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TRANSFORMGAS

Transforming the Swiss Gas Industry via Cluster-Based Decarbonization Strategies

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University of St.Gallen
Institute of Technology Management
CH-9000 St.Gallen

2Pi-Energy GmbH
DE-70199 Stuttgart

Authors:
Palmié, Maximilian, University of St.Gallen, maximilian.palmie@unisg.ch
Opitz, Christian, University of St.Gallen, christian.opitz@unisg.ch
Ben Messaoud, Sami, University of St.Gallen, sami.benmessaoud@unisg.ch
Barroso, Monica, University of St.Gallen, monica.barroso@unisg.ch
Rodak, Philip, University of St.Gallen, philip.rodak@unisg.ch
Pustišek, Andrej, 2Pi-Energy GmbH, andrej.pustisek@2pi-energy.com

SFOE project coordinators:
Anne-Kathrin Faust, Anne-Kathrin.Faust@bfe.admin.ch

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The authors bear the entire responsibility for the content of this report and for the conclusions drawn therefrom.

Summary

This interim report of the TRANSFORMGAS project outlines a gas sector undergoing transition as Switzerland moves toward climate neutrality by 2050. While gas still plays an important role today, particularly for heating and industry, political and technological trends point toward electrification, thermal networks, and selective use of renewable gases in the future. The project aims at developing actionable and context-specific decarbonization strategies for municipalities and utilities to spur the transformation of the Swiss gas industry.

Completed work includes a literature review of decarbonization options and an assessment of supply-side dynamics through analyses and interviews, while a survey sent to all Swiss gas suppliers is still ongoing. Next steps will integrate demand-side perspectives and engage stakeholders in co-creation workshops to validate hypotheses and develop cluster-based decarbonization strategies and transformation pathways.

Zusammenfassung

Der vorliegende Zwischenbericht des TRANSFORMGAS Projekts illustriert die Transformation des Gassektors in der Schweiz vor dem Hintergrund der Klimaneutralitätsziele bis 2050. Obwohl Gas heute noch eine wichtige Rolle spielt, insbesondere für Heizung und Industrie, deuten politische und technologische Entwicklungen künftig auf eine zunehmende Bedeutung von Elektrifizierung, thermischen Netzen und den gezielten Einsatz erneuerbarer Gase hin. Ziel des Projekts ist die Entwicklung umsetzbarer und kontextspezifischer Dekarbonisierungsstrategien für Kommunen und Gasversorgungsunternehmen, um die Transformation der Schweizer Gaswirtschaft voranzutreiben.

Zu den abgeschlossenen Arbeiten gehören eine Literaturrecherche zu Dekarbonisierungsoptionen und eine Bewertung der Angebotsseite durch Analysen und Interviews. Eine Umfrage unter allen Schweizer Gasversorgern läuft derzeit noch. In den nächsten Schritten werden Perspektiven der Nachfrageseite einbezogen und Stakeholder in Co-Creation-Workshops eingebunden, um Hypothesen zu validieren und clusterbasierte Dekarbonisierungsstrategien sowie Transformationspfade zu entwickeln.

Résumé

Ce rapport intermédiaire du projet TRANSFORMGAS illustre la transformation du secteur gazier en Suisse dans le contexte des objectifs de neutralité climatique pour 2050. Bien que le gaz joue encore un rôle important aujourd'hui, notamment pour le chauffage et l'industrie, les évolutions politiques et technologiques soulignent l'importance croissante de l'électrification, des réseaux thermiques et de l'utilisation ciblée des gaz renouvelables. Le projet vise à élaborer des stratégies de décarbonation réalisables et adaptées au contexte pour les municipalités et les entreprises de fourniture d'énergie afin d'impulser la transformation de l'industrie gazière suisse.

Les travaux réalisés comprennent une analyse documentaire des options de décarbonation et une évaluation de l'offre par le biais d'analyses et d'entretiens. Une enquête auprès de tous les fournisseurs de gaz suisses est en cours. Les prochaines étapes intégreront les perspectives de la demande et impliqueront les parties prenantes dans des ateliers de co-création afin de valider les hypothèses et d'élaborer des stratégies de décarbonation et des trajectoires de transformation par clusters.

Contents

List of figures

List of tables

List of abbreviations

AfA	Absetzung für Abnutzungen (Depreciation for wear and tear)
AHK	Anschaffungs- und Herstellungskosten (Acquisition and production costs)
BAFU	Bundesamt für Umwelt (Federal Office for the Environment)
BDEW	Bundesverband der Energie- und Wasserwirtschaft (German Association of Energy and Water Industries)
BFE	Bundesamt für Energie (Swiss Federal Office of Energy)
BFS	Bundesamt für Statistik (Federal Statistical Office)
Empa	Eidgenössische Materialprüfungs- und Forschungsanstalt (Swiss Federal Laboratories for Materials Science and Technology)
EnDK	Konferenz Kantonaler Energiedirektoren (Conference of Cantonal Energy Directors)
ESTV	Eidgenössische Steuerverwaltung (Federal Tax Administration)
ewb	Energie Wasser Bern (municipal utility company from Bern)
GWR	Eidgenössisches Gebäude- und Wohnungsregister (Federal Building and Housing Register)
IBL	Industrielle Betriebe Langenthal (municipal utility company from Langenthal)
SSV	Schweizerischer Städteverband (Swiss Cities Association)
SVGW	Fachverband für Wasser, Gas und Wärme (Swiss Technical Association for Water, Gas, and Heat)
TNS	Thermische Netze Schweiz (Thermal Networks Switzerland)
UVEK	Eidgenössisches Departement für Umwelt, Verkehr, Energie und Kommunikation (Federal Department of the Environment, Transport, Energy and Communications)
VSG	Verband der Schweizerischen Gasindustrie (Swiss Gas Industry Association)

1 Introduction

1.1 Context and motivation

With the Climate and Innovation Act coming into force on January 1, 2025, the net-zero target for 2050 was enshrined in Swiss law (Schweizerische Eidgenossenschaft 30.09.2022). This target requires domestic greenhouse gas emissions to be reduced as far as possible by 2050 at the latest. The remaining emissions that are difficult to avoid are to be offset by negative emission technologies so that a net balance of zero emissions into the atmosphere is achieved overall (BAFU 2022). Over the next 25 years or so, Switzerland will face the challenge of replacing around 70% of its final energy consumption, which is currently still covered by fossil fuels (BFS 2025a). These are mainly imported fuels, petroleum fuels, and natural gas.

