

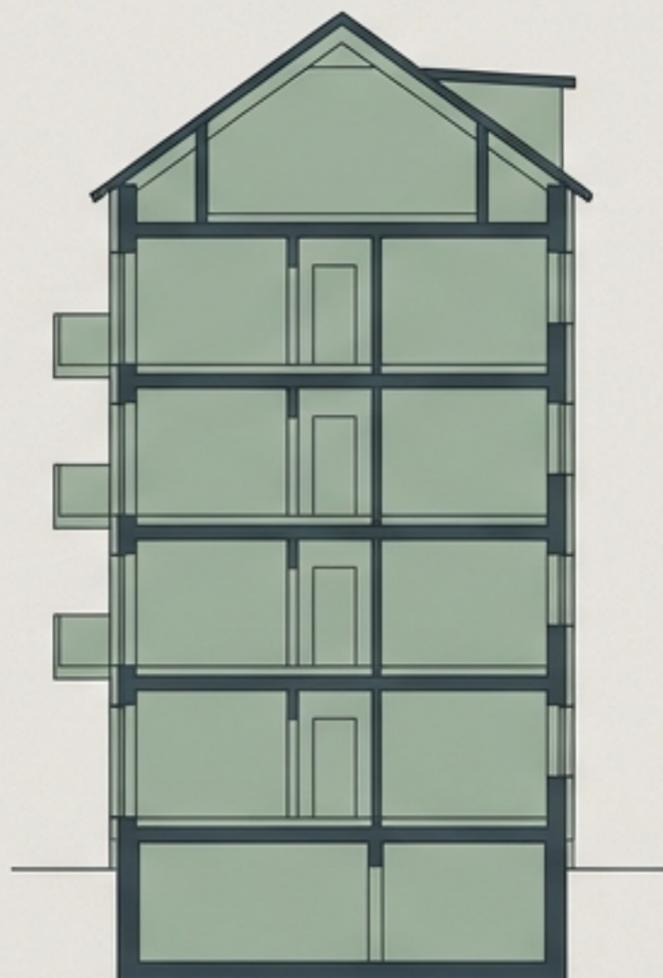
A Strategic Playbook for Policymakers
and Infrastructure Investors

