Chapter 9

Minding the Gap: Financing Solutions to Advance Geothermal in the United Kingdom

Tim Lines, Project InnerSpace and Geothermal Wells UK

The barrier to a powerful geothermal industry is not natural resources or technology, but finance. Geothermal heat and electricity exploration offers a high-upside opportunity for the UK. With the right financing pathways, the UK can attract new capital and catalyse projects nationwide.

Just as the United Kingdom transformed the North Sea from an unexplored frontier into a world-leading energy province between the 1960s and 1990s, the nation now stands at the threshold of another transformative opportunity. In the coming decades, demand will rise sharply for domestic renewable energy as industry, heating, and agriculture shift away from oil and gas. Projected increases in renewable energy demand are driven by the electrification of heat, transport, and industrial processes.[1,2] Geothermal can meet this demand with round-the-clock heat and electricity while creating between 80,000 and 170,000 jobs, reducing imports, and lowering system costs—as well as establishing the United Kingdom as a global leader in dispatchable, low-carbon energy and building expertise and domestic supply chains. This chapter sets out the finance and de-risking levers that turn the resource mapped in Chapter 3, the pilots identified in Chapter 4, and the policy pathways set out in Chapter 5 into a bankable project pipeline that can deliver the report's geothermal targets of 15 gigawatts for heat and between 1.5 gigawatts and 2 gigawatts for electricity by 2050.

The success of North Sea oil and gas required coordinated public–private investment, risk-sharing mechanisms, and a long-term policy commitment. To achieve the proposed geothermal goals and build a robust geothermal industry, early-stage funding for exploration and subsurface appraisal will be essential. Encouragingly, recent US experience indicates that much of the early subsurface and delivery risk is quickly retireable when projects are executed as a disciplined portfolio. In the United States, programmes such as the Utah Frontier Observatory for Research in Geothermal Energy (FORGE) and early commercial deployments led by Fervo have accelerated standardisation and learning-by-doing, strengthening the case for a modest UK demonstration programme to generate investable performance data. With modest philanthropic support and new public financing, first-of-a-kind pilot projects for heat and electricity can be drilled, proven, built, and then financed to become commercially stable.

This pathway relies principally on the following initiatives—some of which are already represented by existing organisations and projects, while others have not yet been created. The initiatives in the latter group in particular will require coordination across several government departments. The following initiatives are discussed in more detail in the section "Organising UK Public Finance to Mind the Gap":

- The Heat Networks Delivery Unit, in collaboration with the British Geological Survey, to create standardised, publicly accessible site-assessment packages for priority geothermal locations aligned with heat network zoning and local heat and energy strategies (see Chapter 5, "Clearing the Runway: Policies and Regulations to Scale the United Kingdom's Geothermal Potential"). This approach follows successful precedents in France, where BRGM (French Geological Survey) provides public subsurface data to help developers de-risk projects,[3] allowing commercial operators to compete on a level playing field with access to high-quality geological data, anchor-load mapping, and preliminary feasibility assessments. In a similar fashion, Project InnerSpace's GeoMap is a global service that overlays subsurface and surface data with high-grade investment opportunities.[4]
- Great British Energy, the National Wealth Fund, and the British Business Bank (the latter for small and medium enterprises) to fund a national demonstration programme for exploration, appraisal, and pilot plants at near-commercial rates (to be created).
- A government-backed first-loss geothermal resource insurance facility, along the lines of the French government's geothermal dry hole insurance programme, to de-risk early development stages (to be created).
- Institutional investors, supported by long-term electricity contracts (Contracts for Differences) and standardised long-term heat purchase agreements (contracts for heat, which will be created), to finance utility-scale geothermal plants.
- The Green Heat Network Fund, crowding in institutional capital for heat network developers.
- Great British Energy, the National Wealth Fund, institutional investors, and government gilts or local climate bonds to refinance and replicate de-risked projects at fully commercial rates.

The pathway should also include a non-state first-loss contribution funding of up to 20%, or between £3 million and £5 million of the exploration stage of each project for the initial 20 projects to de-risk public investment and inform the geothermal resource insurance facility.

With all of these pieces taken together, this pathway organises today's tools into a single, catalytic route from first-of-a-kind projects to a robust geothermal industry. The following sections set out each stage—who leads, what is funded, how decisions are made, and immediate next steps.

SYSTEM VALUE CONTRIBUTIONS

The United Kingdom will need between 30 gigawatts electric and 35 gigawatts electric of natural gas combined-cycle gas turbine (CCGT) power generation through the 2030s to back up a renewables-dominated system,[5] with availability payments expected to rise four-fold this decade.[6] Since geothermal Organic Rankine Cycle units ramp up at between 10% and 25% per minute[7]—comparable to the range of 20% to 40% per minute for CCGTs—they can also back up renewables and compete with CCGTs in frequency, capacity, and reserve markets. Embedded geothermal capacity lowers national energy costs in the following ways:

- Cheaper heat delivery than reinforcing the electricity grid for heat pumps
- Whole-system cost reductions by easing grid constraints and transmission and distribution losses

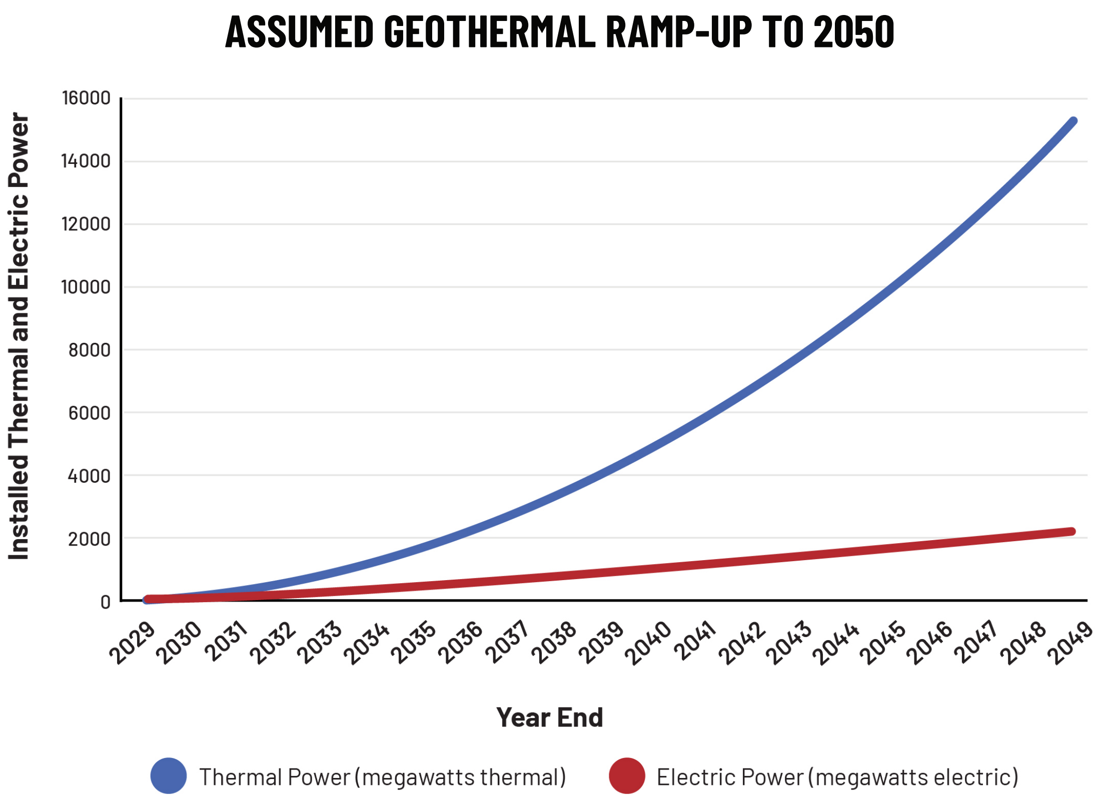

Figure 9.1: Assumed geothermal ramp-up to 2050. Source: author.

