

DHC in Switzerland: Long-term goals

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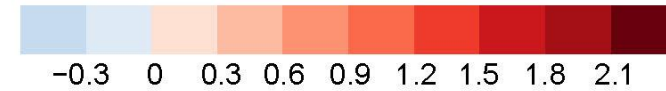
Agenda

1. Overview of the net-zero by 2050 target and the projected transformation path
2. Levels of governance: Jurisdictions and cooperation
3. Financing and subsidies in the energy sector

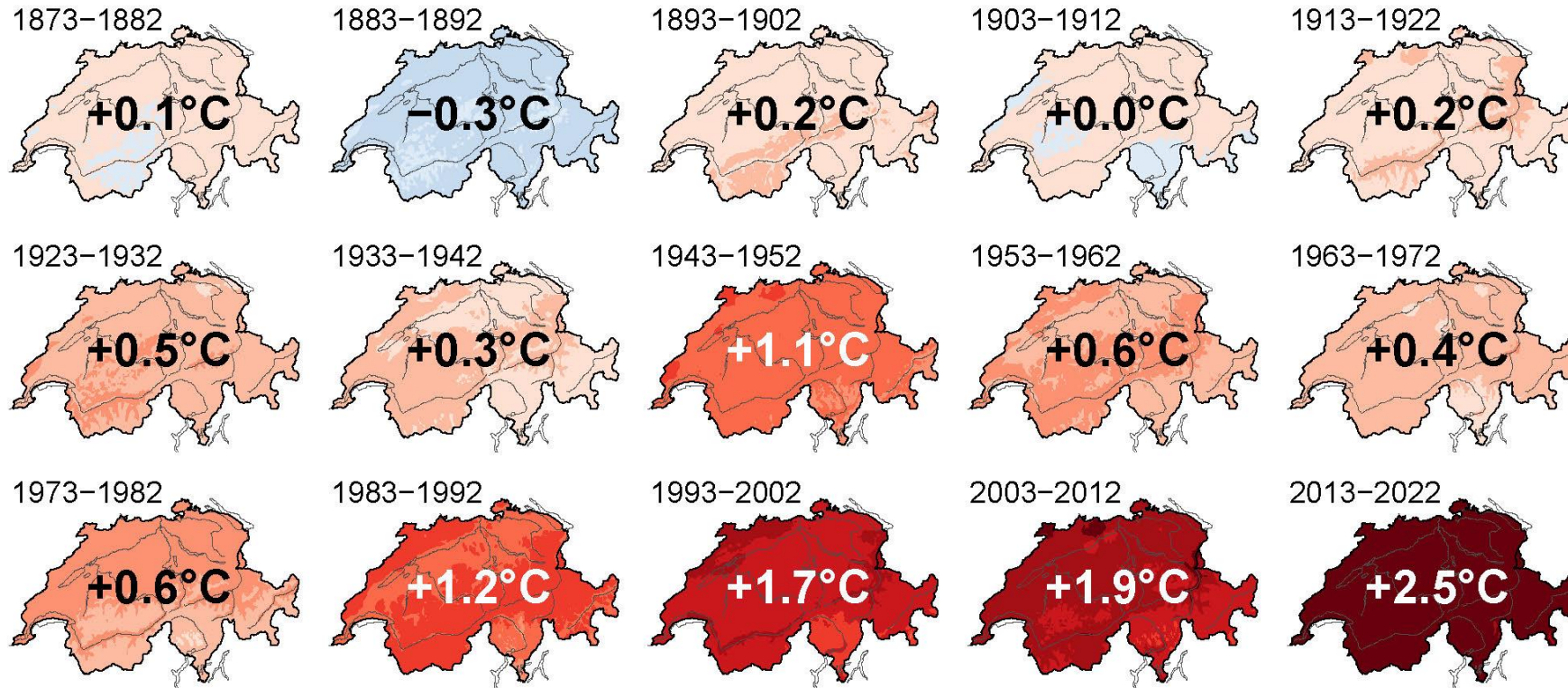
Climate situation Switzerland

Temperatur in der Schweiz
 Température en Suisse
 Temperatura in Svizzera
 Temperature in Switzerland

Abweichung / déviation / deviazione / deviation 1871 – 1900 [°C]



© MeteoSchweiz / © MétéoSuisse / © MeteoSvizzera / © MeteoSwiss



Swiss temperature since 1864. Each year has a different color. Years coded in red are warmer, years coded in blue are colder than the average of the years 1961-1990.



