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Feasibility of EU Funding for the Geothermal-Powered AI Data Center in Băile Felix, Romania

Alignment with EU Strategic Goals (Green Deal, Digital Decade, SET Plan)

The proposed geothermal-powered AI data center strongly aligns with core EU strategies by uniting digital advancement with climate action. It directly addresses the European Green Deal's drive for carbon neutrality and the *Digital Decade* goal of technological sovereignty. In fact, the project exemplifies how the **massive energy demands of AI and cloud** can be met sustainably in line with Green Deal objectives [1]. The facility would be powered 100% by renewable geothermal energy in a closed-loop system, making it a model for **climate-neutral data centres by 2030** – a target explicitly supported by EU policies under the Green Deal and Digital Decade [2]. By eliminating fossil power use and recovering waste heat for local use, the project contributes to emissions reduction and circular economy principles, bolstering EU climate targets.

Crucially, the data center also advances *digital sovereignty*: it provides high-performance computing infrastructure on EU soil, aligning with Europe's 2030 digital targets (e.g. widespread AI and cloud adoption) while remaining *green*. This dual benefit speaks to the EU's Strategic Energy Technology (SET) Plan as well. The SET Plan's geothermal roadmap calls for **innovative renewable technologies** and improved geothermal conversion efficiency; the project's **closed-loop geothermal system** is exactly such an innovation, avoiding the environmental downsides of traditional geothermal and pushing the technology frontier. By demonstrating a novel geothermal application for 24/7 clean power, the project supports SET Plan objectives to expand geothermal use for both electricity and heating in Europe [3]. In summary, the Băile Felix initiative is framed as a *flagship example* of marrying the EU's twin transitions – digital and green – in a single infrastructure project [1] [4].

Suitability for Major EU Funding Instruments

Given its alignment with EU priorities, the project appears to fit the eligibility criteria of several EU funding programs aimed at green innovation, energy, and digital infrastructure:

- **Horizon Europe (Research & Innovation)** – *Relevance:* Horizon Europe supports collaborative R&D and demonstration projects that tackle climate change and digital innovation. This geothermal-AI data center could seek funding under *Cluster 5 (Climate, Energy)* or *Cluster 4 (Digital, Industry)* calls. For example, Horizon Europe 2025 has a call on **innovative geothermal systems** (including closed-loop technology) [3], where the project could apply as a demonstration of a novel geothermal power plant integrated with an energy-intensive digital use-case. *Criteria:* Horizon Europe typically requires a consortium of at least 3 independent entities from different EU countries. The project team should include partners like research institutes (for geothermal reservoir analysis and AI computing), technology providers, and even local authorities (for heat reuse) to strengthen the proposal. **Eligible activities** would include engineering R&D, pilot drilling and well testing, construction of the demo plant and data center cooling systems, and monitoring of performance. The funding (often ~70% of eligible costs for innovation actions [5]) would target the high-risk, innovative aspects – e.g. validating the closed-

loop geothermal technology at scale and its integration with an AI data center (improving power usage effectiveness, etc.). The project's focus on **technological innovation and climate impact** fits Horizon Europe's evaluation criteria (excellence, impact, implementation). It should emphasize contributions to EU policy (green and digital transitions) and plan for knowledge dissemination (creating an EU-wide model).

