pressures, structural challenges and established assumptions. By identifying structural and cultural mechanisms underlying insufficient sanitary provision on Austrian construction sites, this study provides a foundation for both future research and practical initiatives seeking to improve sanitary standards and, therefore, everyday working conditions in the Austrian construction industry.

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9 Appendix

In this chapter, the interview guides translated from German to English of all interviews are listed. The following questions were the ones prepared, though it was deviated from them if additional questions or follow up question came up, or questions were answered already before.

9.1 Interview guide HSW representative & occupational physician

1. Can you briefly introduce yourself, the company you work for and your position?
2. What are your tasks and responsibilities with regard to hygiene and sanitary facilities on construction sites?
3. What experience have you had with sanitary facilities and hygiene on construction sites – both positive and negative?
4. You work for a very large company with large projects. From your perspective, are there differences in the implementation of hygiene on construction sites depending on the size of the project, the size of the company or the client?
5. How do you rate the existing legal regulations (Construction Workers Protection Ordinance, Employee Protection Act, ...) with regard to hygiene on construction sites? Are they sufficient and practicable from your point of view?
6. From your perspective, do hygiene conditions influence how workers organise their working day? E.g. drinking habits, breaks, routes, travel times
7. Do you experience that this has an impact on health, job satisfaction, concentration, workflow or productivity? Do you have any other examples of how poor hygiene on construction sites can have an impact?
8. What reasons do you think there are for sanitary facilities on construction sites always being sufficiently hygienic?
9. In your experience, has the situation regarding sanitary facilities or hygiene behaviour on construction sites changed in recent years?
10. How could hygiene conditions on construction sites in Austria be improved?
11. Is there anything else regarding working conditions or hygiene on construction sites that we have not yet discussed but that you consider important?

9.2 Interview guide foreman/bricklayer

1. Can you briefly introduce yourself and the company you work for?
2. What does a typical working day on the construction site look like for you?
3. Which aspects of health and safety are well implemented? Where exist difficulties?
4. What role does the infrastructure on the construction site play in your everyday work? E.g. containers, sanitary facilities, etc?
5. How are sanitary facilities usually organised on construction sites? (E.g. number, type, location, ...)
6. Are sanitary facilities or containers ever not available, far away, poorly equipped or unclean? If so, how do you deal with this?

7. Does the situation regarding sanitary facilities influence how you organise your working day? E.g how much you drink, how you take breaks or interrupt your work, where you go during working hours...?
8. From your point of view, does this have an impact on concentration, workflow or productivity?
9. In your opinion, who is responsible for ensuring that sanitary facilities on construction sites are functional and clean?
10. In your experience, has anything changed in recent years with regard to the situation surrounding sanitary facilities or hygiene behaviour on construction sites?
11. Is there anything else we haven't discussed yet that you think is important in terms of working conditions or hygiene on construction sites?

9.3 Interview guide 1 labour inspector

1. Can you briefly introduce yourself, the Labour Inspectorate and your position?
2. What are your tasks and responsibilities with regard to hygiene and sanitary facilities on construction sites?
3. What experiences do you make on construction sites with regard to sanitary facilities and hygiene? (positive & negative)
4. In your point of view, are there differences in the implementation of hygiene on construction sites depending on the size of the project, the size of the company or the client?
5. From the perspective of the Labour Inspectorate, which legal regulations are relevant for hygiene and sanitary facilities on construction sites? Are there any distinctions or exceptions that are particularly relevant in practice?
6. How do you assess the existing legal regulations with regard to hygiene on construction sites? From your perspective, are they sufficient and practicable?
7. How are these regulations implemented in general and with regard to hygiene and sanitary facilities in particular?
8. In your experience, are there certain hygiene- related regulations in the Construction Workers Protection Ordinance, Employee Protection Act or, where applicable, Workplace Ordinance, that are particularly difficult to implement in practice or are often problematic? From your point of view, what is the reason for this?
9. How do you view the control of hygiene and sanitary facilities on construction sites? Is this sufficiently possible, and in what context or on what occasions are inspections carried out in Austria or [interviewees' area of responsibility]?
10. In your experience, has the situation regarding sanitary facilities or hygiene behaviour on construction sites changed in recent years?
11. How could hygiene conditions on construction sites in Austria be improved?
12. Regarding the construction site visit: Which construction sites would you consider suitable for realistically observing typical situations involving sanitary facilities?
13. Is there anything else regarding working conditions or hygiene on the construction site that we have not yet discussed but that you consider important?