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Source: Meteo Schweiz <https://www.meteoswiss.admin.ch/climate/climate-change.html>



Climate Change Scenarios

dry summers



less precipitation
more evapotranspiration
drier soils

heavy precipitation



more intense and more
frequent heavy precipitations

more hot days



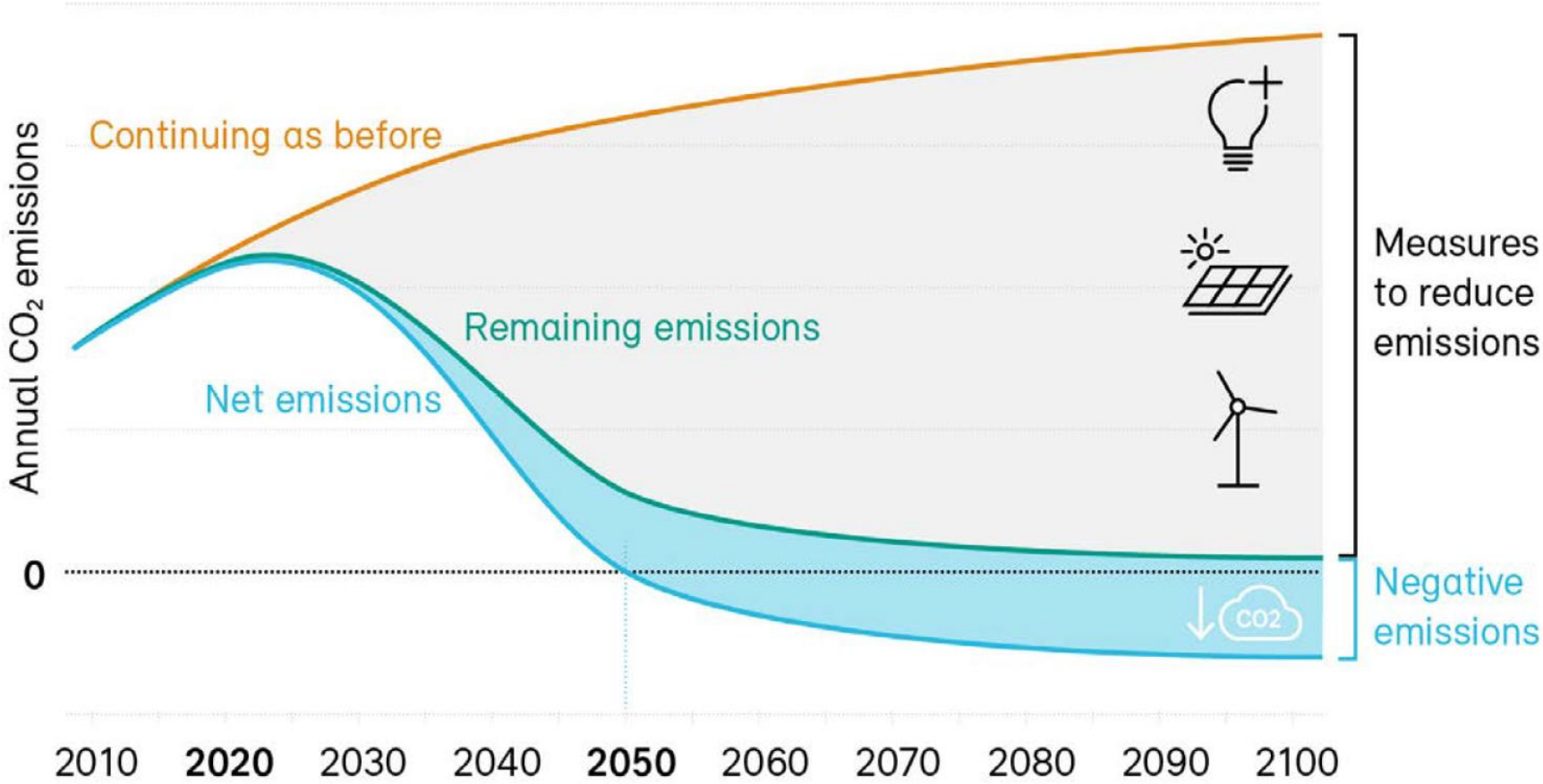
above-average increase in
maximum temperatures
more intense heat waves