- **EU Innovation Fund** – *Relevance:* The Innovation Fund (financed by the ETS) supports large-scale **first-of-a-kind** projects that significantly cut greenhouse gas emissions. A geothermal-powered data center qualifies as an innovative climate solution: it replaces grid/fossil electricity with zero-carbon geothermal power and even repurposes waste heat. Notably, the Fund has already backed projects in this realm – for example, a distributed data centre in Brescia that recovers waste heat for district heating received an Innovation Fund grant [6]. Moreover, the cutting-edge **closed-loop geothermal** tech has precedent: the EU Innovation Fund awarded **€91.6 million** to a similar closed-loop geothermal project (Eavor-Loop in Germany) in 2022 [7]. *Criteria:* The Innovation Fund looks at **effectiveness in CO_2 reduction**, innovation level, scalability, and project viability. The Băile Felix project should quantify its anticipated CO_2 savings (e.g. **net annual CO_2 abatement** from replacing grid power) and highlight the novelty of combining geothermal with AI computing. A strong business plan is needed, as the Fund covers a portion of the *capital expenditure* or "funding gap" and expects projects to reach operation within a set timeframe. The project's scale (a full-scale power plant + data center) likely falls under the **large-scale projects** call. Typically, no formal consortium is required (single company applicants are allowed), but having partnerships (energy utility, tech company, etc.) can strengthen the case. **Eligible costs** would be those related to the innovative elements – drilling, power plant construction, heat reuse systems, and the incremental costs of making the data center ultra-efficient. Given the competition, positioning the project as a *flagship climate-tech demo for data centers* (with replication potential across Europe) would be wise. Timing-wise, the next Innovation Fund large-scale call is expected in late 2024 or 2025, which could align with the project's development schedule.

- **Modernisation Fund** – *Relevance:* The Modernisation Fund is targeted at lower-income EU Member States (including Romania) to modernize energy systems and reduce emissions, using EU ETS revenues. Romania is tapping this fund for renewable and efficiency investments – for instance, a **€300 million state-aid scheme for geothermal heating/cooling** is being set up via the Modernisation Fund [8] [9]. The Băile Felix project's geothermal component fits the Fund's scope (supporting renewables, new energy infrastructure, storage, and just transition). *Criteria:* Projects are typically proposed through national authorities. In Romania, eligible applicants for Modernisation Fund support include energy companies and local authorities, and the focus so far has been on district heating projects [10] [11]. While the data center is not a traditional district heating project, the **geothermal power plant** part could seek MF co-financing as an innovative renewable generation facility – especially if it also supplies heat to a municipal network or industry. The **state aid scheme** being prepared (funded by MF) suggests grants covering the funding gap of geothermal projects, averaging ~€33 million per project [12]. The project could coordinate with the Romanian Ministry of Energy to be considered under this scheme or future MF rounds. Key is to demonstrate maturity (a feasible plan, permits in progress) and alignment with Romania's energy transition plans. Modernisation Fund support could complement other financing by covering a portion of the geothermal drilling and plant costs.

- **Connecting Europe Facility (CEF)** – *Relevance:* CEF funds cross-border infrastructure in **energy, digital, and transport**. Two parts of CEF are pertinent:

- *CEF-Energy:* It has a special window for **Cross-Border Renewable Energy (CB RES)** projects. A geothermal plant that involves cooperation between Romania and a neighbor (e.g. Hungary) could apply for *CB RES status*, which is a gateway to CEF Energy funding for feasibility studies or even implementation. In fact, CEF's current 5th call for CB RES *status* is open until Feb 2026 [13]. Eligible projects must involve **cross-border cooperation** – this could be met if, say, excess geothermal power or heat from Băile Felix is shared across the border, or if there is joint investment with a Hungarian partner. If the project can frame itself as a Romania–Hungary collaborative renewable initiative (for example, integrating into a regional energy network or sharing knowledge and results across the border), it might obtain CB RES designation and access CEF funds. CEF prioritizes innovative renewables including geothermal [14], so the project's uniqueness is an asset.

- *CEF-Digital:* This supports trans-European digital connectivity – such as fiber backbones, 5G corridors, and connections to key digital sites. A high-performance data center in NW Romania could leverage CEF-Digital to improve its international connectivity. For instance, funding could be sought to deploy a cross-border fiber link from the data center to major internet exchange points or to connect with European HPC networks. While CEF-Digital doesn't fund data center construction, it could finance the **optical fiber infrastructure** to ensure the facility is well-connected in Europe's digital backbone [13] [14]. *Criteria:* CEF requires a *European common interest* and typically multi-country involvement. The project should partner with telecom operators or national authorities to propose a backbone link (e.g. Oradea to Budapest or Vienna) that improves EU connectivity. For CEF-Energy, a memorandum of understanding between Romania and Hungary (or another Member State) would bolster the case. Calls are competitive, so clearly highlighting cross-border benefits (energy sharing, grid balancing, or digital network resilience) is key.