Accordingly, the Swiss gas industry also has a responsibility to make its supply completely climate-neutral by 2050. This requires tailor-made decarbonization strategies for local gas supply, particularly at the municipal level, which take equal account of environmental goals, security of supply, and economic viability. The possible options range from a gradual increase in the proportion of biomethane in the standard gas product to the complete decommissioning of the gas network infrastructure. Alternatively, non-gaseous technologies can be used to a greater extent, such as district heating networks for providing space heating and hot water, or large heat pumps for providing high-temperature process heat for industrial applications.

The following recent developments could not be taken into account in the original project application, but will be included as supplements within the scope of the research project:

- In mid-September 2025, the Federal Council submitted the revised draft of a Gas Supply Act for consultation (Schweizerischer Bundesrat 2025). The text of the decree expressly stipulates that the costs of early decommissioning and dismantling of network facilities can be included in the network usage tariffs (UVEK 2025). Such a legal provision might influence the decarbonization strategies of gas suppliers.
- At the end of 2024, the CH42 initiative (formerly the Network Transformation Plan for Renewable Gases) was launched with the participation of numerous gas network operators and the industry associations SVGW and VSG. Its goal is to systematically align the Swiss gas network infrastructure with a climate-neutral future. The organizations involved in the initiative are working together to develop technical, economic, and regulatory frameworks for the gradual conversion of the gas supply to renewable gases, which are published annually in a results report. The initiative thus creates a coordinated basis for developing regional transformation paths and securing long-term investment decisions. (CH42 Initiative 2025 (forthcoming))

Even as 2025 progresses, no uniform approach has been established within the gas industry about the manner and pace of decarbonization of local gas supplies. For example, the Bern municipal energy supplier announced that it would decommission most of its gas network infrastructure by 2045 and increase the proportion of biomethane in its standard product to 50% from January 1, 2026 (ewb 2025). The municipal energy supplier in Langenthal, on the other hand, plans to phase out gas supply only from 2040 onwards; its standard product currently consists entirely of fossil natural gas (Stadt Langenthal und IBL 2025).

1.2 Project objectives

This research project aims to provide decision-makers in local authorities and municipal utilities with sound support for the decarbonization of local gas supply. Depending on the local political, financial, and technological situation, ideal transformation paths for gas supply in the respective municipalities will be developed with innovative business models for a decarbonized gas and heating market.

The project consortium combines sector-specific knowledge of the Swiss and European energy markets with comprehensive business model expertise. The strategies, models, and transformation paths developed are based on a holistic analysis of the current and future gas and heating markets, as well as on collaborative idea generation processes. To this end, existing findings are systematically synthesized, supplemented by primary data collection, and further refined and concretized in idea generation workshops with relevant stakeholders.

The results provide policymakers at the national, cantonal, and municipal levels, public administration, and the Swiss gas industry with reliable data and strategic guidelines for planning and implementing decarbonization strategies, business models, and transformation pathways.

The following research questions will be answered:

- What fundamental options for decarbonizing the gas industry are being discussed at European and national level (including the impact on the gas network infrastructure), and what might the future of gas supply and gas supply companies in Switzerland look like?
- What is the economic significance of gas as an energy source today, and how is this likely to change in the future? What are the consequences for the existing gas network infrastructure?
- How is the decision-making process for developing a decarbonization strategy structured in local authorities, and which factors have a significant influence on the choice? What elements do the transformation paths planned in the industry comprise, and what consequences do the respective decisions have for gas suppliers?
- How is future gas demand likely to develop in the individual demand sectors, and what potential is attributed to competing technologies for current natural gas applications in Switzerland?
- What business model options exist for a decarbonized gas and heating market, how can Swiss gas suppliers be divided into clusters based on, among other things, the political, financial, and technological starting situation, and what could ideal decarbonization strategies look like for each cluster with the help of selected business models?
- Based on all previous work packages, what will be the future role of gas supply and gas supply companies in Switzerland?

2 Approach, method, results and discussion

The research project comprises five work packages that build on each other in terms of content (see Table 1). A comprehensive literature review forms the basis, followed by an in-depth analysis of the supply and demand sides. The hypotheses derived from the literature and empirical studies are then tested in co-creation workshops with representatives of local authorities and gas suppliers. This approach enables scientifically sound statements to be made about the future gas supply in Switzerland and the future role of renewable gases and the gas network infrastructure.

Table 1: Übersicht über die Arbeitspakete

1	Literature review	Opportunities for decarbonizing the gas industry, status quo, and future prospects for Swiss gas supply
2	Empirical study	Analysis of the current and projected significance of (renewable) gas in the local supply areas
3	Empirical study	Analysis of future gas demand by demand sector and the potential of competing technologies for current natural gas applications
4	Development of decarbonization strategies	Development of ideal decarbonization strategies for gas suppliers with business models for a decarbonized gas and heating market
5	Synthesis	Final assessment of the future of gas supply and gas suppliers in Switzerland, final report, and project presentation

As this document is an interim report, the following subchapters present the methodology used, the underlying data and literature sources, and the (interim) results achieved to date for each of the work packages already completed.

2.1 Work package 1: Literature review

As a foundation of this project, we conducted a systematic and integrative literature review that presents a comprehensive overview of the current state of research on decarbonization options for the Swiss gas industry as discussed in existing literature. To identify and assess the relevant body of literature, we have applied a rigorous search strategy and conducted multiple rounds of evaluations within the project team. Moreover, the structure and content of the literature review as well as the selection of relevant literature has been presented and discussed at the first advisory board meeting. The feedback from the advisory board has been implemented accordingly.