9.4 Interview guide project controller

1. Can you briefly introduce yourself and the company you work for?
2. We have already talked about public toilets and potty parity. When you think about hygiene and sanitary facilities in Austria in general, what structural problems do you use that are also reflected on construction sites?
3. From a planning or organisational point of view, do you see any differences between the needs of men and women in terms of sanitary facilities?
4. What experiences have you had with sanitary facilities and hygiene on construction sites? (positive & negative)
5. How do you perceive the facilities (toilet paper, washbasins, soap, etc.) in sanitary facilities on construction sites?
6. Does the situation regarding sanitary facilities influence how you organise your working day? E.g. how much you drink, how you take breaks or interrupt your work, where you go during working hours?
7. In your opinion, does this have an impact on health, job satisfaction, concentration, workflow or productivity? Do you have any other examples of how poor hygiene on construction sites can have an impact?
8. What reasons do you think there are for sanitary facilities on construction sites being the way they are? (organisational, economic, cultural or regulatory)?
9. In your experience, has the situation regarding sanitary facilities or hygiene behaviour on construction sites changed in recent years?
10. How do you think hygiene on construction sites could be improved?
11. Is there anything about working conditions or hygiene on construction sites that we haven't discussed yet, but which you think is important?

9.5 Interview guide carpenter apprentice

1. Can you briefly introduce yourself and your position in the company?
2. What does a typical working day on the construction site look like for you?
3. What role does the infrastructure on the construction site play in your everyday work? E.g. containers, sanitary facilities, etc?
4. How are sanitary facilities usually organised on construction sites? (E.g. number, type, location, ...)
5. What does "hygienic sanitary facilities" on construction sites mean for you?
6. Are sanitary facilities or containers ever not available, far away, poorly equipped or unclean?
7. If so, how do you deal with this?
8. Are problems like this talked about on the construction site, or do you feel comfortable to address if the conditions are unfavourable for you?
9. Does the situation regarding sanitary facilities influence how you organise your working day? E.g. how much you drink, how you take breaks or interrupt your work, where you go during working hours...?
10. From your point of view, does this have an impact on concentration, workflow or productivity?
11. In your experience, do hygiene conditions on construction sites work similarly well for men and women, or do you see any differences?
12. In your opinion, who is responsible for ensuring that sanitary facilities on construction sites are functional and clean?

13. Which legal requirements concerning hygiene on construction sites are you familiar with?
14. Is there anything else we haven't discussed yet that you think is important in terms of working conditions or hygiene on construction sites?

9.6 Interview guide project manager

1. Can you briefly introduce yourself, the company you work for, and your position?
2. What are your responsibilities regarding hygiene on construction sites?
3. How do you perceive the conditions of sanitary and hygiene facilities on construction sites? Could you give and describe some positive and negative examples?
4. What legal regulations regarding hygiene on construction sites are you aware of?
5. In your experience, what are the reasons for poor cleanliness and inadequate facilities in sanitary and other hygiene facilities on construction sites?
6. What role do time and cost pressures play in decisions regarding hygiene facilities?
7. What role do subcontractors play in the condition of sanitary facilities?
8. Who decides which product (e.g. what type of sanitary facility) is used, and are you aware of any conflicts of interest in this context? (Client, construction company, legislator, ...)
9. What is your view on the choice of sanitary facilities? Are there enough and appropriate options available?
10. Who is responsible for ensuring that sufficient sanitary facilities and other hygiene facilities are provided, and that these are adequately equipped and clean?
11. How often are hygiene conditions on construction sites checked? Internally, by the construction coordinator or the labour inspector?
12. How consistently are legal requirements implemented and monitored?
13. Are there any financial, legal or personal incentives to promote good hygiene standards on construction sites?
14. What are the consequences if hygiene standards are inadequate?
15. Are issues with hygiene facilities typically reported?
16. Is there anything else regarding hygiene on construction sites that we haven't discussed yet, but which you consider important?

