CHIMAERA

A FUND OF Renaissance Philanthropy

REQUEST FOR INFORMATION

Catalyst: Sub-Saharan Africa

RESPONSE DEADLINE	COUNTRIES	WEBINARS	QUESTIONS	TEAMING AND PARTNERSHIP EXCHANGE
January 1, 2027 23:59 ET	Kenya Nigeria Ethiopia	Nov 17 · 12:00 PM ET Nov 30 · 6:00 AM ET Register →	geoh2-ssa@renphil.org	Explore the exchange →

All responses are submitted through the online form. Use this PDF to read and draft offline.

RESPOND ONLINE →

Introduction

The Chimaera Fund is launching a ~12–15 month initiative assessing public & private geologic data within Kenya, Nigeria, and Ethiopia to identify potential Areas of Interest for locating a small-scale testbed that can produce at least 100 tons of hydrogen per year by 2030.

While small, this amount of local hydrogen can reduce costs and import dependence on ammonia for up to 10,000 small farms. Today, farmers in sub-Saharan Africa (SSA) import nearly 90% of their fertilizer at a cost that is 2x–15x higher than US Gulf market prices. This level of exposure to import markets means farmers in Africa are acutely impacted by geopolitical or energy market disruptions and the high cost premium means that the consumption of nitrogenous fertilizer in Africa is 5.5x below the global average which translates to low yields and low incomes.

Localized ammonia production could be a solution, but it is constrained by hydrogen availability and upfront capital requirements. Conventional ammonia plants depend on economies of scale: the lowest-cost facilities produce more than 2,000 tons per day and cost billions of dollars to build. The push towards lower-emissions ammonia production has also grown interest in using clean hydrogen from splitting water (“electrolysis”). However, this method requires significant electricity, with power alone accounting for 50–80% of the cost of

green fertilizer. As a result, electrolytic hydrogen costs $3.74–11.69/kg, with costs in Africa 3–10x above global targets. Even in Kenya, which has abundant geothermal and renewable power, green fertilizer remains roughly 20% more expensive than conventional alternatives.

In contrast, geologic hydrogen – a zero-carbon natural gas produced through water-rock chemical reactions in the Earth's crust – avoids both the cost and scale problem, potentially unlocking smaller-scale production methodologies at a fraction of the cost. It is also the first new primary energy resource identified in over 80 years, meaning that, unlike other hydrogen production technologies, geologic hydrogen can be produced with less energy input than resulting output. What's more, global resource estimates suggest geologic hydrogen may exceed the energy content of known natural gas reserves.

The first and only geologic hydrogen producing field is in Bourakébougou, Mali, which began producing 40 tons of H_2 per year at an estimated cost of $0.50 per kilogram. The hydrogen has been used for over a decade as a local power source. Since then, nearly $1 billion has been invested across over 100 companies working to find and develop new production fields. However, despite its origin, geologic hydrogen exploration is relatively limited in the African continent and especially in sub-Saharan Africa (SSA). Moreover, these private sector efforts are focused on large-scale production of geologic hydrogen, leaving the public benefits of small-scale geologic hydrogen production – as a dual-solution of energy and food security that can radically increase farm yields and reduce subsidies needed for ammonia imports – entirely neglected.

This program is designed to investigate and significantly de-risk geologic hydrogen exploration within SSA, answering fundamental questions including whether geologic hydrogen can be produced reliably, safely, and at a competitive price point.

This is a Request for Information (RFI) only. We seek input from geoscience researchers, geologic hydrogen companies, drilling and geophysical service providers, industrial hydrogen users, research institutions (especially institutions with experience in or within target countries of Kenya, Ethiopia, and Nigeria), and other interested parties — both in SSA and internationally — to inform the design of the program.

Our goal with this RFI is to seek feedback on program design, understand relevant regulations that impact geologic hydrogen development, inform the team on local fertilizer markets, and identify potential partners, including:

- Expert researchers – and potential pre-formed teams – spanning geology, geophysics, and geochemistry disciplines;
- Potential lead in-country institutions within Kenya, Ethiopia, and/or Nigeria;
- Data providers who can comment on the quality and quantity of existing subsurface data in their possession and who may be willing to share their datasets on a limited basis as part of the program;
- Government partners overseeing national agriculture, energy security, subsurface innovation, environmental regulation and/or geodata initiatives

The responses to this RFI will directly shape the scope of this program and lay the foundation for a potential future Request for Proposals (RFP). Respondents should expect that their input may substantially influence the final Program design and their standing as future partners in this program.