The results of this systematic and integrative literature review show that the Swiss gas industry is facing a profound structural transformation, the direction and speed of which will be largely determined by climate policy objectives, technological developments and regulatory decisions at federal and cantonal level. The decarbonization of the sector is not an isolated process but is embedded in broader energy and climate policy changes aimed at far-reaching electrification and the consistent expansion of renewable energies (cf. BFE 2023; BFE 2023a; Bundesrat 2024).

A key finding of this work is the clear expectation of a marked decline in gas consumption in Switzerland by 2050. Both the scenarios in Energy Perspectives 2050+ (Prognos et al. 2022b) and industry surveys (e.g., EVU Partners 2021) consistently point to a significant expected decline in gas consumption. This development in the building sector is primarily driven by two factors: firstly, the clear political shift towards electrified heating technologies such as heat pumps as well as towards thermal networks, and secondly, the comparatively high costs of adding renewable gases to the existing gas network and their limited availability. The normative guideline of the federal policy strategy documents is clear: in the medium to long term, gas should only be used in applications where there is no economically or technically viable alternative (cf. BFE 2019; BFE 2023; Bundesrat 2024).

In the building sector, this normative framework is likely to lead to an increasing substitution of gas use by heat pumps or district heating. This substitution will likely be accompanied by cantonal regulations, in particular the gradual implementation of MuKEn 2025, which will largely prohibit the installation of fossil fuel heating systems and make renewable systems the standard solution (cf. EnDK 2025). The research results thus underline that gas is likely to play only a minor role in low-temperature heat supply in the long term. This is in line with the assessments of the BFE, which had already pointed out the high economic inefficiency of generating space heating and hot water using gaseous energy sources in its position paper on gas (BFE 2019).

While the importance of gaseous energy sources in the building sector is likely to decline in the medium to long term, the results of the literature review show that there is a need for (renewable) gaseous energy sources in certain applications in the industrial sector. These include, in particular, high-temperature processes above 200°C, for which efficient, technically available electrical alternatives are still lacking in some cases (cf. BFE 2023; Bundesrat 2024). However, the literature indicates that the sales volume required for such special applications is likely to be significantly lower than current consumption in the industrial sector (cf. Prognos et al. 2022b).

The analysis also shows, however, that estimates of future gas demand are subject to considerable uncertainty. This is due in particular to the fact that technological developments, including the expected price degression of renewable gases and their resulting competitiveness compared to other energy sources, are difficult to predict. Although the BFE (2019) and the Bundesrat (2024) agree that green hydrogen will likely become more efficient and cheaper in the future, the actual cost paths remain dependent on international economies of scale in production, geopolitical conditions and the expansion of the European hydrogen infrastructure, including connections to Switzerland to ensure import options.

Another key finding concerns the potential of renewable gases. The literature suggests that although biomethane is highly valued as a renewable gaseous energy source, its potential is structurally limited. A seminal study from 2017 estimates the realizable domestic potential at 5.7 TWh (WSL 2017). More recent estimates, which also take import potential into account, extend this figure to around 16 TWh (Prognos et al. 2022a). Although the projected potential for biomethane shows that it will not be able to

replace existing fossil gas consumption in terms of volume, it can nevertheless play a strategically important role in specific applications in a future with reduced gas consumption. These include, in particular, industrial processes with high requirements for security of supply and process continuity.

Green hydrogen is associated with both high expectations and high uncertainties in the literature. Domestic production capacity remains limited due to the limited surpluses of renewable electricity (cf. Polynomics et al. 2023), while import options depend largely on Switzerland's connection to the European hydrogen backbone (cf. Brockhaus 2022; Bundesrat 2024). The expected costs for green hydrogen are also likely to remain higher than for biomass, biomethane or electricity in the mid- to long term (cf. Prognos et al. 2022a). The sources compiled in this paper therefore paint a relatively consistent picture: hydrogen is only expected to play a role in clearly defined "no-regret" applications, i.e. primarily in high-temperature processes, parts of the transport sector and for peak load coverage in highly integrated energy systems.

An important implication of these findings is the foreseeable need to transform the gas infrastructure. The expected reduction in sales volumes while maintaining large parts of the infrastructure will lead to growing challenges for gas supply companies, especially at the distribution network level. The studies clearly show that networks with low heat density are becoming increasingly uneconomical (cf. EVU Partners 2021; BFE 2019). This implies a structural shift towards more selective network operation. The need for planned, coordinated dismantling of distribution networks is therefore one of the key challenges of the coming decades. The results of this study emphasize that strategies for network densification, decommissioning or conversion for hydrogen should be developed at an early stage. The planned Gas Supply Act (Bundesrat 2023) provides a regulatory framework for this.

Another point of discussion concerns the long-term role of gas supply companies themselves. The literature suggests that their business models will be less characterized by pure gas distribution in the future and more by services such as heating network operation or complex multi-energy solutions (cf. EBP Schweiz 2019). This change opens new opportunities, for example in the area of decentralized energy centres or in the integration of heat, electricity and flexibility services. At the same time, there are risks, particularly in connection with investment cycles, regulatory uncertainties and the danger of a stranded asset problem if existing gas networks lose importance faster than anticipated.

Finally, the results also make it clear that the transformation of the gas industry cannot be viewed in isolation. Although gas plays an important role in the transition to a carbon-neutral energy system, it does so mainly as a complement to other technologies and, above all, in today's niche applications. The literature shows that Switzerland's target path is heavily dependent on efficient sector coupling and a significant expansion of the electricity system (cf. BFE 2023). Gas, and thus also renewable gases, are expected to play a supporting, stabilizing role in the Swiss energy system of the future, but not a leading one.

Overall, the literature review presents a coherent picture of an industry in transition: the gas business is becoming smaller, more specialized and more embedded in an integrated energy system. The strategic challenge is to shape this transition with foresight, consistently address the remaining "no-regret" applications and, at the same time, ensure long-term economic viability and security of supply.