- Competition with CCGTs for ancillary services
- Avoiding gas imports and carbon, fossil fuel costs, and pollution

This section estimates the monetary and other system contributions to ramping up geothermal production to 15 gigawatts for heat and between 1.5 gigawatts and 2 gigawatts for electricity by 2050 (**Figure 9.1**), with reference to two real-life example projects in north-east England that the author is currently evaluating:

- 40 megawatts thermal and 1.6 megawatts electric geothermal heat project (sufficient power for parasitic pumping loads)
- 40 megawatts thermal and 25 megawatts electric geothermal combined heat and power project

This chapter's national deployment estimate assumes 327 thermal-only projects (each approximately 40 megawatts thermal at a 30% capacity factor) and 56 combined heat and power (CHP) projects (also around 40 megawatts thermal with approximately 25 megawatts electric output) are installed by 2050, with project cash flows extending to 2060. When aggregated, this portfolio would deliver approximately 38.3 terawatt-hours per year of useful thermal energy by 2050. This level of deployment represents a conservative share of the broader UK opportunity for efficient heating infrastructure. The UK's Second National Comprehensive Assessment of the Potential for Efficient Heating and Cooling identifies economic potential for heat networks totaling 95 terawatt-hours per year by 2050—meaning the geothermal target represents approximately 40% of the identified district heating opportunity.[8]

Independent research and government resources confirm that the UK has substantial geological conditions favourable to geothermal heat exploitation across both shallow and deep systems. The British Geological Survey's UK Geothermal Platform provides national-scale data on geothermal potential, helping planners identify where subsurface conditions—including temperature gradients, geology, and aquifer characteristics—are most favourable.[9] Geological studies indicate that medium- to high-enthalpy geothermal potential is geographically distributed across regions with radiogenic granites and favourable subsurface conditions, including Cornwall, parts of northern England, and Scotland.[10]

Potential for Cheaper Heat Delivery

Meeting winter demand with geothermal networks in areas served by deep, high-temperature geothermal district heat networks can be substantially cheaper than reinforcing the electricity grid to serve large-scale electric heat pump deployments in those same locations. For geothermal systems that supply heat at temperatures high enough for direct district heating (that is, with no need to boost the temperature with electric heating), the marginal cost of heat delivery has been estimated at around £7.9 per kilowatt thermal per year,[11] whereas reinforcing the grid to accommodate peak winter heat pump capacity is estimated to require an investment equivalent to an annualised £73 to £173 per kilowatt electric.[12] This 9- to 22-fold cost advantage makes deep geothermal heat an attractive option for shaving peak winter electric demand in heat-dominant cities.

In the 40 megawatts thermal example, avoided reinforcement costs equal £1.6 million annually over a 32-year operating life. Nationally, a 15 gigawatts thermal geothermal portfolio could displace roughly 6 gigawatts electric of peak demand (a 2.5 winter coefficient of performance [COP], which is the ratio of useful heat output to electrical energy input), cutting the need for additional peak generation and avoiding £360 million per year in annualised reinforcement costs—freeing capital for storage, integration, and resilience.
The British Geological Survey Atlas reports heat yields between 1 megawatt thermal and 100 megawatts thermal per well doublet near major population centres (such as East Midlands, Greater Manchester, Humber, and Cheshire).[13] Assuming 10 megawatts thermal per doublet, 3,000 wells drilled to less than 3.5 kilometres could deliver 15 gigawatts thermal in 16 years with 10 rigs, with a surface footprint of roughly 315 hectares (more than 750 acres).[14] (Conversations with drilling operators suggest they would be willing to bring rigs to the UK with the level of sustained work envisioned in this chapter. This statement reflects this understanding.) For context, the UK oil and gas industry has drilled about 1,500 onshore and 6,500 offshore oil and gas wells since 1980, illustrating that the number of wells envisioned in this chapter has already been surpassed by the oil and gas industry.[15,16] Additionally, the drilling rates required for this analysis have been achieved in Fervo's project in Utah in the United States. While rural Utah is different from the UK, the rock underneath both is granite, and in Utah, Fervo is able to drill 4,800 metres into granite in 16 days.[17]

Whole-System Cost Reductions by Easing Grid Constraints

In 2023, constraint payments to limit electricity generation exceeded £1.5 billion,[18] largely from curtailing Scottish wind farms due to limited transmission to the south. To stabilise supply, fossil-fuel generators in England charged "constraint relief" to generate instead. Geothermal power capacity located in England reduces these constraint-relief payments, providing additional firm generation local to demand. While planned new transmission capacity will lower—but not eliminate—constraint payments in the 2030s,[19,20,21,22] geothermal can make a material impact. In our 25 megawatts electric example, the avoided discounted-cash-flow constraint costs equal £14 million between 2030 and 2040. The relatively small proportion of the electric portfolio assumed to be deployed by 2040 could reduce constraint-relief payments by £100 million social discounted cash flow (S-DCF).[23]

When geothermal electricity is sited between 5 miles and 10 miles from population centres, this also cuts transmission losses by about 2% from a national average of 7.2%.[24] Cutting such losses could save £340 million S-DCF for 2 gigawatts electric, based on the HM Treasury long-run variable costs.

Assuming that permitting, environmental and social impact assessments, land access negotiations, and stakeholder consultations are initiated in parallel—and that regulatory approvals proceed without undue delay (discussed in Chapter 5, "Clearing the Runway: Policies and Regulations to Scale the United Kingdom's Geothermal Potential")—2 gigawatts electric could be delivered in less than 10 years by drilling 800 engineered geothermal system wells at about 5.5 kilometres depth into radiogenic granites using 10 rigs with a surface footprint of roughly 270 hectares (670 acres).[25]

POTENTIAL BENEFITS OF GEOTHERMAL DEPLOYMENT

Benefit Area	Financial Impact Estimate
System Value Contributions	By 2050, ramp up to 15 gigawatts of geothermal heat networks and 2 gigawatts of electricity at 30% and 95% capacity factors.
Avoided grid reinforcement (heat pumps)	~£360 million annualised avoided reinforcement cost
Whole-system impacts (at HM Treasury *Green Book* Social Discount Rate)	~£450 million from avoided constraint relief payments and reduced transmission losses
Ancillary services revenue	~£200 million per year potential revenue (average to 2050, consistent with a projected £4 billion balancing market by the late 2020s)
Avoided grid reinforcement (heat pumps)	~£320 million annualised avoided reinforcement cost
Energy Security and Wider Economic Benefits	
Avoided gas imports	~2.8 trillion cubic feet avoided (around 88 billion cubic feet per year, about 2.6% of UK annual consumption), with balance-of-payments and resilience benefits
Social Net Present Value (at HM Treasury *Green Book* Social Discount Rate)	~£9 billion avoided carbon, fossil fuel costs, and pollution
Gross Value Added	~£37 billion

Figure 9.2: Potential system and energy security benefits from geothermal deployment in the United Kingdom. Source: author's calculations based on varied government sources.

