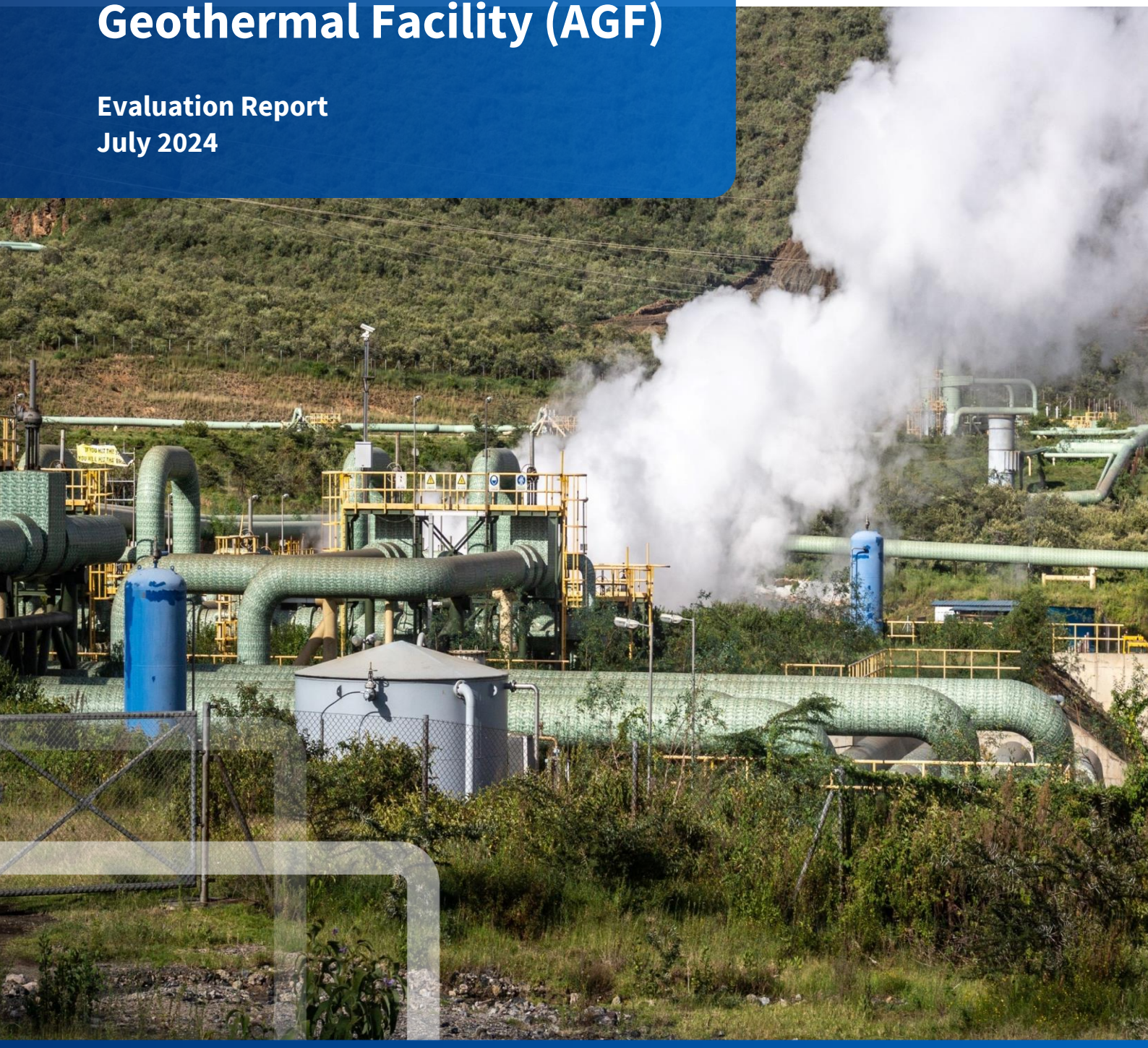
TETRA TECH
International Development

Evaluation of the New Zealand – Africa Geothermal Facility (AGF)

Evaluation Report
July 2024



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Glossary

AfDB	African Development Bank
AFREC	Africa Energy Commission
AGA	African Geothermal Association
AGCE	Africa Geothermal Centre for Excellence
AGF	Africa Geothermal Facility
AMA	Activity monitoring assessment
ARGeo	African Rift Geothermal Development Facility
AU	Africa Union
AUDA	Africa Union Development Agency
AUC	Africa Union Commission
AWAG	Africa Women Advancing Geothermal
CSOs	Civil society organisations
CTCN/UNEP	Climate Technical Centre and Network
DEVECO	MFAT's Development Economy and Prosperity Division
DRC	Democratic Republic of Congo
DU	Direct use
EDCL	Rwanda Energy Development Corporation Limited
EEP	Ethiopian Electric Power
FCG	Facility Management, now known as Cowater International
FGD	Focus group discussion
4YP	Four Year Plan
GDC	Kenya Geothermal Development Company
GE	Geothermal energy

GRMF	Geothermal Risk Mitigation Facility
ICEIDC	Iceland International Development Cooperation
ICESD	New Zealand's International Cooperation for Effective Sustainable Development
IPP	Independent power provider
IRENA	International Renewable Energy Agency
JICA	Japan International Cooperation Agency
JRG	JRG Energy Consultants
KEQs	Key evaluation questions
KenGen	Kenya Electricity Generating Company
KfW	Kreditanstalt für Wiederaufbau, German Development Bank
KII	Key informant interview
M&E	Monitoring and evaluation
MEL	Monitoring, evaluation and learning
MFAT	Ministry of Foreign Affairs and Trade
MTO	Medium-term outcome
MW	Megawatt
NEP	National energy policy
NEPAD	New Partnership for Africa's Development
NZ	New Zealand
ODDEG	Djiboutian Office for the Exploration and Exploitation of Geothermal Energy
RGCU	Regional Geothermal Coordination Unit
SDG	Sustainable Development Goals
TGDC	Tanzania Geothermal Development Company
TRM	Technical review meetings
UN	United Nations
UNEP	United Nations Environment Programme
WB	World Bank

Executive Summary

The Ministry of Foreign Affairs and Trade (MFAT) commissioned Tetra Tech International Development (Tetra Tech) to undertake an independent evaluation (the Evaluation) of the New Zealand - Africa Geothermal Facility (the AGF). The Evaluation was conducted from December 2023 to March 2024. This report presents the Evaluation findings and considerations for future directions of the AGF. The purpose of the Evaluation was to assess the relevance, effectiveness and impact of the AGF and assess the extent to which governance and implementation arrangements of the AGF are fit for purpose and efficient. Also, the Evaluation presents options for future considerations for any potential future phase of the AGF.

Background and context

The AGF is a NZD10.2 million programme delivered through a partnership between the African Union Commission (AUC) and MFAT. The AGF provides responsive and flexible geothermal technical assistance and capacity building for the East African geothermal sector. The AGF began in 2017 as a five-year programme, with an expected completion date of 31 December 2024. Eleven (11)[1] countries in the East African Rift are eligible for assistance through the AGF. Currently, bilateral support is provided to five countries (Kenya, Ethiopia, Tanzania, Djibouti and Rwanda) in addition to training opportunities accessible by all eligible countries.

The East Africa region has significant geothermal potential and has made considerable progress towards harnessing geothermal energy, particularly in Ethiopia and Kenya. The sector faces challenges such as long lead times for development, capacity constraints, attracting and securing financing and evolving political and institutional environments that hinder the realisation of greater potential from geothermal resources. Recognising these challenges, the AUC and MFAT established the AGF, seeking to address critical gaps and support development of the geothermal sector in East Africa. The AGF is a demand-driven Facility where an Independent Facility Management Team (Cowater, formerly FCG Anzdec Ltd) is responsible for project identification, monitoring, facilitating project delivery and relationship management with geothermal sector stakeholders and implementing partners in the region by a regionally appointed Facility Manager.

The AGF plays an important role in providing flexible support to geothermal energy agencies and facilitating knowledge transfer and capacity strengthening for in-country implementing partners through access to New Zealand's geothermal expertise.[2] To date, the AGF has completed one project supporting steamfield operation and management in Kenya, and has three ongoing projects including: a region-wide online webinar series; technical assistance for the preparation of applications for Geothermal Risk Mitigation Facility (GRMF)[3] funding for Tanzania, Djibouti and Rwanda; and drilling advisory support to Ethiopia, Tanzania and Kenya. For context, GRMF is a Facility established in 2012 and implemented by the African Union and the German Development Bank (KfW), to fund and accelerate geothermal development in East Africa. The AGF supports implementing partners prepare applications for GRMF funding that can advance surface studies and drilling activities.

Evaluation purpose and scope

The key Evaluation objectives were as follows:

1. To assess the relevance and coherence of the AGF to the priorities of East African countries and New Zealand (NZ), and the coherence of the activities within themselves and with that of other donors
2. Examine the effectiveness and impact of the AGF against its intended outcomes
3. Explore whether the current AGF modality, implementing and governance arrangements are fit for purpose for achieving intended outcomes and for supporting overall efficiency
4. Consider how a future phase of the AGF could be more effective and achieve greater impact, and be more relevant and partner-led

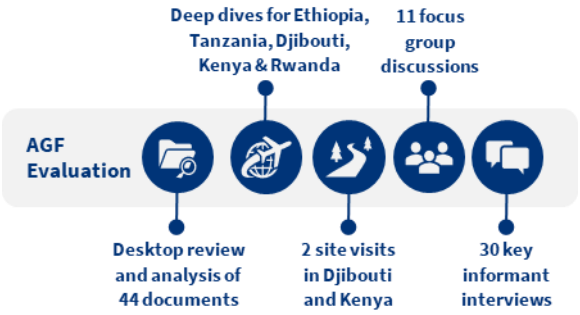
The Evaluation assessed the AGF as a whole and did not undertake a detailed performance review of the individual projects delivered under the AGF.

The Evaluation has both summative and formative aspects and utilised a mixed-methods approach combining different forms of data collection (primary and secondary) in a phased manner. The Evaluation also undertook deep dive assessments of the AGF activities in Ethiopia, Tanzania, Djibouti, Kenya and Rwanda. Site visits were also undertaken to a drilling location in Djibouti and the Menengai power plant in Kenya. The figure below

[1] Ethiopia, Kenya, Djibouti, Tanzania, Rwanda, Zambia, Uganda, Eritrea, Comoros, Burundi, and Democratic Republic of Congo.
[2] AGF Activity Design Document (ADD), MFAT, 2017.
[3] Geothermal Risk Mitigation Facility (GRMF) for Eastern Africa, African Union and KfW. Home - Geothermal Risk Mitigation Facility (GRMF) (grmf-eastafrica.org)

summarises the key methods utilised in this Evaluation.

Figure 1. AGF Evaluation methods



The evidence from multiple data sources was triangulated to inform the Evaluation's findings and future considerations.

Summary of key findings

Relevance and coherence of the AGF: To what extent is the AGF relevant and aligned to the policies and priorities of the AUC (governance partner), MFAT and the implementing partners (state-owned geothermal developers) and are the AGF's activities aligned or harmonised within themselves and with that of other donors?

The AGF is a valued and relevant programme that is aligned with the local implementing partners and NZ policies and priorities. The programme has garnered widespread support from implementing partners (state-owned geothermal developers) in East Africa and has provided technical assistance and capacity building in five East African countries over the last five years. The AGF is consistent with the priorities of the AUC, which draws its priorities from member states, to expand access to reliable energy from renewable sources. The AGF's support to Ethiopia, Tanzania, Djibouti, Kenya and Rwanda is aligned with national priorities and commitments for geothermal resource development and broader renewable energy. The AGF's high degree of responsiveness and flexibility has enhanced its relevance with the implementing partners.

Supporting geothermal energy development in partner countries is consistent with NZ policies and priorities as outlined in the Africa Regional Four Year Plan (4YP). By supporting geothermal development as a key source of renewable energy, the AGF aligns with the International Cooperation for Effective Sustainable Development (ICESD) key principles of resilient and sustainable development.

There is overall good coherence between the AGF's own project activities and those of other donors, noting there are gaps in donor coordination and harmonisation. The AGF is providing coherent support to implementing partners on technical assistance and capacity building for surface studies, resource exploration, resource development and resource utilisation based on the needs of the country. Implementing partners reported that the support of AGF is mostly complementary to support being provided by other regional donors and facilities. However, the Evaluation notes that duplication might still be occurring, particularly in relation to technical assistance and capacity building provided by the Japan International Cooperation Agency (JICA) and the Iceland International Development Cooperation (ICEIDC). Acknowledging that donor funding is influenced by different policy drivers, any potential future phase of the AGF provides opportunities for enhanced donor coordination and harmonisation.

Opportunities to unlock greater relevance of the AGF include enhancing the visibility of the AGF's scope to implementing partners as well as national policy makers where relevant or requested. Greater clarity on what the AGF can deliver would improve implementing countries' clarity of what can be requested from AGF and enhance the relevance and visibility of the AGF for implementing partners. To date, limited advocacy and engagement with ministries and key policy makers at the national level was noted as potentially limiting relevance, especially in countries at the early stages of geothermal development. Though the AGF provides support to implementing partners as a result of requests, a future phase of the AGF could explore how and whether the AGF could engage relevant policy makers to enhance relevance and effectiveness. Implementing partners noted that engaging policy makers is crucial to progressing geothermal mandates, regulatory frameworks and legislation that improve the enabling environment for geothermal development, and that the AGF and NZ are well positioned to influence outcomes in these areas.

Effectiveness and impact: To what extent has the AGF made progress towards its intended outcomes?

In assessing the effectiveness and impact of the AGF, three factors and limitations were considered. Firstly, achieving geothermal development outcomes take time and require work over a long horizon. In recognition of this, MFAT's intent for the AGF from 2017 to 2024 was to lay a strong foundation for achieving future sustainable outcomes. Thirdly, the impact of the

COVID-19 pandemic slowed momentum and delayed implementation progress.

Despite a challenging start and the COVID-19 pandemic, the AGF has achieved almost all of its outputs. Further, short-term outcomes are making progress towards achieving medium-term outcomes. Key results were achieved through the provision of technical assistance for geothermal exploration programmes (Kenya, Tanzania and Djibouti) and technical support for steam field operation (Kenya). Results show an increase in exploration projects meeting investment criteria as a result of the AGF's support by way of peer reviews and quality assurance of GRMF applications. Evidence also shows results from in-person training and regional webinars.

The AGF's support for GRMF applications has been effective and led to seven projects qualifying for approximately USD15.4m in funding. This is a significant contribution that was valued and recognised by several stakeholder groups consulted for this Evaluation. As a relatively new and small donor in the geothermal sector in East Africa, MFAT has played a sizeable role in helping some implementing partners with de-risking geothermal exploration in East Africa and securing financing for geothermal development.

The AGF's strength has been increasing implementing partners' capacity and capability to participate in the geothermal sector at a national level, in spite of limited direct engagement of the AGF with policy makers at the national level. The Evaluation found evidence of enhanced capability and technical participation of the implementing partners in their respective geothermal sectors across the five countries. The AGF itself received limited requests for supporting improvements to geothermal sector planning, policy and regulatory frameworks and the broader enabling environment. As the AGF is primarily a demand-driven Facility, concentration of efforts and progress focused on outputs and areas where the AGF received requests for support, and it was not expected of the AGF to make equal contributions against all its intended outcomes. Having said this, implementing partners noted that an increased focus on supporting improvements in geothermal sector planning, policy and regulatory frameworks and the broader enabling environment would be valuable as countries assess their resources and seek to engage the private sector for power generation and direct use. While it was recognised work to support policy and legal frameworks involves engaging in highly political and bureaucratic processes and is time consuming, the AGF was encouraged to explore what support it can provide in a future phase, particularly for countries in the initial stages of geothermal development.