2.2 Work package 2: Analysis of the supply side

2.2.1. Approach and methodology

Compared to the project proposal, which only envisaged a survey of Swiss gas suppliers, the scope of work package 2 has been significantly expanded: First, comprehensive literature and data analyses were carried out on the current and future energy industry significance of gas as an energy source, and gas suppliers and the municipalities they supply were systematically characterized. Based on this, a meta-analysis of existing surveys of the supply side was carried out. In addition, interviews with experts were conducted to develop the design of an electronic questionnaire (see Table 2), before the actual survey of Swiss gas suppliers was carried out.

Table 2: Overview of expert interviews on questionnaire design

Organization	Function	Date	Format
KIT Karlsruhe	Lecturer	October 5, 2025	in writing
Stadt St.Gallen	Chief of Staff Technical Operations	October 9, 2025	virtually
SVGW	Gas Specialist	October 9, 2025	virtually
EnDK	Deputy Secretary General	October 9, 2025	virtually
VSG	Director	October 15, 2025	virtually
EVU Partners	Senior Consultant	October 17, 2025	virtually
EBP Schweiz	Partner	October 17, 2025	virtually

Once access to the newsletter archive of energate messenger Switzerland, an information service specializing in the German-speaking energy industry, has been activated, the next step will be to evaluate the publicly communicated gas decommissioning strategies of the municipalities. At the same time, workshops will be held to further refine the clusters of gas suppliers, which to date have been based exclusively on technical and energy industry criteria, using the survey results and the data already collected to characterize the gas suppliers and the municipalities they serve. Further interviews with technical experts will serve to validate the economic significance of the existing gas network infrastructure. Finally, all findings will be synthesized in order to formulate well-founded hypotheses for work package 4.

The results of the work package to date are presented below. These include (i) the current and future importance of gas as an energy source for the energy industry, (ii) a description of the data sets used to characterize gas suppliers and municipalities supplied with gas, and (iii) key findings from existing surveys of the supply side.

2.2.2. Current and future significance of gas as an energy source for the energy industry

The current importance of gas as an energy source in Switzerland is often underestimated: according to overall energy statistics, fossil and renewable gases accounted for around 26.5 TWh – just under 12% of total final energy consumption – in 2024. Net imports of fossil natural gas amounted to 27.9 TWh, while the physical feed-in of biomethane into the gas network infrastructure reached around 470 GWh (BFE 2025a).

Together with the purchase of foreign biomethane certificates – mainly from Denmark (1.3 TWh), the United Kingdom (0.7 TWh), and the Netherlands (0.4 TWh) – this resulted in renewable gases accounting for 9.2% of final gas consumption, according to industry association VSG (VSG 2025). Depending on the data basis, this corresponds to a ratio of physical feed-in to certificate purchase of approximately 1:7.

Table 3: Overview of gross and final gas consumption (2024)

in GWh	2024
Net imports of fossil natural gas	27'911
Biomethane feed-in	471
Gross consumption	28'382
Conversion for district heating and electricity generation	1'825
Own consumption, grid losses, and measurement differences	35
Final consumption	26'522

Own compilation, based on: (BFE 2025a).

According to the industry association VSG, end consumption of gas was almost entirely accounted for by the household (45%), services (20%), and industry (32%) sectors (VSG 2025). To put this into context: although the relative share of industry in final gas consumption is roughly the same as in Germany, in absolute terms German industry currently consumes more than 30 times as much gas as its Swiss counterpart (BDEW 2025). This difference is likely to be a decisive factor in the decarbonization of gas supply in Germany developing differently than in Switzerland.

Table 4: Overview of final gas consumption for heating and cooling by purpose (2024)

in TWh	Haushalte	Dienstleistungen	Industrie
Space heating and hot water	12.0	5.4	1.8
Process heat	0.1	0.0	7.8
TOTAL	12.0	5.4	9.6

Own compilation and calculation, based on: (INFRAS et al. 2025).

Detailed statistics on the specific uses of gas as an energy source in Switzerland are not available. However, Table 4 shows that gas is used almost exclusively for heat generation – in particular for decentralized heat production in gas heating systems and for the provision of industrial process heat. Another area of application is centralized heat production for local and district heating networks (see Table 3). By contrast, the use of gas for mobility and cooking is almost negligible. In 2024, for example, gas stoves accounted for only around 3% of total energy consumption for cooking in private households (INFRAS et al. 2025).

Final energy consumption for space heating, hot water, and process heat fell by around 18% to approximately 95 TWh between 2000 and 2024, due in part to declining heating degree days, improved building insulation, and efficiency gains in heating systems. Nevertheless, in 2024, just under half of domestic final energy consumption was accounted for by heat (including process heat); within buildings, the share for space heating and hot water was as high as 87%. Natural gas, biomethane, and other gases were particularly important, accounting for around 27% of the energy sources used. (INFRAS et al. 2025)

In 2024, around 310,000 residential buildings in Switzerland were heated with gas (BFS 2025b). This means that around a quarter of the resident population – around 2.3 million people – had gas heating (BFS 2025a). Most of the total 318,000 heating systems were decentralized systems, 336 of which were combined heat and power plants (VSG 2025).

Figure 1 shows that buildings are heated with gas, particularly in urban and densely populated peri-urban areas (or rural centers) – especially in the Lake Geneva region, northwestern Switzerland, and Zurich (BFS 2025a). The current importance of gas-based heating is demonstrated by the fact that in 2024, more than 30% of buildings in almost 350 municipalities were heated with gas (BFS 2025e). In private households alone, gas accounted for around 10 TWh of energy consumption for space heating and 2 TWh for hot water (INFRAS et al. 2025). In relative terms, gas is used particularly in larger apartment buildings (six or more apartments) and in buildings constructed between 1919 and 1945 or between 1991 and 2010 (BFS 2025b).