Competing with CCGT for Ancillary Services

Balancing services cost about £1 billion annually in 2023 and 2024,[26] with roughly 45% for ancillary services,[27] and are projected to rise to £4 billion annually by 2029 (an estimated £1.8 billion ancillary). Geothermal plants can compete with CCGT for five ancillary services (capacity market, reactive/voltage support, stability/inertia, black start, and dynamic containment down) without compromising baseload supply. Our 25 megawatt electric example could compete for £4 million annual revenue. The ramp-up to 2 gigawatts electric could compete for an estimated annual average £200 million per year in ancillary services revenue, placing downward pressure on rising CCGT ancillary service costs while adding zero-carbon capacity.

Avoided Gas Imports

Geothermal deployment also reduces reliance on imported natural gas. A 40 megawatts thermal and 25 megawatts electric project avoids a cumulative 14 billion cubic feet of gas to the 2060 analysis cutoff date. At a national scale, 15 gigawatts thermal and 2 gigawatts electric of geothermal capacity could displace about 2.8 trillion cubic feet—around 88 billion cubic feet per year, equal to 2.6% of current annual UK consumption.[28] These avoided imports strengthen the balance of payments, complementing the social and environmental benefits already quantified through the Green Book.

Avoided Carbon, Fossil Fuel Costs, and Pollution

The thermal example project has a social discounted net present value (S-NPV; the social discounted monetised value of avoided carbon, fossil fuel costs, and pollution) of £75 million and a Gross Value Added of £100 million; the CHP example has values of £280 million and £250 million, respectively.[29,30,31] Achieving the national goal could generate a S-NPV of £9 billion and Gross Value Added of £37 billion.

The economic, social and system, and balance-of-payments benefits described are summarised in **Figure 9.2**.

Over the decades, these effects represent billions of pounds per year in economic growth and potential savings to the energy system, alongside bankable project-level returns once early-stage risks are addressed. The next section outlines financing structures to redirect existing mechanisms toward geothermal development, unlocking both the system-wide benefits and the long-term economic gains.

CURRENT FINANCING ARCHITECTURE AND FUNDING GAPS

The UK has several funding programmes for the development of low-carbon heat and electricity, but almost none of these programmes cover geothermal's pre-construction risk:

- The Green Heat Network Fund (GHNF) provides grants of up to 50% of the total eligible commercialisation and construction costs for heat networks.
- The Heat Networks Delivery Unit (HNDU) helps councils undertake techno-economic assessments but does not fund subsurface risk.
- Combined authorities have similar Net Zero Accelerator funding.
- Contracts for Differences (CfDs) provide long-term power-price certainty for operational projects.
- The National Wealth Fund (NWF) can invest in proven assets and crowd-in private capital but is not designed for exploration risk.
- Great British Energy (GB Energy) is a new state-owned developer with potential to invest earlier in geothermal—if explicitly mandated.
- The British Business Bank (BBB) provides small and medium enterprises with finance and venture capital indirectly, operates on commercial terms, and does not cover geological risk.

Implementation of two complementary instruments proposed in this document would close the risk gap. First, a geothermal resource insurance facility (GRIF) would transfer the risks of exploration failure, initial underperformance, and early decline into global reinsurance markets, lowering the cost of capital through credible risk take-out. Comparable public-backed drilling-risk and geothermal guarantee schemes already operate in Europe (including France's GEODEEP,[32] the Netherlands' Garantieregeling Aardwarmte,[33] and Germany's KfW-supported program[34]), showing this kind of risk-transfer tool is a proven way to crowd-in private investment. GRIF is conceived to interface directly with the GHNF and CfDs so that insured appraisal results can move seamlessly into bankable construction and revenue frameworks (details are set out later in this chapter).

Second, standardised long-term contracts for heat would provide a lender-friendly offtake for the heat business case, complementing electricity CfDs for CHP schemes. These contracts require a policy wrapper and templates and are discussed later; their role here is to make post-resource-proving heat revenues bankable rather than bespoke.

Because early-stage funding is misaligned, viable projects struggle to move beyond concept. The central gap is subsurface risk capital for appraisal drilling (**Figure 9.3**). Venture and other private risk investors have shown limited appetite for this financing, leaving projects stranded before they can access mainstream debt and equity. (See "Potential Funding Pathways in the United Kingdom" for the specific mechanisms and the fuller GRIF and contracts for heat proposals.)

Figure 9.3 describes the scope of the programmes described, and **Figure 9.4** plots the programmes' applicability by geothermal development stage.

ORGANISING UK PUBLIC FINANCE TO MIND THE GAP

This section sets out five steps to move from today's fragmented funding to a single pipeline for first-of-

FINANCING ARCHITECTURE AND FUNDING GAPS

Fund/ Mechanism	Administering Body	Scope and Eligible Technologies	Stage of Project Supported	Relevance to Geothermal	Key Gaps and Constraints
Contract for Difference (CfD)	Low Carbon Contracts Company (LCCC); Department for Energy Security and Net Zero (DESNZ)	Low-carbon electricity generation	Revenue support for operational projects	Provides long-term power price certainty	Does not fund pre-construction
Green Heat Network Fund (GHNF)	DESNZ	Capital grants supporting commercialisation and construction heat networks	Construction phase (heat source must be proven)	Can fund network integration of geothermal	Does not underwrite early-stage geological risk
National Wealth Fund (NWF)	UK government	Government investment vehicle providing debt/ equity to catalyse private capital in priority sectors	Construction, expansion, scaling; crowd-in private finance	Potential anchor investor/ co-investor for proven geothermal power/heat network assets	Not a resource-risk vehicle
Great British Energy (GB Energy)	UK government	State-owned energy developer to invest/develop clean energy	Exploration (where policy allows), development, construction, operation	Could take earlier-stage positions in geothermal if mandated	Mandate and scope currently unclear
British Business Bank (BBB); includes Growth Guarantee Scheme (GGS), Nations and Regions Investment Funds (NRIF), British Patient Capital (BPC)	BBB plc (UK government economic development bank)	SME finance via GGS debt guarantees; NRIF debt/equity for SMEs; BPC invests in venture/growth funds	Corporate/ supply-chain growth, working capital, and equipment finance; venture/growth rounds via BPC-backed funds.	Can support UK supply-chain companies serving geothermal projects; potential developer financing via equity funds	Not a project-finance/grant vehicle; no geological resource-risk; ticket-size limits
Geothermal Resource Insurance Facility (GRIF) (conceptual)	Perhaps DESNZ or HM Treasury via an appointed scheme manager	Insurance for exploration failure, initial under-performance; longer-term temperature/ pressure decline	Exploration drilling, appraisal/ flow-test, construction, and early operation (warranty period)	Caps downside for lenders/equity	Requires (i) actuarial data, monitoring and verification; (ii) deductibles/co-insurance and partial premium subsidy; and (iii) scheme design and state-aid compliance
Contracts for heat (conceptual)	Perhaps Ofgem	Long-term fixed-price heat purchase agreements	Post-resource-proving (bankable offtake)	Could provide bankable revenue stream for geothermal heat	Requires policy framework; not yet implemented

Figure 9.3: Current financing architecture and funding gaps at a glance. Source: author.