The AGF's geographic focus and programme areas of support are relevant, noting there are opportunities to explore support for direct use. The AGF's programme areas of support are relevant in terms of its focus on addressing exploration, resource development and resource utilisation in accordance with countries' needs. The Evaluation explored whether the AGF should scale up to provide support to all 11 eligible countries or maintain and or deepen support to the current five countries. Stakeholders noted that the future geographical scope should continue to be determined by the implementing partners' priorities and commitment. An increase in knowledge and appreciation of geothermal direct use was a positive unintended consequence of the AGF's support derived through support for GRMF Heat applications. Stakeholders noted the dual benefits of direct use for mitigating climate change impacts and also socio-economic benefits to communities. A future phase of the AGF could explore this and test whether technical support for direct use aligns with MFAT's objectives for the future phase, NZ expertise and partner countries needs and priorities.

There are opportunities to enhance gender and social inclusion programming through targeted approaches and overall mainstreaming. The Evaluation assessed the extent to which the AGF is supporting gender and social inclusion and identified several areas for improvement. There is evidence of efforts to support mainstreaming approaches such as encouraging women's attendance in trainings and workshops and a gender and social inclusion situational analysis. While this Evaluation understands that the AGF has commenced work to develop a guiding strategy or action plan, this was not developed or sighted during the Evaluation. A future phase of the AGF should ensure a clear strategy for gender and social inclusion is developed and consider providing examples for contextually relevant approaches. Targeted initiatives that have seen success across the globe in the geothermal sector should also be considered.

Opportunities to elevate the current AGF's good Monitoring, Evaluation and Learning (MEL) system from tracking to strategic analysis, and evidence generation to support learning and decision-making. Evidence shows the AGF has a good system that has focused on tracking outputs-to-outcomes. The next natural step is to elevate the system to generate evidence to assess not just the effectiveness of the AGF, but also provide evidence to support learning, course corrections and evidence-based decision making.

Appropriateness of the modality and governance arrangements and efficiency: To what extent is the AGF's modality fit for purpose to achieve its outcomes?

The current AGF modality is fit for purpose and implementation arrangements are working well. Overall, the AGF is an appropriate and efficient modality for NZ to fund and deliver support in Africa where it has a limited diplomatic presence. The AGF delivery through a Facility Model managed by a Facility Management Unit and led by a Facility Manager is efficient and working well, whereby implementing partners are receiving support based on their needs and evidence of an active pipeline in place. By working with NZ based suppliers with high technical expertise to deliver technical assistance and capacity building to implementing partners in East Africa, the AGF is supporting countries to make progress towards renewable energy ambitions and climate mitigation targets. The modality is in part effective and efficient due to the targeted number of activities (resulting from requests from implementing partners) that have an appropriate timeframe, and adequate flexibility to respond to emerging needs and requests within these activities. The implementing partners have found their engagement with the Facility and NZ based suppliers, including the underlying procurement processes, to be functioning relatively efficiently. The combination of online and in-person training and technical assistance is deemed appropriate and relevant with online training and webinar series reaching a wider audience in Africa.

A reinvigoration of governance arrangements is required to support efficient decision-making and to maximise the benefits of strategic partnerships. A Partnership Agreement between MFAT and the AUC sets out arrangements for governance of the AGF. Partnership and engagement with the AUC was strategic as the AUC is a member-driven organisation that provided the AGF with access to key stakeholders within the eligible countries. The Evaluation found that the AGF's governance arrangements served its intended purpose with regard to agreed approvals and monitoring processes. However, the limited frequency of engagement between governance partners meant that the potential strategic benefits for the AGF were not fully maximised and matters such as the engagement of policy makers at the national level were not discussed to the extent possible. However, it should be noted that any challenges encountered or infrequency issues relating to the governance arrangements did not have a material impact on the AGF's ability to support implementing partners and make progress towards its intended outcomes. Feedback from both the AUC and MFAT as governance partners indicated opportunities for both partners to be engaged through more of a strengths-based approach and to have a greater shared understanding of expectations, roles and responsibilities. Partnership arrangements for a future phase should consider the strengths, resources and constraints of both parties to maximise the benefits of the partnership and the impact of the AGF.

Strategic communication could improve joint visibility of the AGF. The Evaluation found that external communication and visibility of the AGF was ad-hoc and limited at times. Communication could be improved to better communicate the purpose and results of the AGF. This includes improving the visibility of the governance and implementing partners of the AGF's activities.

Future directions and emerging areas of consideration

Considerations for future directions are based on the Evaluation findings, lessons learned as well as recommendations from internal and external stakeholders consulted during the Evaluation of the AGF. These considerations are intended to provide options to inform the future directions and programming of a potential future phase of the AGF.

Considerations for technical strategy and programme area of focus

Retain current programme areas of support focus and explore opportunities for direct use

Considerations for the future include:

- Retain the current geothermal programme areas of support in line with implementing partners' needs and priorities, while exploring geothermal data and knowledge management and project management as other areas of potential support for implementing partners
- Depending on MFAT's objectives for the future phase of the AGF, explore supporting direct use beyond GRMF Heat applications and what the scope of the AGF's support would look like. This is particularly relevant for countries with low to medium temperature resources
- Should direct use be adopted by the AGF then technical assistance and capacity building for implementing partners regarding direct use will be required to be coupled with technical assistance and capacity building for policy makers and national ministries regarding direct use to address regulatory and compliance gaps, particularly for environmental and social aspects

Expanding the AGF: considerations for geographic scope

The future geographic scope should be informed by implementing partners' priorities and demands, MFAT's objectives for the future phase of the AGF, available resources, and the absorptive capacity of the AGF. Considerations for the future include:

- Deepen the scope in the current five countries to build on the progress made toward national geothermal resource development
- Should enhancing regional footprint be of importance to MFAT, then expanding to the 11 countries is critical. However, this should be informed by a strict criterion that MFAT and relevant partners can agree upon in the next design of the next phase of AGF
- Should there be expansion to other countries with low to medium temperatures (countries in the west rift), direct use technical support should be considered because of the low potential for energy production
- Continue the online learning and training webinars, which are currently offered to all 11 countries and available to other African countries also. Communicating the region-wide webinars as a package of support alongside the bilateral technical assistance and capacity building will increase the visibility of the AGF

Considerations for programming and ways of working

Advance MEL from results tracking to strategic analysis and evidence generation to support decision-making

Considerations for the future include:

- A future phase should build on the existing theory of change, results framework and MEL table to develop a MEL plan that will outline how monitoring, evaluation and learning will be conducted for the AGF and how data will be synthesised to generate evidence on progress (tracking) and outcomes achieved
- As the AGF modality involves both programming and partnerships components, there is value in increasing the learning component through undertaking mini-evaluations and case studies to assess both programming and strategic partnerships
- Reinstate partner check-ins and high-level partnership dialogues as part of the monitoring process to proactively assess the health of the partnerships and make course corrections

Strengthen gender and social inclusion in programming

Considerations for the future include:

- A future phase of AGF should be informed by gender and social inclusion analysis, building on the situational analysis and the gender and social inclusion study
- Progress mainstreaming gender and social inclusion by ensuring gender-balanced training and workshop participants as is now, having gender quotas for all training and capacity building activities, and applying a gender lens in project activities to understand how interventions affect men and women
- Develop targeted gender and social inclusion activities by working with existing women in geothermal networks such as African Women Advancing Geothermal (AWAG) to develop key regional activities that target women in geothermal in East Africa
- Develop gender and social inclusion-sensitive indicators as part of the AGF results framework that goes beyond counting women's participation to measuring the change and impact of gender equality and other social inclusion efforts

Consider strategic communication, branding and visibility of the AGF

A future phase of the AGF will benefit from streamlined and consistent internal and external communication. Considerations for a future phase include:

- Prioritise implementation of the communication and branding strategy for the AGF to help raise the profile of the AGF, embed consistent approaches to communication responsibilities, capture knowledge and share success stories
- When refreshing the communication and branding strategy, consider the feasibility and value of developing a website for the AGF that will not only enhance the joint visibility of the AGF but also act as knowledge and resource sharing platform for geothermal development
- Consider consistent formal communication of the AGF's support to implementing partners to support shared understanding of the programme areas of support to implementing partners but also support the visibility of the AGF to the national ministries and policy makers
- All AGF branding and external communication should incorporate the key governance partners' logo and branding as appropriate

Explore opportunities for donor coordination and harmonisation of geothermal technical assistance and capacity building

As the AGF is fully operational and is in a position to communicate its offering and results to the geothermal sector, a future phase of the AGF should explore opportunities for greater donor coordination and harmonisation so that implementing partners receive targeted and well-rounded support. Considerations for the future include:

- Explore opportunities to harmonise with like-minded development partners such as the World Bank, AfDB and KfW who are the other main donors of geothermal exploration technical assistance and capacity building in East Africa

- Where possible, participate in existing donor coordination committees to understand more about the support being offered to implementing partners and national policy makers to ensure minimal duplication and fill potential gaps

Considerations for implementation arrangements of AGF

While the current implementation arrangements are working well, there is scope to consider alternative options as part of a subsequent design process

As the current implementation arrangement of having a flexible facility model with local representation of a Facility Manager with a Facility Management Unit supporting implementation is working well and efficiently, this could be retained for a future phase. Implementation arrangements in potential future phases will need to ensure continuing with targeted number of activities in line with the theory of change, adequate flexibility for implementing partners that are at different stages of their geothermal development, and the provision of high-quality suppliers to work with implementing partners. Should there be an increase in geographical scope and programme areas of focus for the AGF, then this should be matched by an increase in resources for the Facility Management Unit and MFAT.

Retain the use of NZ based suppliers, enhance the visibility of their scope of services and embed mechanisms for local knowledge and skills transfer

Considerations for the future include:

- Enhance visibility of the scope of services by sharing the terms of reference (TOR) with the implementing partners before the work commences so they know what they can reasonably expect from NZ based suppliers
- Support sustainability of local knowledge through systematic knowledge sharing and knowledge management platforms where the AGF's key learning documents can be uploaded and shared with a wider audience (see recommendation on the AGF communication and branding)
- Explore how the NZ private sector can be connected to the implementing partners, especially for countries that have confirmed geothermal resources. One option recommended was AGF finding ways to share the AGF pipeline of projects for countries with confirmed resources with the NZ private sector to encourage them to take part in the tendering process

Considerations for governance arrangements of AGF

Reinvigorate governance arrangements to support efficient decision-making and appropriate visibility of the AGF

A future phase should consider:

- Separating out the management and strategic oversight functions within the current governance arrangement to allow for efficient decision-making with regard to work planning but also to ensure that the resources of governance partners are focused on supporting strategic or higher-level matters of the AGF
- A governance partner with a wide reach and relationships across the region remains valuable for the AGF. However, the resources and time of a governance partner could be better focused on providing insights and advice on adapting programme areas of support to meet regional / bilateral needs, developing key stakeholder relationships and engagement approaches (including participation in donor coordination committees), advising on the prioritisation of countries and activities, and resolving roadblocks or issues/risks.
- The management functions of the existing governance arrangement (i.e. approving workplans) could sit with MFAT alone to ensure efficient decision making, noting there is value in MFAT providing regular updates to the governance partner on potential projects and progress to enable them to provide timely advice and insights to maximise the effectiveness of a project.
- Given the ever-changing landscapes, revisiting the foundations of a partnership between governance partners to clarify the interests, roles and responsibilities, optimal frequency of engagement, appropriate means for recognition and branding, resources and constraints.

Consider the sustained location of the Facility Manager with a governance partner or other key donor in the region

Findings from the Evaluation indicate that the co-location of the AGF Facility Manager matters for sustained engagement and relationship management with a governance partner or a key donor implementing complementary programming. Considerations for the future include:

- Implement and sustain the location of the AGF Facility at the governance partner's site to support relationship building and partner engagement
- If feasible to MFAT, explore options for the Facility Manager to provide ad hoc support to the governance partner where required, as an added benefit of the co-location

1 Overview of the New Zealand – Africa Geothermal Facility

1.1 Context and background

The New Zealand – Africa Geothermal Facility (AGF) was established through a partnership between the African Union Commission (AUC) and New Zealand's Ministry of Foreign Affairs and Trade (MFAT) in 2017, to address critical gaps in reliable energy across East Africa for almost half the population by supporting advancements within the East African geothermal sector.[4] Reliable, sustainable and cost-efficient energy is central to unlocking economic and social development, and the significant geothermal resource potential could provide the region with renewable, stable and affordable energy supply.[5]

The East Africa region has made considerable progress toward harnessing geothermal energy, particularly in Ethiopia and Kenya. However, the persisting challenges of long lead times for geothermal development, complexities in establishing geothermal development projects, attracting and securing financing and the evolving institutional and political environments hinder the realisation of greater potential from geothermal energy sources across the region.

The AGF plays an important role in providing flexible support to geothermal energy agencies and facilitating knowledge transfer and capacity strengthening for in-country partners through access to geothermal expertise of New Zealand (NZ).[6] The AGF began in mid-2017 as a five-year programme. A no-cost extension was approved during the reporting period (in Year 5) for an additional two years to 31 December 2024.

Eleven (11) countries in the East Africa Rift are eligible for assistance through AGF, with the current bilateral support limited to five countries (Kenya, Ethiopia, Tanzania, Djibouti and Rwanda) while also offering regional accessible training opportunities across the region. The AGF 'demand-driven' modality was designed in late 2016, with the Partnership Agreement signed and brought into effect in 2017. The single Facility Manager model originally programmed in the design in 2017 was updated in 2019 to provide wider facility management support.[7] The Independent Facility Management Team (managed by Cowater International) is responsible for project identification, monitoring, facilitating project delivery and relationship management with geothermal sector stakeholders and implementing partners represented in the region by a regionally appointed Facility Manager. The Facility Manager works with eligible country stakeholders throughout the region and NZ industry with experience in the region for technical assistance, capacity building, and project scoping and design for geothermal energy development.