- **InvestEU (and EIB financing)** – *Relevance:* InvestEU is an EU program that provides guarantees to mobilize private financing for projects aligned with EU priorities (sustainable infrastructure, R&I, etc.). A large capital project like this data center can tap into **InvestEU-backed loans** from the European Investment Bank (EIB) or other institutions. For example, the EIB recently lent €45 million to the Eavor geothermal project in Bavaria, using an **InvestEU guarantee** to de-risk the loan [15] [7]. Similarly, the Băile Felix initiative – with its strong climate and innovation profile – could be a candidate for EIB **"Green Deal" investment support**. *Criteria:* Unlike grants, this would be **debt financing**, so the project must demonstrate financial viability (future revenue from data center services, etc.) and sound procurement. The EIB will assess alignment with its climate and innovation lending policies (which this project meets by enabling renewable energy and digital infrastructure). The **InvestEU sustainable infrastructure window** could provide a guarantee, enabling a longer-term, low-interest loan. The project promoters should engage early with EIB or Romania's national promotional bank to discuss inclusion in an **InvestEU pipeline**. Often, blending is possible: for instance, combining an Innovation Fund grant with an EIB loan (as Eavor did) to cover total costs [7]. Additionally, the EIB offers **Project Advisory support** (via the European Investment Advisory Hub, now part of InvestEU Advisory) to help shape projects for bankability. Overall, positioning the data center as a pathfinder for green digital infrastructure could attract EIB's interest, given EIB's mandate to finance climate action and digital connectivity in the EU.

- **Just Transition Fund (JTF)** – *Relevance:* The JTF provides grants to support regions that are *economically dependent on high-emission industries*, helping them transition to greener economies. Romania's JTF allocation (over €2 billion) is focused on **six counties (e.g. Gorj, Hunedoara, Dolj, Galați, Mureș, Prahova)** that host coal mining, coal power, or other heavy industries [16]. Bihor County (where Băile Felix is located) is **not** one of the designated just

transition regions. Therefore, JTF funding is likely *not applicable* to this project, since the region's economy is not categorized as carbon-intensive in the JTF plan. Unless the project could somehow tie into the transition of a nearby eligible area (which is unlikely here), it would not qualify for JTF grants. The project's merits lie more in innovation and sustainability rather than remediating a fossil-dependent economy, so other instruments (as above) are more appropriate.

- **EU Cohesion Policy Funds (ERDF, Cohesion Fund)** – *Relevance:* As a less-developed region, North-West Romania (including Bihor) can access substantial European Regional Development Fund (ERDF) and Cohesion Fund resources for 2021–2027. Romania's Partnership Agreement with the EU allocates **€31.5 billion** in Cohesion funds aimed at green transition, digitalization, and regional development [17]. There may be **national or regional operational programmes** under Cohesion Policy that the project can leverage. For example:

- The **Regional Operational Programme (ROP) for North-West Romania** could support projects that boost regional innovation capacity or digital infrastructure. A hyperscale-ready data center can be an anchor for regional economic growth, aligning with ROP priorities for competitiveness and smart specialization (e.g. IT sector development). While ERDF usually co-funds public or public-private initiatives (often with calls managed by regional authorities), a partnership with the **Oradea Metropolitan Area** or local universities could make the project eligible as part of a regional innovation cluster. Small-scale grant components (for training, SME innovation hubs around the data center, etc.) might be obtained through ROP calls.
- The **Operational Programme for Sustainable Development (funded by ERDF/Cohesion Fund)** at the national level finances renewable energy and energy efficiency investments. If this program issues calls for *renewable electricity generation* or *climate adaptation infrastructure*, a geothermal plant could compete – especially if it supplies public consumers with clean energy or improves grid resilience. The project's unique resilience aspect (geothermal being baseload and climate-proof) aligns with cohesion policy goals of energy security and climate adaptation. Any application here would likely need a Romanian public authority or utility as an implementing body, or a clear public benefit component (e.g. supplying green power to the local grid or providing heating to public buildings).
- **Interreg cross-border programs:** Given Băile Felix's proximity to Hungary, the **Interreg VI-A Romania–Hungary Programme** (2021–2027) is relevant. This €175 million programme (with ~€140M ERDF) supports joint projects in the border counties (including Bihor) [18]. While Interreg grants are usually much smaller, the project could seek funding for specific cross-border elements – for instance, a *Romania–Hungary research collaboration on geothermal technology* or a pilot of cross-border data services. Interreg could fund feasibility studies, exchanges of best practices, or integration of the data center with Hungarian educational/research institutions. Such funding would complement the main investment and underscore the cross-border cooperation aspect (useful for CEF as noted).