snow-scarce winters



zero degree line rises
precipitation falls
increasingly as rain

Long-term climate strategy: Net zero by 2050



1. Avoidable emissions remove

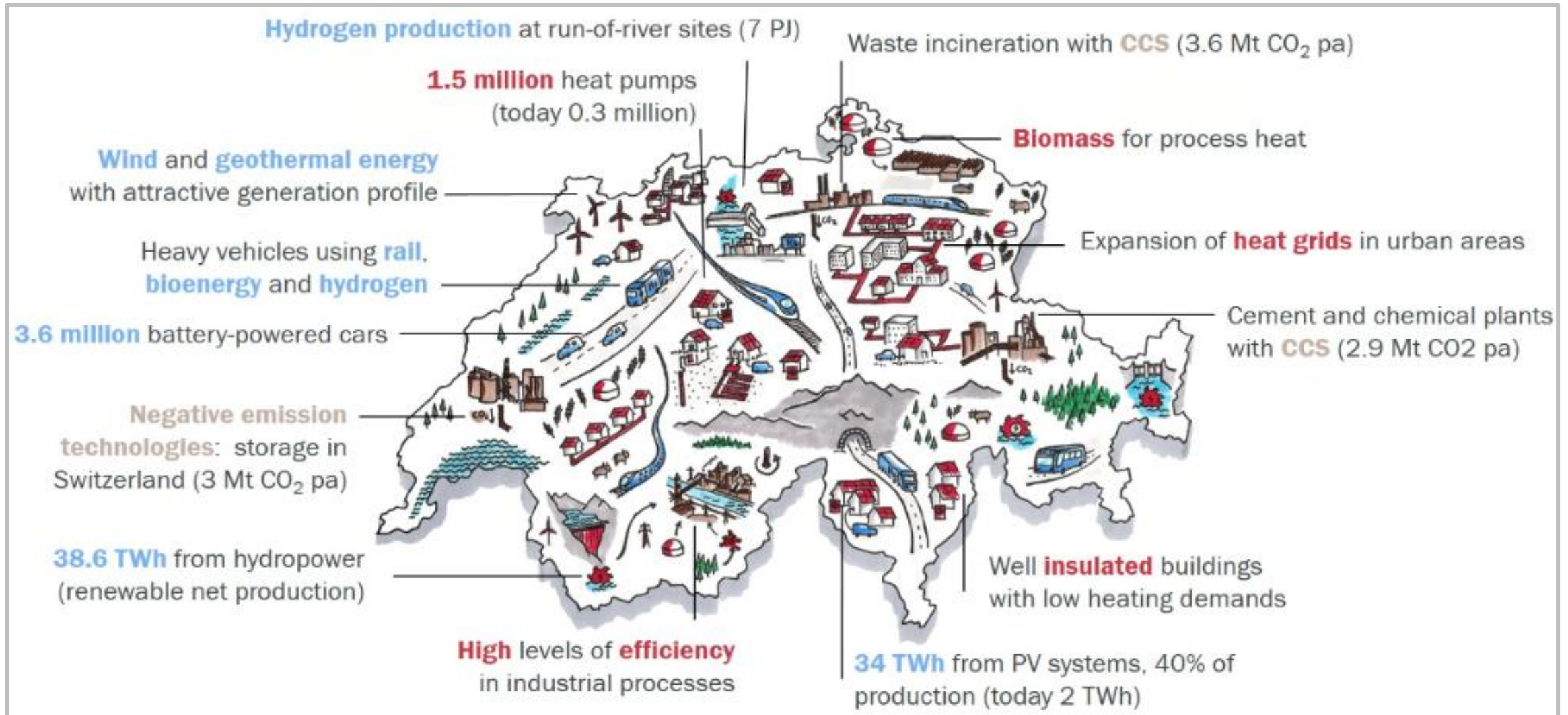
2. Compensate difficult-to-avoid emissions with NETs

Net zero is an interim goal

Source: SFOE - Switzerland's Long-Term Climate Strategy and the Role of Negative Emission Technologies
<https://www.bafu.admin.ch/bafu/en/home/topics/climate/info-specialists/emission-reduction/reduction-targets/2050-target/climate-strategy-2050.html>