1.2 Theory of change for the AGF

The AGF developed a theory of change during the design stage that outlined the outcome pathways for the programme. The initial 2017 design proposed the following outputs:[8]

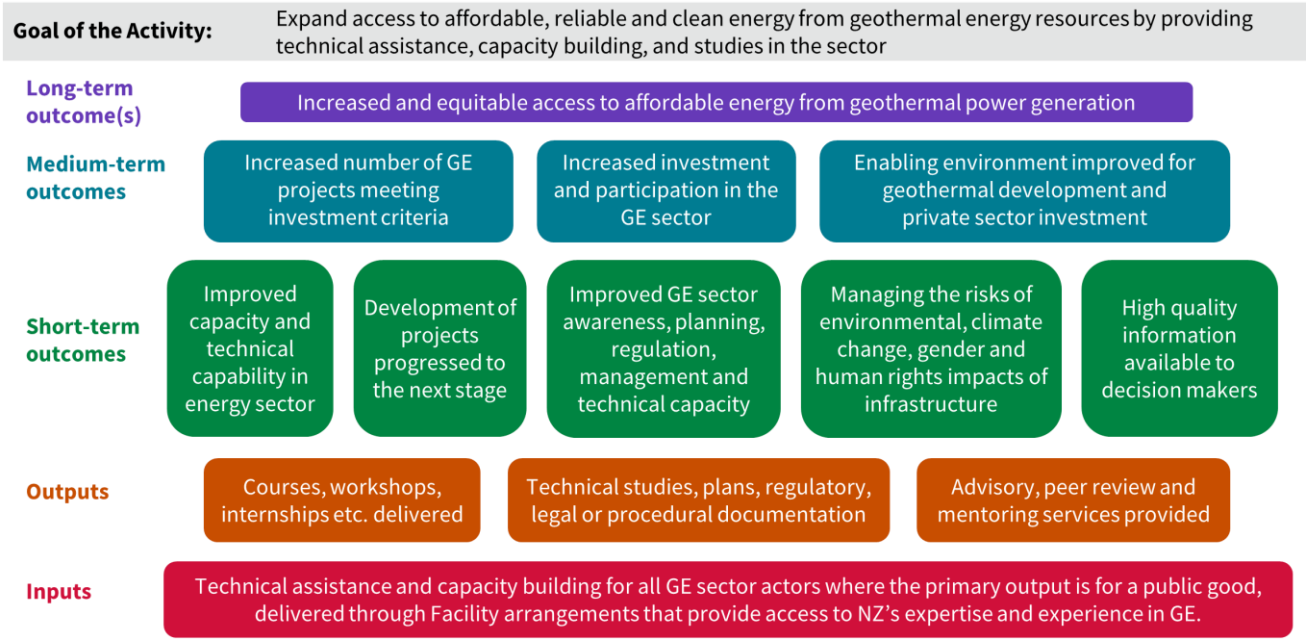
- Technical support for geothermal energy (GE) exploration programmes
- Technical support for GE project feasibility assessments
- Technical support for GE plant design, construction, and operation
- Support for GE sector planning, governance, regulation, and management
- Support for GE sector training frameworks, qualifications, and training delivery.

The theory of change was reviewed and amended in 2021 (see Figure 2 below), to provide clarity on AGF's objectives, baseline, and targets for the indicators.

The outcome pathways are interrelated and could be assumed to be the pathways of the AGF as of this Evaluation. The outcome pathways have formed the basis of this Evaluation's assessment of effectiveness and impact (see Section 4).

[4] East Africa Population Access to Electricity, Africa Energy Portal (AEP), 2021, East Africa | Africa Energy Portal (africa-energy-portal.org)
[5] Geothermal Development in Eastern Africa, International Renewable Energy Agency (IRENA), 2020, Geothermal Development in Eastern Africa (irena.org)
[6] AGF Activity Design Document (ADD), MFAT, 2017.
[7] According to the AGF ADD (2017), the facility management services were to be delivered by an independent Facility Manager, a dedicated role for one person. In 2019, additional project management support was provided to the Facility Manager.
[8] AGF Activity Design Document (ADD), MFAT, 2017.

Figure 2. The AGF Theory of change diagram[9]



1.3 AGF Modality

The modality, as shown in Figure 3 below, involves:

- The **AGF Steering Committee (SC)** that is comprised of representatives from AUC and the NZ Embassy in Addis Ababa as **governance partners**[10], that provide approvals for project proposals and the associated budgets to respond to eligible requests from the implementing partners
- The **implementing partners**[11] that are the publicly owned geothermal developing companies from Ethiopia, Tanzania, Djibouti, Kenya and Rwanda, who work with the AGF Facility Manager to make requests and receive support from the NZ based suppliers through AGF.
- The **AGF Facility Management**, that now includes the Facility Manager and Facility Management support, independent of any delivery responsibilities, works with the implementing partners to refine requests, and tables these requests to the SC.
- **MFAT in Wellington** undertakes the procurement of appropriately qualified NZ based suppliers based on the requests from the implementing partners that are approved by the SC, and liaises mainly with the Facility Manager regarding implementing partner needs, and the NZ Embassy for strategic oversight and direction of the AGF
- The **NZ based suppliers** that are NZ based consulting firms with geothermal expertise are engaged by MFAT Wellington and work directly with the implementing partners to provide technical assistance, capacity building for conceptual modelling, data management and drilling, as well as strategic advice to enable greater decision-making capabilities for the implementing partners.

The modality also has some interaction with other regional donors and facilities, and national ministries through the AUC and NZ Embassy relationships. The relationship management with other donors is managed by NZ Embassy.

The AGF modality provides a system that allows MFAT, in partnership with AUC, to provide technical assistance and capacity building in the geothermal sector in East Africa.

Important features of the AGF modality

Governance and management arrangement[12]

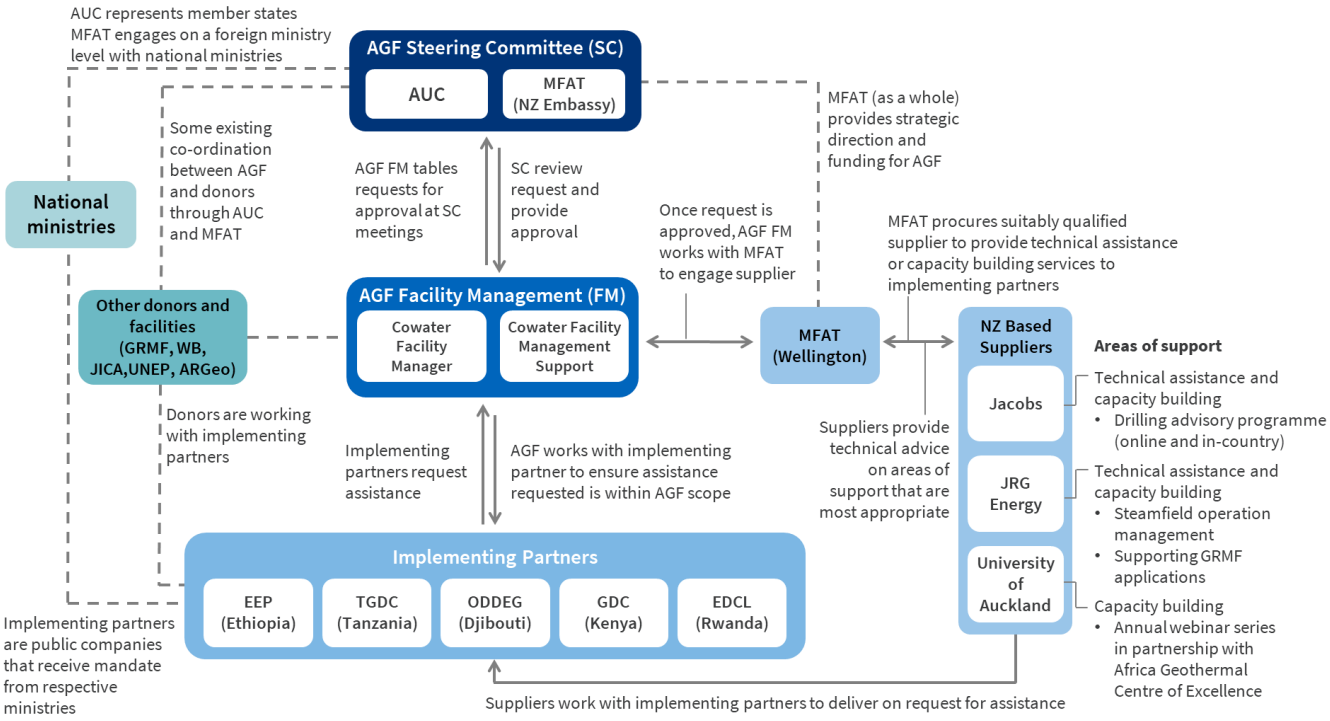
The governance for the AGF is administered through a partnership between MFAT and AUC, who are signatories to the Partnership Arrangement[13] for the AGF. MFAT and AUC

[9] Appendix A: Revised Results Framework July 2021.
[10] Refers to AUC and MFAT and the partnership to govern and administer the AGF
[11] Refers to in-country geothermal developer companies that the AGF works with directly to implement technical assistance and capacity building
[12] Refers to the governance partnership between AUC and MFAT to implement the AGF, particularly through Steering Committee meetings and providing the approval of project requests.
[13] Partnership Arrangement / Agreement on the NZ-AGF (Facility) between MFAT and AUC, MFAT and AUC, 2017

established a Steering Committee (SC) as the key governance mechanism for the AGF, comprised of two senior representatives of MFAT and the AUC respectively. They key responsibilities of the SC as per the Partnership Agreement include:

- Providing high level policy and strategic guidance to the AGF
- Review and endorse operational policy for the AGF
- Receive and review plans including an annual high level workplan
- Receive and review activity proposals against the AGF criteria
- Take decisions on activities to be financed and progressed under the AGF
- Receive progress and annual reporting submitted by the Facility Manager and approve these for submission for MFAT and AUC
- Monitor delivery of Facility activities, expenditure against budget and overall Facility results
- Decide on any other matters for efficient and effective operation of the AGF.

Figure 3. Current modality of AGF



Implementation arrangement[14]

The AGF began with a single Facility Manager model, who was originally co-located in the AUC Regional Geothermal Coordination Unit (RGCU) in Addis Ababa for close collaboration.

This model was revised in 2019 to provide wider facility management support to the Facility Manager for project development, project management and reporting, allowing the Facility Manager more time to focus on in-country stakeholder relationship management and establishing a pipeline of projects.[15]

The current Independent Facility Management Team is contracted to Cowater International (formerly known as FCG Anzdec Ltd), is responsible for project identification, monitoring, facilitating project delivery and relationship management with geothermal sector stakeholders and implementing partners represented in the region by a regionally appointed Facility Manager. The Facility Manager works with eligible country stakeholders throughout the region and NZ

[14] Refers to the arrangements of the day-to-day operations of the AGF. It refers to the arrangements of AGF to deliver on requests made by implementing partners, through the Facility Management with support from MFAT Wellington and NZ based suppliers.
[15] According to the AGF ADD (2017), the facility management services were to be delivered by an independent Facility Manager, a dedicated role for one person. In 2019, additional project management support was provided to the Facility Manager.

industry with experience in the region for technical assistance, capacity building, and project scoping and design for geothermal energy development. The NZ Embassy to Ethiopia focuses on supporting the Facility Manager at the strategic and diplomatic level and relationship building. MFAT Wellington-based staff focus on project procurement, contracting, and supplier engagement with NZ based suppliers.

Implementing partners

The AGF is currently working with the following state-owned geothermal developers, referred to as implementing partners in this Report:

- **Ethiopia**: Ethiopia Electric Power (EEP)
- **Tanzania**: Tanzania Geothermal Development Company (TGDC)
- **Kenya**: Geothermal Development Company (GDC)
- **Djibouti**: Djiboutian Office for the Exploration and Exploitation of Geothermal Energy (ODDEG)
- **Rwanda**: Energy Development Company Limited (EDCL)

NZ based suppliers

The AGF engages with the NZ geothermal industry to deliver technical assistance and capacity building to implementing partners. These firms, referred to as NZ based suppliers in this Report, are listed below:

- **Jacobs**: provides technical assistance and capacity building on drilling advisory support to implementing partners, both in-person and online for Ethiopia, Djibouti and Tanzania
- **JRG Energy**: provides technical assistance and capacity building, both in-person and online, for steamfield operations and management in Kenya and GRMF applications for Tanzania, Djibouti and Rwanda
- **University of Auckland**: provides capacity building to implementing partners through the geothermal webinar series which is delivered online and accessible regionally

1.4 Snapshot of AGF progress to date

The AGF underwent a prolonged inception period between 2017 and 2019, with the first project eventually mobilising in 2019.[16] Since then, the AGF has progressed significantly and has completed one project, has three substantive and ongoing active projects, and two in the pipeline.[17] These projects are described briefly below:

Table 1. AGF Project status

Project status	Project description
Complete project	Support to GDC in Kenya to undertake its first commercial steam field operation
Active projects	Supporting the Africa Geothermal Centre for Excellence (AGCE) to host a Geothermal Webinar series on training support for geothermal professionals, delivered by the University of Auckland and regionally accessible
	Technical support for preparation of Geothermal Risk Mitigation Facility (GRMF) funding applications in Djibouti, Tanzania and Rwanda
	East Africa Drilling Advisory Support to Ethiopia, Tanzania and Djibouti
Projects in the pipeline	Technical assistance for asset management of drilling equipment
	Capacity strengthening for the geothermal regulatory body in Ethiopia

The COVID-19 pandemic impacted the ability to build relationships in person, however, the AGF was able to adapt and respond to this challenge by delivering online webinars for geothermal training support to 10 of the 11 AGF eligible countries. This was important for maintaining relationships during the period of travel restrictions, allowing the AGF to continue to progress towards its short-term and medium-term outcomes.

Since approval from the Steering Committee in 2019 for the first two projects (the first and second projects listed in Table 1 above), the AGF is now in full implementation mode and facilitates a partner-led approach to move forward with geothermal development by building sector capacity, co-developing support projects, engaging in partnerships, and creating technical knowledge-sharing opportunities with NZ based expertise.[18]

[16] AGF Activity Monitoring Assessment (AMA) July 2018 to June 2019, 2019.
[17] NZ-AGF Annual Report for the period 1 July 2021 – 30 June 2022, FCG Anzdec Limited (New Zealand), 2022.
[18] NZ-AGF Annual Report for the period 1 July 2021 – 30 June 2022 Executive Summary, FCG Anzdec Limited (New Zealand), 2022

1.5 Snapshot of East Africa countries geothermal development

The development of geothermal in Eastern Africa started in the 1950s, with the Democratic Republic of Congo (DRC) being the first country to commission a geothermal power plant in 1953, followed by Kenya in 1981, Zambia in 1986 and Ethiopia in 1998. The DRC plant is no longer operational due to operational challenges, and the Zambia plant also closed operations due to distance from the load centre, absence of transmission lines to transmit power, and a temperature that was too low to justify a large power plan. Currently, Kenya is leading in the geothermal energy development with installed geothermal power capacity of 972.5MW followed by Ethiopia at 8.5MW, while Tanzania, Djibouti, and Rwanda are at various stages of resources exploration, confirmation, and appraisal. This is shown in Figure 4 below.

Geothermal project development process consists of three major stages, as shown in Figure 5 below. Each stage is independent and builds on the preceding one. The full duration for implementation of a geothermal project from exploration through development, to plant commissioning is about five to eight years.[19] Only two countries in East Africa (Kenya and Ethiopia) have been able to implement the development and utilisation phases.

Figure 4. Overview of geothermal development in East Africa

Figure 5. Geothermal project development process

Many countries are still in the exploration phase including Ethiopia (Aluto Langano, Corbetti, Tulu Moye) and Djibouti (Gale La Koma) who are carrying out drilling to estimate the resource potential. Tanzania (Ngozi) is drilling a slim well to confirm the resource, and Rwanda has redirected exploration and resource utilisation efforts towards direct use.

The development of geothermal depends on regional and country specific approaches to tackle technical and non-technical challenges that are specific to the geothermal industry. Technical barriers include a lack of quality resource data and information especially drilling data. Non-technical barriers include high cost and risk associated with early-stage exploration, absence of capable and dedicated local institutions to foster geothermal development, insufficient human capacity and skills, inadequate institutional arrangements, limited access to finance and lack of awareness for policy, decision makers and the general public. These barriers must be jointly addressed to progress geothermal resource exploration towards resource development and utilisation.