In summary, **there is no single EU fund that will fully finance a project of this scale**. However, by matching the project's components to the right instruments, a *financing mix* can be achieved. For example, a plausible package could be: a Horizon Europe or Innovation Fund grant (to support the innovative geothermal plant and cooling tech), combined with a loan from EIB/InvestEU (to finance data center construction), plus tapping the Modernisation Fund or ERDF for any remaining generation or grid-connection costs. The project's strong alignment with EU climate and digital strategies makes it a credible candidate across multiple funding avenues.

Relevant Open or Upcoming EU Funding Calls (2025–2027)

Several specific EU calls for proposals are either currently open or on the near horizon, for which the Băile Felix data center project could apply:

- **Horizon Europe 2025 – Cluster 5 (Climate, Energy)**: *Call on "Novel approaches to geothermal resource development"* – This call (HORIZON-CL5-2025-02-D3-03) opened in May 2025 with a deadline in Sept 2025 [19]. It specifically seeks demonstration projects for **innovative geothermal technologies (shallow or deep)** and mentions *"closed loop technology"* as an area of interest [3]. A proposal from the Băile Felix consortium could fit here, focusing on demonstrating the closed-loop geothermal system at ~2–3 km depth and its integration with power generation. The call's expected EU contribution is ~€10 million per project [20], so it could co-fund early implementation phases. *Upcoming:* If the 2025 call deadline has just passed, the project team should watch for the **2026 Horizon Europe calls** – the Cluster 5 Work Programme 2025-2027 may include follow-on topics for geothermal energy, energy storage, or green data centers. Similarly, **Cluster 4 (Digital, Industry)** might have calls on **energy-efficient data center technologies** or advanced cooling and AI infrastructure (check the 2025–2026 work programme for topics on sustainable digital infrastructure or HPC). The Horizon Europe Funding & Tenders portal is the place to monitor for these calls [21].

- **EU Innovation Fund – 2024/25 Large-Scale Projects Call**: The next large-scale call under the Innovation Fund is anticipated in late 2024 or 2025 (exact timing to be confirmed by the Commission's climate action department). The project should prepare to apply once the call opens. Typically, there is a two-stage process (initial Expression of Interest, then Full Application). *Relevant call focus:* The Innovation Fund doesn't predefine sub-topics but welcomes all sectors – however, proposals are grouped into categories like **Renewable Energy, Energy-Intensive Industries, Energy Storage, etc.** A geothermal power/data center project would likely be evaluated under *Renewable Energy* or *Energy-intensive industry* (since data centers are energy-intensive facilities to be decarbonized). In the 2023 round, we saw relevant awarded projects, e.g. *"Qarnot Green Data Centre – waste heat reuse"* in small-scale, and *Eavor's geothermal* in large-scale [6] [7]. The upcoming call will have a substantial budget (the previous large-scale call had over €3 billion for grants). **Action:** Keep an eye on the EU Innovation Fund website for the call announcement, expected to list deadline dates (likely in 2025) and updated guidelines. Begin compiling the required data (GHG emissions avoidance calculation, project financial model, etc.) early.