This is a Request for Information only. It does not constitute a funding opportunity, a solicitation, or a commitment. No funding or compensation will be provided for responses. Information submitted will be used solely for program scoping, without attribution. Respondents should not include information they consider proprietary or confidential.

Responses are requested by **January 1, 2027, at 23:59 ET**. Submission instructions are provided under How to Respond. The Chimaera team will also host two virtual webinars on November 17 at 12:00 PM ET and November 30 at 6:00 AM ET to answer any questions that potential respondents have regarding this RFI. Those interested in attending are invited to **register for a webinar** for approval; we'll email the webinar link to registered attendees. **Webinar attendance is not mandatory.**

The Program

The following describes the program as currently envisioned, subject to changes informed by responses to this RFI.

Concept

Sub-Saharan Africa remains underexplored for its geologic hydrogen potential. This program is designed to address this gap via a multi-staged process that balances risk and philanthropic capital. The time-bound goal of the program is to demonstrate a pathway to 100 tons of geologic H_2 production per year in SSA by 2030. The ultimate goal is to de-risk the selected region for larger commercial production after 2030.

Staged structure

The Program intends to operate in three sequential stages:

STAGE 1

Identification of Areas of Interest ~12–15 MONTHS

The Chimaera Fund will identify and aggregate available datasets from Areas of Interest within one or two focus countries from the initial set of Kenya, Ethiopia, or Nigeria.

- Data will be sourced from regional operators, geothermal companies, CO2 sequestration operations, government agencies, third-party groups, satellite Earth observation and remote-sensing analysis, and others that may hold existing subsurface data. The selection of the focus

country or countries will depend primarily on the team's understanding of data availability and potential government and research partner interests, as indicated by the responses to this RFI, and alignment with program goals.

- Through a future Request for Proposals (RFP), we aim to select an in-country scientific host institution and up to four expert teams working independently to analyze these datasets, collect additional data, and generate novel insights leading to identification of prospective areas for a geologic hydrogen testbed.
- Success at this stage looks like a rank-ordered priority list of Areas of Interest within 1–2 focus countries, technically justified and independently reviewed, with supporting infrastructure and logistics assessment (e.g., roads, electricity, water, potential hydrogen users, existing ammonia and fertilizer production facilities) and regulatory environment. Based on the findings of the program, the final report will issue a go/no-go recommendation for further development with initial budgetary estimates for a small-scale testbed if the recommendation is to proceed.

STAGE 2

Follow-On Fieldwork and Site Selection ~18 MONTHS

Pending funding availability and promising results from Stage 1 indicating good geologic hydrogen prospectivity and supportive regulatory pathways, expert teams will advance into more advanced field work, such as geophysical surveys, geochemical sampling, laboratory analyses, drill-site identification, and permitting initiation. Outputs will include securing access to a permitted or permit-ready drill site and early conceptualization of the field demonstration design.

STAGE 3

Pilot Test ~18 MONTHS

Pending funding availability and promising results from Stage 2, one or a small number of teams will seek to drill a pilot well and measure hydrogen generation – whether from a naturally occurring reservoir or resulting from injecting a water-based solution into a suitable formation – from the well. The goal of the pilot test is to target 100 tons hydrogen per year. Outputs include the well itself and a public technical record of scientific results — flow rates, geochemical data, and geological interpretation — released as precompetitive geoscience data.

Timeline

Subject to refinement and funding availability, Stage 1 will commence following this RFI and subsequent stakeholder engagement. Stage 1 is therefore the focus of this RFI, the results of which will be used to inform a potential future RFP.

Teams and Partnerships

In Stage 1, we expect to engage several partners that will fall into one of two categories:

- **Vertical partners:** Up to four independent research teams of a mix of geophysical, geochemical, and geological expertise that will analyze the evidence and generate insights on Areas of Interest.
- **Horizontal partners:** One local host institution providing shared services, including in-country field-sampling and engagements with vertical partners, along with government stakeholders, data partners, country lead(s), and related industry groups whose involvement will support the overall project objectives.