Status of geothermal development in Ethiopia, Tanzania, Djibouti, Kenya and Rwanda

The stages of development of geothermal resources across Ethiopia, Tanzania, Djibouti, Kenya and Rwanda can be summarised as shown in Table 2 below. The table shows that each country is conducting surface studies and geothermal exploration drilling, with Ethiopia and Kenya having progressed to power generation.

[19] Geothermal Handbook: Planning and Financing Power Generation. ESMAP Technical Report 002/12, Gehringer, Magnus; Loksha, Victor, 2012

Table 2. Status of geothermal development in Ethiopia, Tanzania, Djibouti, Kenya and Rwanda

Main phases	Stages of development	Description	Ethiopia	Tanzania	Djibouti	Kenya	Rwanda
		• Estimated Potential (MW)[20]	10,000	5,000	125-300	10,000	340
		• Realised power (MW)	8.5			972.5	
Exploration	**Surface exploration** **Detailed exploration** **Test drilling**	• Surface geoscientific studies	✓	✓	✓	✓	✓
		• Conceptual modelling	✓	✓	✓	✓	✓
		• Exploration drilling	✓	✓ongoing	✓	✓	✓ dry wells
Development	**Feasibility study** **Project design** **Procurement/ tendering** **Financing**	• Plant and steam-field design • Power contracting • Production drilling	✓			✓	
	Construction, testing & commission-ing	• Steam field development • Power plant construction • Testing & commissioning	✓			✓	
Utilisation	**Operation and maintenance**	• Maintenance of equipment • Monitoring of reservoir performance • Well workovers • Drilling new make-up wells	✓			✓	
	Direct heat utilisation	• Demonstration/pilot projects	✓	✓		✓	
Enabling environment		• Energy Policy	✓	✓		✓	✓
		• Legislation	✓	Draft		✓	
		• Dedicated institution	EEP[21]	TGDC	ODDEG	GDC / Ken-Gen	EDCL[22]

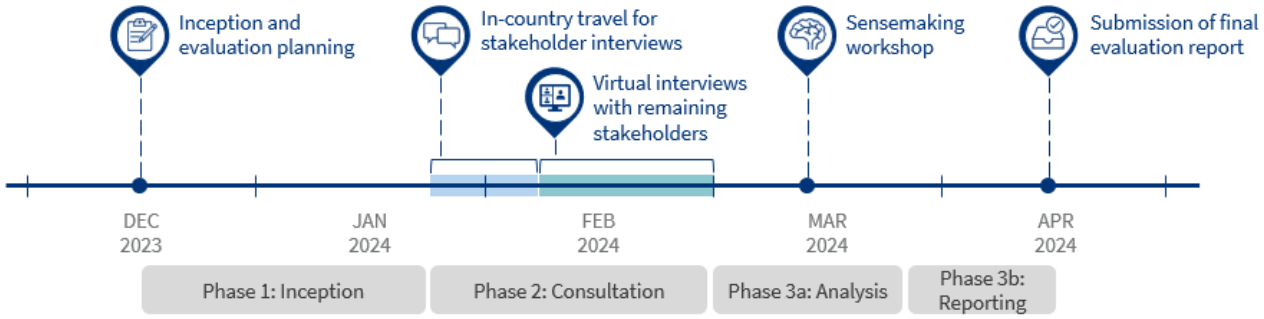
[20] Situation Analysis Study on Geothermal Development (Annex), Japanese International Cooperation Agency (JICA) and West Japan Engineering Consultants, INC., 2010.
[21] Ethiopia Electric Power (EEP) is the state-owned electricity producer in Ethiopia that carries a mandate for geothermal resource development.
[22] Energy Development Company Limited (EDCL) is the state-owned electricity producer in Rwanda that carries a mandate for geothermal resource development.

2 Overview of the Evaluation

The overall purpose of this independent evaluation (the Evaluation) is to understand the relevance, effectiveness and impact of AGF and provide insights and considerations for the future direction of the AGF. The Evaluation also assesses the extent to which the governance and implementation arrangements of the AGF are fit for purpose and how they support efficiency in achieving the intended outcomes. MFAT intends to use the findings and future directions of the Evaluation to understand the impact of AGF and inform decision making about any future phase of the AGF.

The Evaluation was undertaken from December 2023 to March 2024, and was conducted in three phases: 1 Inception; 2 Consultation; 3a Analysis; and 3b Reporting. This included in-country travel to Ethiopia, Tanzania, Djibouti and Kenya for stakeholder interviews in January / February, virtual stakeholder interviews throughout February, and a sensemaking workshop in March. This is briefly presented in Figure 6 below.

Figure 6. Overview of Evaluation timelines



2.1 Evaluation scope

The Evaluation covers the current phase of AGF, from June 2017 to December 2023. It focuses on assessing the effectiveness and impact of the AGF as a whole and its various projects at an aggregate level. The geographic focus included Ethiopia, Tanzania, Djibouti, Kenya and Rwanda. With MFAT's approval, other AGF eligible countries that participated in the geothermal webinar series were contacted for virtual interviews. Responses were received from Zambia, Burundi and Comoros.

The Evaluation has both summative and formative aspects and took a regional approach where possible to achieving Evaluation objectives and answering the key evaluation questions. Significant focus was centred on implementing partners from the five core countries, exploring both the results achieved as a result of AGF support (summative assessment), while exploring formative assessments on what can be done in the future. The formative elements of the Evaluation also included consultations from national ministries, civil society organisations (CSOs), regional facilities and donors, and countries from the broader geographic scope of the AGF to understand what has worked well, what areas can be strengthened and what considerations should be taken forward for potential future phases of the AGF.

The scope of the Evaluation does not cover:

- Other donor funded initiatives or partner-country projects of a similar nature and scope (beyond identifying where there are complementary, competing initiatives or if the AGF has added value to these initiatives).
- A detailed performance review of all projects delivered by suppliers / implementing partners.

2.2 Key evaluation questions

The Tetra Tech Evaluation Team consulted the NZ Embassy to Ethiopia, MFAT staff in Wellington and the AGF Facility Manager to understand the background and drivers of the Evaluation to shape the key evaluation questions (KEQs). From these discussions, the Evaluation Team understood that the Evaluation should consider the effectiveness of support delivered to date, and how the efficiency of the current modality and governance mechanisms have evolved since the inception of the AGF, given how the AGF has adapted to changing political and operating contexts and partner needs. It was also understood, based on the Evaluation Terms of Reference (TOR) that there was a particular interest in the

implementation and governance arrangements to ensure good alignment and coordination, and what could be done to make any future phase of the AGF more relevant, and partner driven.

The Evaluation Team has taken this into consideration and developed the Evaluation objectives and 10 KEQs. The Evaluation maintained a balance between the first three Evaluation objectives (relevance and coherence; effectiveness and impact; and efficiency) and the last objective (future directions) to ensure that summative elements inform the future directions of the AGF.

The table below sets out the agreed criteria, Evaluation objectives and questions which detail how this Evaluation was undertaken. A detailed overview of the sub-questions that supplemented the KEQs is shown in Annex 4.

Table 3. Evaluation objectives and questions

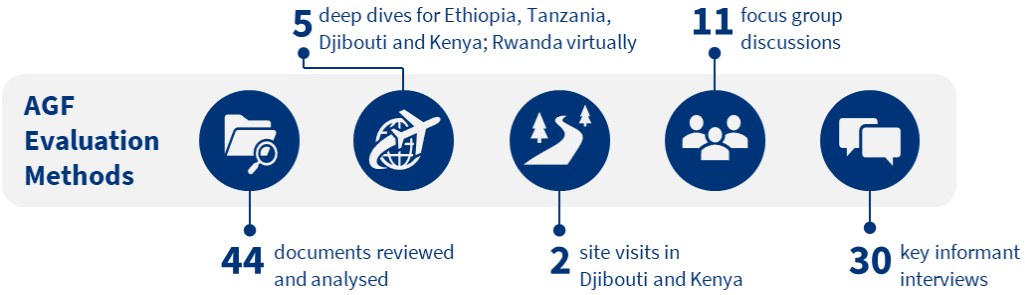
Objectives	Details	Key Evaluation Questions
Relevance and coherence	To assess the **relevance** and **coherence** of the AGF to the priorities of East African countries and NZ, and the coherence of the activities to government and other development partners' activities and priorities	1. To what extent is the AGF relevant and aligned to the renewable energy priorities of the AUC, Ethiopia, Tanzania, Djibouti, Kenya, and Rwanda, and the East Africa region? 2. How are the AGF activities aligned or harmonised within themselves and with what other key donors are delivering in East Africa?
Effectiveness and impact	Examine the **effectiveness** and **impact** of the AGF against its intended goal and outcomes, including understanding how well the AGF projects are aligned with each other to achieve objectives	3. To what extent has the AGF made progress towards its intended outcomes to date? 4. To what extent has AGF enhanced local ownership and cooperation in the geothermal sector? 5. What factors constrained or enhanced the AGF's achievement of the intended outcomes? 6. Were there any unintended outcomes as a result of AGF support in the implementing countries and in the overall partnership arrangements?
Appropriateness of the modality and governance arrangements and efficiency	Consider whether the current AGF **modality**, implementing and governance arrangements are **fit for purpose** for achieving intended outcomes and for supporting the overall **efficiency**	7. To what extent is the AGF's modality fit for purpose to achieve its outcomes? 8. To what extent has the AGF's implementation and governance and management arrangements supported or hindered the achievement of its objectives? 9. What options exist to strengthen the AGF modality, governance scope, and implementation?
Future directions	Consider how a **future** phase of the AGF could be more effective and achieve greater impact, be relevant and partner-led	10. What are the key considerations for a future phase of AGF geothermal support to East Africa and the broader region?

2.3 Evaluation approach and methods

The Evaluation drew on qualitative evaluation techniques using different data collection tools all applied in a sequential multi-phase approach using progressive inquiry. Stakeholder engagement and emerging findings continually informed the evaluative approach and its ongoing refinement throughout the Evaluation. The Evaluation was carried out as a collaborative, participatory and 'open' exercise with emphasis on providing progress updates and emerging findings to both the AGF, AUC and MFAT as they emerged to inform early discussions on the preparation of future phases. The Evaluation applied exploratory approach across all phases of the Evaluation that allowed data and evidence to be analysed in a manner that triangulated findings as well as provided new insights to emerge.

A brief outline of methods for data collection and analysis is shown in Figure 7 below.

Figure 7. Key AGF Evaluation methods



The Evaluation also undertook deep-dive assessments of activities of the AGF in Ethiopia, Tanzania, Djibouti, Kenya and Rwanda. Site visits were also undertaken to a drilling location in Djibouti and the Menengai power plant in Kenya.

The methods and data collection processes are presented visually in the Evaluation methodology map in Annex 1. The views and perceptions of interviewed stakeholders from the AGF Facility Management, implementing partners and development partners, NZ based suppliers and CSOs are referenced in this Report to amplify the voice and meaning of the findings.

2.4 Challenges and limitations

Other than scheduling conflicts in Ethiopia, the Evaluation Team experienced no major challenges in delivering the evaluation according to the agreed upon Evaluation Plan. However, several limitations are worth noting, listed in the table below.

Table 4. Evaluation challenges and limitations

Challenge / Limitation	Details
Limited engagement with AUC Senior Management Team	• Scheduling conflicts meant that deeper engagement with some stakeholders was limited, particularly with the AUC. While the Evaluation Team was still able to meet with some AUC representatives, scheduling conflicts meant engagement with senior staff could not occur as planned. This limited the ability of the Evaluation Team to extract high-level findings from the AUC's perspectives from the Senior Management Team. Findings on AUC feedback should be read and understood in this context.
Contribution vs. attribution	• The AGF is one of many players in the geothermal sector in East Africa, and the implementing partners work with many donors and facilities. The AGF's effectiveness and impact should be understand in the context what outcomes the AGF contributed to and not what can only be attributed to the AGF.
Assessment of modality and not outcomes of the individual projects	• The Evaluation assessed the modality as a whole rather than a detailed performance review of all projects delivered by the AGF. While individual projects were considered to assess effectiveness and impact of the AGF, they have not been individually assessed as part of this Evaluation.
Geothermal development long horizons and effectiveness	• Geothermal development is a long process and there are many steps to be undertaken to reach the power generation stage. Other factors are also required for geothermal development to progress, including enabling environments and private sector participation. At the time of writing this Evaluation, only Kenya has achieved power generation, with Ethiopia also experienced in power generation. Tanzania, Djibouti and Rwanda are still at the exploratory stage. This has had implications on how the overall effectiveness and impact of the AGF is assessed.
Evaluation not a substitute of a future design	• Finally, it is worth noting that while the Evaluation contains both summative (backward looking) and formative (forward looking) analysis, the formative elements are not a substitute for a full activity design. Should MFAT decide to pursue a new phase of the AGF, the future considerations are best explored in-depth as a part of a full activity design process.

2.5 How to read this report

This Report is meant to assess the relevance, effectiveness, impact and implementation and governance arrangements of the first phase of the AGF from inception in 2017 to December 2023. It is primarily intended for AUC and MFAT personnel directly involved with delivering or supporting the implementation of the AGF to ensure findings and recommendations are feasible and utilisation focused. Below is the structure of the Report:

- Executive Summary: This section provides a summary of the Evaluation findings and emerging areas of consideration.
- Overview of the AGF (Chapter 1): This section provides an overview of the AGF, current governance and implementation arrangements and progress to date.
- Snapshot of East Africa countries geothermal development (Chapter 1.5): This section provides an overview of the geothermal context in East Africa, geothermal development processes, and geothermal development progress across Ethiopia, Tanzania, Djibouti, Kenya and Rwanda.
- Overview of the Evaluation (Chapter 2): This section provides an overview of the Evaluation, including its purpose, key objectives, and key evaluation questions, in addition to detailing the approaches and methods that were utilised.
- Evaluation Findings (Chapters 3 to 5): These sections present findings from the various data collection methods, including the desktop review, literature review, and stakeholder consultations against each of the key evaluation questions.
- Future directions (Chapter 6): This section presents the conclusions of the Evaluation analysis with overarching observations and recommendations for future consideration by AUC and MFAT for potential future phases of the AGF. This section also responds to Evaluation Objective Four: Future directions.

The Evaluation findings include text boxes that provide exemplars, lessons learned, and best practice examples based on existing literature as follows:

Exemplars

The Report features blue boxes with exemplars on areas AGF has performed well

Lessons Learned

The Report features light green boxes with key lessons learned

Best practice insights

The Report features teal boxes with best practice insights from literature and stakeholder consultations

Evaluation Findings

3 The relevance and coherence of the AGF

This section presents findings in relation to Objective One[23] of the Evaluation and presents analysis and findings relating to the AGF's relevance and coherence. In the context of this Evaluation, relevance and coherence were complementary criteria that assessed the extent to which the AGF's objectives and activities align with the needs, policies, and priorities of AUC, MFAT, and implementing countries. It also assessed the extent to which the AGF activities are coherent with activities being delivered by key regional programmes and donors in the region.

Key evaluation questions:

1. To what extent is the AGF relevant and aligned to the renewable energy priorities of the AUC, Ethiopia, Tanzania, Djibouti, Kenya, and Rwanda, and the East Africa region?
2. How are the AGF activities aligned or harmonised within themselves and with what other key donors are delivering in East Africa?