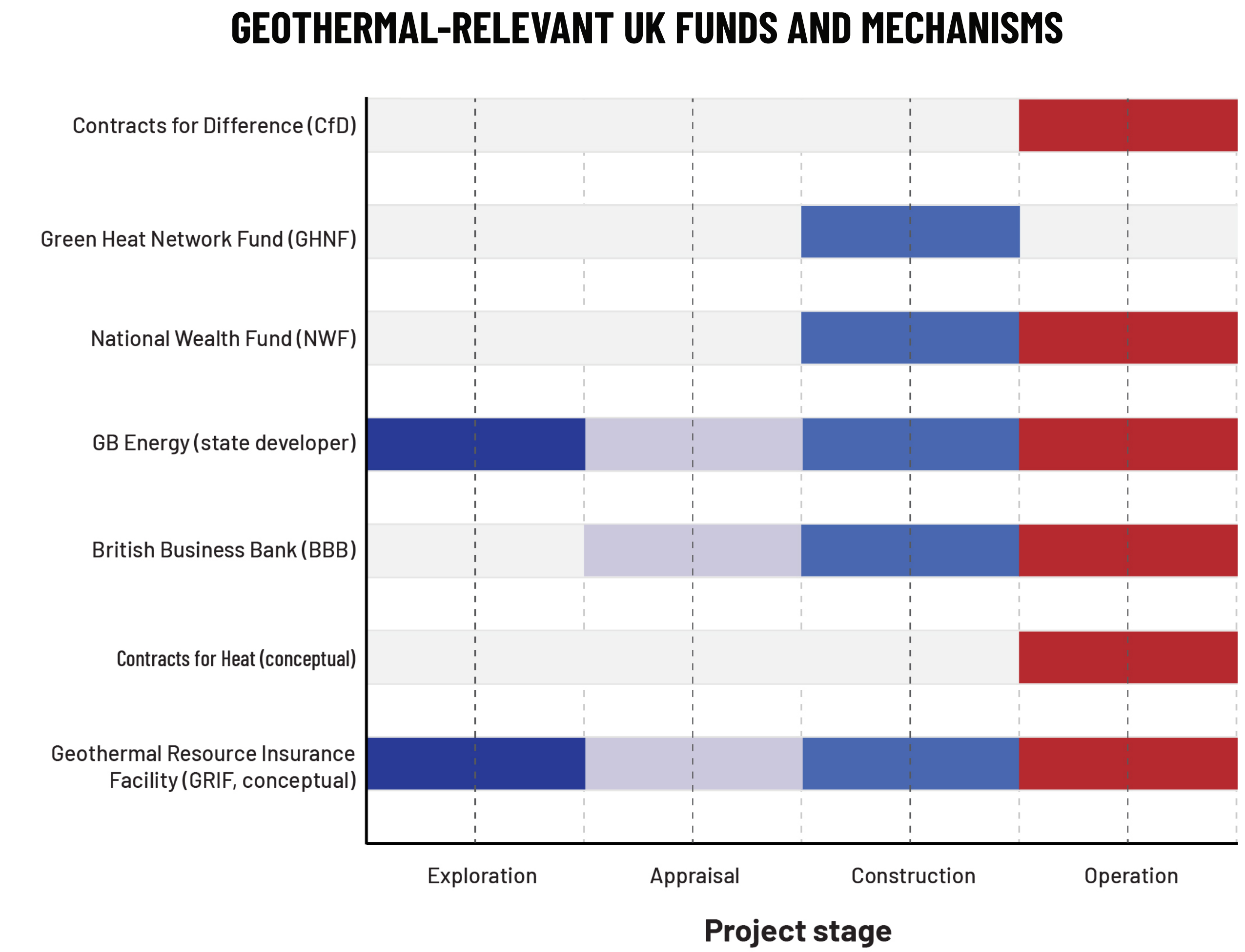

Figure 9.4: Summary of existing and conceptual UK funds and mechanisms relevant to geothermal. Source: author.

a-kind geothermal projects in the United Kingdom. A key new element is a philanthropic first-loss layer of between £3 million and £5 million per project to fund front-end studies and a slim-hole pilot. As a whole, these measures would let government-backed finance carry projects through the riskiest phases before handing off to institutional capital and project finance—allowing geothermal to scale in the United Kingdom. Taken together, these five steps fix the single biggest bottleneck the industry faces: early-stage subsurface risk.

Step 1: Integrate Geothermal into the Energy Plan and Build a Real Project Pipeline

Geothermal for heat and electricity must move from the margins of the UK energy strategy into the centre of delivery. Doing so means embedding geothermal in core planning frameworks and developing investable project lists that attract finance and speed delivery.

Actions

- **Add geothermal to scenarios and policies.** Explicitly include geothermal in National Energy System Operator scenarios, Department for Energy Security and Net Zero policies, and the Industrial Decarbonisation Strategy.[35] Taking this step would signal long-term demand for domestic, firm clean heat and dispatchable electricity, giving investors confidence. Additional policy ideas are discussed in Chapter 5, "Clearing the Runway: Policies and Regulations to Scale the United Kingdom's Geothermal Potential."
- **Maintain and expand subsurface resource data.** As detailed in Chapter 3, "Where Is the Heat? Exploring the United Kingdom's Subsurface

Geology," subsurface characterisation and other technical and operational challenges must be addressed to unlock scalable deployment.

- **Launch a national demonstration programme.** The UK geothermal sector currently lacks an operational track record at commercial scale—no utility-scale deep geothermal plants currently operate in the UK for heat or power. The United States launched its FORGE project in Utah to help overcome a similar challenge and create a commercial pathway for new geothermal technologies.[36] At Utah FORGE, the programme has established standardised testing protocols and monitoring, and Fervo's nearby early projects demonstrate rapid learning-by-doing in drilling and reservoir performance.[37] This success illustrates how a similar demonstration programme in the UK focused on producing bankable data and repeatable delivery models could be catalytic. A modest UK demonstration programme would serve three critical functions: (1) generate performance data (flow rates, temperatures, decline curves, and operational costs) that will inform GRIF underwriting and reduce insurance premiums for subsequent projects; (2) establish standardised technical specifications and procurement frameworks that can be replicated, lowering costs industry-wide; and (3) create visible, bankable precedents that institutional investors can evaluate, addressing the "first-mover disadvantage" that has stalled UK geothermal despite successful deployment in comparable jurisdictions. In recognition of the UK's devolved governance arrangements—where energy policy is largely reserved to Westminster but planning and consenting are devolved—GB Energy will work with relevant national and devolved authorities to define clear, standardised project templates and a unified instruction set so that operational lessons can be consistently transferred across jurisdictions.
- **Standardise project front-end requirements.** Through the HNDU and the British Geological Survey, create a site information dossier for all candidates that includes desk geology, an appraisal plan, an anchor-load map (showing district heat, clusters, and data centres), indicative offtake pathways, and early-stage community engagement notes.

Who Leads

- National Energy System Operator and Department for Energy Security and Net Zero for scenarios and policy integration
- British Geological Survey and Geological Survey of Northern Ireland for atlas and classification
- Great British Energy, with the Scottish government's cabinet secretary for climate action and energy for national demonstration programme
- Heat Networks Delivery Unit for site dossiers and support for their development

All agencies coordinate for the national demonstration programme.

Why This Step Closes the Gap

A visible, standardised pipeline shortens diligence, concentrates support at the best sites, and prepares projects for risk transfer, laying the foundation for subsequent financing steps.