- **Connecting Europe Facility (CEF) Energy – Cross-Border Renewable Energy (CB RES) Call:** On **2 Sept 2025, CINEA launched the 5th call** for proposals to obtain *CB RES project status* [22]. The deadline for applications is 5 Feb 2026 [23]. Gaining this status is **mandatory** to later apply for CEF funding for the project's implementation. If the data center's geothermal plant can involve a cross-border agreement (e.g. supplying some power/heat to a neighboring country or joint venture with an entity in Hungary), applying for CB RES status is worthwhile. The call documentation (available via a dedicated submission platform [23]) outlines criteria like needing support letters from the Member States involved. *If successful*, the project could then in a subsequent step apply for **CEF Energy grant** for studies or capital costs under the *CEF Renewable Energy* window. Each CB RES call so far has supported a variety of renewable tech, including geothermal [14]. **Action:** Contact the Romanian Ministry of Energy and the Hungarian energy agency to explore a bilateral cooperation framework, and prepare a CB RES application by the Feb 2026 deadline. Also join the virtual Info Day (e.g. the one on 23 Sept 2025 [24]) to get guidance on the application process.

- **CEF Digital – 2024 Calls for Digital Connectivity:** The Commission has open calls under CEF Digital (e.g. the 4th call in early 2024, budget €230M+ for backbone networks and 5G corridors) [25]. While these calls are not targeted at data centers per se, the project could partner in a proposal to **improve connectivity in NW Romania**. For instance, a call might fund a *terabit fiber route* connecting major data centers or research centers across borders. If a 2024 or 2025 CEF Digital call focuses on *"Backbone connectivity for Digital Global Gateways or Data Infrastructures"*, Băile Felix DC could be included as a node to connect. The **European HPC backbone** or **GAIA-X cloud infrastructure** connectivity could be relevant themes. **Action:** Review the CEF Digital work programme for calls like "*Gigabit connectivity to key digital sites*" or "*Cross-border cloud infrastructure links*". Engage with telecom operators in Romania/Hungary to co-submit a proposal, as typically telecom companies or NRENs (national research and education networks) lead these projects.

- **InvestEU "Project Development Assistance" and EIB's lending pipeline:** While not a call for proposal in the traditional sense, it's important to note that **InvestEU has an advisory hub** where project promoters can apply for technical assistance. This can help refine the business case to meet requirements of financiers. In parallel, EIB often issues calls for *project proposals or initiative pipelines* under its climate and innovation programs. For example, EIB might have a rolling intake for renewable energy projects of significant size – contacting them early is advised. **Action:** Approach the **InvestEU Advisory Hub** (via the European Investment Advisory Hub portal) to request support, and consider EIB's **InnovFin** or **Climate Bank** instruments which sometimes have open expressions of interest. If any **blended call** opens (combining grants and loans, as sometimes done under InnovFin Energy Demo Projects in the past), be ready to apply.

- **National/Regional Calls (co-financed by EU funds):** Keep watch on Romanian ministries and regional authorities for calls that use Cohesion Fund/ERDF money:

- The **Ministry of European Investments and Projects (MIPE)** in Romania announces calls for the Operational Programmes. A relevant one in 2025 is the *PNRR-funded geothermal grant scheme* (already open, closing end of 2025) – though limited to local authorities [26]. If Oradea or Bihor County would partner as applicant (for, say, a district heating component), up to €8M grant could be tapped for geothermal drilling [27].
- The **North-West ROP Managing Authority** may launch calls for high-value investments in innovation or green infrastructure. These are often announced on the regional development agency's website.
- **Interreg RO-HU Calls:** The Interreg programme might release calls for strategic projects soon. A joint Romanian-Hungarian proposal (perhaps establishing a *"Geothermal Innovation Hub"* that includes the data center and a Hungarian counterpart) could secure a few million euros for soft activities (research, training, small equipment).

By targeting specific calls like the above, the project team can assemble funding step by step. It's advisable to use the EU's Funding & Tenders Portal to search keywords (e.g. "geothermal", "data centre") and subscribe to updates, as new calls in Horizon Europe, LIFE, or other programmes (even **LIFE Clean Energy Transition** calls, which sometimes fund market uptake for renewable innovations) could emerge that fit parts of this project.