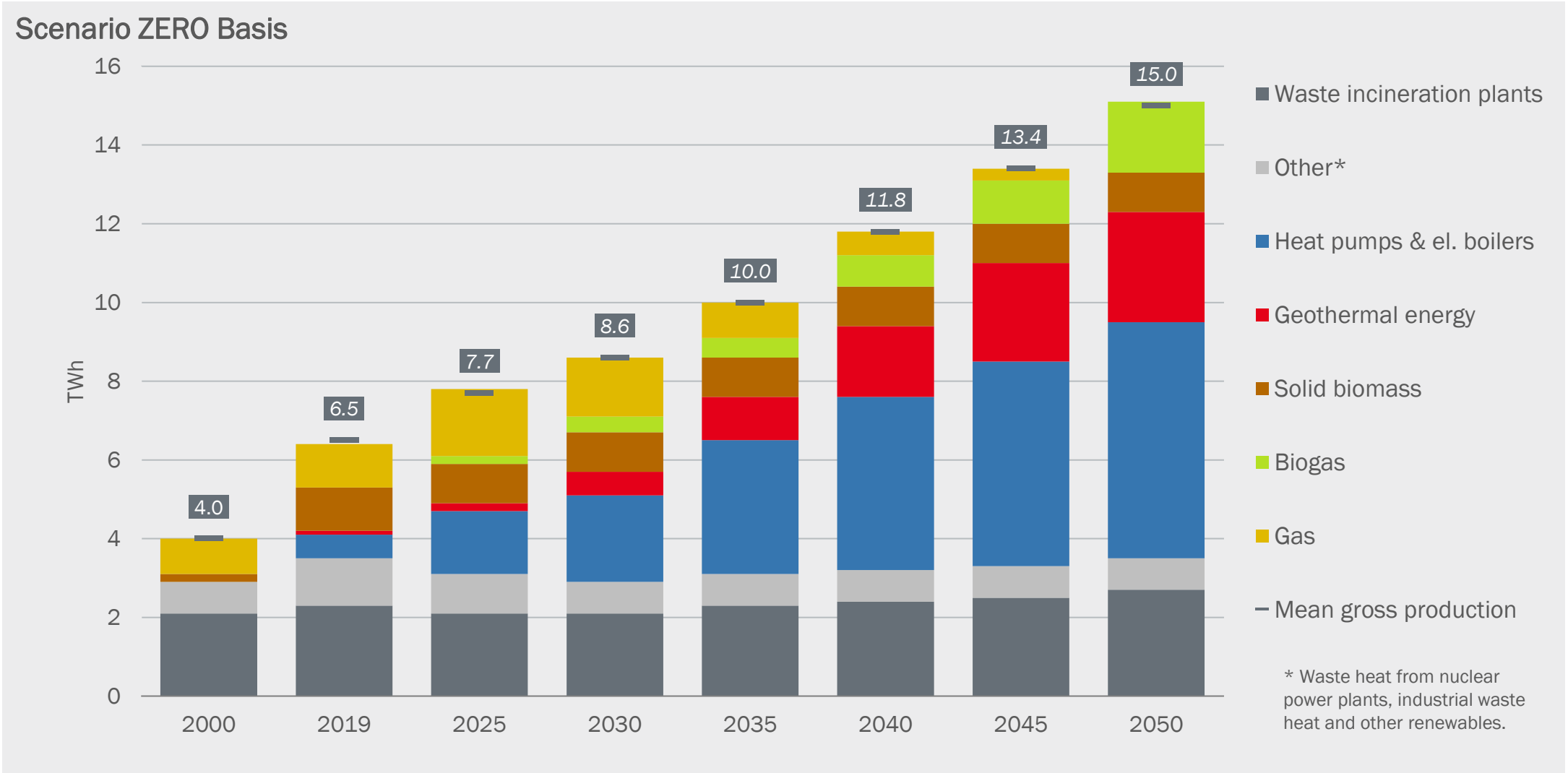
Energy Perspectives 2050+

Objectives for a climate-neutral Switzerland by 2050



Energy perspectives 2050+

Production of district heat



Energy perspectives 2050+ Costs

Accumulated figures 2020 to 2050 in all sectors:

Total additional costs of 73 billion CHF*, of which

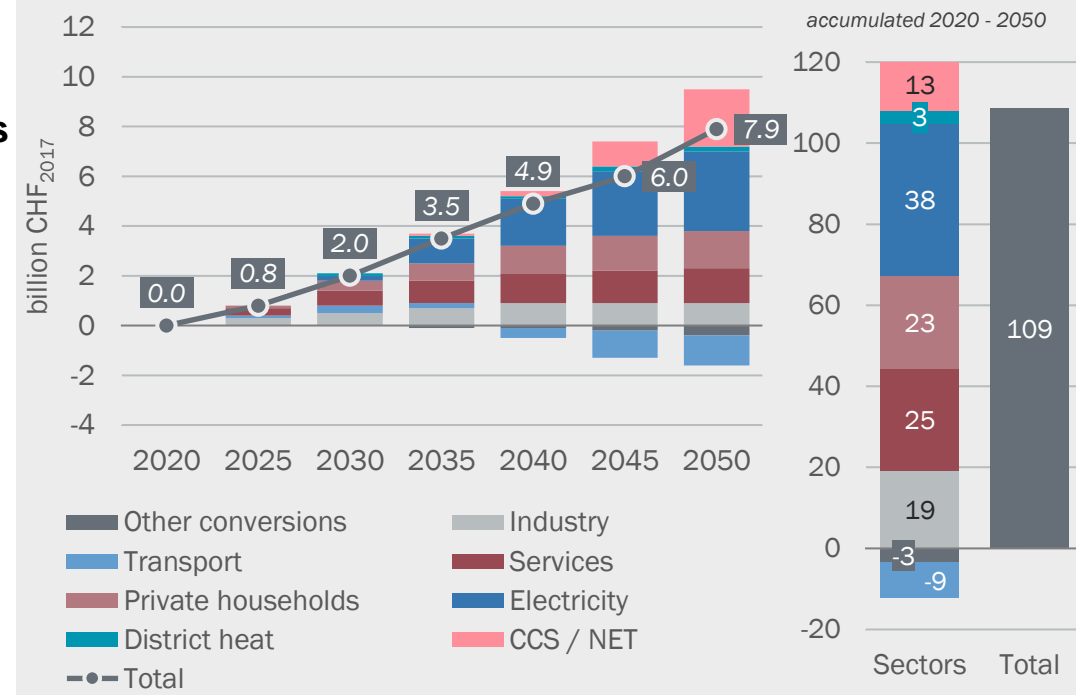
- annualised investments: 109 billion CHF
- maintenance costs: 14 billion CHF
- saved energy costs: -50 billion CHF

Additional investments of 109 billion CHF means an increase of 8% compared to the existing investments in the energy system of 1'400 billion CHF

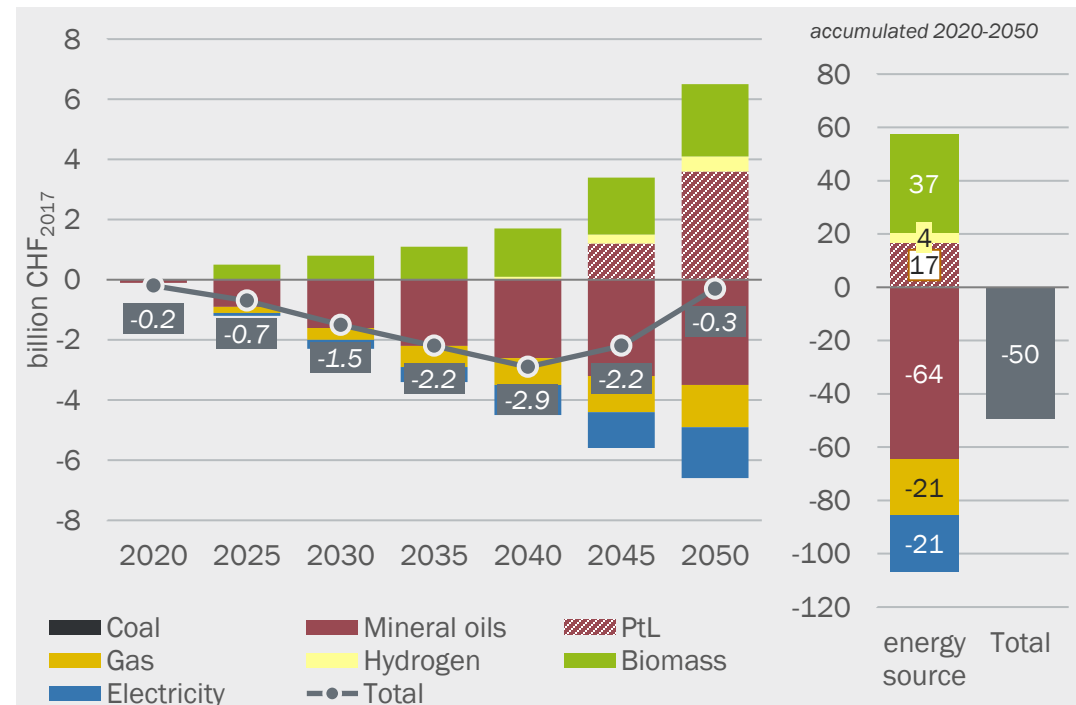
Average annual additional costs (2020 to 2050):
2.4 billion CHF/a