Step 2: Transfer Exploration Risk and Stack Public Capital Where It Has the Most Impact

In this step, the riskiest phase of geothermal development—exploration and drilling to appraise a site—is shielded from risk via early public anchors so projects can raise affordable capital before revenue contracts exist.

Actions

- **Establish a government-backed GRIF.** The GRIF would cover the risk of exploration failure, initial underperformance, and the early temperature decline. Re-insure global specialty markets so banks accept the transfer as credible. Similar public-backed drilling-risk and guarantee mechanisms already operate in Europe, providing workable precedents for a UK design. Existing UK bodies can administer this step. Design and regulatory oversight would reflect the UK's devolution settlement—energy policy and resource licensing remain reserved to the UK Parliament and the Department for Energy Security and Net Zero, but planning, local consenting, and heat policy are devolved in Scotland and Wales—so Great British Energy, the Department for Energy Security and Net Zero, and devolved administrations (such as the Scottish government) will agree on operating parameters and enforcement mechanisms.

- **Add a philanthropic or public first-loss layer.** Adding this layer of about £5 million per project to fund front-end studies and a slim-hole pilot well would generate the data needed for GRIF underwriting and de-risking transition to appraisal wells.
- **Capitalise Great British Energy for early equity.** Allocate an estimated £200 million for Great British Energy to co-invest in between 10 and 15 early-stage schemes, bridging projects from appraisal to shovel-ready. Statutory consent motions for Great British Energy investments in Scotland and Northern Ireland will be facilitated through intergovernmental agreement where required.
- **Create a geothermal sleeve within the National Wealth Fund.** Ring-fence £500 million to invest in early projects, crowding-in private equity and debt investors who would otherwise be reluctant to participate.
- **Deploy co-loans via the British Business Bank.** Offer senior or mezzanine tranches alongside commercial lenders, lowering the blended capital costs once insurance is in place.
- **Invite offtakers and the supply chain to participate.** Encourage minority equity stakes from district-heat operators, municipal energy companies, and large industrial heat users. Use oil and gas-style risk-sharing tools (for example, carried interests, service-for-equity, and multi-well structures) so drilling contractors share risks and rewards.

Who Leads

- Department for Energy Security and Net Zero and HM Treasury for GRIF design and re-insurance
- National Wealth Fund as aggregator and investor
- Great British Energy for early equity
- British Business Bank for co-lending
- Devolved administrations (such as Scottish government) and local authorities for planning and consenting alignment where projects sit within their jurisdictions
- Offtakers and service firms (voluntary participation)

Coordination Mechanism

A formal intergovernmental coordination forum will be established (Department for Energy Security and Net Zero, Great British Energy, devolved administration energy leads, and relevant regulators) to ensure clarity on devolved and reserved roles, mutual enforcement of standards and templates, and alignment of regulatory expectations across the UK's different energy governance frameworks.

Why This Step Closes the Gap

By combining insurance, first-loss support, and early public anchors, projects secure leverage and lower the cost of capital at the most finance-starved stage. De-risked wells become bankable resources, unlocking construction finance.

Step 3: Build Pilot Projects with Revenue Certainty, Not Bespoke Deals

Once resources are proven, pilot projects should be financed and built using standard revenue contracts and existing funds rather than bespoke negotiations.

Actions

- **Prioritise proven geothermal in the Green Heat Network Fund.** Once resources are confirmed via GRIF-compatible tests, the GHNF should finance network integration and customer connections. Align GHNF milestones with insurance verification to reduce timing risk.
- **Reform power contracts for geothermal CHP.** Establish a geothermal-specific budget line within Contracts for Difference, and make insurance-backed projects eligible early so electricity revenue is bankable before construction starts. Geothermal combined heat and electricity could be a subcategory of geothermal electricity only because its economics are more challenging.
- **Publish model contracts for heat.** Standardise long-term heat offtake agreements tied to zoning, with lender-friendly indexation, termination, step-in, and measurement and verification provisions that allow local councils and operators to adopt them off the shelf.
- **Encourage geothermal offtakers to be co-investors.** Create pathways for heat-network operators and

large users to take minority equity stakes—trading modest capital today for predictable heat prices tomorrow and helping unlock matched finance.
- **Bundle procurement across a demonstration portfolio.** Offer standardised
  - Well-design and stimulation workflows (leveraging oil and gas expertise);
  - Rig specifications to promote onshore rig construction and automation;
  - Organic Rankine Cycle specifications to aggregate orders to stimulate onshore production and cut lead times;
  - Engineering, Procurement, Construction, and Commissioning scopes and controls to compress schedules and reduce costs; and
  - Fast-tracked Health, Safety and Environment approvals on working organic fluids.

Who Leads

- Green Heat Network Fund for construction
- Low Carbon Contracts Company and Contract for Difference team for power contracts
- Department for Energy Security and Net Zero and Heat Networks Delivery Unit for heat contracts
- National Wealth Fund and Great British Energy for equity, debt, and bundled procurement
- Environment Agency to lead Health, Safety and Environment approvals on organic working fluids.

Why This Step Closes the Gap

Stable revenue frameworks and standard documents turn pilots into infrastructure, making them financeable and replicable.

Step 4: Align Demand and Mobilise Regional Finance So Projects Close Faster

New electricity demand can help fund local infrastructure, communities can co-finance networks, and regional institutions should establish explicit geothermal lanes.

Actions

- **Pilot a programme for large new electricity users.** In high-demand areas (such as data centres and energy-intensive plants), require the developers of large facilities to make contributions that can support local grid upgrades. These contributions should be standardised and tradeable, with reductions given for implementing on-site CHP and sharing surplus heat and electricity with nearby customers. This approach replaces blunt levies with a financeable asset and builds geothermal demand.
- **Enable local climate bonds.** Councils issue bonds for proven district-heating networks backed by contracts for heat, which lowers delivered heat prices and builds municipal ownership.
- **Mandate the Financial Conduct Authority to create a sandbox (a supervised, time-limited environment for live trials under tailored regulatory safeguards).** Conduct trials of geothermal-linked instruments such as geothermal gilts, local climate bonds, Emissions Trading System (ETS)–linked equity incentives, and tradeable infrastructure contributions.
- **Establish regional delivery lanes.** Require regional low-carbon investment funds to earmark geothermal allocations, accelerate offtake agreements with major heat-network operators, and leverage established infrastructure managers (such as Amber Infrastructure, Equitix, Schroders Greencoat, and Triple Point) to scale deployment.
- **Expand Salix Finance.** Use Salix for small, fast programmes in municipal and health-sector networks, which complements the GHNF's larger capital grants by providing rapid, interest-free public sector finance for connections and secondary-side upgrades (for example, heat interface units, controls, and metering); offering match funding; and de-risking GHNF schemes by firming near-term anchor loads.
- **Connect the workforce and supply chain.** Transition oil and gas workers via existing training frameworks, and attract oil and gas and power-equipment firms with bundling incentives such as investment zone relief, targeted capital grants, and streamlined planning. (See Chapter 8, "Beyond the North Sea: Leveraging the United Kingdom's Oil and Gas Expertise to Advance Geothermal," for more on this approach.)

Who Leads

- HM Treasury and local authorities for the local climate bonds and contribution pilots
- Financial Conduct Authority for financial instruments

- Regional funds and operators for frameworks
- Salix for municipal programmes
- Infrastructure managers for delivery

Why This Step Closes the Gap

Demand-side money and local capital reduce reliance on central funds, expedite closings, and keep tariffs affordable.