Romanian Co-Financing and Complementary Mechanisms

To complement EU-level funding, the project should leverage Romanian national programs and co-financing opportunities:

- **National Recovery and Resilience Plan (NRRP)**: Romania's NRRP (funded by NextGenerationEU) includes investments in green and digital transition. Notably, as mentioned, a **€56 million NRRP-funded scheme for geothermal energy** is currently open [28]. However, it is restricted to public-sector applicants (municipalities) for heating supply projects [26]. If the Băile Felix project partners with the City of Oradea or Sânmartin commune (which encompasses Băile Felix), it might access up to **€8 million grant** for eligible geothermal installations [26]. This could defray the cost of drilling exploratory wells or building heat exchangers, particularly if waste heat will feed public buildings. Engaging local authorities as stakeholders can thus unlock this NRRP support by the end-of-2025 deadline.

- **State Aid for Major Investments**: Romania offers state aid schemes to stimulate regional development and job creation. Under the **existing schemes (GD 807/2014 and successors)**, private investors in less-developed regions like Bihor can obtain **reimbursements up to 50% of capital expenditure** for large projects [29] [30]. To qualify, the project would need to meet minimum investment thresholds (around €10 million in assets) and create a certain number of jobs (often 100+ for large projects). The data center project, with significant capital spend on construction and equipment, likely meets these thresholds. By applying to the Ministry of Finance's state aid program for 2021–2027 (recently extended), the company could secure non-refundable support for building the facility and purchasing equipment. This is effectively *national co-financing* that can pair with EU funds: e.g. if Horizon Europe covers R&D and a loan covers part of construction, state aid could fill financing gaps for building the data hall or power infrastructure. Romania has **budget allocated for such aid (over €1 billion)** and prioritizes projects introducing modern technologies and innovation in the region [31] [32]. The application process is competitive and "first-come, first-served," so early submission with government support letters is important.

- **Modernisation Fund (national allocation)**: In addition to the EU-level Modernisation Fund discussion, note that Romania's use of the Fund is implemented via domestic channels. The mentioned **€300M geothermal support program** from MF will effectively be a state aid scheme run by the Ministry of Energy [8] [9]. Staying engaged with the Ministry to ensure the Băile Felix project is recognized as a candidate is key. If the project is "mature" (feasibility completed, permit process started), it could be one of the ~9 projects envisaged to split that funding [12]. The government has indicated even state companies like ELCEN and cities like Timișoara are applying [33] – it would be strategic to position the Băile Felix initiative as *the flagship in the North-West for geothermal*, complementing those in other regions. Perhaps the project can be framed to supply a public service (e.g. backup power or heating to critical facilities), which strengthens its case for public funding.

- **Structural Funds via Operational Programmes**: Romania's Cohesion Policy programs (2021–2027) are starting to roll out calls:

- The **"Competitiveness, Smart Growth" Operational Programme** (if one exists in this cycle) or similar programs could support aspects like high-performance computing capacity for R&D. For instance, a grant to equip the data center with an **AI supercomputer node for academia** could be sought, thereby integrating the project into the national research infrastructure. This would

require collaboration with the Ministry of Research or universities (e.g. Babeș-Bolyai University in Cluj or University of Oradea) to apply for EU funds earmarked for research infrastructure.

- The **Regional Programme for NW Romania** might have a priority on **"Supporting innovation clusters and digitalization"**. The project could anchor a regional innovation cluster in Oradea – bringing together geothermal energy firms, IT companies, and universities. Funding could then be requested for complementary facilities (e.g. a training center, startup incubator next to the data center) through cluster development calls. These funds would typically be smaller but help maximize local socio-economic impact (important for Cohesion policy outcomes).

- **National Research & Innovation Funds**: While smaller in scale, Romania has national RDI programs (like those managed by UEFISCDI) that could co-finance parts of the project, such as experimental development of smart grid integration or AI optimization for energy management. If a call on **"carbon-neutral digital technologies"** or **"renewable integration"** appears, a proposal involving this project's testbed could secure additional grant money and academic partnerships.