Figure 1: Percentage of buildings using gas as an energy source for heating (2024)

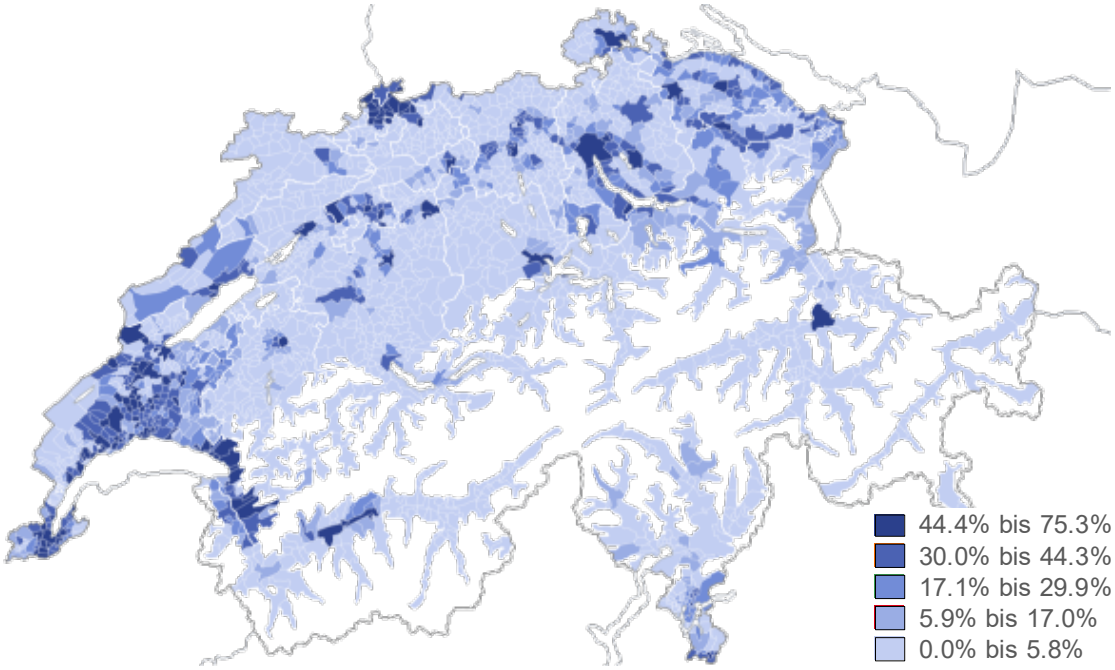
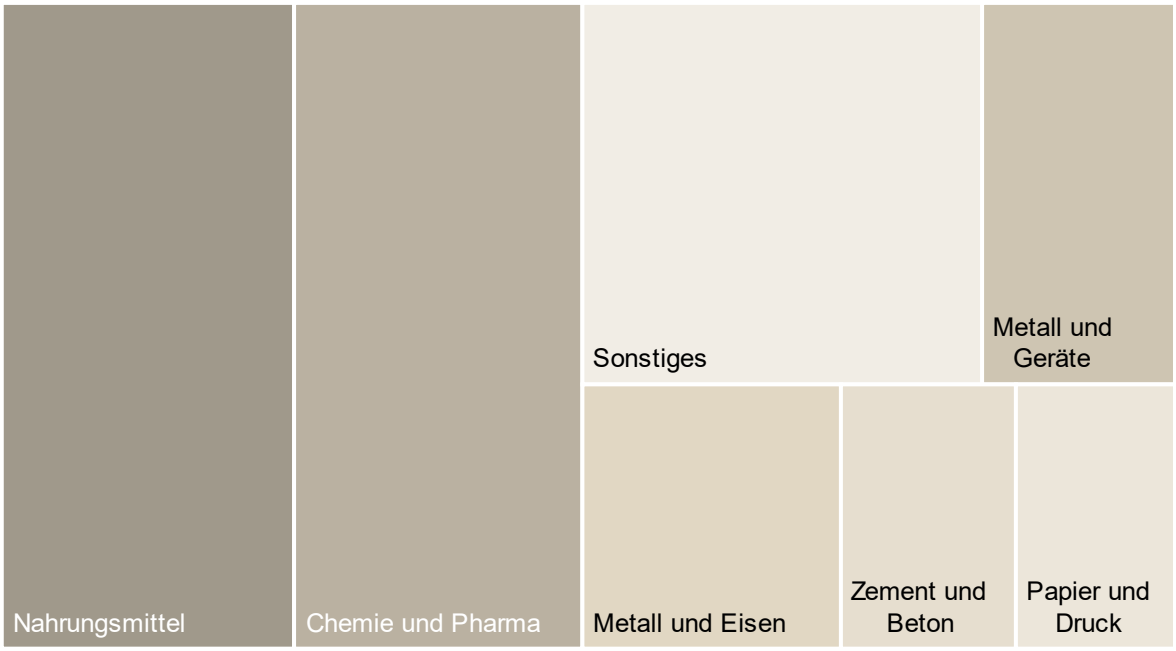


Image taken from: (BFS 2025c).

Table 3 shows that gas is also used for central heat production in thermal networks. The term «thermal networks» refers to district heating, local heating, and district cooling networks that supply thermal energy to several buildings on different properties. Of the 1'549 heating networks recorded in a database provided by the Swiss Federal Office of Energy, 102 plants used natural gas as their main energy source in November 2025 and a further 167 used it as an additional energy source (BFE 2025b). The latter suggests that fossil natural gas is widely used, particularly to cover peak loads. The industry association TNS estimates that in 2023, around 19% of the primary energy for district heating supplied to its member companies was generated using natural gas (TNS 2024). According to official figures, gas accounted for about 10% of energy used for district heating in 2024 (BFE 2025a).

In 2024, industry accounted for just under 90% of total process heat in Switzerland (22 TWh), with around one-third of this based on gas as an energy source. Forty-three percent of (total) industrial process heat was required for temperatures between 400 and 1'200°C, with a further 18% required for temperatures above 1'200°C. (INFRAS et al. 2025) It seems reasonable to assume that gas was used increasingly for such high-temperature applications in particular.

Figure 2: Overview of gas consumption in industry by sector (2024)



Own illustration, based on: (Helbling and Polyquest 2025).