Vertical Partners

TARGET EXPERTISE	PURPOSE
Geophysics	• Processing of geophysical data (if necessary) • Analysis of available geophysical data
Geochemistry	• Analysis of available geochemical data • Analysis of field sampling campaign data
Geology	• Analysis of available geological data

Horizontal Partners

TYPE	ROLE
In-country host institution	*Home institution for the focus country* • Compiles and hosts data made available from government ministries, geological surveys, and regional companies providing data • Collaborates with each expert team as the local partner • Leads regional field sampling campaign and coordinates field sample analysis • Recruits students and early-career researchers to participate in the program

Horizontal Partners

TYPE	ROLE
Country lead	*Chimaera's main point of contact in the focus country, distinct from the host institution* • Disseminates program information, especially on RFIs, RFPs, awardee selections, and related announcements. • Connects the program to prior and related country-level work, including identifying and connecting with potential stakeholders of interest. • Organizes participation and coordination among the in-country research institution, government contacts and agencies, potential in-country industry partners, and additional partners as needed. • Maintains program momentum through regular communications and follow-up
Government and geological survey partners	• Provides available data for data room (including data from geophysical surveys, well logs, geothermal gradient measurements, rock samples, regional hydrology, etc.) • Provides insight on regulatory picture and identifies gaps impacting geologic hydrogen development in-country
Regional companies	*Geothermal, mining, oil and gas, CO2 sequestration, and water well operators active in the focus country* • Provides legacy subsurface data to the host institution for the data room (core libraries, drill cuttings, well logs), in whatever form it exists • Potential commercial partner in future stages of the program *Ammonia producers and fertilizer suppliers* • Shares insights regarding regional supply chains, distribution channels, and major demand segments in-country.
Drilling and geophysical service providers	*Potential future contractor for Stage 2 and Stage 3 development, subject to available funding.* • Provides cost estimates for geophysical surveys and exploratory wells in the focus country • Advises on what equipment and expertise is available domestically versus what is needed to be outsourced

Horizontal Partners	
TYPE	ROLE
Private data providers	*Data in digital format preferred, though analog datasets can be accepted.* • Provides licensed regional geophysical datasets (magnetics, gravity, structural and basement mapping) and other relevant data to the data room for approved teams

Purpose and Need for Information

This program's success hinges on an accurate understanding of SSA-specific conditions: the geology, the availability and cost of data and field services, the regulatory and permitting environment, the technical design of modular ammonia production, and the interest and capacity of potential participants. Much of this information is not readily available to the program's designers.

Through this RFI, the Chimaera Fund seeks to:

- Understand the geologic hydrogen resource potential within Kenya, Ethiopia, and Nigeria and the data available to assess it;
- Calibrate realistic costs and timelines for geophysical fieldwork, drilling, permitting, and related activities in Kenya, Ethiopia, and Nigeria;
- Understand the regulatory and land-access challenges for exploratory drilling ahead of any future stages;
- Understand the local hydrogen demand for fertilizer production and the conditions under which local companies would commit to offtake; and
- Gauge interest from prospective participants: international startups, companies based in SSA, government agencies, service providers, and research institutions.

Scope of Interest

This RFI concerns the exploration, research, and demonstration of geologic hydrogen production in Kenya, Ethiopia, and Nigeria.

The following are outside the scope of this RFI: manufactured hydrogen production (electrolysis, methane reforming, or pyrolysis); hydrogen derived from fossil fuel resources; and general hydrogen end-use technology development not connected to subsurface exploration, research, or demonstration.

Respondents need not address every question. Please respond only to the sections and questions relevant to your expertise and interest.

Request for Information — Questions

The Chimaera Fund is most interested in respondents' perspectives — your views, experience, and the gaps you perceive in the field. Rather than authoritative factual reporting, we are seeking your sense of the key knowledge gaps, infrastructure gaps, regulatory gaps, commercialization or deployment barriers, and other obstacles or opportunities relevant to your part of the ecosystem.

Respondents are not expected to answer every question. The questions below cover a broad range of expertise areas, and most respondents will have direct knowledge of only a subset. A thoughtful answer on a few questions where you have direct experience or considered views is far more useful and informative than a brief answer on every question.

SECTION 0

Respondent Background

0.1 Please state your organization, organization type (or individual expertise), and country, and indicate the role(s) in the Teams and Partnerships list most aligned with your interest. If you are not well-suited to either category and subsection, please describe more about your interest in participating in or advising this program.

SECTION 1

Geologic Hydrogen Resource Potential in Kenya, Ethiopia, and Nigeria

1.1 In your view, which geological formations in Kenya, Ethiopia, and Nigeria — for example ultramafic complexes, ophiolites, serpentinized peridotites, or iron-rich formations — appear most prospective for geologic hydrogen generation, accumulation, or stimulation? What evidence informs that view?

1.2 Are you aware of (a) documented occurrences of natural hydrogen seeps, shows, or anomalies in Kenya, Ethiopia, or Nigeria, or (b) existing geological mapping, prospectivity assessments, or basin studies relevant to evaluating geologic hydrogen potential in Kenya, Ethiopia, or Nigeria, whether from prior oil and gas, geothermal, mining, or academic work?