* CHF in real terms at 2017 prices

Annualised difference investments



Saved Energy costs



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Source: Prognos AG / TEP Energy GmbH / Infrac AG / Ecoplan AG (2020)
<https://www.bfe.admin.ch/bfe/en/home/policy/energy-perspectives-2050-plus.html/>

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Thermal networks: Activities at federal, cantonal and municipal level

Federal Department of the Environment, Transport, Energy and Communications DETEC:

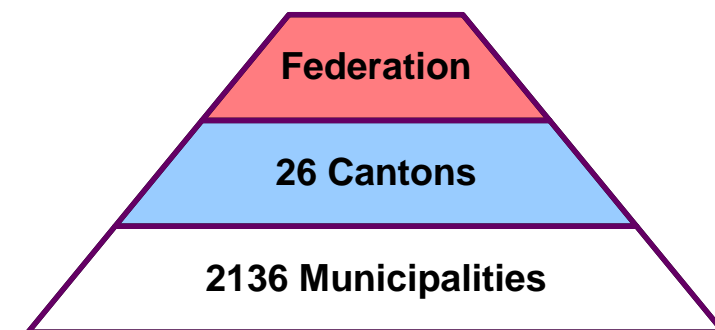
- Federal constitution, acts and ordinances
- Energy, Transport, Environment, Spatial Development and Communication

Canton:

- 26 different cantonal energy acts
→ Requirements for efficiency and renewable energies
→ Financial promotion
- Coordination of energy-related activities (Conference of Cantonal Energy Directors EnDK)
- Energy efficiency in companies
- Licensing power plant facilities
- Assisting with energy planning (Spatial energy planning)
- Co-owners of energy companies and act as role models in the energy sector together with the federal government and municipalities.

Municipalities:

- Spatial energy planning
- Energy promotion programs
- Responsible for their own energy production facilities
- Implementation of cantonal regulations and federal legal provisions



Source: Städte, Gemeinden, Kantone und der Bund unterzeichnen Charta zur Beschleunigung des Ausbaus thermischer Netze
<https://www.admin.ch/gov/de/start/dokumentation/medienmitteilungen.msg-id-89991.html>

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Financial support for thermal networks

Federal law on the reduction of CO₂ emissions (CO₂ Act)

Federal funding via CO₂ tax on all combustible fossil fuels (e.g. heating oil, natural gas):

- 120 CHF/t CO₂ (30 ct. per litre)
- National Buildings Programme: Global contributions to the cantons

Cantonal subsidy programs:

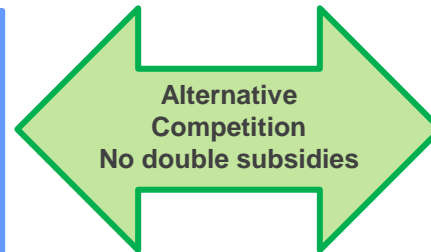
- 410 mil. CHF from federal and 170 mil. CHF from cantonal government (for 2022)
- Buildings
- Replacement of heating system
- Construction of thermal networks

Financing by mineral oil companies via tax on fossil motor fuels with a cap of up to 5 ct. per litre.

CO₂ compensation projects at domestic and international level. In the domestic market in four compensation areas:

- Transport
- Companies
- Buildings
- Agriculture

Foundation KliK pays up to 160 CHF/t CO₂



Source: Das Gebäudeprogramm
<https://www.dasgebaeudeprogramm.ch/de/>

klik Stiftung Klimaschutz
und CO₂-Kompensation KliK

Source: KliK <https://www.klik.ch/home>

Source: Projekte und Programme zur Emissionsverminderung
und Erhöhung der Senkenleistung
<https://www.bafu.admin.ch/bafu/de/home/themen/klima/publikationen-studien/publikationen/projekte-programme-emissionsverminderung-inland.html>



Financing of district heating

Results of a survey on the current and future financing of district heating expansion

Study commissioned by the Swiss Federal Office of Energy, EnergieSchweiz and the National District Heating Association (2021)