Figure 2 shows that more than two-thirds of industrial gas consumption (across all uses) is accounted for by the food, chemical and pharmaceutical, metal and equipment, and metal and iron industries.

In summary, it can be said that gas currently plays an important role in Switzerland's energy economy, particularly in space heating, hot water, and process heating applications. Less clear from the available statistics is that around 1.8 TWh of gas is used to generate district heating and electricity, often to cover short-term peak loads in heating networks.

This raises the question of how Switzerland's gas supply could be decarbonized by 2050. Important insights into this are expected from the ongoing survey of gas suppliers and from interviews with experts representing the demand side (work package 3). At the same time, however, it is interesting to see what conclusions previous studies have already drawn.

The central question is which of today's gas applications (under economically viable conditions) can be replaced by alternative technologies and which, on the other hand, can be continued by defossilizing the energy source – i.e., by using renewable gases and a correspondingly adapted gas network infrastructure.

Thermal networks and heat pumps already offer technological alternatives to gas heating for decentralized heat generation in existing buildings. Although these are often more expensive to purchase at present, when the full costs are taken into account (including expected future increases in CO2 taxes), these technologies are likely to be economically viable for end customers in the medium term. It should also be noted that the demand for space heating is expected to decline by around 30% by 2050 – a decline that is likely to have a significant impact on future gas demand in Switzerland, regardless of decarbonization targets.

At the same time, it can be assumed that decentralized heating systems powered by renewable gases may continue to exist in Swiss municipalities beyond 2050 in certain cases – for example, for technical reasons in highly densely populated neighborhoods or in historic old town areas where alternative systems are only feasible to a limited extent.

To date, there are only limited technological alternatives available for central heat generation to cover peak loads in thermal networks (primarily fed by renewable energies). Biomethane and green hydrogen are likely to be used increasingly in this area of application. It will be interesting to see how the (expectedly rising) costs of such peak load coverage and thus the heat prices for end customers develop. This is due to both the expected higher energy carrier costs for renewable gases and the (assumed) significant increase in network usage costs for the gas network infrastructure in the medium term.

In the industrial sector, high-temperature process heat based on renewable gases is likely to be used from 2050 onwards only in cases where processes cannot be electrified or can only be electrified at very high technical and financial cost. A study by Prognos (2025) identifies high-temperature heat pumps and electrode boilers for steam generation in the food, paper, chemical, and pharmaceutical industries as potentially relevant electrification technologies for the provision of high-temperature process heat. Alternatives such as alternating current induction furnaces and indirect resistance heating are also mentioned for all areas of metal production and processing. (BFE 2019, 2023; Prognos 2025)

In some municipalities, it is also conceivable that supplying industrial production facilities with gas-based process heat will become difficult or even impossible if the gas network infrastructure is completely (and not just partially) shut down. This could have an impact on which energy-intensive industries continue to be based in Switzerland in the medium to long term.

Future gas applications are likely to have a significant impact on the design and importance of the gas network infrastructure. Distribution networks (<1 bar) intended exclusively for space heating and hot water production, as well as distribution networks in the range of 1 to 5 bar with low gas sales density (e.g., in rural regions or in neighborhoods connected to thermal networks) are likely to be decommissioned. Transport networks (>5 bar) and parts of distribution networks (1-5 bar) with large consumers that cannot be electrified and high gas sales density, on the other hand, are expected to continue to exist in the medium term. The conversion of the Swiss gas network to renewable gases will probably not take place simultaneously across the board by 2050, but rather in sections in sub-networks that are hydraulically independent of the main network. The definition of such sub-networks is likely to depend, among other things, on regional production and consumption structures, network topologies and infrastructure connections, gas quality, and coordination between distribution network operators, high-pressure network operators, cantons, and municipalities. (BFE 2019; Schweizerische Eidgenossenschaft 2024; CH42 Initiative 2025 (forthcoming))

2.2.3. Data sets characterizing gas suppliers and municipalities supplied with gas

As mentioned at the outset, the clusters of gas suppliers identified in collaboration with representatives of the SVGW, which were previously based exclusively on technical and energy industry criteria, are to be further refined in work package 2 by combining them with additional data sets. A comprehensive data collection exercise was carried out in preparation for this task. The aim was to collect data that would enable a sufficient characterization of both the gas suppliers themselves and the municipalities they supply.

Based on the project team's experience from numerous practical projects, several hypotheses on possible cluster criteria were formulated in the research proposal. These assume that Swiss gas suppliers can be clustered based, among other things, on the political, financial, and technological starting situation with regard to the future decarbonization of local gas supply. Relevant criteria therefore include, for example

- the decarbonization ambitions of political decision-makers,
- the owner's economic dependence on the gas business, and
- the existence of competing technologies to current natural gas applications, particularly in the heating sector and local industry.

To operationalize these criteria, the data sets listed in Table 5 were collected. These relate to the 104 gas suppliers listed by the industry association VSG in its 2023 annual statistics with end customers, or to the largest municipality in the respective supply area.

Table 5: Overview of datasets used to characterize gas suppliers and municipalities

Description	Reference year	Origin	Source	Data completeness
Gas sales to end consumers[1]	2023	VSG	VSG 2024	Complete
Revenue, net income, distribution (total or gas sector)	2023	Gas suppliers or municipalities	Annual reports	Partial
Gas network infrastructure (AHK, book value, AfA p.a.)	2023	Gas suppliers or municipalities	Annual reports	Partial
Ownership structure	2025	Gas suppliers	Internet research	Partial
Legal form	2025	Gas suppliers	Internet research	Complete
Cantonal requirements for heating replacement (share of renewable heat)	2025	Location cantons	EnDK BFE 2025	Complete
Municipality typology	2023	BFS	BFS 2025a	Complete
Population	2019	BFS	BFS 2021	Complete
Taxable income per capita	2017	ESTV	BFS 2024	Complete
Political majorities	2019	BFS	BFS 2021	Complete
Energy City label	2025	Trägerverein Energiestadt	Trägerverein Energiestadt 2025	Complete
Share of gas-heated buildings	2024	BFS	BFS 2025c	Complete
Share of heat sources in buildings	2025	BFS	BFS 2025b	Complete

[1] Excluding direct sales by regional companies. Gas supply area may extend beyond municipal or cantonal boundaries. Partial hydrological year 2023/24.