3.1 Key findings on the extent to which the AGF is relevant and coherent

The AGF is a valued and relevant programme that is aligned with the local implementing partners and NZ policies and priorities. It enjoys widespread support among implementing partners in East Africa and has provided technical assistance and capacity building in five East African countries for the last five years.

The AGF is relevant and aligned with the renewable energy priorities of AUC

The AGF continues to remain aligned and relevant to the AUC. The AGF seeks to provide demand-driven, flexible and responsive technical assistance and capacity building support to implementing partners in East African countries to enable progress towards their geothermal development goals. This objective was set out in the original theory of change of the AGF and has remained the objective of the AGF to date.

The AUC recognises the need for increased access to reliable energy sources for the African people. It has established initiatives such as the Energy Development Strategies and Initiatives[24], Africa Energy Commission (AFREC)[25] and the RGCU[26], to operationalise and implement interventions to make progress towards its energy and electricity provision objectives.

The pursuit of geothermal development in East Africa is recognised by the AUC as important for energy security, just transitions to cleaner energy and to mitigate against intensifying climate impacts.[27] The AUC mandates across energy provision and climate change mitigation are closely aligned with AGF's objectives. This is reinforced by Agenda 2063 - The Africa We Want,[28] a strategy encompassing a united vision for the continent developed by the African Union, highlighting energy access to all African households, businesses, industries and institutions in a way that is modern, efficient, reliable, cost-effective, renewable and environmentally friendly. The member states that the AUC represents, including the 11 states that are eligible for AGF support, have policies, mandates, commitments and goals in place that focus on advancing geothermal development and achieving greater renewable energy production. As the AUC draws its mandate from member states, this also demonstrates the alignment and relevance of the AGF to the AUC's priorities for geothermal resource development.

Overall good alignment with renewable energy priorities of implementing countries.

The AGF is relevant and aligned with the renewable energy priorities of Ethiopia, Tanzania, Djibouti, Kenya and Rwanda. Each country has

[23] Evaluation objective one assesses the extent to which the AGF is relevant and aligned to the priorities of East African countries and New Zealand, and coherent with the activities to government and other development partners' activities and priorities
[24] Energy, African Union (AU), 2020. Energy | African Union (au.int)
[25] Overview, Africa Energy Commission (AFREC), AU, 2023. Overview | AFREC (au-afrec.org)
[26] The Role of AUC in Development of Geothermal Energy in East African Countries, Regional Geothermal Working Group Meeting (Slides), Department of Infrastructure and Energy, AUC, 2011. PowerPoint Presentation (au.int)
[27] Accelerating Geothermal Energy Development to Drive Energy Transition, Press Release, AUC, 2023. Accelerating Geothermal Energy Development to Drive Energy Transition | African Union (au.int)
[28] Agenda 2063 – The Africa We Want, AUC, 2015. 36204-doc-agenda2063_popular_version_en.pdf (au.int)

made policy commitments to geothermal energy through national visions and renewable energy policies, and AGF activities have supported these goals. This is briefly described in the table below.

Table 5. AGF alignment with renewable energy priorities of implementing countries

Country	How the AGF is relevant and coherent
Kenya	Kenya has a national goal of an additional installed capacity of 913MW from geothermal power projects by 2022, as outlined in the Third Medium Term Plan 2018-2022, Kenya Vision 2030.[29] The AGF supported some work that introduced 35MW of geothermal energy into the grid in 2023.[30] The support for capacity building for steam field operation, engineering, and management of the Menengai steam field led to the commissioning of the first power plant that sustainably meet its steam supply contract obligations to the independent power provider (IPP). AGF's support allowed the power plant to be commissioned on time.
Tanzania	The activities of the AGF are supporting Tanzania to move towards its goals of power generation from geothermal energy, as outlined in the National Five Year Development Plan 2021/22-2025/26,[31] National Energy Policy[32] and Power System Master Plan 2020 Update.[33] Tanzania is still in the early stages of geothermal development, so support from the AGF included online training on conceptual modelling, data interpretation, data validation and data acquisition. The AGF has also supported GRMF applications and is supporting the convening of experts for a technical review meeting to progress plans for drilling.
Ethiopia	Ethiopia has a target for 577MW of geothermal energy production.[34] The AGF drilling advisory support both online and in person has supported the capacity strengthening of EEP to conduct well siting, drilling and well control, which are critical early steps to support Ethiopia to realise their target.
Djibouti	Support from the AGF is addressing important areas of strengthening for Djibouti to realise 100 per cent renewable energy generation as part of the Djibouti Vision 2035.[35] The AGF has supported Djibouti with GRMF applications, online and in-person training covering conceptual modelling, inventory management and drilling advisory support.
Rwanda	Rwanda seeks to increase the share of renewable energy in the national energy mix by utilising geothermal heat[36]. AGF activities have supported this goal by providing quality assurance and peer review of GRMF application, capacity building through webinars and online training for data interpretation and a country wide resource assessment for EDCL.

Strategic alignment with New Zealand's regional priorities, renewable energy ambitions and climate change mitigation priorities and international development principles

The AGF is aligned with NZ's renewable energy and climate change mitigation priorities and international development principles. Supporting geothermal energy development in partner countries aligns with MFAT's intent to work for global solutions to global sustainable development challenges while drawing on and sharing domestic expertise. Some of the key policies include NZ's International Cooperation for Effective Sustainable Development (ICESD), [37] MFAT Strategic Intentions 2021-2025,[38] and the Africa Regional Four-Year Plan (4YP).[39] The Africa 4YP highlights infrastructure, energy, climate and environment as a key thematic focus areas to support MFAT's commitment to the United Nations Sustainable Development Goals and make useful contributions through niche sectors of NZ expertise.

The Activity Design Document (ADD) for AGF also highlighted the areas of relevance between the priorities of the East Africa region and NZ's

[29] Third Medium Term Plan 2018-2022, Kenya Vision 2030, Republic of Kenya – The National Treasury and Planning, 2018, THIRD-MEDIUM-TERM-PLAN-2018-2022.pdf (vision2030.go.ke)
[30] Kenya: Construction of the Menengai geothermal power plant is completed, news article, Africa Energy Portal, 2020. Kenya: Construction of the Menengai geothermal power plant is completed | Africa Energy Portal (africa-energy-portal.org)
[31] National Five Year Development Plan 2021/22-2025/26, The United Republic of Tanzania – Ministry of Finance and Planning, 2021, FYDP-III-English.pdf (tro.go.tz)
[32] National Energy Policy, The United Republic of Tanzania – Ministry of Energy and Minerals, 2015, en-1622283004-National Energy Policy (NEP). 2015.pdf (nishati.go.tz)
[33] Power System Master Plan 2020 Update, United Republic of Tanzania Ministry of Energy, 2020, en-1638532283-PSMP 2020 UPDATE FINAL signed.pdf (nishati.go.tz)
[34] Growth and Transformation Plan II (GTP II) 2015/16-2019/20, Federal Democratic Republic of Ethiopia, 2016, GTPII English Translation Final June 21 2016.pdf
[35] Vision Djibouti 2035, Republic of Djibouti, 2013, vision-2035-anglais.pdf (gouv.dj)
[36] Rwanda Energy Policy, Republic of Rwanda – Ministry of Infrastructure, 2015, Rwanda_Energy_Policy.pdf (rura.rw)
[37] New Zealand's International Cooperation for Effective Sustainable Development (ICESD), MFAT, 2019, Policy-Statement-New-Zealands-International-Cooperation-for-Effective-Sustainable-Development-ICESD.pdf (mfat.govt.nz)
[38] MFAT Strategic Intentions 2021-2025, MFAT, 2021. MFAT-Strategic-Intentions-2021-2025.pdf
[39] Africa Regional Four Year Plan, MFAT, 2021, Africa-4YP.pdf (mfat.govt.nz)

technical expertise in geothermal, consistency with existing programmes and policies of MFAT, and the intention of MFAT to build long-lasting positive relationships. The AGF continues to demonstrate relevance and alignment to NZ's renewable energy and climate change mitigation priorities and international development principles to date. This was reinforced through interviews with MFAT staff, who highlighted the strong alignment of the work delivered by the AGF with the NZ ICESD and the Africa 4YP. It was noted that despite the crowded and competitive renewable energy sector in Africa, the high-level geothermal technical advice and expertise provided through the AGF is addressing a big gap that aligns with NZ's renowned technical expertise against a modest budget of the AGF.

Relevance driven by the AGF's high degree of flexibility and responsiveness

The AGF demonstrated a high degree of responsiveness, adaptability, and flexibility according to the needs and plans of implementing partners, which enhanced relevance. Implementing partners shared that the responsive nature of the AGF and flexibility in meeting evolving needs was positively received, and largely viewed AGF to be 'demand-driven'. This can be seen through the support the AGF has provided to implementing partners for GRMF applications, technical review meetings for progressing drilling programmes, and capacity building for conceptual modelling, data management and data analysis. The implementing partners noted that the NZ based suppliers are flexible to evolving needs and easy to work with.

This high level of flexibility is seen as important for enabling implementing partners rationalise their requests and implement activities relevant to their geothermal needs. Similarly, MFAT's perceived level of high flexibility is also valued as this enables implementing partners to adapt to changing circumstances with relative ease.

Overall good coherence of the AGF's own project activities and those of other donors noting there are gaps in donor coordination and harmonisation

The AGF demonstrates internal and external coherence through its own project activities and less harmonisation with those of other donors. The programme areas of support that the AGF is providing to implementing partners is deemed coherent. The support addresses technical assistance and capacity building for surface studies, resource exploration, resource development and resource utilisation based on the needs of the country.

Through interviews and focus group discussions with implementing partners, NZ based suppliers and other regional facilities and donors in East Africa, it was acknowledged that support from the AGF addresses an important gap in the sector. It was also acknowledged that the support provided to implementing partners by the AGF was generally complementary with the support provided by regional donors and facilities including the Japan International Cooperation Agency (JICA), the Geothermal Risk Mitigation Facility (GRMF) (administered by the German Development Bank (KfW) and AUC), the Africa Rift Geothermal Development Facility (ARGeo) (currently delivered by the United Nations Environment Programme (UNEP), the African Development Bank (AfDB) and the World Bank (WB). The way that NZ based suppliers worked and engaged with implementing partners was also noted as a differentiating factor from other donors, and was also identified as a key success factor of the AGF (see Section 4.1)

Exemplar: Harmonisation and complementarity of the AGF with other donors in Kenya

The Menengai power plant project in Kenya necessitated the implementing partner to work with donors such as WB and AfDB, climate investment funds, JICA, GRMF and the AGF. The AGF provided steamfield operation and management training which was critical to supplying steam to specification on demand to the IPP, enabling the successful commissioning of the power plant by the IPP. The implementing partner found that the AGF support complemented the support from other regional facilities and donors and the interventions the AGF provided were much needed. The on-time, targeted capacity building support was greatly appreciated by the implementing partner, helping them meet contractual obligations to support the commissionining of the Menengai power plant on time.

Despite high level coordination, and existing efforts from the AGF to understand complementarity with likeminded donors in the region, it was raised by MFAT and other regional donors during an interview that duplication may still occur. To address this, a need for a platform to convene regional facilities and donors working with similar implementing partners was identified. Greater collaboration between regional facilities and donors would be able to provide strategic direction and joined-up geothermal activities as well as provide a long-term view for geothermal development in the region. This was affirmed by an NZ based supplier that had involvement with facilities and donors in the region through previous work in the East African geothermal sector. Future design of AGF should explore

opportunities for harmonisation with other donors for technical assistance and capacity building as it can provide a platform to streamline activities to avoid duplication given limited resources. Existing platforms that could be explored include the biannual ARGeo conferences, the annual AGCE short courses or through the African Geothermal Association (AGA).

Opportunities to unlock greater relevance of the AGF include enhancing the visibility of the AGF's scope to implementing partners as well as national policy makers where relevant or requested

Absence of a clearly written scope of work and lack of visibility of the AGF scope to implementing partners outlining what is in and out of scope was noted by some implementing partners to be limiting the relevance and visibility of the AGF at the national level. This is important for implementing partners to track and manage requests made to the AGF and support received from donors, and report to their relevant ministries and parent agencies on progress and impact.

Implementing partner feedback through interviews and focus group discussions in-country raised that greater clarity of the AGF scope could help streamline requests and demands made. It was also raised that the scope of support being provided by the NZ based suppliers, including scope, tasks, deliverables and timelines, was not always clear to the implementing partners. This made it difficult for implementing partners sometimes to understand what to expect and to understand if the objectives of the support have been met.

It was highlighted by implementing partners that a menu of scope of services from the AGF as well as indication of objectives, and proactive communicating by AGF on the outputs and timelines for support provided by NZ based suppliers would be helpful in addressing this and improve the relevance of AGF with implementing partners and the respective national ministries.

> ***"It is hard to communicate what the AGF does and doesn't do without a clear high-level document. Without a binding administrative document for ministries to engage and create awareness for the AGF, it is challenging to move things forward for geothermal development."***
>
> **Stakeholder, Tanzania**

Implementing partners also noted that official communication from the AGF regarding the requested support was not consistent or formalised. Information transfer was often occurring through conversations, emails, and memorandums of arrangements, with different people in the implementing agencies. While this was positive for responsiveness, some implementing partners found this process unclear in the context of government ministries and public agencies. This is because in most parts of governments in Africa, communication needs to be formal through a letter or memorandum of understanding and addressed to the correct ministry ahead.

Most if not, all implementing partners noted that a simple and consistent manner of requesting assistance by implementing countries, then official communication of scope of support being provided by NZ based suppliers, can be useful to dispel confusion and lack of clarity. Even though MFAT is concerned that this is likely to compromise efficiency in the broader context of the demand-driven approach, the design of the next phase of AGF should explore with implementing partners how this could work in practice to meet their needs and but also avoid unnecessary roadblocks and inefficiencies.

Limited engagement with national ministries in the implementing countries has affected visibility of the AGF at national level and in effect limited visibility with high level policy makers in-country.

To date, limited advocacy and engagement with ministries and key policy makers at the national level was noted as potentially limiting relevance, especially in countries at the early stages of geothermal development. Though the AGF provides support to implementing partners as a result of requests, a future phase of the AGF could explore how and whether AGF could engage relevant policy makers to enhance relevance and effectiveness. Implementing partners noted that engaging policy makers is crucial to progressing geothermal mandates, regulatory frameworks and legislation that improve the enabling environment for geothermal development, and that the AGF and NZ are well positioned to influence outcomes in these areas.

> ***"Capacity building [from the AGF] could include policy, legal, and regulatory framework to improve the enabling environment [for geothermal]. For example, for a natural gas project, multiple ministries and agencies were taken to obtain training on the gas economy, legal requirements and so forth, which helped move the natural gas industry forward."***
>
> **Stakeholder, Tanzania**

The Evaluation notes that consistent communication and meetings of policy makers with NZ based suppliers while in-country might be useful in enhancing visibility at the national level.

4 The effectiveness and impact of the AGF

Key evaluation questions:

3. To what extent has the AGF made progress towards its intended outcomes to date?
4. To what extent has AGF enhanced local ownership and cooperation in the geothermal sector?
5. Were there any unintended outcomes as a result of AGF support in the implementing countries and in the overall partnership arrangements?
6. What factors constrained or enhanced the AGF's achievement of the intended outcomes?