Step 5: Refinance into Low-Cost, Long-Tenor Capital and Recycle Public Money

Operating pilots are refinanced or bought out by project finance and institutional investors; government anchors recycle proceeds into the next round of wells.

Actions

- **Issue geothermal gilts and local climate bonds.** Use national gilts and local bonds to refinance proven geothermal assets at near-sovereign rates, typically 4 percentage points or 5 percentage points cheaper than private infrastructure debt.
- **Adopt reserves-based lending and portfolio finance.** Translate proven geothermal resources into collateral that banks recognise, using multi-well structures and service-for-equity models drawn from the oil and gas sector.
- **Deploy ETS-linked equity incentives.** Allocate a small, performance-linked share of anticipated lifetime carbon dioxide equivalent (CO_2e) savings, monetisable in the ETS market. At £45 per tonne of CO_2e,[38] a 40 megawatt electric and 80 megawatt thermal combined heat and electricity project avoids about 300,000 tonnes of CO_2e annually, yielding around £13.5 million in emissions value. Dedicating 10% of lifetime value could offset between £40 million and £50 million of equity without new grants.
- **Recycle the anchors.** Require the National Wealth Fund and Great British Energy to exit a project once it is refinanced, and re-deploy proceeds into the next set of appraisals and builds. This step creates a rolling programme and avoids stranded public investment.

Who Leads

- HM Treasury and UK Debt Management Office for gilts
- Local authorities for climate bonds
- Commercial banks and the British Business Bank for reserves-based lending and portfolio structures
- Emissions Trading System authority for performance-linked allocations
- National Wealth Fund and Great British Energy for reinvestment

Why This Step Closes the Gap

Low-cost take-out capital locks in affordability and frees public money to repeat the cycle—turning a handful of projects into a pipeline.

CONCLUSION

Geothermal can deliver reliable heat and truly dispatchable electricity while easing grid constraints and cutting whole-system costs. The obstacle is not the resource but the pre-construction appraisal risk that prevents otherwise viable projects from reaching build. The solution to this problem is implementing a disciplined, five-step pathway that uses existing institutions and adds a philanthropic first-loss funding step where capital is scarcest. Together, these steps turn system value into bankable cash flows.

The five steps tackle the bottleneck with insurance plus public anchors, focus each institution where it is most catalytic, bring in local and private capital, and recycle public money to fund future projects. With these steps and the institutions already in place, the United Kingdom can fund and remove early-stage risk and move projects from concept to bankable assets.

Geothermal can deliver reliable heat and truly dispatchable electricity while easing grid constraints and cutting whole-system costs. The obstacle is not the resource but the pre-construction appraisal risk that prevents otherwise viable projects from reaching build. The solution to this problem is implementing a disciplined, five-step pathway that uses existing institutions and adds a philanthropic first-loss funding step where capital is scarcest. Together, these steps turn system value into bankable cash flows.

POTENTIAL FUNDING PATHWAYS IN THE UNITED KINGDOM

Green Heat Network Fund (GHNF)

The GHNF is the main capital grant programme, covering up to 50% of eligible commercialisation and construction costs in England.[39] Launched in 2022 with £288 million, GHNF has already awarded more than £380 million.[40] In January 2026, the government announced[41] that the GHNF will receive £195 million per year in capital funding through 2030 for the commercialisation and construction of heat networks. The plan outlines the government's approach to heat network zoning, commits to publishing a national pipeline of district heating opportunities, and confirms its ambition for heat networks in England to double by 2035, providing at least 7% of England's total heat demand. While this is a welcome development for heat networks, it was also a missed opportunity to catalyse the supply of geothermal energy to those heat networks from minewater-fed heat pumps, direct heat, CHP, and aquifer thermal energy storage. Ground source heat pumps for buildings were also not incentivised. Geothermal schemes qualify only once the resource is proven and construction-ready. The GHNF does not fund exploration or appraisal drilling, so developers must raise early-stage capital elsewhere. Current rules cover "finalising contracts, procurement, planning, and technical investigations, including geological surveys and exploratory investigations." In practice, "exploratory investigations" has been applied narrowly (for example, to shallow geotechnical works), but the language could be broadened.

Heat Networks Delivery Unit (HNDU)

The HNDU provides early-stage grant support and technical guidance to local authorities for developing heat network pilots.[42] Since inception, it has distributed about £40 million to more than 300 projects.[43] HNDU funding can help position geothermal heat for integration into local network business cases—but again, it does not fund the subsurface resource risk phase.

Public Sector Decarbonisation Fund

More than £2.7 billion in grants have been awarded to support decarbonisation projects in public sector buildings between financial years 2020–21 and 2025–26.[44,45] Beneficiaries have included local authorities, schools, hospitals, and emergency services. The University of York was awarded £35 million to decarbonise multiple buildings across its main campus in York, most of which will be connected to an on-site geothermal heating network, while others will link to the existing district heating system.[46]

Contracts for Difference (CfD)

The CfD programme is the United Kingdom's flagship mechanism for providing long-term revenue certainty to low-carbon electricity generators.[47] The funding rounds for geothermal (Allocation Round [AR]5–AR7) are as follows:

- **AR5 (2023):** Three Geothermal Engineering Ltd projects—Manhay (5 megawatts electric), Penhallow (5 megawatts electric), and United Downs (2 megawatts electric)—secured 12 megawatts electric CfDs at £119 per megawatt-hour (2012 prices).
- **AR6 (2024):** The administrative strike price for geothermal rose to £157 per megawatt-electric-hour in 2012 prices (~£219 per megawatt-electric-hour in 2024 prices).[48] No geothermal projects were awarded CfDs in AR6.
- **AR7a (2025), Pot 2:** The administrative strike price for geothermal remained at £219 per megawatt-electric-hour in 2024 prices. The value of the pot was £15 million to allocate between all emerging technologies listed.[49]

The CfD structure does nothing to finance the pre-construction risk capital phase, when tens of millions of pounds per project may be needed for resource appraisal drilling before any revenue contract can be signed.[50]

National Wealth Fund (formerly UK Infrastructure Bank)

Now rebranded as a £28 billion sovereign-backed fund, the National Wealth Fund's mandate extends beyond infrastructure to include wider industrial strategy objectives.[51] While the fund can provide debt or equity for proven geothermal network projects—especially if linked to regional economic development and in association with private funds—it has a minimum £25 million ticket size, with a target of between £25 million and £50 million.[52]

Great British Energy (GB Energy)

GB Energy is planned as a state-backed investment vehicle with £8.3 billion over the parliamentary term.[53] Its remit is still under consultation, and equity stakes in early-stage geothermal would require an explicit mandate and allocation. The initial budget is modest: £100 million allocated for 2025–26, with significant scale-up not expected until after 2026.

British Business Bank (BBB)

The BBB channels capital via delivery partners such as Amber Infrastructure and Salix Finance. With £6.8 billion in deployable funds (2024–25)—including about £2.3 billion via Enterprise Capital Funds—BBB offers debt and limited equity (typically less than £5 million; range less than £1 million to £14 million[54]) at commercial rates. Its real value lies in financing small and medium enterprise supply-chain actors (for instance, drilling contractors, civils, fabrication, controls, and network installers) rather than direct project development.