2.2.4. Key findings from existing surveys of the supply side

In 2025, Swiss gas suppliers were surveyed by two organizations: the consulting firm EVU Partners and the CH42 initiative. The results of the EVU Partners survey were published in a gas and heating market study, while the results of the CH42 initiative will be published in the first results report at the end of November. The EVU Partners survey covered 39 gas suppliers of various sizes from German-speaking Switzerland and was conducted electronically in the first quarter. Between April and June, the CH42 initiative surveyed 20 distribution network operators from all regions of Switzerland and supplemented the feedback with current gas statistics from the industry associations SVGW and VSG from 2024.

The key findings from both surveys that are relevant to work package 2 are summarized below.

a. EVU Partners 2025: Gas and heating market study (EVU Partners 2025)

- The survey reveals three key challenges for the decarbonization of local gas supply: First, recognition of the carbon neutrality of imported renewable gas is perceived as by far the biggest obstacle. Second, the procurement of renewable Swiss gas poses an equally significant structural challenge. Third, providing suitable alternatives for gas customers in the event of a shutdown of the gas network infrastructure (e.g., connection to a thermal network) is considered a key operational challenge for the coming years.
- The survey also shows that there is currently little demand for renewable hydrogen: 64% of the gas suppliers surveyed report no customer interest whatsoever, while 36% have only received isolated inquiries about basic availability. According to the feedback, there is currently no significant or concrete interest in demand.
- About the future sales structure, utilities anticipate a significant increase in renewable gases: by 2030, they expect an average of around 24% biomethane and around 3% green hydrogen. By 2035, these shares are expected to rise to 35% and 9% respectively. Finally, a significant change is forecast for 2040, with biomethane accounting for around 51% and hydrogen for 19% of end customer sales.
- The results show that gas suppliers expect a significant reduction in gas network infrastructure by 2050: only a moderate decline is expected for (local) transport pipelines (-6% by 2040, -8% by 2045, and -12% by 2050). Distribution pipelines, on the other hand, would be much more severely affected; here, companies expect decommissioning rates of -36% by 2040, -51% by 2045, and -67% by 2050. The authors of the study explain the comparatively low level of dismantling of transport pipelines by the fact that these are still needed to supply process gas customers and heating plants. This is consistent with feedback from utilities: in 19 of the 23 district heating networks that have recently been commissioned, peak load coverage is provided using gas as an energy source.
- The utilities surveyed are clearly pessimistic about short-term profit development in the gas and heating business: 80% expect lower profits in 2030 than today, while 10% expect stable or higher results. Negative expectations also prevail for 2040: 60% of utilities expect profits to decline, while 20% expect them to remain stable or increase. A more positive trend is only emerging for 2050: 40% of those surveyed expect higher profits and 30% expect stable profits, while only 30% anticipate a decline. The authors of the study attribute the pessimistic outlook primarily to the foreseeable decline in gas sales, which is likely to have a significant impact on utilities' profits in the coming years. In addition, the necessary investments in the expansion of thermal networks will initially result in high interest costs and depreciation—while revenues remain low. By 2050, however, the planned decommissioning of the gas network infrastructure should be largely complete and the targeted heat sales achieved, which should lead to a renewed improvement in the profit situation.

b. Initiative CH42: 1st results report (CH42 Initiative 2025 (forthcoming))

- According to current scientific and technical knowledge, the high-pressure network is almost completely H2-ready. 77% of the distribution network kilometers analyzed by the participating network operators are already suitable for the use of all renewable gases due to the materials used and their age.
- According to current scientific knowledge, modern plastic pipes (PE 100/PE 100 RC) built after 1990 and steel pipes built after 1980 meet the requirements for hydrogen operation. 91% of polyethylene pipes (1-5 bar) and 74% (<1 bar) as well as 72% of steel pipes (1-5 bar) and 69% (<1 bar) were laid after 1990 and should therefore be H2-ready.
- 71% of the 17 gas network operators who responded have already begun or are planning to systematically check the H2 readiness of their networks. Most of the fittings, control and measuring systems installed are considered H2-compatible or can be adapted in the short or medium term with manageable effort. Gas network operators already predominantly use H2-ready components, which can be replaced or supplemented during regular renewal cycles without significant additional costs.
- The transition to renewable gases does not require a fundamental redesign of the feed-in points; the existing structures can be used and gradually expanded. Around a quarter of the 17 gas network operators who responded have already identified or are planning sub-networks in which there is a temporary surplus of renewable gases fed into the grid due to seasonal fluctuations in local demand. Numerous gas network operators are preparing the distribution networks for an increase in the feed-in of renewable gases and for their bidirectional transport; This will ensure that the amount of renewable gases fed into the grid is always in line with consumption.
- The considerable capacity reserves in existing distribution networks create scope for absorbing increasing amounts of renewable gases in the future and reliably balancing out regional fluctuations in feed-in volumes. The existing pressure levels and network structures allow peak loads to be managed and different seasonal or cyclical supply requirements to be met.
- Just under half of the 13 gas network operators who responded are interested in connecting to a European hydrogen transport network, which is currently scheduled for completion in the Germany-Switzerland border region in 2032.
- According to the estimates of the 15 gas network operators that responded, just under three-quarters of household customers and more than half of industrial and commercial customers and heating plants are interested in using biomethane; by contrast, only around a quarter of commercial and industrial customers and 16% of heating plants are interested in using hydrogen.
- For five of the 14 gas network operators that responded, biomethane currently accounts for 11-25% of total deliveries, and for two gas network operators, the figure is even higher. Around one-third of gas network operators assume that more than a quarter of their customers would be willing to pay a surcharge of at least 25% for the ecological added value of renewable gases.
- Thirteen of the 17 gas network operators who responded have industrial or commercial customers who cannot replace gas as an energy source or can only do so at great technical and financial expense.