This chapter presents the analysis and findings relating to the AGF's effectiveness, impact and performance against its programme outcomes and responds to Objective Two[40] of the Evaluation. In the context of this Evaluation, effectiveness involves assessing the extent to which the intervention achieved or is expected to achieve, its objectives and results. This chapter first assesses the extent to which the AGF was expected to, and did, achieve its outcomes. The section further spotlights the outcomes achieved by the AGF in line with its theory of change while exploring the factors that have enabled or hindered the effective achievement of results.

In assessing the effectiveness and impact of the AGF, four factors and limitations have to be taken into consideration:

- The long horizon nature of achievements of geothermal development outcomes. This is because geothermal development is a long process, takes time and resources to be achieved (the full duration for implementation of geothermal project from exploration through development, to plant commissioning is about five to eight years) even in the most ideal programmes or circumstances.
- Discussions with MFAT during sensemaking workshops noted that at design, it was not the intention of the AGF to achieve medium-term and long-term outcomes in the first phase, but rather the first phase was to be used to lay groundwork and enabling environment for future outcomes to be achieved.
- Assessing the outcomes should also consider the impact of the COVID-19 pandemic on programme delivery, delayed activity implementation and lack of movement of key personnel staff but also on how the remote work affected implementation momentum and relationship building and management.
- Given the many players and donors in the geothermal space in East Africa, outcomes achieved cannot be attributed to the AGF but rather the AGF can only be said to have contributed to outcomes in the region. Findings on the effectiveness and impact of the AGF should be read in this context.

4.1 Key findings on the extent to which the AGF has achieved its intended outcomes

Despite a challenging start and the COVID-19 pandemic, the AGF has made contributions to almost all of its outputs, short-term outcomes and is making progress towards its medium-term outcomes

The Evaluation used the AGF's theory of change developed during the design phase in 2017 and revised in 2021 as a basis for assessing the extent to which contributions were made towards outcomes based on activities requested from implementing partners, shown in Figure 8 below. The AGF theory of change put forward three outputs and five short-term outcomes (STOs) that could contribute to three medium-term outcomes (MTOs) and one long-term outcome depending on demand from implementing partners. The three inter-related medium-term outcomes are:

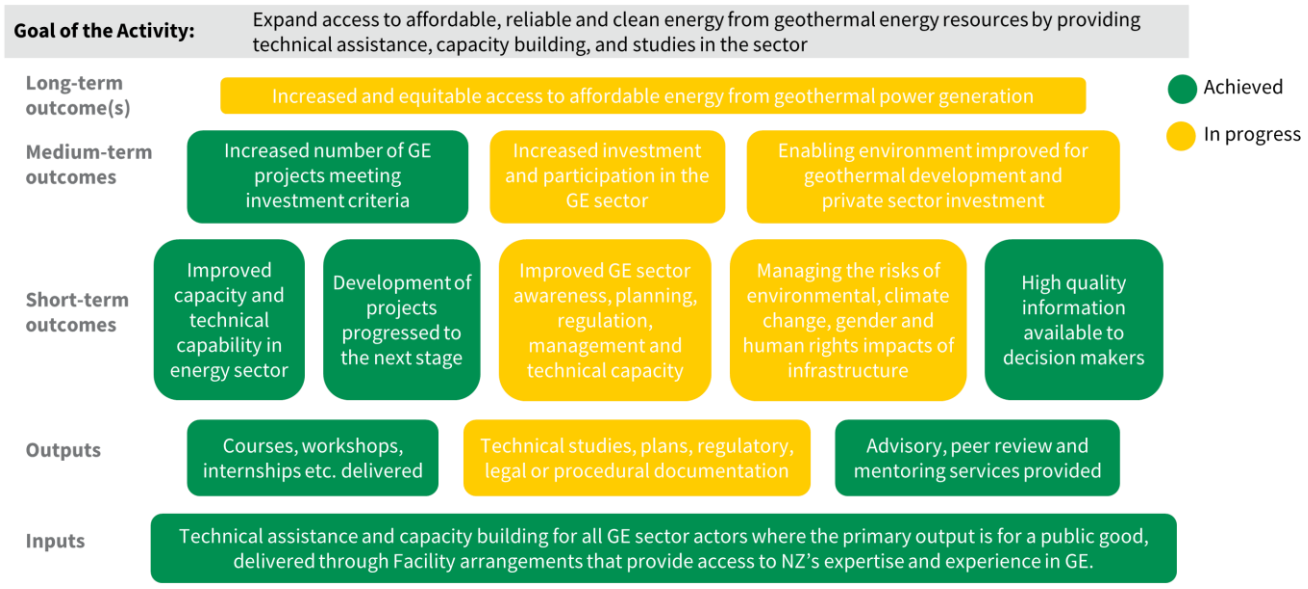
Medium-term outcome 1: Increased number of GE projects meeting investment criteria

Medium-term outcome 2: Increased investment and participation in the GE sector

Medium-term outcome 3: Enabling environment improved for geothermal development and private sector investment

[40] Evaluation objective two examines the effectiveness and impact of the AGF against its intended goal and outcomes, including understanding how well the AGF projects are aligned with each other to achieve objectives

Figure 8. Progress made against theory of change



The AGF had three main project outputs. Reporting analysis and interviews with key stakeholders note that progress has been made against all outputs of the AGF as outlined in the theory of change, with two outputs being considered as achieved. Furthermore, through implementing partner requests, the AGF is on track to achieve its short-term and medium-term outcomes with three of five short-term outcomes achieved and one out of three medium-term outcomes achieved. Key results achieved are indicated in Table 6 below:

Table 6. Key achievements of the AGF

	Results	Status	Evidence
Outputs	Courses, workshops, internships etc. delivered	✓	The AGF supported a range of training including: • Online webinars accessible regionally that build foundational geothermal capacity in general geothermal systems to resource development and testing, engineering design, feasibility studies and investment, power plants and project concepts, and direct use • Capacity building online and in-person in small focus groups on conceptual modelling, resource exploration and confirmation, and drilling advisory support
	Technical studies, plans, regulatory, legal or procedural documentation	↻	The AGF supported Ethiopia, Tanzania, and Djibouti with data analysis, validation, interpretation, quality assurance, and conceptual modelling, as well as remote support during the drilling process in Ethiopia. AGF support on GRMF applications for Tanzania, Djibouti and Rwanda has progressed surface studies and drilling programmes. The Ethiopian Ministry of Mines, the geothermal regulatory body in Ethiopia, requested assistance for 'Regulatory Training Support', to build internal capacity for a range of compliance and processing areas. Currently in the pipeline, project has not commenced yet.
	Advisory, peer review and mentoring services provided	✓	AGF support for GRMF applications took the form of peer review and quality assurance to improve quality of applications and meet GRMF requirements for funding. The AGF supported Kenya with capacity building for steamfield operation, engineering and management for the Menengai steamfield. This helped GDC to fulfil contractual obligations required to support the timely commissioning of the Menengai power plant. In-person capacity building is provided through the drilling advisory support, with ongoing mentoring and technical support provided remotely via email or the Drilldown platform.

	Results	Status	Evidence
Short-term outcomes	Improved capacity and technical capability in energy sector	✓	Achieved through support on GRMF applications, and online and in-person training that was carried out in focus groups using implementing partner data.
	Development of projects progressed to the next stage	✓	Through support on GRMF applications, drilling programmes and supporting technical expert review meetings of conceptual models, the AGF has supported greater surface exploration and resource confirmation.
	Improved GE sector awareness, planning, regulation, management and technical capacity	↻	The Ethiopian Ministry of Mines has requested 'Regulatory Training Support' to build capacity for regulatory processes. This is currently in the pipeline, project has not commenced yet, but it is anticipated to improve the enabling environment for geothermal in Ethiopia. The AGF has contributed to a resource assessment in Rwanda, through support for GRMF applications, and provided ad-hoc strategic advice to Kenya, Ethiopia and Djibouti.
	Managing the risks of environmental, climate change, gender and human rights impacts of infrastructure	↻	Implementing partner requests are yet to reflect these considerations, however, the importance of these aspects for sustainable development of the GE sector was acknowledged by implementing partners. The AGF has conducted preliminary needs assessments of gender and social inclusion, however this is at the early stages, and has not been explicitly requested by implementing partners.
	High quality information available to decision makers	✓	Partners reported that AGF support, particularly through the drilling advisory support programme, and a country wide resource assessment in Rwanda, has enabled improved decision-making regarding resource exploration, confirmation, and drilling. This is attributed to the training using partner data and support for data acquisition.
Medium-term outcomes	Increased number of GE projects meeting investment criteria	✓	Five GRMF applications for surface exploration or drilling submitted with support of the AGF have been successful and unlocked funding for implementing partners: • Northwest Assal Drilling Program (Djibouti) • North Ghoubbet Surface Study (Djibouti) • Alol Surface Study (Djibouti) • Arta Drilling Program (Djibouti) • Songwe Drilling Program (Tanzania) At the time of reporting, there are four GRMF direct use applications, two of which qualified for funding, and two that have passed the first round and are now under evaluation: • Lac Abhé Surface Study (Djibouti) – under evaluation • PK-20 Surface Study (Djibouti) – under evaluation • Manyara Surface Study (Tanzania) – successful • Gisenyi Surface Study (Rwanda) – successful
	Increased investment and participation in the GE sector	↻	The AGF has supported increased investment in the geothermal sector through its support for seven successful GRMF applications for surface exploration or drilling (listed above), unlocking USD15.4m in funding for implementing partners.
	Enabling environment improved for geothermal development and private sector investment	↻	Technical capacity of GE sector in East Africa is growing with the support of the AGF: • Online training attendees reported improved data interpretation capacity, helping to facilitate better decision-making on resource exploration • Multi-disciplinary technical reviews of conceptual models to validate drilling locations and drilling advisory support The AGF's contribution to GE sector planning, regulation and management is still in progress, with a resource assessment in Rwanda, ad-hoc advice to Ethiopia, Kenya and Djibouti and a project in the pipeline for strengthening regulatory capacity in Ethiopia.

The support of AGF for GRMF applications has been effective and led to seven projects qualifying for approximately USD15.4m in funding. The support of AGF to partners for GRMF applications has big potential to help MFAT as a relatively small donor for geothermal in East Africa to support implementing partners de-risk geothermal exploration and secure financing.

The Geothermal Risk Mitigation Facility (GRMF)[41] was established in 2012 to fund, facilitate, and accelerate geothermal development in Eastern Africa. The overall objective of the GRMF is to encourage public and private sector investment in geothermal power generation. The GRMF therefore acts as a catalyst in establishing geothermal energy as a strategic option for power generation capacity expansion in 12 partner countries in the Eastern African Rift region. The AGF supports the five implementing partners in East Africa in the GRMF application through technical assistance and peer review of the expressions of interests (EOI) and full proposals.

The AGF support for GRMF applications and peer review has enhanced the quality of applications and has increased the number of surface exploration and drilling projects meeting the GRMF funding criteria in East Africa. In total 11 project applications (see Table 7) were submitted over three Application Rounds (AR) where seven qualified, two were rejected, and two are under evaluation. Interviews with implementing partners in-country, the AUC and NZ suppliers all reported that the quality of the submissions by countries has remarkably improved leading to an increase of projects qualifying to seven at the time of this Evaluation. They all attributed this change to the support from the AGF.

Table 7. AGF support with GRMF application rounds

Location Partner	Project (type)	AR6 (2020-2021)		AR7 (2021-2022)		HEAT (2023)		Awarded grant value (USD)
		EOI	Full-Ap.	EOI	Full-Ap.	EOI	Full-Ap.	
Djibouti ODDEG	NW Assal (Drilling Program for power production)	qualified	rejected	qualified	qualified			$4.1m
	N Ghoubbet (Surface Study for power production)	qualified	qualified					$324k
	Alol (Surface Study for power production)	qualified	qualified					$222k
	Arta (Drilling Program for power production)			qualified	qualified			$5m
	Lac Abhé (Surface Study for direct-use applications)					qualified	under evaluation	-
	PK-20 (Surface Study for direct-use applications)					qualified	under evaluation	-
Tanzania TGDC	Songwe (Drilling Program for power production)	qualified	qualified					$4.1m
	Manyara (Surface Study for direct-use applications)					qualified	qualified	$1.1m
	Kisaki (Surface Study for direct-use applications)					rejected	-	-
	Ibadakuli (Surface Study for direct-use applications)					rejected	-	-
Rwanda EDCL	Gisenyi (Surface Study for direct-use applications)					qualified	qualified	$589k

[41] Geothermal Risk Mitigation Facility (GRMF) for Eastern Africa, African Union and KfW, Home - Geothermal Risk Mitigation Facility (GRMF) (grmf-eastafrica.org)

> ***"The AGF support for GRMF applications helped us secure USD10m to progress drilling and well testing. The project was also financed by the government and the private sector. We also received technical assistance from AGF for well testing and surveys. It helped us to identify conditions that we can now investigate further."***
>
> **Stakeholder, Djibouti**

Most stakeholders interviewed noted that the support for GRMF applications from the AGF is important and has sustainability and impact gains in the long term as it enhances financing to implementing partners to support de-risking geothermal exploration in East Africa. As a relatively small donor in East Africa, this result is not only important from an effectiveness perspective but also commendable because of its big opportunity to support resource mobilisation given that the AGF does not provide capital funding (loans and grants) to implementing partners.

Strength in increasing implementing partners' capacity and capability to participate in the geothermal sector at the national level with opportunities to enhance regional learning, collaboration and networking in the future

Medium-term outcome two[42] of the AGF considered if the AGF could contribute to investment and participation in the geothermal sector for the implementing countries through requests received for capacity building and technical assistance delivered by the NZ based suppliers. The approach to technical assistance has been delivered bilaterally either remotely or in person. For instance, Kenya will request support and if the requested support is within the AGF's scope, then the AGF will work with the NZ based supplier to provide the support. Interviews with implementing partners in the five countries confirmed the enhanced knowledge and skills in geothermal (see Table 6). For instance, the AGF's support to Tanzania, Djibouti and Kenya has enhanced their data analysis, validation, interpretation, quality assurance, and conceptual modelling. In Djibouti, the AGF is supported resource assessment (i.e., well testing, equipment inventory and testing). With the COVID-19 pandemic, the AGF pivoted to remote and delivered training including online workshops and webinars, ongoing mentoring and remote technical support. Interviews with implementing partners reported positive feedback on the bilateral support however, they reported that opportunities could have been lost to support regional participation, collaboration, and learning.

Implementing partners noted that future considerations should be given to programme areas that can be offered bilaterally and what can be offered at the regional level. NZ based suppliers shared that when working with implementing partners, the diversity of geothermal systems in the East African region needs to be taken into account. While the countries share some commonalities in resource, there are still unique conditions that must be addressed accordingly. NZ based suppliers take efforts to tailor capacity building provided directly to implementing partners to the country. Smaller focus groups are also recommended for technical modelling and data interpretation training, where NZ based suppliers also use implementing partner data and make the sessions as interactive as possible.