The 122 Petajoule Asset

Unlocking Austria's
Industrial Waste Heat for
National Energy Security



The Thermal Baseline: High Demand, Dangerous Dependency

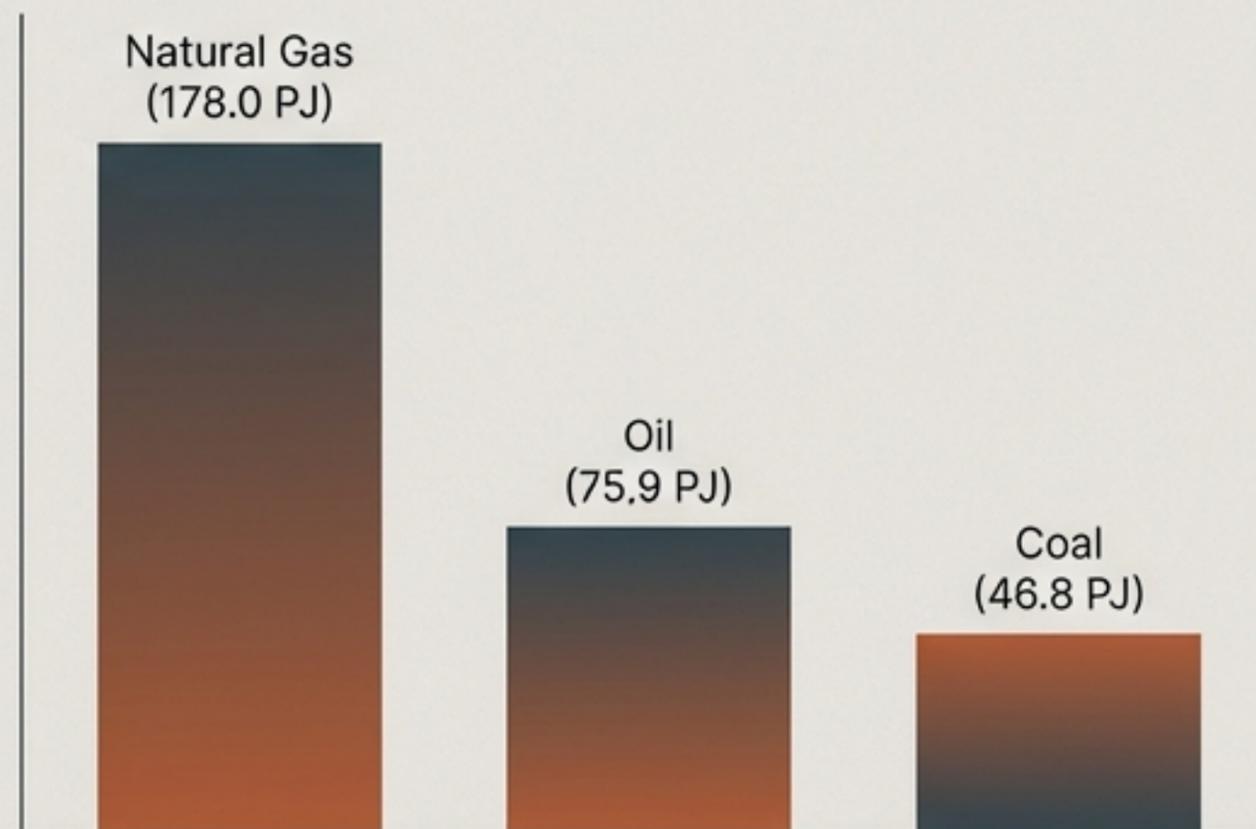


**293.4 PJ /
annum**

Total thermal demand for space heating and hot water across Austria's residential and tertiary building stock.

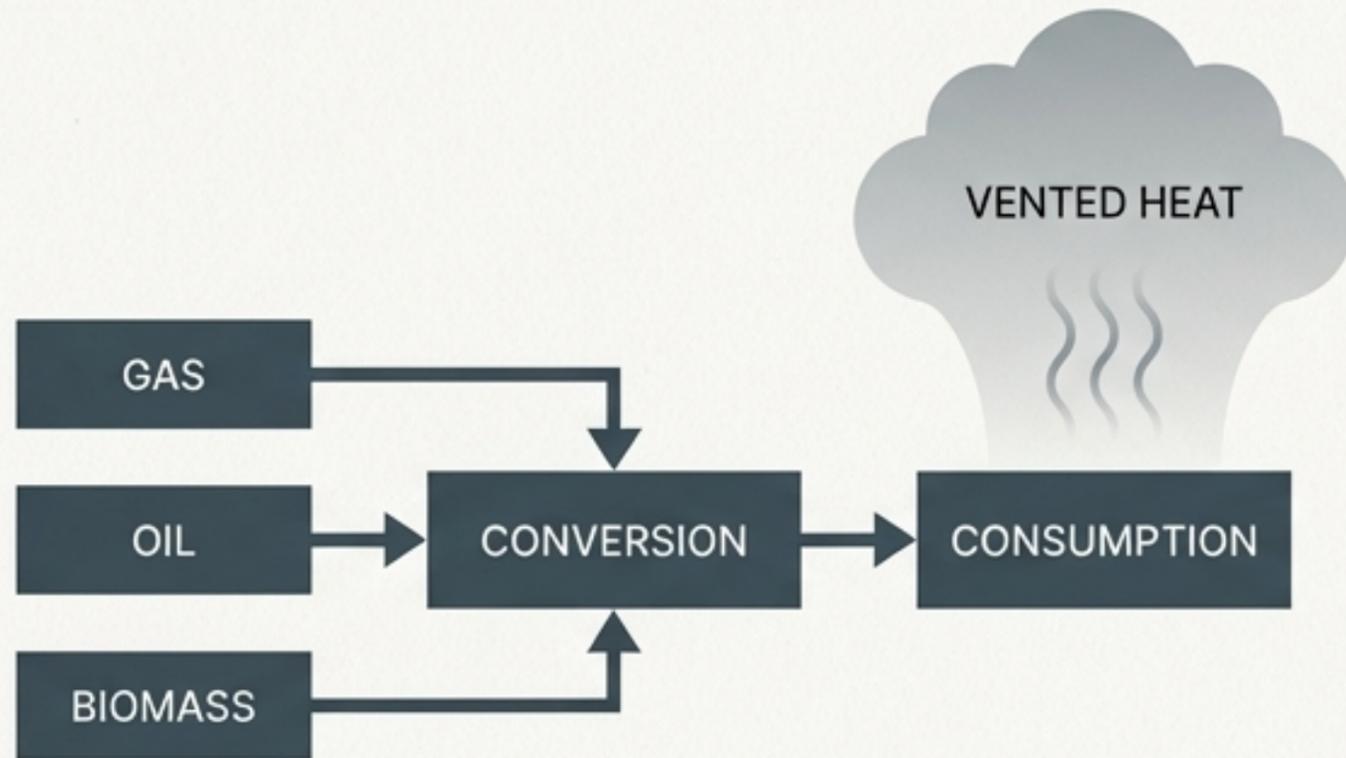
~67% Fossil Fuel Reliance

Direct inputs. A system highly exposed to price volatility and import disruptions.