1.3 In your view, what is the overlap between regions/basins in Kenya, Ethiopia, or Nigeria that are prospective for geologic hydrogen with regions with major agricultural activity or existing infrastructure?

1.4 Based on your experience, are there comparable geological settings with hydrogen-producing systems in other countries in sub-Saharan Africa or outside sub-Saharan Africa that could inform the assessment of the region's geologic hydrogen potential?

SECTION 2

Subsurface and Geophysical Data Availability

2.1 Are you aware of geophysical datasets — including but not limited to seismic reflection or refraction, gravity, magnetic, magnetotelluric, electrical resistivity — for prospective regions in Ethiopia, Kenya, and Nigeria that this program could leverage? Who, in your understanding, holds custody of them and are there any associated restrictions to making the dataset public or sharing the dataset on a limited basis with research teams?

2.2 Are you aware of core libraries, drill cuttings, or well-log archives in Ethiopia, Kenya, or Nigeria — from prior oil and gas, geothermal, or mineral exploration — that may be relevant to geologic hydrogen? From your experience, what kinds of access terms, licensing costs, or restrictions typically attach to such datasets?

2.3 Are you aware of (a) precedents in Ethiopia, Kenya, or Nigeria for sharing legacy subsurface data with international research or commercial partners, and (b) significant gaps in publicly available subsurface data for prospective regions?

2.4 What facilities and laboratory capabilities are available to conduct rock and fluid sample analyses in Nigeria, Kenya, or Ethiopia? If the program seeks to characterize the mineralogy of rock samples (e.g., XRD, XRF, Mössbauer spectroscopy) or fluid samples (e.g., GC/MS for gas samples, ion chromatography for fluids), how much could be done in-country?

2.5 What resources and teams are available in-country if there was a devoted effort to collecting field samples (e.g., rocks, fluids, gases) or conducting geophysical surveys (e.g., electrical resistivity measurements, passive seismic)? What are some potential challenges which may impact field work? Who are the appropriate groups to engage to organize a field campaign?

2.6 What kind of early-stage fieldwork would be most useful and appropriate to help select a potential field site?

2.7 In what form do available datasets exist (e.g., paper archives, digital files) and are they raw data files or have they been pre-processed?

2.8 Which additional measurements or field investigations would most effectively resolve the critical uncertainties before committing to additional phases in the program?

SECTION 3

Field Operations, Costs, and Service Capacity in sub-Saharan Africa

3.1 Based on your experience or pricing intelligence, what cost ranges should be expected for, and what factors most influence those costs in, the following:

- Geophysical field surveys, by survey type;
- Drilling exploratory or test wells, by depth and well type;
- Technical and field-team personnel;
- Other costs not identified but necessary to participate in the Program as described

3.2 The overall program will require access to available geophysical data, drilling rigs, laboratories, and engineering service providers in sub-Saharan Africa. How should the program think about their availability over the 2027–2028 period and what, if any, barriers should we anticipate?

3.3 From your perspective, which capabilities or equipment are readily available domestically, and which would typically need to be contracted internationally or imported?

SECTION 4

Regulatory, Permitting, Land Access, and Operator Risk

4.1 What is your view of the regulatory environment governing exploratory drilling in Kenya, Ethiopia, and Nigeria, including how precedents from oil and gas, geothermal, deep-water, or mineral exploration might apply to geologic hydrogen?

4.2 Are you aware of regulatory challenges or ambiguities specific to geologic hydrogen in Kenya, Ethiopia, and Nigeria?

- How might geologic hydrogen be classified under existing law or resource regulation?
- How might the regulations change for a naturally occurring geologic hydrogen accumulation versus an engineered/stimulated geologic hydrogen well (i.e., water is injected into a source rock to accelerate hydrogen-forming reactions in the subsurface)?

4.3 Is there one country in particular out of the three that is more likely to be a first mover in geologic hydrogen due to favorable pre-existing regulations?

4.4 Based on your experience, how straightforward are the permitting processes in Kenya, Ethiopia, and Nigeria for exploratory wells? What permitting timelines should the program expect to encounter, what factors most influence them, and what practical differences would you flag as most important?

4.5 If no regulations exist which could be applied to a geologic hydrogen testbed, what would some next steps look like? What would the pathway to acceptance look like and how long would it take?

4.6 What safety, environmental, and community considerations should the program anticipate for drilling and water injection (for example induced seismicity, water use in water-stressed regions, hydrogen venting, land tenure and community consent, and local benefit-sharing), and which government agencies should be engaged on each?