By stitching together these sources, the project can attain the necessary co-financing. It's important to note that many EU grants (Horizon, Innovation Fund, etc.) **require co-funding** – the national mechanisms above can serve as that co-funding, alongside private investment. Romania's relatively high permissible state aid intensity (up to 50% in Bihor [30] [32]) is a major advantage – it means the project could potentially receive half its funding in grants (from EU and state sources combined) and cover the rest via loans/private capital.

Recommendations for Positioning the Project for Success

To maximize the chances of securing funding and delivering the project, we recommend the following strategies:

- **Seek "Flagship" or Pilot Initiative Status:** Engage with EU institutions to have the project designated as a *flagship of EU policy*. The feasibility study itself urges that it be labeled a **Flagship Project of the Digital Decade and Green Deal** [34]. This could be achieved by applying to relevant EU programs or awards (for example, the project can be submitted to the **Important Projects of Common European Interest (IPCEI)** in climate/energy if such an initiative arises, or as an EU-wide *lighthouse project* under Horizon Europe missions or partnerships). A flagship status would not only raise the project's profile but also align political support and potentially fast-track certain funding. Similarly, consider branding it as a **"European Geothermal–AI Pathfinder"** project, as recommended in the study [35], to emphasize its role in pioneering a new paradigm. This makes the case to EU funders that supporting this project has Union-wide learning benefits (creating blueprints for other regions to copy).

- **Build a Strong Consortium and Partnerships:** When applying to EU programs (especially Horizon Europe or CEF), the consortium composition is critical. We suggest forming a coalition that includes: (a) **Technical experts** – e.g. a reputable geothermal technology firm or research institute (possibly from countries with geothermal expertise like Germany or France) to lend credibility on the innovation side; (b) **Academic partners** – a university or research center (perhaps University of Oradea and a foreign partner like TU Delft or RWTH Aachen for geothermal engineering) to cover research tasks and workforce training; (c) **Local authority or community stakeholders** – such as Oradea City or Bihor County Council, to demonstrate public support and help with permits and heat offtake agreements; (d) **Industry/end-users** – for instance, a major cloud/AI company or a public institution that will use the data center services

(ensuring the digital infrastructure has clear demand and impact). A cross-border partnership with a Hungarian entity (like the University of Debrecen or a regional development agency in Hungary) would be advantageous for CEF and Interreg, underlining the project's transnational value. Also, involve **government bodies** as needed (the Romanian Geological Institute or energy agency) to navigate regulatory aspects – this shows funders that the project has support at multiple levels. A well-rounded consortium will score higher on EU proposals and can handle the multidisciplinary challenges (drilling, construction, ICT, environmental management, etc.).

- **Emphasize Innovation and "First-of-a-Kind" Nature:** In all funding applications, underscore that this is a **first-of-its-kind project in the EU** – integrating advanced geothermal power with a hyperscale AI data center. Highlight the novelty: a *dual closed-loop system* (closed-loop geothermal + closed-loop liquid cooling) setting new efficiency benchmarks [36]. By positioning the data center as an *innovation sandbox* (for example, testing AI workload scheduling to optimize energy use, or new heat reuse techniques), the project appeals to R&D-oriented funds. Aim to register or publicize the project under initiatives like the **EU Smart Cities Marketplace (energy integration)** or the **Climate-Neutral Data Centre Pact** to further showcase its groundbreaking aspects. The more the project is seen not as routine infrastructure but as a **high-impact innovation pilot**, the better its chances for grants and special designations.

- **Maximize Socio-Economic and Regional Development Impacts:** EU funders and national programs alike prioritize projects that deliver broad benefits. The proposal should therefore stress job creation (hundreds of high-skilled jobs in construction and operation) and the **tech ecosystem growth** in a cohesion region [37]. To strengthen this angle, consider establishing a **training center or incubator on-site** (perhaps in partnership with local IT clusters or technical universities) to nurture talent in geothermal engineering and AI computing. This could be a small but symbolic part of the project, eligible for ERDF or ESF+ (skills funds). By actively addressing the regional "brain drain" issue (keeping Romanian talent home with cutting-edge jobs) [37], the project aligns with Cohesion Policy goals and Just Transition principles (even if not in a JTF county, the ethos of social benefit counts). Document letters of support from the community and SMEs that plan to use or benefit from the data center. All of this will reassure evaluators that the project is not an isolated endeavor but a catalyst for **sustainable regional development**.