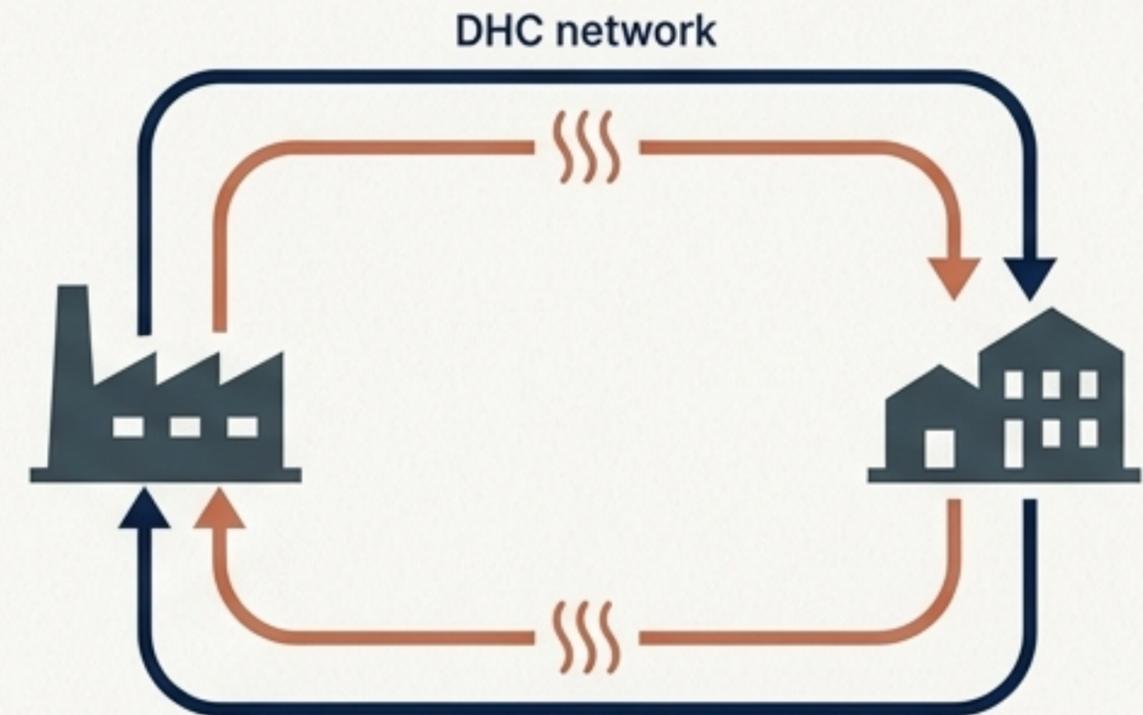
Re-engineering the National Flow: From Linear Waste to Circular Wealth