SECTION 5

Ammonia/Fertilizer Production and Offtake

5.1 What scale is existing ammonia/fertilizer production in Kenya, Ethiopia, and Nigeria in terms of volume and location? Who are the largest producers/companies?

5.2 What is the level of hydrogen infrastructure available to support production, transportation, and utilization if geologic hydrogen production can be demonstrated?

5.3 What are examples of the most promising modular ammonia production technologies which are sized for ~100 tons H_2 per year? What is the estimated technology readiness level of the technology?

5.4 At what delivered hydrogen or ammonia price, and under what conditions (volume, quality, contract length, counterparty), would local fertilizer producers, blenders, or distributors commit to offtake from a small-scale geologic hydrogen source?

5.5 How should infrastructure availability, proximity to potential users, and transport costs be incorporated into the ranking of Areas of Interest?

SECTION 6

Partnership Interest and Teaming

6.1 For international geologic hydrogen organizations: is your organization interested in participating in the program? If a requirement was integrated into the program to partner with local universities or institutions based in Kenya, Ethiopia, and Nigeria, what kind of partners would you seek?

6.2 What would most enable or unlock your organization's participation in the program, and what concerns, barriers, or risks would discourage participation?

SECTION 7

Program Design Feedback

7.1 What is your assessment of the proposed three-stage structure — Identification of Areas of Interest, Follow-On Fieldwork and Site Selection, and Pilot Test — and any general reflections on the nature of the Program?

7.2 What is your assessment of a potential requirement that each team include both an international entity with geologic hydrogen capability and a local institution based in Kenya, Ethiopia, and Nigeria? What other factors should be considered for team selection?

7.3 What co-funding mechanisms, incentives, or matching frameworks could strengthen the program?

7.4 In your view, how should the program structure intellectual property and data-ownership frameworks to maximize the public value of openly released subsurface data while protecting legitimate commercial and IP interests of participating teams? What precedents from prior international research collaboration are relevant?

7.5 As currently envisioned, the program's IP framework would allow participants to retain ownership of Background Technology[1]. However, any outputs or IP that is developed as a result of work conducted in the program (i.e., Funded Development[2]) would be subject to open access policies, including (a) the knowledge and information gained from the project be promptly and broadly disseminated; and (b) the Funded Developments be made available and accessible at an affordable price to people most in need within developing countries. How would this arrangement affect your organization's decision to participate, and (if applicable) your investors' willingness to support that participation?

7.6 What minimum evidence and uncertainty assessment should be required to advance an Area of Interest from Stage 1 to Stage 2?

7.7 Please share any other input you consider important on the program's design, risks, or opportunities.

[1] Background Technology: here defined as all products, services, processes, technologies, materials, software, data, or other innovations, and intellectual property created by you or a third party prior to or outside of the project and used as part of the project.

[2] Funded Development: here defined as the products, services, processes, technologies, materials, software, data, other innovations, and intellectual property (IP) resulting from the project (including modifications, improvements, and further developments to Background Technology).

How to Respond

SUBMIT ONLINE BY JANUARY 1, 2027 · 23:59 ET

All responses must be submitted through the online form.

chimaerafund.org/programs/catalyst-ssa/rfi/ →

Respondents are not expected to address every question. Please respond only where you have relevant expertise, considered views, or direct experience. A thoughtful answer on a few questions is far more valuable than a brief answer on every question.

This is a Request for Information only. This RFI does not constitute a funding opportunity, and no Request for Proposals exists at this time. No funding or compensation will be provided for any information submitted. Information submitted will be used solely for program planning, without attribution. The Chimaera Fund may contact respondents to request clarification or to arrange follow-up discussion.

Respondents should not include any information they consider proprietary or confidential at this time. All responses must be submitted through the online form at chimaerafund.org/programs/catalyst-ssa/rfi/. Write your answers directly beneath the questions you choose to address, then complete your details at the end of the form and select “Submit response” by January 1, 2027, at 23:59 ET. Responses can include basic formatting, lists, and links. Respondents are encouraged to draft responses offline first and then paste them into the form.

Questions about the RFI? Register for a webinar or email geoh2-ssa@renphil.org.

Organizational Information

The Chimaera Fund is a fund of Renaissance Philanthropy that aims to rapidly and responsibly scale geologic hydrogen by the 2030s. Chimaera does not invest in companies. Instead, learning from what unlocked shale & geothermal industries, this program sponsors three compounding interventions: open-science demonstration wells, coordinated data platforms and breakthrough R&D programs, and effective public policy. You can learn more about this program at chimaerafund.org/programs/catalyst-ssa/.

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