- High equity ratio
- High investments in the last ten years
- High level of self-financing
- Mainly short maturities of debt financing.
- Future investments with a higher share of debt capital and longer maturities
- Investments of surveyed companies:
 - One-third of the companies have ideas of investment by 2050
 - around 290 mil. CHF per year
 - around 4.3 billion CHF by 2050
 - total estimation of around CHF 25 billion by 2050.
- Biggest challenge is profitability and framework conditions, not financing

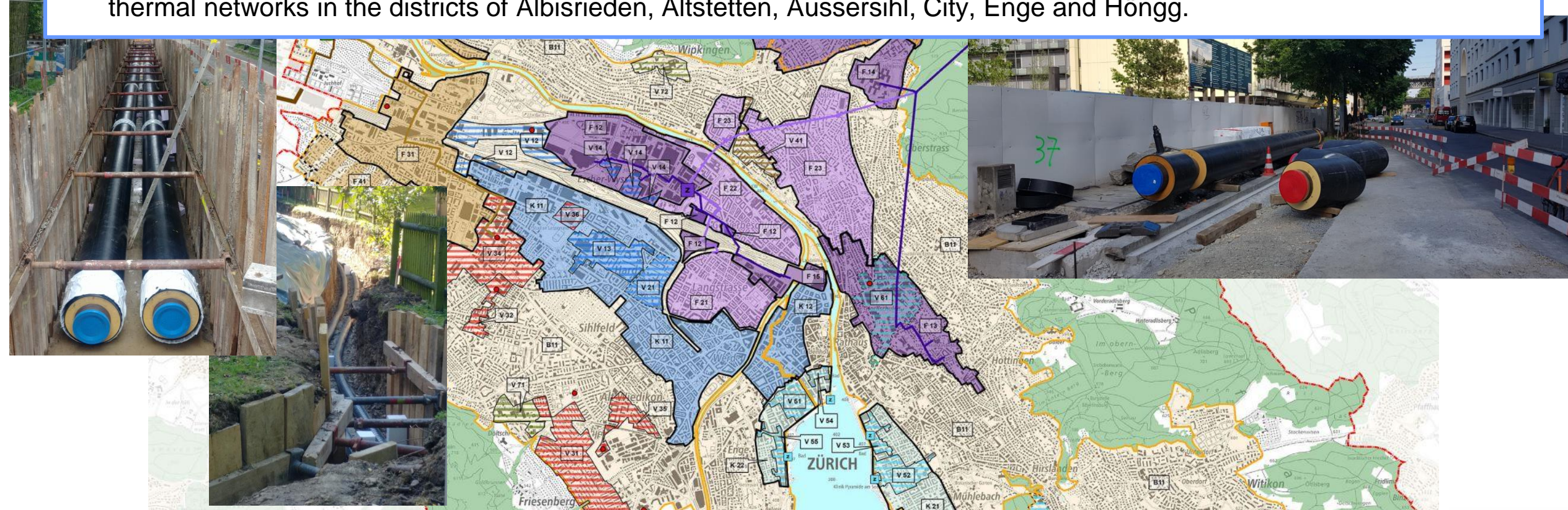
Conclusion

- Climate change is a reality and has high cost implications
- Net zero is a major challenge and has no alternative, is technically feasible and can be financed.
- Thermal networks play a central role in decarbonization.
- Agreement on all political levels that the framework conditions must be improved.

Example: Zurich

The city of **Zurich** wants to reduce CO₂ emissions to **net zero by 2040**. One of the most urgent and effective projects is the replacement of fossil-fuelled heating systems, which cause around 50 percent of direct CO₂ emissions in the city.