The Linear Trap

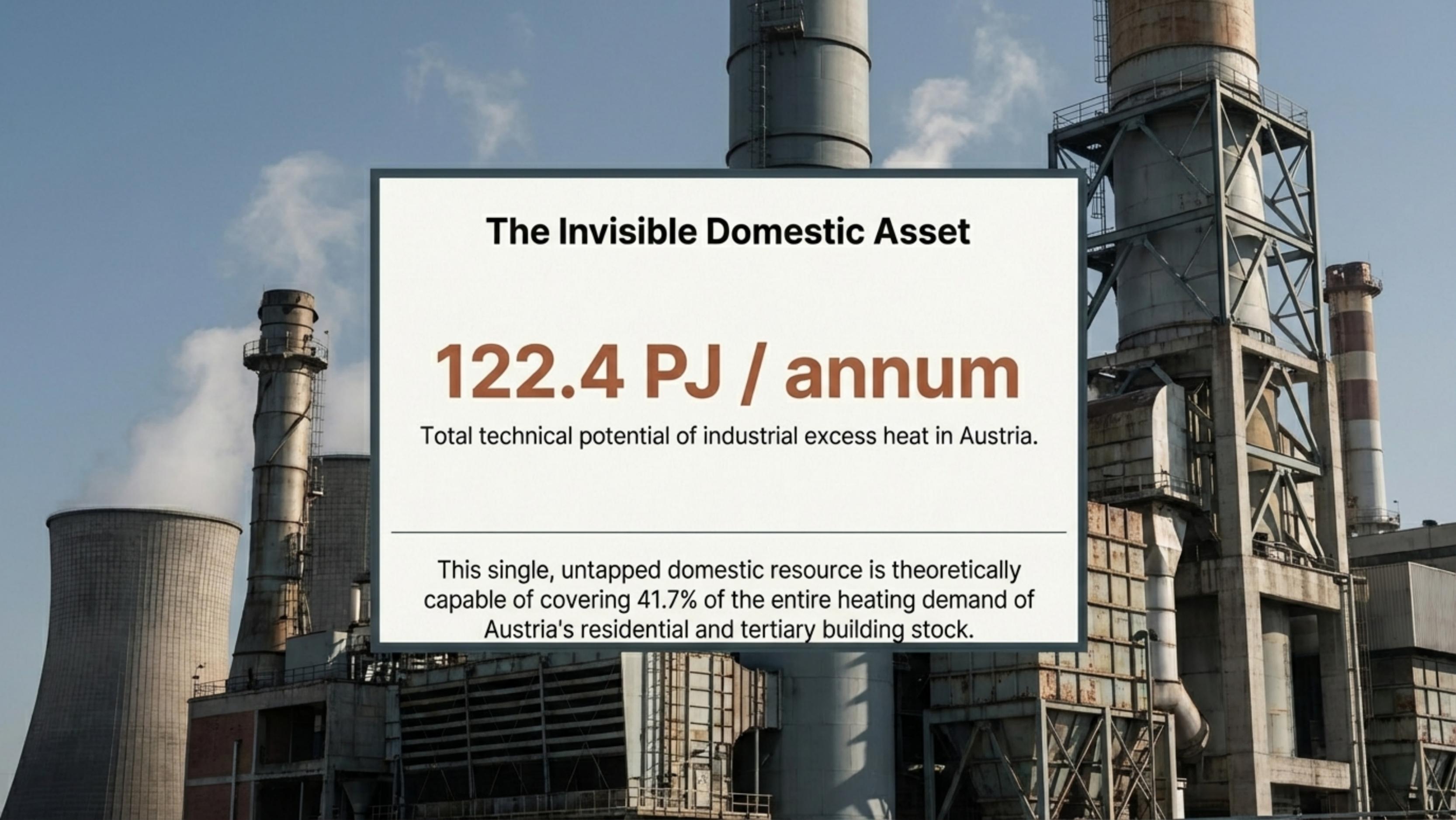


Currently, 500 PJ of primary energy is converted, consumed, and the excess is vented into the atmosphere as an invisible loss.

The Symbiotic Loop



Austria's well-established DHC infrastructure (12,000 MWth capacity) provides a ready-made transport medium to capture and redistribute this asset.

The background of the image shows an industrial plant with several tall, cylindrical smokestacks and a large cooling tower. The sky is blue with some light clouds. The text is overlaid on a white rectangular box with a dark border.