Regional programme areas of support that bring together implementing countries to learn, share and network were noted as some of the natural next steps in the modality of support. Implementing partners expressed that opportunities to come together were valuable to discuss the shared geothermal resources of the Rift Valley, share learnings and network. NZ based suppliers also shared this view, particularly for training topics such as how to use certain software and locating wells, topics that are seen as common themes across the region. It was raised by NZ based suppliers that larger groups can compromise the absorptive capacity of attendees, particularly when the training focuses on granular detail and specific areas of the geothermal disciplines. Technical training was seen to work better as small teams within each organisation. There still remains value in conducting training in person, whether in small or large numbers, which was a sentiment shared by implementing partners and NZ based suppliers. Opportunities for regional collaboration through the AGF could be explored to bring implementing partners together, with a focus on sharing learnings and ideas across common themes between the implementing partners and allowing opportunities for networking. Acknowledging that resources may be an issue, implementing partners noted that the regional approach has potential long-term benefits of enhancing collaboration and learning given that the countries are at different stages of geothermal development.

[42] Increased investment and participation in the geothermal sector

Future geographical scope should be determined by MFAT's objectives, available resources and countries needs

The Evaluation found divided opinion on whether the AGF should scale to the 11 eligible countries[43] or retain and deepen support to the current five countries. Interviews with MFAT staff indicated a preference for retaining the current geographic focus on the five implementing partners and countries due to capacity for resourcing and need for deeper engagement and impact, but acknowledged the importance of the wide reach of the online webinar series that can be attended by the additional six countries and non-AGF eligible countries. Through written responses and interviews, views from countries outside the core implementing partner countries indicated an interest in receiving assistance from AGF, particularly Comoros due to the long history of NZ technical assistance in the geothermal sector.

With increasing interest from the current eligible countries in working with the AGF, and interests from non-eligible countries, concerns arise regarding the resources required for the AGF to capably drive a regional programme that addresses varying geothermal needs. Interviews with the AGF Facility Management and MFAT highlighted that any expansion of the geographical scope of the AGF would need to be matched with resources within Facility Management and the NZ Embassy or de-prioritising current activities to make room for new or less activities. The Evaluation also noted that geographical expansion to other countries should be determined by a multifaceted criteria as well as future funding as part of the design of a future phase of the Facility.

Limited demand and progress in supporting improving geothermal sector planning, policy, regulation and enabling environment and policy framework

The AGF's medium-term outcome three[44] intended to contribute to improving the enabling environment for geothermal sector development and private sector investment based on implementing partner requests. The intention was to support countries' enabling environments, especially those at the early stage of geothermal development through policy, sector planning and management. Some planning related activities have been undertaken, including a country wide resource assessment in Rwanda, ad-hoc strategic advice to Kenya, Ethiopia and Djibouti and planning undertaken through support for GRMF applications. Capacity strengthening for the geothermal regulatory body in Ethiopia is a project currently in the AGF pipeline, and is yet to be undertaken. Other than these activities, the Evaluation found this programme area of support to have made less progress compared to the other outcome areas. Interviews with implementing partners especially those in the early development of their geothermal resources (Tanzania, Rwanda, Djibouti) noted that this is a high priority and an area that AGF could support in the future. They noted that the geothermal sector is not well known by senior policy makers, making it challenging to progress policy and legislation for geothermal development. Feedback from MFAT noted that while this might be an important area and need, it can only be supported if such requests are made by the implementing partners. Even though policy and legal framework is a highly domestic political process and takes time with limited influence by external parties, should there be demand from implementing partners for this, leveraging from experience in Ethiopia, AGF could continue to support enabling geothermal policy and legislative environments especially for countries at the early stages of geothermal development if requested. This will be important as countries confirm their resources and look to engage the private sector for power generation.

Positive unintended outcomes in enhancing knowledge and understanding of geothermal direct use as well as enhancing interest of New Zealand practitioners in the geothermal sector in East Africa

Like many development activities, the AGF activities and programme areas of support led to positive unintended outcomes. For example, through the AGF support for GRMF applications for direct use, there was an increase in knowledge and appreciation among implementing partners of geothermal direct use. The AGF has supported countries that have low to medium temperature resources (like Rwanda and Tanzania) to submit GRMF applications for direct use of geothermal heat. Through this process, implementing partners reported through interviews that this has enabled them to appreciate geothermal potential for direct use and not only for power generation. In Kenya, the AGF supported GDC with policy development and advocacy for direct use.

"We submitted a GRMF application for direct use in Manyara with AGF support. We are generally

[43] Ethiopia, Kenya, Djibouti, Tanzania, Rwanda, Zambia, Uganda, Eritrea, Comoros, Burundi, and Democratic Republic of Congo.
[44] Enabling environment improved for geothermal development and private sector investment

experienced in these forms, but AGF has helped us see it in a different way, so we have grown our capacity by jointly completing the GRMF application. It was an opportunity for two-way learning."

Stakeholder, Tanzania

In Rwanda, technical assistance and capacity building regarding advocacy for and utilisation of direct heat may be more appropriate, as the geothermal resource is low to medium temperature, and unlikely to efficiently generate power. It is also a useful way to optimise the geothermal value chain if power generation can be pursued, as direct heat and steam are byproducts of the geothermal power generation process. Also, there is evidence of the value of direct use for enhancing economic livelihoods and women empowerment. Stakeholders noted the dual benefits of direct use for mitigating climate change impacts and socio-economic benefits to communities. Interviews with MFAT during the sensemaking reported that the AGF's key policy driver from design has been the renewable energy gains towards climate change mitigation ambitions. With this opportunity, a future phase of the AGF could explore this and test whether technical support for direct use aligns with NZ expertise and MFAT's objectives for the future phase of the AGF.

The other positive unintended outcome observed by the Evaluation Team was the increased interest by NZ geothermal practitioners in the geothermal sector in East Africa. This was reported by the NZ based suppliers that presented on their experience through the AGF to the NZ industry, which elicited the interest of some practitioners, especially women geothermal practitioners in opportunities for mentorship in East Africa. Though it is too early to tell what the interest could lead to, this outcome is important for MFAT in two ways. One, it provides opportunities for future engagement of the NZ private sector in the geothermal sector in East Africa. Two, it helps showcase NZ's known and respected global expertise in geothermal and elevate NZ's soft power as a geothermal powerhouse around the world.

Opportunities to enhance gender and social inclusion programming through targeted approaches and overall mainstreaming

The Evaluation assessed the extent to which the AGF is supporting gender and social inclusion in line with the NZ's ICESD principle[45] of inclusive development that encourages programming that addresses exclusions and inequality while promoting human rights, and equitable participation for all. The Evaluation found that enhancing inclusive development in geothermal development in East Africa was particularly weak in terms of attention to gender equality and other social inclusion dimensions. Analysis of the AGF reporting and interviews with key stakeholders reported that gender and social inclusion was not prioritised at inception and there was no clear approach to how the AGF plans and measures for inclusive development. This does not mean that encouraging participation of women and other excluded groups was not conducted by the AGF. The AGF took a mainstreaming approach to including women by encouraging women's attendance in trainings, workshops and other capacity building activities. For instance, the proportion of women practitioners attending the online webinars has increased over time, exceeding the target of 20%[46], through the AGF intentionally working with Women in Geothermal chapters and African Women Advancing Geothermal (AWAG) to circulate the webinars and encouraging women to attend. Though the evaluation did not find evidence that the increase in women attending is because of AGF, a key lesson noted by some of the interviewed implementing partners and CSOs was that working with existing networks can help boost women's participation and engagement.

The AGF commissioned the Gender and Situational Analysis and Study to explore the major challenges facing women in the East African geothermal energy sector and understand the initiatives addressing these challenges. The study seeks to identify key stakeholders active in addressing these gaps and what the AGF can do to support gender and social inclusion in the geothermal energy sector.

Going forward, using the situational analysis and study findings as a starting point, opportunities exist for the AGF to support gender and social inclusion in the region. This calls for concerted efforts to mainstream gender and social inclusion but also develop targeted inclusive activities for different groups. Practice shows that for better inclusion outcomes, there is a need for a mix of targeted activities to reach the specific segment of the marginalised population (such as women in geothermal) but also mainstream inclusion in the operations of the programme. Mainstreaming could include ensuring gender-balanced training and workshop participants, having gender quotas for training and capacity building, developing gender action plans at design and applying a

[45] New Zealand's International Cooperation for Effective Sustainable Development (ICESD), MFAT, 2019, Policy-Statement-New-Zealands-International-Cooperation-for-Effective-Sustainable-Development-ICESD.pdf (mfat.govt.nz)
[46] NZ-AGF Annual Report for the period 1 July 2021 – 30 June 2022, FCG Anzdec Limited (New Zealand), 2022.

gender lens in project activities to understand how interventions affect men and women. Future efforts should also explore how geothermal energy, and geothermal direct use, impacts women as major users and what can be done to address the challenges and opportunities.

Lessons learnt: Supporting and encouraging women participation in the geothermal sector in Indonesia[47]

MFAT's Support for Acceleration of Geothermal Development in Indonesia (Geo-INZ) Activity made good gains in supporting women in geothermal in Indonesia. The Activity addressed gender and social inclusion through establishing the Women in Geothermal Sector (WING) – Indonesia Chapter initiative which was noted as the greatest gender outcome of the project. The Activity was instrumental in establishing the WING Indonesia chapter and supported it to operationalise and become self-directed, with Indonesian women taking ownership. Over time, WING Indonesia Chapter matured and became very visible within the Indonesia geothermal sector and the broader industry. Stakeholders noted the success of WING Indonesia as a gender-specific activity that ensures the Activity is taking an inclusive approach and targeting equitable participation of men and women. By utilising women's events, networks and mentoring programmes in the male-dominated industry, Geo-INZ was instrumental in supporting women to take leadership and ownership within the sector.

Monitoring, evaluation and learning could be further enhanced by shifting from outputs to outcomes tracking to systematic analysis as well as enhancing learning through collaborative spaces and learning sessions

Analysis of the AGF monitoring, evaluation and learning (MEL) documentation, systems and processes shows the existence of a good MEL system. The AGF had a theory of change, results framework and MEL table at design which was used throughout the project period as the basis for progress reporting and updating. The presence of a theory of change and results framework was important in supporting the understanding of the AGF's purpose, value proposition and results amongst different partners.

Even though the current MEL system is good, the current system is geared towards monitoring progress with no systematic approach or plan on how learning and adaptive management is conducted. MFAT noted, however, that the AGF has adopted carefully executed adaptive processes such as pivoting to the Facility Model and shifting to online capacity building during the COVID-19 pandemic. This does not mean that monitoring in itself is not valued, however, the value of monitoring is maximised when adequate analysis and synthesis of data occurs to understand issues and make course corrections during implementation. Opportunities exist for future phases of the AGF to shift MEL outputs and outcomes monitoring to strategic and high-level analytical MEL and learning that assesses both the outcomes achieved and supports learning and course correction. This will shift emphasis from day-to-day project output and outcome data collection and reporting functions to strategic outcome reporting, learning and communication.

Gaps for strategic communication, branding and joint visibility of the AGF

The Evaluation found that overall external communication and visibility of the AGF could be improved. The AGF does not have a digital presence that communicates its objectives and progress to date in a publicly or widely accessible domain. Interviews with implementing partners in-country confirmed a desire for a central platform for partners to learn, share and collaborate on the AGF. Suggestions raised during interviews with implementing partners regarding greater visibility of the AGF included an annual high-level workshop organised in collaboration with AGCE[48], AGA[49] and ARGeo, or dedicated side events at the biannual ARGeo conference[50] to promote the AGF, NZ based suppliers' expertise and technologies. Interviews with the AUC noted that as the governance partner, the communication and visibility of the AUC remained a concern. Interviews with NZ based suppliers that deliver training and technical assistance through the AGF reported that over time, they have developed tools, guides and contextual information that require a platform to be centrally stored and shared for ease of access by all implementing partners. Overall, the Evaluation notes that the communication and visibility of the AGF could be improved through a clearly outlined communication strategy that enhances visibility through different knowledge products to support documenting and highlighting AGF's results and

[47] Lesson learned from MFAT's previous evaluation
[48] AGCE – The African Geothermal Centre for Excellence. The AGCE was established in 2015 to provide a platform for regional capacity strengthening of local expertise in geothermal development to match the growing demand to explore and utilise geothermal resources in Africa. (Geothermal Development in East Africa, IRENA, 2020. Geothermal Development in Eastern Africa (irena.org))
[49] AGA – The Africa Geothermal Association. The AGA is a geothermal peak body in Africa that represents geothermal practitioners and advances geothermal development.
[50] The biannual Africa Rift Geothermal (ARGeo) Conference is hosted by UNEP, AUC, AGA, and AWAG in partnership with participating countries, bringing together practitioners and experts within Africa and around the world to share learnings, best practice examples and promote regional co-peration in geothermal energy. (About ARGeo-C9 Conference, ARGeo, 2023. ARGeo-C9 (theargeo.org))

progress. The communication strategy should outline communication and branding responsibilities for the AGF Facility Management Unit, the NZ Embassy, the governance partner and MFAT in Wellington.

Factors that enhanced achievement of outcomes

The Evaluation found high-level factors and features of the modality that facilitated the effective delivery of outcomes. These factors and features were reported by the governance partner and the implementing partners to have contributed to the delivery of outcomes:

- **The AGF's responsiveness and flexibility:** The AGF has demonstrated flexibility and responsiveness to the implementing partners' needs and requests. This flexibility and responsiveness to implementing partner needs is highly valued as it creates an opportunity for implementing activities that are of value to the countries. Flexibility was noted for instance in Kenya where the AGF supported GDC with 'last mile' support with steamfield operation and management training which was critical to commissioning the power plant on time. From a partnership perspective, flexibility can create efficiency in the long run because it creates spaces and processes where programming bottlenecks are addressed, and new ways of working are trialled and implemented.
- **High level of technical expertise, responsiveness and flexibility of NZ suppliers:** There was consensus among the implementing partners on the high level of technical expertise of the NZ suppliers. Implementing partners noted not only high levels of technical expertise but also their good relationship building and management capabilities. They went out of their way to provide support and advice to partners even on geothermal matters that were not part of their scope of work.
- **The ability of the AGF to pivot to remote delivery:** The ability of the AGF to shift to remote learning and development of platforms to support online learning and knowledge management was important for programming continuity and effectiveness.
- **The Facility Manager's good relationship skills:** The current Facility Manager was reported by the implementing partners to be good at building relationships with countries and has ensured the pipeline of projects has remained vibrant. The Facility Manager's regular visits to countries and implementing partners are well received and have ensured that implementing partners' needs are understood and if within scope, supported to be implemented.

Factors that hindered the achievement of outcomes

The following factors were noted by interviewed stakeholders to have hindered the delivery of outcomes:

- **Facility Manager being temporarily located outside of the AUC:** Despite this being a key part of the modality and being documented in the Partnership Agreement with the AUC, at the time of this evaluation, the Manager was temporarily not located at AUC. This is critical for the partnership between MFAT and the AUC, to provide adequate visibility and best leverage what the partnership can offer in terms of alignment with policy, technical and strategic directions to maximise impacts for the East Africa region.
- **COVID-19 pandemic:** COVID-19 affected activity implementation and slowed the momentum of implementation. Restricted travel due to the pandemic also affected relationships building and management. Though travel has resumed now, implementing partners noted that more could have been done if travel was permissible.
- **Turnover in Facility Management:** Changes in the Facility Manager role impacted the visibility of AGF among implementing partners. It also impacted the ability to engage in regular communication to build relationships and grow the profile of AGF among implementing partners.
- **Resource and funding availability of AGF as pipeline grows:** Being a demand-led facility, the AGF responds to implementing partner requests. As the pipeline grows and support is committed, this places limits on the extent of support that can be provided to additional requests made by implementing partners. This is a function of finite resourcing, which was noted in interviews the NZ Embassy in Addis Ababa and AGF Facility Management. This brought the need for expectation management with implementing partners, limiting the potential benefits they may have received if AGF was able to provide the support request.

