



Heat Pump Day

Summary, Tuesday 2 September 2025

Unlimitrust Campus, Lausanne

Summary – Heat Pump Investment Day

Lausanne, 2 September 2025

On 2 September, E4S brought together 26 participants representing utilities, investors, researchers, politicians, and impact experts to align on the technological state of the art, systemic feasibility and investment frameworks needed to accelerate the deployment of heat pumps in Romandie. The group specifically examined a concrete proposal from Services Industriels de Genève (SIG) and the Caisse de prévoyance de l'État de Genève (CPEG), which suggest creating communal-backed asset-holding structures supported by cantonal guarantees or other forms of public de-risking. This would operate in parallel with a progressive fossil fuel phase-out, targeted building renovations and the promotion of energy-sufficient behaviours.

Context and Motivation

To achieve the 2050 net-zero objective, Switzerland must accelerate the deployment of heat pumps from the current level of approximately 400,000 units to around 1.5 million. Heating remains the single largest source of energy demand in Swiss buildings, accounting for about 70% of their consumption and more than one-fifth of national CO₂ emissions. While heat pumps are becoming the standard in new constructions, their adoption within the existing building stock remains limited. Older multi-family residences, heritage properties and commercial buildings in particular still rely heavily on fossil-based systems. Advancing this transition is a cornerstone of both national and cantonal climate strategies and requires coordinated action among energy and technology providers, policymakers, the financial sector, as well as building owners and tenants.

Central role of public governance and communes for an efficient energy transition

Harmonized infrastructure upgrades are pivotal to the energy transition. Public authorities can establish clear and ambitious rules, such as renovation obligations, the phase-out of fossil boilers and regulatory harmonisation across cantons and communes. They can also streamline permitting processes, promote best practices and support workforce training to accelerate high-quality installations. By de-risking large investment projects, for instance through public guarantees, authorities can provide the stability and credibility necessary to mobilise private capital. Because regulatory and administrative differences exist not only between cantons but also across communes, the suitability of heat pump technologies (such as air-water or geothermal) depends on coherent territorial planning and investments in complementary infrastructure, including renewable electricity, district heating and geothermal networks. While most heat pumps in Switzerland currently source heat from the air, the cantons of Geneva and Vaud promote more efficient geothermal systems, which capture heat from the ground, underground water, or district heating pipes. A heat pump operates much like a refrigerator in reverse: it uses a working fluid to absorb low-level heat and then “boost” it, for example with renewable electricity from solar panels. This is why a single unit of electricity can deliver up to four units of usable heat (Coefficient of Performance, COP=4). Future technological breakthroughs (such as adapting heat pump designs to turbo compressors) could push efficiency even further.

Challenge of retrofitting existing buildings without overburdening owners and tenants

Pilot projects in Geneva have demonstrated that replacing fossil systems with heat pumps in existing urban buildings is technically feasible and can deliver substantial emissions reductions, even without deep renovation. However, not every building is suitable and individualized solutions remain economically challenging. Poor insulation can limit efficiency (as reflected in the COP) and undermine return on investment, while limited space complicates the installation of external units or geothermal boreholes. In dense neighborhoods, noise constraints or fire-safety regulations add further obstacles. Upfront costs also remain a significant barrier: replacing a fossil boiler in a single-family home may cost CHF 10,000–12,000, whereas installing a heat pump can require CHF 40,000–70,000 (depending on whether it is an air-water or geothermal system) or even several hundred thousand francs for individualized solutions in larger buildings, due to the lack of standardized large-scale modules. Moreover, long-term energy savings and the risk of asset depreciation in the case of inaction are often uncertain and excluded from cost calculations. As a result, owners are inclined to prioritize the lowest upfront cost, even though subsidies for heat pumps exist and the long-term efficiency and emissions benefits are evident.

Financing Options

Deploying heat pumps at the necessary scale will require billions of francs in investment, which cannot be mobilized without new models that distribute risk and align incentives. Public guarantees could reduce the cost of capital, making projects viable and attractive to large institutional investors, for example, lowering borrowing costs at interest rates around 5% at levels close to risk-free rates. Subsidies and green bonds could complement such guarantees. Communal investment entities, structured as non-profit foundations, could pool capital, own installations and guarantee performance by delivering heat as a service to local building owners. This approach aligns incentives: tenants benefit from stable energy bills, owners can modernize their properties without heavy upfront costs and investors receive predictable returns. However, uncertainty remains around the future of fossil fuel taxation, as well as gas and renewable electricity prices, all of which directly affect the ultimate return on investment for heat pump projects. A territorial solution could therefore combine: a) centralized financing and ownership through bundled communal investment entities; b) heat-as-a-service contracts with transparent pricing and tenant protections; c) integration of digital monitoring tools to track energy savings, improve information exchange across stakeholders, and enhance benefit-sharing between tenants and owners.

Conclusion

The workshop confirmed that heat pumps are mature, efficient and indispensable for decarbonisation and gathered expertise on how to finance, coordinate, and scale their deployment. Next steps include a follow-up meeting with all interested participants, alongside bilateral consultations in Geneva and Vaud to secure buy-in from key stakeholders. By linking public guarantees with shared investment structures, offering heat as a service rather than a product, and building trust through knowledge sharing and digital transparency, Switzerland could unlock the billions required for this transformation. A local pilot could serve as a blueprint for replication, positioning heat pumps, together with regulatory incentives and behavioural shifts toward energy sufficiency, as the backbone of a decarbonized and resilient heating system.