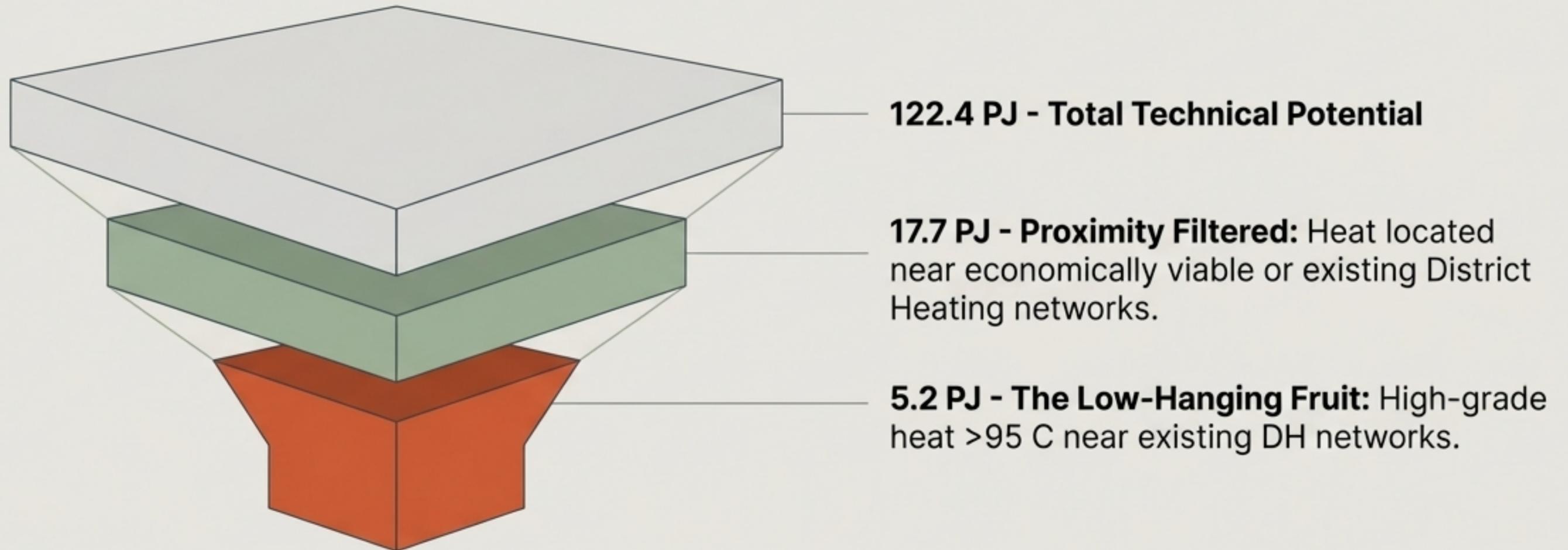
The Invisible Domestic Asset

122.4 PJ / annum

Total technical potential of industrial excess heat in Austria.

This single, untapped domestic resource is theoretically capable of covering 41.7% of the entire heating demand of Austria's residential and tertiary building stock.

From Theoretical Scale to Immediate Action



Takeaway: We do not need to capture all of it tomorrow. A highly lucrative, viable 5.2 PJ asset is immediately exploitable using existing infrastructure and technology.

The Heat Grade Integration Matrix

Grade & Temp	Available Energy	Integration Tech	Strategic Priority
High-Grade (>95 C)	5.2 PJ/a	Direct connection to existing DH grids	Immediate Action (Lowest CAPEX, highest immediate ROI)
Medium-Grade (55-95 C)	2.0 PJ/a	Minor temperature boosting required	Near-Term Expansion (Ideal for evolving 4th-gen networks)
Low-Grade (25-55 C)	10.5 PJ/a	Large-scale industrial heat pumps	Strategic Investment (Massive volume, requires DHC modernization)

The ROI of Integration: Security and Climate Action



Energy Security

Every petajoule of waste heat is in Inter Regular. Every petajoule of waste heat directly displaces imported fossil fuels. Capturing the 122.4 PJ potential could displace over two-thirds of the natural gas currently used for heating in Austria.



Climate Impact

Displacing 1 PJ of gas avoids ~56,100 tonnes of
Displacing 1 PJ of gas avoids ~56,100 tonnes of
Immediate Phase (5.2 PJ) abates 291,720 tonnes
annually. Total Potential (122.4 PJ) abates 6.8
million tonnes annually, accelerating the 2040
climate neutrality target.

The Real Bottleneck: Governance, Not Physics



Federal & Lander

Policy Fragmentation: Inconsistent spatial planning laws. The national framework lacks a consolidated mandate linking climate targets with local zoning.



The Data Vault

Information Asymmetry: Crucial consumption data (electricity, gas, DH) is locked by utilities. Planners cannot design efficient grids without granular, standardized digital access.



