

Policy recommendations approved

Government levers and market-enabling actions to improve financing of geothermal heat pumps

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Executive summary

This document synthesises findings from **Deliverable 4.2** of the **LIFE21 GeoBOOST project** into a **Policy recommendations guide on financing geothermal heat pumps** (short “Policy Recommendations Guide”) designed to support the wider adoption of highly efficient geothermal heat pumps (GHPs) across Europe. Drawing on the detailed analysis presented in the original report, it sets out **14 targeted recommendations** aimed at addressing key financial barriers that currently hinder the deployment of GHP technologies.

Each recommendation has been rated against three criteria that are relevant to decision-makers:

- **Cost-burden relief**: addressing the mismatch between high upfront investment and lower lifetime operating costs;
- **Risk transfer**: reallocating technical and financial risks to those best equipped to manage them, enabling larger-scale investment by lenders;
- **Fair access**: promoting inclusive participation by allowing that low-income households, small and medium-sized enterprises, and tenants can benefit on equitable terms.

To support strategic planning, the recommendations have also been classified by implementation timeframe: **(i)** *quick wins* represent short-term actions that may be deployed straightaway; **(ii)** *system-scaling measures* are medium-term interventions potentially achievable within five years; and **(iii)** *structural fixes* are long-term solutions possibly requiring up to a decade.

Together, the **proposed recommendations offer a practical roadmap** for European Union (EU) policymakers and institutions, national and local governments and end-users to help mainstream GHPs and advance Europe’s energy efficiency and decarbonisation goals.

1. Context and objectives

Heating and cooling account for roughly half of the EU’s final energy demand, yet much of the building stock remains reliant on fossil-fuel boilers. GHPs represent a reliable alternative that can significantly reduce both greenhouse gas emissions and energy costs. Despite their potential, GHP deployment continues to face many hurdles, chief among them, financial barriers.

As part of the GeoBOOST project, Deliverable 4.2 catalogues these financial barriers, explores different innovative financing solutions, and provides case studies and feasibility appraisals to support real-world application. Drawing on this evidence base, 14 actionable recommendations have been developed, forming the present Policy Recommendations Guide. The recommendations cover **(i)** direct measures suitable for government implementation and **(ii)** additional measures, the success of which depends on a supportive policy environment.

The objective of this document, designated as **Milestone 7**, is to present the Policy Recommendations Guide in a clear, concise, and action-oriented format. It aims to support stakeholders in shaping policies, funding instruments, and business models that can enable large-scale, inclusive investment in GHP systems.

Validation by the Advisory Committee. A previous version of this document was submitted to the GeoBOOST Advisory Committee for review.

2. Proposed recommendations

#	Recommendation	Cost burden	Risk transfer	Fair access	Stakeholder
1	Create a dedicated EU heat pump financing facility offering low-interest loans, credit lines and guarantees to underpin on-bill and green mortgage programmes, with a quota for low-income households.	●	●	●	EU policymakers and institutions
2	Harmonise and enable innovative business models EU-wide through guidance or directives, and provide a "Green Heat Toolkit" with templates (legal language for on-tax assessments, on-bill tariffs, standard HaaS contracts) to reduce setup efforts for countries.	●	▼	▼	
3	Rebalance energy taxes by accelerating the ETD revision to cut electricity levies, raise fossil fuel duties, and use ETS2/SCF revenues to support clean and affordable heating and cooling, including high-efficiency GHPs.	●	▼	▼	
4	Encourage Member States to set indicative GHP deployment milestones , track them through NECP progress reports and plan financing to meet them.	▼	▼	■	
5	Scale and implement diverse incentive programs that combine grants (considering vulnerable groups), zero-interest loans and tax credits.	●	▼	●	National and local governments
6	Mandate utility participation to require or incentivise offers for on-bill financing and HaaS models, with consumer protections.	●	●	▼	
7	Resolve split incentives by using "green lease" frameworks allowing landlords to share savings with tenants and implement condominium voting rules for collective GHP retrofits.	▼	▼	●	
8	Fund one-stop shops to guide homeowners and building managers through technical assessment, installer selection and financing.	▼	●	▼	
9	Launch green home finance products as refurbishment mortgages and long-tenor renovation loans for GHPs, with preferential capital treatment or public guarantees.	●	●	▼	Financial institutions and investors
10	Issue GHP-themed green bonds or securitised loan portfolios, leveraging EU Taxonomy certification to attract low-cost institutional capital.	●	▼	■	
11	Aggregate and de-risk by pooling many small projects into diversified funds, and tap into EFSI-style guarantee instruments and performance insurance.	▼	●	■	
12	Proactively seek new offers to be aware of emerging financing offers that can make a GHP system viable.	▼	▼	▼	End-users (homeowners and building managers)
13	Organise collectively as energy communities or neighbourhood groups to access bulk-purchase discounts and develop or join thermal energy networks.	●	▼	▼	
14	Demand performance guarantees to safeguard contracts come with service-level commitments and maintenance provisions, and use certified installers.	▼	●	▼	