Contracts for Heat (Conceptual/Proposed in This Chapter)

Not yet operational, contracts for heat would mirror the economic incentives of CfDs by offering long-term, fixed-price offtake. They could give geothermal projects bankable revenue certainty but would require statutory zoning and standard lender-friendly templates. Until then, projects remain dependent on ad hoc agreements.[55]

Geothermal Resource Insurance Facility (GRIF; Conceptual/Proposed in This Chapter)

Not yet operational, a GRIF could address the United Kingdom's main geothermal barrier: the tens of millions of pounds in appraisal drilling risk that block projects before GHNF or CfD support is viable. By underwriting this phase, the GRIF would shift risk into global re-insurance markets and unlock cheaper capital. Coverage would include the following:

- Exploration failure (dry wells)
- Underperformance (low flow and temperature)
- Early decline (first 5 years to 10 years)

Policies would use deductibles and co-insurance to limit moral hazard, with subsidised premiums. As mentioned in the summary, comparable public-backed geothermal risk guarantee and drilling-risk cover schemes already operate in Europe—including France's GEODEEP guarantee fund, the Netherlands' Garantieregeling Aardwarmte, and Germany's KfW geothermal drilling-risk cover—showing that this type of risk-transfer tool is an established way to catalyse private investment.[56,57,58] The Department for Energy Security and Net Zero and HM Treasury could administer GRIF, reinsured by firms such as Munich Re or Swiss Re. Precedents in France and Germany, as well as with the World Bank and European Investment Bank, show such schemes cut financing costs by around 20% and expand pipelines by more than 50% in five years.

GRIF should link directly to GHNF and CfD allocations so insured wells move seamlessly into bankable projects. Combined with GB Energy equity and NWF co-investment, taking this step would complete a UK geothermal financing chain.

PLAN OF ACTION

What departments can do in the next 12 months to 24 months:

1. **Publish and place GRIF.** Issue terms for a government-backed insurance facility covering exploration failure, underperformance, and early decline, and secure re-insurance in global specialty markets.

2. **Capitalise early-stage anchors.** Confirm a £500 million geothermal sleeve within the National Wealth Fund and £200 million for Great British Energy to co-invest in at least 10 early-stage schemes. Enable British Business Bank co-loans alongside insured projects.

3. **Standardise site data and contracts.** The British Geological Survey and the Heat Networks Delivery Unit should publish a site information and assessment dossier with due-diligence templates; the Department for Energy Security and Net Zero and the Heat Networks Delivery Unit should release model contracts for heat tied to zoning; and the Low Carbon Contracts Company and the Contracts for Difference team should confirm a geothermal budget line with early eligibility for insured projects.

4. **Launch the national demonstration programme.** Select a mixed portfolio of heat-only and combined heat and electricity generation sites in specific regions; bundle procurement; invite offtaker minority equity; and deliver quarterly reports on cost, schedule, test results, availability, and contracted revenues.

5. **Pilot demand-side and local finance.** Run infrastructure contribution pilots for large new electricity users with offset credits; enable local climate bonds on model terms.

6. **Prepare refinancing lanes.** Develop geothermal gilt templates, agree on reserves-based and portfolio finance structures with lenders, and implement Emissions Trading System–linked equity incentives with claw backs.

7. **Support the atlas and the workforce.** Fund the British Geological Survey to perform new data and atlas updates; expand oil and gas reskilling pathways and procurement frameworks to speed workforce transition.

CHAPTER REFERENCES

1 Climate Change Committee. (2020). *Sixth carbon budget*. https://www.theccc.org.uk/publication/sixth-carbon-budget/

2 National Energy System Operator (NESO). (2024). *Future energy scenarios*. https://www.neso.energy/publications/future-energy-scenarios-fes

3 BRGM. (2022, September 9). *Development of deep geothermal resources in France*. https://www.brgm.fr/en/reference-completed-project/development-deep-geothermal-resources-france

4 Project InnerSpace. (n.d.). *GeoMap*. https://geomap.projectinnerspace.org/geomap/

5 National Energy System Operator (NESO). (2024). *Clean power 2030: Advice on achieving clean power for Great Britain by 2030*. NESO. https://www.neso.energy/document/346651/download

6 Millard, R., & Pickard, J. (2024, November 5). Britain will need gas plants as "back-up" for wind in 2030, says grid operator. *Financial Times*. https://www.ft.com/content/2b3aff38-570c-4718-b26d-3fa346110b14

7 Linvill, C., Candelaria, J., & Elder, C. (2013). *The value of geothermal energy generation attributes: Aspen report to Ormat Technologies*. Aspen Environmental Group.

8 Department for Business, Energy and Industrial Strategy. (2021). *Opportunity areas for district heating networks in the UK: National comprehensive assessment of the potential for efficient heating and cooling*. Government of the United Kingdom. https://assets.publishing.service.gov.uk/media/61371cdbd3bf7f05b166a517/opps_for_dhnnca_hc.pdf

9 Department for Energy Security and Net Zero. (2025). *UK geothermal platform*. Government of the United Kingdom. https://www.gov.uk/government/publications/uk-geothermal-platform

10 British Geological Survey (BGS). (n.d.). *UK geothermal platform*. https://ukgeothermalplatform.org

11 National Energy System Operator (NESO). 2024. *Summer outlook*. https://www.neso.energy/document/316126/download. Heat network cost = £3 per megawatt thermal per hour = £7.9 per kilowatt thermal per year at 30% capacity factor.

12 Ofgem. (2022). Appendix 1–Demand HCC development methodology. In *Access and forward-looking charges significant code review: Decision and direction*. Government of the United Kingdom. https://www.ofgem.gov.uk/sites/default/files/2022-05/Appendix%201%20%E2%80%93%20Demand%20HCC%20development%20methodology1651572982904.pdf. Grid reinforcement capital cost: £1720 per kilovolt-ampere (that is, kilowatt electric for 1.0 power factor) = £73–£173 kilowatt electric annualised.

13 British Geological Survey. (n.d.). *Geothermal energy*. https://www.bgs.ac.uk/geology-projects/geothermal-energy/

14 Calculated by the author based on various resources.

15 Historical well counts are derived from North Sea Transition Authority (NSTA). (2024).*Wells insight report 2024*. https://www.nstauthority.co.uk/news-publications/wells-insight-report-2024/

16 Data indicate that approximately 6,800 offshore wellbores and around 1,500 onshore wellbores spudded between 1980 and 2025. British Geological Survey (BGS). (2023, June 15). *A new open dataset to benefit onshore geoscience research*. BGS News. https://www.bgs.ac.uk/news/a-new-open-dataset-to-benefit-onshore-geoscience-research

17 Fervo Energy. (2025, June 10). *Fervo Energy drills 15,000-ft, 500°F geothermal well pushing the envelope for EGS deployment* [Press release]. https://fervoenergy.com/fervo-energy-pushes-envelope/

18 National Energy System Operator (NESO). (n.d.). *Constraint breakdown 2022-2023* [Database]. https://www.neso.energy/data-portal/constraint-breakdown/constraint_breakdown_2022-2023

19 Eastern Green Link. (n.d.). *Eastern Green Link 1: Torness–Hawthorn Pit*. https://www.easterngreenlink1.co.uk

20 Eastern Green Link. (n.d.). *Eastern Green Link 2*. https://www.easterngreenlink2.co.uk/

21 National Energy System Operator (NESO). (2024). *Beyond 2030: A national blueprint for a decarbonised electricity system in Great Britain—Web map*. NESO. https://www.neso.energy/publications/beyond-2030/web-map

22 Ofgem. (2023). *Accelerated strategic transmission investment guidance and submission requirements document*. Government of the United Kingdom. https://www.ofgem.gov.uk/sites/default/files/2023-08/Accelerated%20Strategic%20Transmission%20Investment%20Guidance%20And%20Submission%20Requirements%20Document.pdf

23 HM Treasury. (2022). Annex 6: Discounting. In *The green book*. Government of the United Kingdom. Last updated May 2024. https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-government/the-green-book-2020

24 UK Power Networks. (n.d.). *Distribution network energy losses*. https://www.ukpowernetworks.co.uk/distribution-network-energy-losses. This reports that transmission and distribution totaled 7.2% of the total electricity consumed in Great Britain. These electricity-network losses were 21.4 terrawatt-hours in 2023.