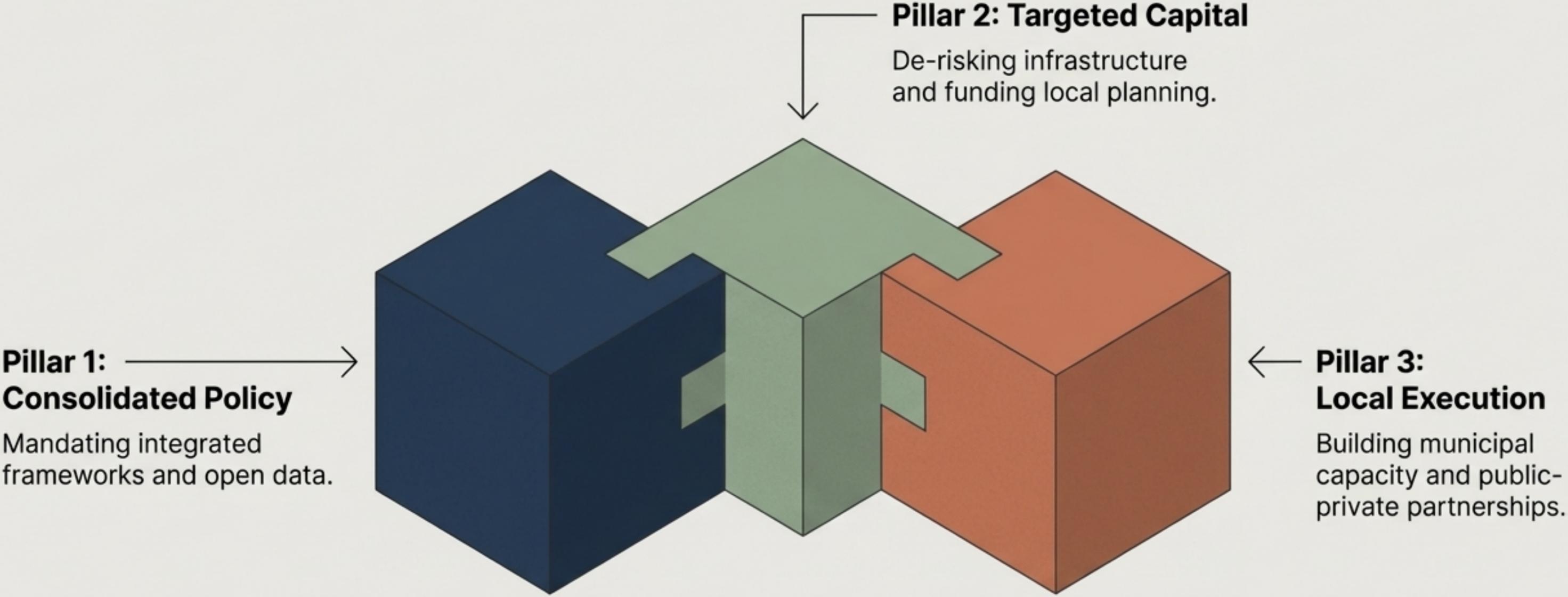
Municipal

Resource Starvation: Local authorities lack the upfront funding and technical capacity (staff, engineers) to execute complex strategic energy planning.



The Decarbonisation Engine: A Three-Pillar Playbook

Unlocking 122 Petajoules requires moving beyond voluntary, project-based subsidies into a synchronized national system.



Pillar I: Consolidated Policy & Open Data

01

Federal Heat Planning Framework: Enact binding legislation requiring integrated local heating and cooling plans for all municipalities above a specific population threshold, modelled on Danish and German best practices.

02

Municipal Empowerment: Grant local authorities the legal tools to designate mandatory district heating connection zones and restrict new fossil fuel boilers in existing buildings within these zones.

03

Mandate Open Energy Data: Legally oblige energy utilities to provide granular, anonymized consumption and infrastructure data to municipal planners in a standardized digital format.

Pillar II: Strategic Capital Allocation

National Planning Fund

Establish a multi-annual fund exclusively for the planning phase. Municipalities need upfront resources for data analysis, scenario modelling, and feasibility studies before shovels hit the ground.

Target the Low-Hanging Fruit

Direct immediate public investment and de-risking instruments toward the ~16 PJ/a of viable waste heat already situated near existing district heating networks.

Subsidize 4th Generation Tech

Create one-specific financial incentives for low-temperature DHC networks and large-scale heat pumps to unlock the massive 10.5 PJ/a low-grade heat reserves.



Pillar III: Local Authority Execution



Step 1: Proactive Mapping

Do not wait for federal mandates. Municipalities must immediately map local industrial facilities to quantify highly localized waste heat potential.



Step 2: Public-Private Partnerships

Local governments must act as conveners, aligning the financial interests of industrial plants (heat sellers), DHC operators (distributors), and investors.



Step 3: Internal Capacity Building

Shift funding away from temporary external consultants toward hiring dedicated in-house staff with expertise in GIS mapping, energy planning, and project finance.



The Symbiotic City

Industrial waste heat is not a byproduct; it is Austria's next great energy reserve. By aligning federal policy, targeted capital, and municipal data, we can transform a 122-petajoule atmospheric loss into the cornerstone of a secure, decarbonised national grid.