Traffic-light rating: ● = strong/primary effect | ▼ = partial/supporting effect | ■ = little/none effect

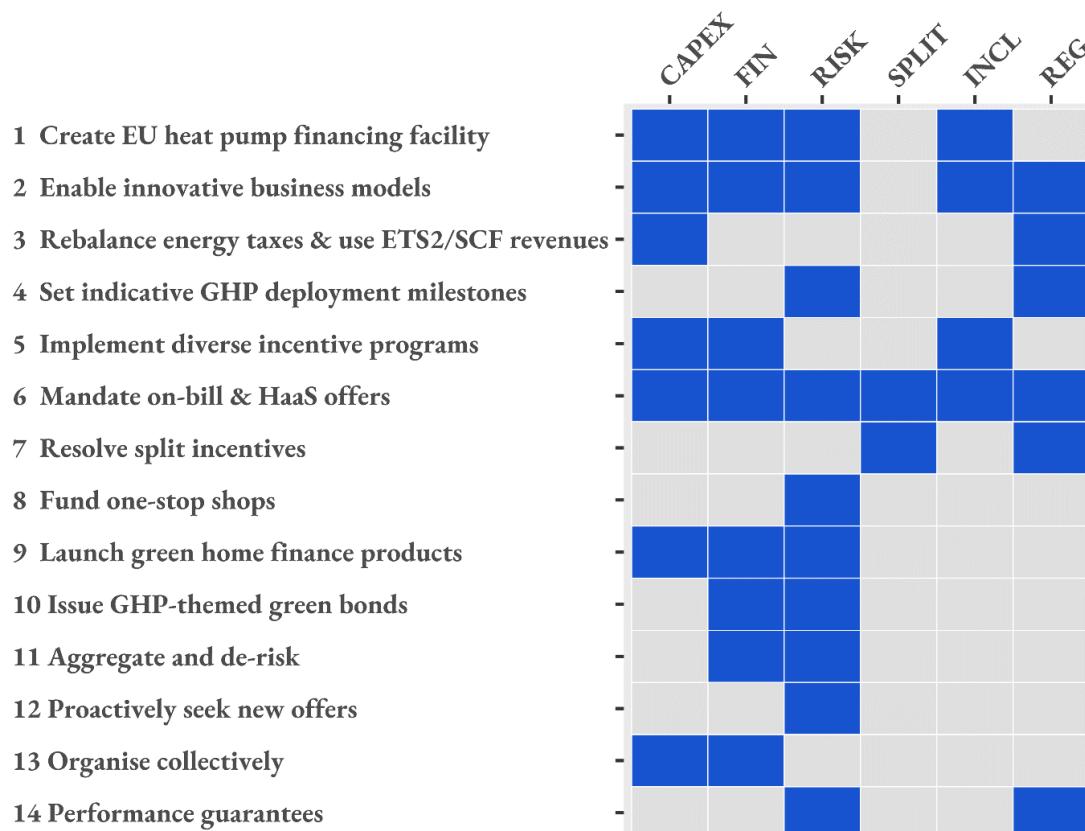
It should be noted that the proposed recommendations are deliberately **scale-agnostic**, given that many instruments apply to both individual projects and collective schemes such as thermal energy networks. However, the Policy Recommendations Guide does not aim to provide a dedicated treatment of shared thermal infrastructure. This would require a distinct technical, governance and regulatory analysis, and in fact falls outside the scope of GeoBOOST project mandate.