- **Secure National Endorsement and Blending of Funds:** It is advisable to get the project listed as a priority in Romania's national strategies – for instance, in the upcoming **Integrated National Energy and Climate Plan (NECP) updates or the Smart Specialization Strategy for the region**. If the government of Romania endorses the data center as strategically important (for digital infrastructure and renewable energy), it will ease the path to accessing various funds (national co-financing, Modernisation Fund, etc.). Work closely with the Ministry of Energy and Ministry of Research/Digitalization to identify all relevant funding lines. A blended financing plan should be developed and discussed with these authorities: e.g. **Innovation Fund + state aid + EIB loan**. The authorities can then issue support letters for EU grant applications, commit to co-financing (where required), and align any necessary regulatory support. As the feasibility study recommended, proactive engagement to **modernize the regulatory framework for geothermal** is part of this; success there (perhaps using the project as the pilot under new regulations [38]) could even be cited as a *project deliverable* in funding proposals (indicating policy impact).

- **Consider Phasing and Scalability:** If the total project is very large (say €100+ million), it might be pragmatic to break it into phases and smaller funding packages. For instance, Phase 1 could drill a test well and build a smaller pilot data center module – funded by Horizon Europe (for

R&D) and some national grant. Phase 2 would scale up to full production wells and the large data hall – funded by a combination of Innovation Fund (for the energy plant) and InvestEU/EIB (for the data center capital). By presenting a phased approach, each part becomes fundable under specific instruments, and it also *de-risks* the project for investors. EU programs like Innovation Fund also appreciate when a project is de-risked by a prior pilot. If possible, **start with a smaller demonstrator on-site** in 2025–2026 (even just a single geothermal well and a containerized compute unit to simulate loads). This could be done with initial seed funding (perhaps from an innovation grant or private angel investment) and would greatly strengthen subsequent applications – you can show real data and momentum.

- **Join EU Networks and Initiatives:** To bolster knowledge exchange and visibility, the project team should actively participate in European platforms such as the **European Technology & Innovation Platform on Deep Geothermal (ETIP-DG)** and data center industry groups. By sharing progress and results, the project can gain recognition. EU officials often scout such networks for success stories. If the project is seen as a key contributor to EU initiatives (for example, feeding into the EU's **SET Plan geothermal implementation working group** or the **Green Digital Coalition**), it might attract additional support or at least mentorship from those circles. Networking can also help find consortium partners from other countries for Horizon calls.

In conclusion, the geothermal-powered AI data center in Băile Felix is highly aligned with EU goals and, with a savvy approach, can tap a combination of EU funding instruments. The project checks the boxes of **green innovation, digital infrastructure, and regional development**, which are at the heart of current EU funding priorities. By identifying the right calls (as outlined), meeting the criteria with strong partnerships, utilizing Romanian co-funding tools, and positioning itself as a European flagship, the project can greatly improve its viability and financing prospects. With diligent planning, it stands to become a **trailblazer for sustainable AI infrastructure** in Europe – exactly the type of initiative that EU funds were designed to enable.

Sources: European Commission funding call documents and portals [39] [3]; Feasibility Study Executive Summary & Conclusions [1] [34]; EU policy reports on Green Deal & Digital Decade targets [2]; Innovation Fund project lists [6]; EIB press release on InvestEU geothermal project [7]; Romanian MIPE/ThinkGeoEnergy releases on geothermal funding schemes [28] [8]; EU Cohesion/Just Transition allocations [16]; Noerr analysis of RO state aid schemes [30] [32]; CEF Energy call notice (2025) [13] [14]; Borderstep study on data centers & EU goals [2].

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