25 Calculated by the author based on various resources.

26 National Energy System Operator (NESO). (2024). *Annual balancing services spend report 2023/24*. https://www.neso.energy/document/346086/download.This report shows approximately £1.01 billion total balancing services spend and ancillary services share.

27 National Energy System Operator (NESO). (2023). *Monthly balancing services summary 2023/24: June 2023*. https://storage.googleapis.com/dx-national-grid/national-grid/resources/251db6d5-6acd-40bd-ab64-f5b0ba760a19/mbss-june-2023.pdf. This report shows £52.82 million spent on ancillary services out of £115.23 million total (~45%).

28 Department for Energy Security and Net Zero. (2025). *UK energy in brief 2025*. Government of the United Kingdom. https://assets.publishing.service.gov.uk/media/688890c3a11f859994409132/UK_Energy_in_Brief_2025.pdf

29 HM Treasury, 2022.

30 *The Green Book* uses a Social Time Preference Rate (STPR) for discounting.

31 Department for Transport. (2024). *Value for money: Supplementary guidance on categories*. Government of the United Kingdom. https://assets.publishing.service.gov.uk/media/673e1cd02ff787d4e01b08d6/value-for-money-supplementary-guidance-on-categories.pdf. See Box 1.1 on page 4.

32 National Agency for Territorial Cohesion & the Ministry of Territorial Planning and Decentralization. (n.d.). *SA.48894 GEODEEP–Guarantee fund for geothermal projects*. Government of France. https://www.europe-en-france.gouv.fr/fr/aides-d-etat/regimes-d-aide/sa48894-sa48894-sas-geodeep-guarantee-fund-geothermal-projects

33 Netherlands Enterprise Agency. (2025, February 27). *Covering risks for geothermal energy (RNES Geothermal Energy)*.Government of the Netherlands. https://www.rvo.nl/subsidies-financiering/rnes

34 Richter, A. (2025, December 18). *Germany launches KfW geothermal loan and drilling risk cover*. ThinkGeoEnergy. https://www.thinkgeoenergy.com/germany-launches-kfw-geothermal-loan-and-drilling-risk-cover/

35 Department for Energy Security and Net Zero & Department for Business, Energy and Industrial Strategy. (2021). *Industrial decarbonisation strategy*. Government of the United Kingdom. https://www.gov.uk/government/publications/industrial-decarbonisation-strategy

36 Geothermal Technologies Office. (n.d.). *FORGE*. U.S. Department of Energy. https://www.energy.gov/eere/geothermal/forge

37 McClennan, J., Swearingen, L., & England, K. (2024). *Utah FORGE: Wells 16A(78)-32 and 16B(78)-32 Stimulation Program Report—May 2024* [Data set]. Geothermal Data Repository, Energy and Geoscience Institute at the University of Utah. https://doi.org/10.15121/2483880

38 Department for Energy Security and Net Zero. (2024). *Traded carbon values used for modelling purposes, 2024*. Government of the United Kingdom. https://www.gov.uk/government/publications/traded-carbon-values-used-for-modelling-purposes-2024/traded-carbon-values-used-for-modelling-purposes-2024. Central scenario values around £37 per tonne of CO_2-equivalent in 2024, increasing in later years.

39 Department for Energy Security and Net Zero. (2025). *Green Heat Network Fund (GHNF): Guidance on how to apply*. Government of the United Kingdom. https://www.gov.uk/government/publications/green-heat-network-fund-ghnf

40 Department for Energy Security and Net Zero, *Green Heat Network Fund*, 2025.

41 Department for Energy Security and Net Zero. (2026). *Warm homes plan*. Government of the United Kingdom. https://assets.publishing.service.gov.uk/media/696f8a3ec0f4afaa9536a0c4/warm-homes-plan-standard-print.pdf

42 Department for Energy Security and Net Zero. (2017). *Heat Networks Delivery Unit*. Government of the United Kingdom. Last updated on January 19, 2026. https://www.gov.uk/guidance/heat-networks-delivery-unit

43 Department for Energy Security and Net Zero, 2017.

44 Department for Energy Security and Net Zero. (2024). *Public Sector Decarbonisation Scheme*. UK Parliament. https://questions-statements.parliament.uk/written-questions/detail/2024-05-07/25109

45 Department for Energy Security and Net Zero. (2024). *Public Sector Decarbonisation Scheme: Phase 4–projects awarded funding*. Government of the United Kingdom. https://www.gov.uk/government/publications/public-sector-decarbonisation-scheme-phase-4

46 Department for Energy Security and Net Zero. (2025). *Phase 4 Public Sector Decarbonisation Scheme: Project summaries*. Government of the United Kingdom. https://www.gov.uk/government/publications/public-sector-decarbonisation-scheme-phase-4/phase-4-public-sector-decarbonisation-scheme-project-summaries

47 Low Carbon Contracts Company (LCCC). (n.d.). *Contracts for Difference*. https://www.lowcarboncontracts.uk/our-schemes/contracts-for-difference/

48 Low Carbon Contracts Company (LCCC). (2024). *CfD Allocation Round Six (AR6) results*. https://www.lowcarboncontracts.uk/news/cfd-allocation-round-six-ar6-results/

49 Government of the United Kingdom. (2025, December 8). *Accompanying note to the contract budget notice for Allocation Round 7a (AR7a), 2025*. https://assets.publishing.service.gov.uk/media/6936af1070840a535475d3fd/cfd-ar7-second-contract-budget-notice-accompanying-note.pdf

50 GTW UK Ltd analysis of UK geothermal project pre-construction cost structures, September 2024. Unpublished internal document.

51 National Wealth Fund. (n.d.). *National Wealth Fund*. https://www.nationalwealthfund.org.uk/

52 National Wealth Fund. (n.d.). *Our products and terms*. https://www.nationalwealthfund.org.uk/private-sector-finance/our-products-and-terms

53 House of Commons Library. (2024, October 25). *Great British Energy Bill 2024-25*. UK Parliament. https://commonslibrary.parliament.uk/research-briefings/cbp-10088/

54 British Business Bank (BBB). (2024). *Small business equity tracker 2024*. https://www.british-business-bank.co.uk/sites/g/files/sovrnj166/files/2024-07/sbet-2024-report.pdf

55 Conceptual mechanism; no formal government documentation.

56 National Agency for Territorial Cohesion & the Ministry of Territorial Planning and Decentralization, n.d.

57 Richter, 2025.

58 Netherlands Enterprise Agency, 2025.