2.3 Work package 3: Analysis of the demand side

Work package 3 analyzes future gas demand in individual demand sectors and the potential of competing technologies for current natural gas applications. Methodologically, the project proposal envisages semi-structured interviews with experts from industry, the mobility sector, and municipal energy departments. While selecting potential interview partners, it became apparent that the expertise of the Energy City consultants (Energiestadt-Berater) of the Energy City association (Trägerverein Energiestadt) in the field of municipal energy planning could also provide valuable insights. The originally planned list of interview partners was therefore expanded accordingly (see Table 6).

Table 6: Overview of expert interviews on the description of future gas demand

Focus	Organization	Function	Date
Municipalities	EnDK	Secretary General	to be agreed
Municipalities	SSV	Head of Energy and Climate Policy	Jan 6, 2026
Municipalities	City of Zurich	Energy Officer	Jan 9, 2026
Municipalities	City of Wil	Head of Energy Department	Nov 24, 2025
Municipalities	City of Aarau	Co-Head of Environment and Climate	Nov 24, 2025
Municipalities	City of St. Gallen	Co-Head of Environment and Energy	Nov 27, 2025
Municipalities	econcept	Energy City Consultant	to be agreed
Municipalities	Amstein + Walthert	Energy City Consultant	to be agreed
Industry	Enerprice	Managing Partner	to be agreed
Industry	Swiss Brick Industry	Managing Director	Jan 27, 2026
Industry	Migros	Head of Energy Efficiency & Climate Protection	Jan 15, 2026
Industry	Syngenta	Head Decarbonization Plant Monthey	Jan 27, 2026
Industry	Lonza	Head Energy Management	to be agreed
Mobility	Empa	Head of Vehicle Systems Department	Jan 15, 2026
Mobility	AMAG Energy & Mobility	Managing Director	Jan 16, 2026
Heating networks	TNS	Managing Director	Jan 16, 2026

Initial discussions with municipal representatives have already taken place. The remaining interviews and the evaluation of the results are scheduled for the first few weeks of 2026. Due to the limited number of interviews conducted so far, we will refrain from presenting the initial interim results from this work package at this point.

3 Conclusions and outlook

The interim results of the TRANSFORMGAS project already underline the profound structural changes facing the Swiss gas industry on its path toward climate neutrality. The analyses conducted to date show that the relevance of gaseous energy sources in Switzerland are expected to continue to diminish, particularly in the building sector, while future application fields of renewable gases will likely become more specialized and concentrated, for example in industrial high-temperature processes and in the provision of peak load capacity for thermal networks. At the same time, the decarbonization of the gas supply is emerging as a complex coordination task in which political requirements, technological developments, and local boundary conditions interact in ways that vary considerably between municipalities and gas suppliers.

The literature review, the characterization of gas suppliers and municipalities, and the evaluation of existing industry surveys indicate that the transformation will probably not follow a uniform national trajectory, but rather a plurality of local pathways shaped by political ambition, infrastructure constraints, economic dependencies, and the availability of alternative technologies. The initial findings from our own survey reinforce this impression and confirm that decision-making processes and strategic orientations differ substantially across Switzerland. These differences will need to be taken into account when developing cluster-based transformation pathways and business model options in the next stages of the project.

The findings from WP1 to 3 provide a robust empirical and conceptual basis for advancing the project. WP4 will build on this foundation by developing ideal-typical decarbonization strategies for municipal gas suppliers, drawing on innovative business models suited to a future decarbonized gas and heating market. This work package integrates systematic literature reviews, expert interviews, and co-creation workshops with representatives from selected municipalities and gas suppliers. Together, these activities will support the development of a comprehensive characterization of decarbonization strategies for four sample municipalities (Basel, Zurich, St.Gallen, and Grenchen) and the formulation of ideal-typical transformation pathways for municipalities and multi-utility companies.

4 National and international cooperation

During the current year, an active exchange was established with the CH42 initiative, in which 20 gas distribution network operators and five high-pressure network operators participate alongside the industry associations SVGW and VSG. Together, these organizations transport around 60% of domestic gas sales and operate almost 50% of the distribution network and 98% of the high-pressure network kilometers in Switzerland. (CH42 Initiative 2025 (forthcoming))

In the summer of 2025, participating distribution network operators were surveyed electronically about the technical condition of their gas network infrastructure about the transmission of renewable gases (biomethane, hydrogen). The final report will be officially published at the end of November 2025; however, the authors of this interim report were able to view the initial interim results in October and compare their own questionnaire to Swiss gas suppliers (work package 2) with the CH42 survey. This was necessary because the organizations surveyed in both surveys largely overlap.

Further in-depth exchanges between the research project and the CH42 initiative are planned for the coming year. The participating gas suppliers should make it much easier to recruit suitable industry representatives for business model verification and for identifying ideal transformation paths as part of the planned co-creation workshops (work package 4).

In addition to establishing contact with gas network operators, a network of national gas experts was also set up during the year. These are primarily representatives of consulting firms that support the Swiss gas industry in developing decarbonization strategies and network development plans (e.g., EVU Partners, Hanser Consulting, EBP Switzerland, Renera, and Polynomics). As these organizations generally support several gas suppliers, exchanges with this network are likely to be particularly valuable as the project progresses – especially for verifying the hypotheses developed based on primary and secondary data.

5 Publications and other communications

Due to the short project duration, no publications have been released in scientific journals or industry trade magazines to date.

However, the University of St.Gallen hosted a Gas Conference on October 1, 2025. Organized by the Competence Center Energy Management, the event focused on overarching transformation paths and concrete initiatives for climate-neutral gases and provided an opportunity to present the research project to a broader specialist audience. This platform can also be used in the coming years to proactively share the project results with municipalities and gas suppliers.

During an exchange about access to the newsletter archive of the information service *energate messenger Switzerland*, which specializes in the German-speaking energy industry (for the analysis of publicly communicated gas decommissioning strategies of municipalities), the project team was also invited to present the research results at an industry event in 2026. This provides an opportunity to make the study results visible beyond national borders.

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