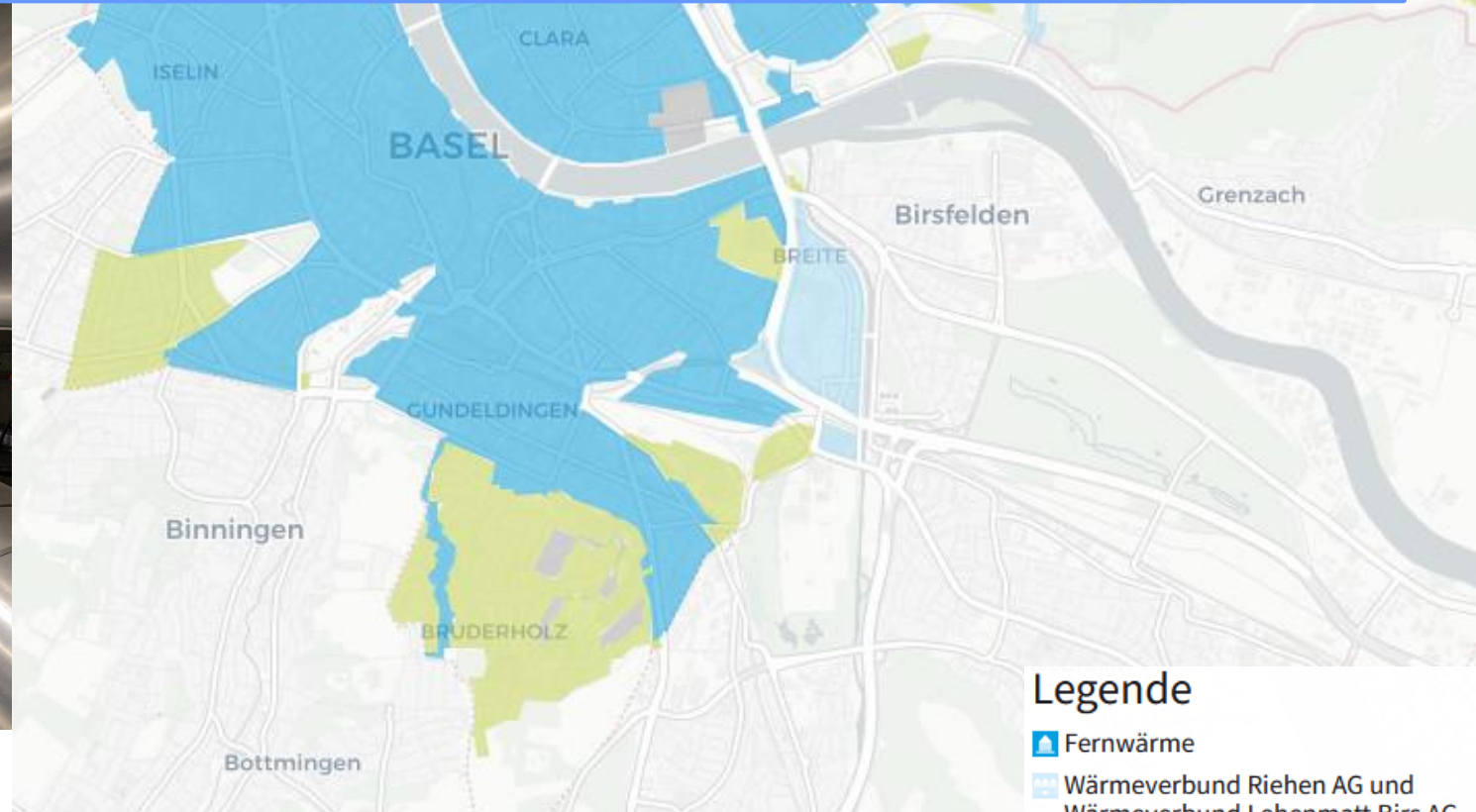
- Expansion of existing thermal networks
- New thermal networks in multiple areas in accordance with municipal energy planning and supplied with renewable heating and cooling energy.
- In the referendum of 27 November 2022, a framework credit of **CHF 573 million** was approved for the expansion of the thermal networks in the districts of Albisrieden, Altstetten, Aussersihl, City, Enge and Höngg.







Example: Basel

By around **2035**, the existing district heating network is to be further densified and additional urban areas integrated into the grid-based, CO₂-neutral heat supply.

- The project foresees investments of **CHF 460 million** by the Industriellen Werke Basel IWB.
- The majority of the investment (248 mil. CHF) is to be financed through district heating tariffs. The rest will come from connection contributions (42 mil. CHF), IWB's own funds (60 mil. CHF) and an interest-free loan from the canton of Basel-Stadt (110 mil. CHF).



Legende

-  Fernwärme
-  Wärmeverbund Riehen AG und Wärmeverbund Lehenmatt Birs AG
-  Wärmeverbünde
-  Erd- oder Umweltwärme

Sources:

<https://www.regierungsrat.bs.ch/nm/2020-ausbau-der-fernwaermeversorgung-in-basel---460-millionen-franken-investitionen-fuer-den-klimaschutz-rr.html>

https://www.iwb.ch/ueber-uns/newsroom/medienmitteilungen/artikel~_archiv_W-rme-im-Wandel-zum-Nutzen-f-r-Basel~

Thank you for your attention!

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