3. Barrier-to-recommendation mapping

Deliverable 4.2 recognised six key financial barriers to GHP adoption:

Abbreviation	Short description
CAPEX	High upfront capital expenditure
FIN	Limited access to appropriate financing
RISK	Perceived investment risks and low consumer confidence
SPLIT	Split incentives in rental buildings
INCL	Inclusivity concerns especially regarding low-income households
REG	Regulatory and market obstacles to financing, including tax, tariff and price structures.

The figure below shows how each recommendation addresses one or more of these barriers, allowing for a quick match between "problems" and "solutions". It maps only direct, first-order impacts, namely, where a recommendation *itself* removes or neutralises a barrier. Indirect effects, such as enabling, informing or creating supportive conditions, are therefore not mapped.



4. Indicative timeline

The following table presents an indicative timeline for implementing each recommendation, grouped into three successive waves. While of course not prescriptive, the idea of this phased approach is to provide a realistic sense of when the measures could be deployed under ideal conditions.

Implementation window	Recommendations	Remarks
SHORT-TERM (potentially deployable straightaway) <i>"Quick wins that could start tomorrow with existing levers"</i>	#5 Implement diverse incentive programs #6 Mandate on-bill & HaaS offers #8 Fund one-stop shops #12 Proactively seek new offers #13 Organise collectively #14 Performance guarantees <i>(Kick-off #2 planning here)</i> <i>(Kick-off #4 planning here)</i>	<ul style="list-style-type: none"> • All rely on schemes or business models already piloted in Member States. So, deployment is mainly equal to budget mobilisation and political will. • No primary legislation or large new EU vehicle needed.
MEDIUM-TERM (≤ 5 years) <i>"System-scaling measures that need some years for design, legislation or aggregation"</i>	#1 Create EU heat pump financing facility #2 Enable innovative business models #3 Rebalance energy taxes & use ETS2/SCF revenues (started) #4 Set indicative GHP deployment milestones (proposed) #9 Launch green home finance products #10 Issue GHP-themed green bonds #11 Aggregate and de-risk	<ul style="list-style-type: none"> • Requires new EU funding vehicle, cross Member States legal templates or regulated utility business model tweaks. • Bond issuance and portfolio guarantees need an initial stock of projects (built during the short-term phase) before they can be bundled and sold to capital markets.
LONG-TERM (≤ 10 years) <i>"Structural fixes that lock-in the transition and correct remaining market obstacles"</i>	#2 Harmonisation across all Member States completed #3 Rebalance energy taxes & use ETS2/SCF revenues (completed tax/levy realignment for electricity vs. fossil fuels) #4 Set indicative GHP deployment milestones (adopted) #7 Resolve split incentives (fully embedded)	<ul style="list-style-type: none"> • Full energy-tax overhaul and ETS2 earmarking are politically sensitive, often tied to multi-year budget cycles. • Rental-law changes need civil-code amendments and coordinated stakeholder dialogue. • A long-term horizon for these recommendations gives markets time to digest earlier measures.

Acronyms

List of acronyms used in this document and their meanings:

Acronym	Description
EFSI	European Fund for Strategic Investments
ETD	Energy Taxation Directive
ETS2	Emissions Trading System 2 (extension to buildings and road transport)
EU	European Union
LIFE	Programme for the Environment and Climate Action
GHP(s)	Geothermal heat pump(s)
HaaS	Heating as a Service
NECP	National Energy and Climate Plans
SCF	Social Climate Fund