9.7 Interview guide 2 labour inspector

1. Regarding the issue of a flush toilet or equivalent facility, which you raised during the site visit: Could you explain again what is considered equivalent, and how often a flush toilet or equivalent is available throughout the construction process, or under what circumstances it is not?
2. Also, as I've just come across this in another interview, does it happen that (particularly on smaller client-managed construction sites) the client acts as the site coordinator? How does this usually work?
3. How is it checked whether subcontractors also provide sanitary facilities if it is not stipulated that one company must provide them for everyone?

4. What priority is given to hygiene in general inspections compared to other health and safety-related aspects?
5. How well do the workers and the responsible managers know the legal requirements?
6. The structure of responsibility, decision-making and control relating to health and safety in general and hygiene in particular strikes me as relatively complex. Could you explain how the client, all contractors, the legislator and supervisory bodies such as the Labour Inspectorate, site coordinators and the General Accident Insurance Institution are linked within this network?
7. Who makes which decisions within the network in question, and are any conflicts of interest known?
8. What is your view of the Labour Inspection Act? Is it adequate and practicable? How abstract or specific are the provisions contained therein?
9. Are there any quality assurance or monitoring mechanisms within the Labour Inspectorate designed to ensure that the Labour Inspectorate Act is applied consistently?
10. What incentives are there for labour inspectors to consistently enforce the provisions of the Labour Inspectorate Act or to consistently monitor the implementation of the Employee Protection Act and the Construction Workers Protection Ordinance?
11. To what extent do labour inspectors have discretion in practice when applying the Labour Inspectorate Act, and how is this handled?
12. To what extent do you rely on advice, setting deadlines or sanctions, and why?
13. What internal or legal consequences arise if the requirements of the Labour Inspectorate Act are not consistently implemented?
14. Is there anything else regarding hygiene on construction sites, particularly structural issues, that we have not yet discussed but which you consider important?

9.8 Interview guide owner of coordination company

1. Could you briefly introduce yourself, the company you work for, and your role?
2. What are your responsibilities regarding hygiene on construction sites?
3. How is planning and construction coordination usually organised? Are there differences between small and large projects, or between public and private clients?
4. What is your view of the legal regulations governing hygiene on construction sites (e.g. Construction Work Coordination Act, Construction Workers Protection Ordinance, Employee Protection Act)? In your experience, are these sufficient and feasible in practice? If you believe there are shortcomings, can you give specific examples?
5. How often do you carry out site inspections, and to what extent do you pay attention to hygiene-related aspects during these? Do you have sufficient time and resources to give hygiene issues adequate consideration?
6. In your experience, how consistently are the legal requirements for hygiene on construction sites implemented and monitored?
7. Can you give examples of legal requirements whose implementation is particularly challenging or which are monitored less consistently in practice? In your view, what is the reason for this?

8. Where do you see the greatest coordination problems in practice between the parties involved (e.g. client, construction company, subcontractors)?
9. How do you view the distribution of responsibilities for hygiene on construction sites?
10. Who are the key decision-makers regarding hygiene issues, and are there any competing interests? (e.g. between clients, construction companies, planning and site coordination teams, and regulators)?
11. What are the consequences for the responsible companies if sanitary facilities and other hygiene provisions do not comply with legal requirements? And how often do such consequences actually occur?
12. What consequences would you expect to face if you did not adequately monitor hygiene on construction sites?
13. What incentives do you have to consistently monitor hygiene conditions on construction sites?
14. In your view, are there any other important aspects regarding hygiene on construction sites that were not addressed in the previous questions?