5 Appropriateness of the modality and governance arrangements and efficiency of the AGF

Key evaluation questions:

7. To what extent is the AGF's modality fit for purpose to achieve its outcomes?
8. To what extent has the AGF's implementation and governance and management arrangements supported or hindered the achievement of its objectives?
9. What options exist to strengthen the AGF modality, governance scope, and implementation?

This section presents findings in relation to Objective Three[51] of the Evaluation and presents findings on the extent to which AGF's modality (see Figure 3) is fit for purpose to achieve outcomes. The chapter explores the AGF's governance and implementation arrangements and explores efficiency from the perspective of resource utilisation, programme areas of support and modalities of support.

5.1 Key findings on the extent to which the AGF modality is fit for purpose to achieve intended outcomes and efficiency

The current modality of the AGF is fit for purpose to deliver a programme in a region with limited New Zealand regional presence and the implementation arrangements are working well

Overall, the AGF is an appropriate and efficient modality for NZ to fund and deliver support in Africa where it has limited diplomatic presence. As a member-driven organisation, working with the AUC is strategic as it provides access to countries which would be challenging for NZ were it to go alone or even through bilateral means.

The AGF delivery through a Facility Model managed by a Facility Management Unit and led by a Facility Manager is efficient and working well, whereby implementing partners are receiving support based on their needs and evidence of an active pipeline in place. By working with NZ based suppliers with high technical expertise to deliver technical assistance and capacity building to implementing partners in East Africa, the AGF is supporting countries to make progress towards renewable energy ambitions and climate mitigation targets. The modality is in part effective and efficient due to the targeted number of activities (resulting from requests from implementing partners) that have an appropriate timeframe, together with adequate flexibility to respond to emerging needs and requests within these activities. The implementing partners have found their engagement with the Facility and NZ based suppliers, including the underlying procurement processes, to be functioning relatively efficiently. The combination of online and in-person training and technical assistance is deemed appropriate and relevant, with the online webinar series reaching a wide audience in Africa.

The skills and experience of the Facility Management Unit are deemed appropriate and are valued

Overall, the Facility Manager has supported relationship building with implementing partners, increased visibility of the AGF in the region, and increased confidence in the pipeline. Implementing partners shared that efforts made by the Facility Manager to be with implementing partners in-person, co-assess geothermal needs and build deeper relationships is greatly appreciated and part of what has made the AGF responsive, flexible and effective. Most implementing partners noted that good relationship building skills is the most important for the Facility Manager as geothermal technical gaps on the side of the Manager can be supplemented by the high technical skills by the NZ suppliers.

The Evaluation noted that the Facility Management Unit is operating at capacity with the current scope of activities. This finding was corroborated by MFAT in Wellington who noted that the AGF has reached its absorptive capacity and any increase in scope will also need an increase in budget (as discussed in Section 4.1).

Other than good relationship building skills, the Evaluation found that where the Facility Manager

[51] Evaluation objective three assesses the extent to which the current AGF modality, implementing and governance arrangements are fit for purpose for achieving intended outcomes and for supporting the overall efficiency of the AGF.

is located is important for the AGF in terms of sustained good partnerships. Even though the Facility Manager was intended to be located at the AUC, by this Evaluation, the Manager was temporarily not located at the AUC due to delays in the secondment to the AUC. There was feedback from interviewed stakeholders that there was momentum and good relationships and engagements at the beginning between the AUC and NZ Embassy in Ethiopia when the Facility Manager was located at the AUC. Though there were efforts to have the Facility Manager seconded again to the AUC, should AUC be the governance partner of choice, future phases of the AGF might achieve more partnership outcomes and possible frequent interaction if there is sustained location of the Facility Manager with the governance partner noting that the downside to this arrangement is the risk that the Facility manager becomes occupied with the governance partners priorities.

Efficiency gains and relational strength in using NZ based suppliers to deliver technical assistance and capacity building with opportunities to further support local geothermal expertise for sustainability.

Implementing partners shared that NZ expertise on geothermal development is well regarded in the region. Implementing partners found NZ based suppliers to be respectful, friendly, technically competent, and professional. These were noted as having made interacting with the NZ based suppliers positive.

> ***"We are in a different position to NZ in terms of geothermal capacity. The NZ based suppliers are willing to provide support, and we are willing to receive support. This has helped build the relationship."***
>
> **Stakeholder, Ethiopia**

NZ based suppliers also engage in long-term mentoring and follow-up after providing services to implementing partners, which was well received by implementing partners. NZ based suppliers also shared through interviews the importance of providing post-training support and responding to follow-up questions from implementing partners.

> ***"The NZ based suppliers that supported us were very friendly. We are still in touch with the supplier that provided the training. They are ready to assist, are willing to be mentors, and are very good mentors."***
>
> **Stakeholder, Tanzania**

The NZ based suppliers added that through this follow-up, they have seen implementing partners develop greater skills. For instance, in Tanzania, the trained staff applied skills to undertake drilling exploration programmes and modelling work, which has gone on to inform decision-making for drilling locations. When asked if it was still appropriate to use NZ based suppliers, there was consensus among all implementing partners that this should continue with mechanisms embedded to support local expertise as it emerges and grows in the countries. However, an area of strengthening while engaging NZ based suppliers was for the AGF to share the scope of services of the NZ based suppliers with implementing partners. Implementing partners noted that having visibility of the scope will help them align requests, understand the deliverables in order to assess the performance of the suppliers as well.

Tension between being demand driven vis a vis partner needs, priorities and limited resources

The AGF is 'demand-driven' in principle, as it delivers assistance as requested by implementing partners. While the 'demand-driven' aspect of the AGF is seen as a positive, tensions exist between the AGF being demand-driven, partner needs and available resources. The needs of implementing partners are vast. Paired with an unclear understanding of the scope of the AGF, has led to implementing partners requesting services of the AGF that are not within the AGF scope (also discussed above in Section 3.1). This was a common experience across most implementing partners – of requesting support from the AGF, then finding the request could not be approved as it did not align with the AGF scope.

> ***"It would be better if the AGF conducted needs assessments on implementing partners, this is a major gap for us. We have to fit the scope of what the AGF provides, instead of being able to identify and work on the gaps that could be filled with the support of AGF."***
>
> **Stakeholder, Ethiopia**

Implementing partners shared that due to vast needs it can be difficult to understand what to request or identify gaps that align with AGF scope. Ongoing needs assessments were suggested by implementing partners as a remedy of the mismatch of requests and the scope of the AGF. It is understood that needs assessments occur to an extent through conversations between implementing partners and the Facility Manager. Ongoing needs assessments for implementing partners to identify areas that are critical gaps that the AGF can support could be explored in future phases of the AGF.

NZ based suppliers reported to being exposed to implementing partner requests that have not been aligned with the critical needs of the implementing

partners. The pursuit of such requested assistance was viewed to be 'distracting' from addressing the critical needs that could unlock greater progress towards the implementing partner country's geothermal goals.

Best practice insight: Refining the scope and workplans derived from implementing partner requests to better address implementing partner needs

NZ based suppliers shared an experience in working with MFAT to refine the scope of works for the Drilling Advisory Programme. The NZ based supplier provided feedback to MFAT on the activity, noting that the drilling engineer training requested would take time and the partner was not ready yet for this training, despite owning their own drilling equipment. The NZ based supplier found that the critical need existed a few steps upstream, at the resource identification and drilling targeting stage. What had been requested by the implementing partner in this scenario was not aligned with the critical needs of the partners, although it aligned with the scope of the AGF. The NZ based supplier worked with MFAT to refine the scope to focus more on resource identification and confirmation, rather than drilling engineering training, and delivered this refined scope of work to implementing partners.

Based on their experiences working with implementing partners, NZ based suppliers suggested activities such as resource prioritisation, data management, project management for partners to improve management and decision making. These activities address the critical needs of implementing partners, so that when the requested assistance is delivered, capacity can be strengthened in a sustainable and impactful way, that ultimately supports progress towards national geothermal development goals. Taken together, feedback from the implementing partners, NZ based suppliers and Facility Management affirms that there is no one mechanism of support to the implementing partners. The insights point to the continuous understanding of implementing partners needs and rationalising of the requests against the partners priorities in the geothermal development process and the available resources from the AGF. This does not mean that the AGF ceases to be demand driven, but that based on implementing partners' needs and priorities, the AGF can explore activities or initiatives it can supply or influence to progress geothermal mandates at the national level. These could be initiatives such as engaging policy makers, policy and legislation or engagement of the private sector.

A reinvigoration of governance arrangements is required to support efficient decision making and maximise effective strategic oversight by the governance partners

Findings on effectiveness and impact of the AGF (see Section 4.1) show that the AGF has made contributions towards outcomes by demonstrating an increased number of projects meeting investment criteria (MTO 1) and is in the process of increasing investment and participation in the geothermal sector of East Africa (MTO 2). Further, findings on the AGF's modality shows that the current implementation arrangements are working well, as evidenced by the AGF supporting partners based on their needs with an active pipeline in place.

However, interviews with stakeholders from MFAT and the AUC noted that the governance arrangements did not operate as intended in the partnership agreement nor did it fully maximise the potential strategic benefit to the AGF. This hindered efficient decision making and the visibility of the AGF in some instances. The Evaluation found that SC meetings had not occurred to the frequency expected necessary to support proactive approval of projects based on implementing partner requests. When the Evaluation explored why governance arrangements had not worked in the ways expected, periods of limited or no engagement between the two governance partners, due to misaligned expectations on communication (i.e., frequency, mode), COVID-19 restrictions, temporary location of the Facility Manager outside the AUC and lack of clarity around the recognition of roles and responsibilities of both governance partners were reported as key driving factors.

A Partnership Agreement between MFAT and the AUC sets out arrangements for governance of the AGF. Partnership and engagement with the AUC was strategic as the AUC is a member-driven organisation that provided the AGF with access to key stakeholders within the eligible countries. The Evaluation found that the AGF's governance arrangements served its intended purpose with regard to agreed approvals and monitoring processes. However, the limited frequency of engagement between governance partners meant that the potential strategic benefits for the AGF were not fully maximised. However, it should be noted that any challenges encountered or infrequency issues relating to the governance arrangements did not have a material impact on the AGF's ability to support implementing partners and make progress towards its intended outcomes.

Feedback from both the AUC and MFAT as governance partners indicated opportunities for

both partners to be engaged through more of a strengths-based approach and to have a greater shared understanding of expectations, roles and responsibilities. Partnership arrangements for a future phase should consider the strengths, resources and constraints of both parties to maximise the benefits of the partnership and the impact of the AGF.

Noting that a governance partnership with the AUC as a member state organisation is a good strategic choice for NZ in engaging with eligible countries, future governance arrangements should be balanced with the acknowledgement that the AUC is a political entity, that faces human resource constraints that could limit its engagement in taking on operational or implementation roles in a programme like the AGF. The option for the AUC to have a more strategic oversight role, rather than a daily management role, should be considered in light of its resourcing constraints and what is critical for maximising the strategic benefits and impact of the AGF. To this end, the Evaluation foresees a mechanism where the AUC governance mandate as part of the AGF is elevated to higher-order strategic oversight role that ensures alignment of the AGF with regional priorities and directions and provides greater visibility of the AGF through appropriate communication, greater branding, joint engagement and online platforms.

6 Future directions: Emerging areas of considerations for the AGF

Key evaluation question:

10. What are the key considerations for a future phase of the AGF geothermal support to East Africa and the broader region?

Emerging areas for consideration for future directions of the AGF are summarised below and respond to Objective Four[52] of the Evaluation. Considerations for future directions are based on the Evaluation findings, lessons learned as well as recommendations from internal and external stakeholders consulted during the Evaluation of the AGF. These considerations are intended to provide options to inform the future directions and programming of the potential future phases of the AGF.

6.1 Considerations for governance arrangements of the AGF

Reinvigorate governance arrangements to support efficient decision making and appropriate visibility of the AGF

The Evaluation found that while the AGF has delivered results and its implementation arrangements are working well, the current governance arrangements need reinvigoration to support efficient decision making as well as providing visibility to the governance partners.

Considerations for the future:

- Separating out the management and strategic oversight functions within the current governance arrangement to allow for efficient decision-making with regard to work planning but also to ensure that the resources of governance partners are focused on supporting strategic or higher-level matters of the AGF.
- A governance partner with a wide reach and relationships across the region remains valuable for the AGF. However, the resources and time of a governance partner could be better focused on providing insights and advice on adapting programme areas of support to meet regional / bilateral needs, developing key stakeholder relationships and engagement approaches (including participation in donor coordination committees), advising on the prioritisation of countries and activities, and resolving roadblocks or issues/risks.
- The management functions of the existing governance arrangement (i.e., approving workplans) could sit with MFAT alone to ensure efficient decision making, noting there is value in MFAT providing regular updates to the governance partner on potential projects and progress to enable them to provide timely advice and insights to maximise the effectiveness of a project.
- Given the ever-changing landscapes, revisiting the foundations of a partnership between governance partners to clarify the interests, roles and responsibilities, optimal frequency of engagement, appropriate means for recognition and branding, resources and constraints.

[52] Evaluation objective four considers how a future phase of the AGF could be more effective, relevant, partner-led and achieve greater impact for East Africa and the broader region.

Consider the sustained location of the Facility Manager with a governance partner or other key donor in the region

Findings from the Evaluation indicate that the co-location of the AGF Facility Manager matters for sustained engagement and relationship management with a governance partner or a key donor implementing complementary programming.

Considerations for the future:

- Location of the Facility Manager at the governance partner should be implemented and sustained. Doing this will not only support relationships building and partner engagement but will also open opportunities for the Facility Manager to provide support and technical assistance to the governance partner when necessary or required.
- If feasible to MFAT, explore options for the Facility Manager to provide ad hoc support to the governance partner where required, as an added benefit of the co-location. Should this be feasible to MFAT, details of the type of support can be discussed as part of the partnership agreement negotiations and during the design of the second phase.

6.2 Considerations for implementation arrangements of the AGF

While the current implementation arrangements are working well, there is scope to consider alternative options as part of a subsequent design process

As the current implementation arrangement of having a flexible facility model with local representation of a Facility Manager with a Facility Management Unit supporting implementation is working well and efficiently, this could be retained for a future phase a future phase. Implementation arrangements in potential future phases will need to ensure continuing with targeted number of activities in line with the theory of change, adequate flexibility for implementing partners that are at different stages of their geothermal development, and the provision of high-quality suppliers to work with implementing partners. Should there be an increase in geographical scope and programme areas of focus for the AGF, then this should be matched by an increase in resources for the Facility Management Unit and MFAT.

Sustain the 'demand-driven' approach balanced with partners geothermal development needs, appropriate priorities of partners and available resources

Evidence showed that the 'demand-driven', flexible and responsive modality of the AGF was well-received by implementing partners and was working well. Implementing partners raised through interviews that due to the vast needs and opportunities in the geothermal sector, the ability to identify and prioritise areas that align with AGF scope can be limited.

Considerations for the future:

- The future design of AGF should consider conducting rolling or annual geothermal needs assessment with implementing partners. The ongoing annual needs assessment should explore partner's needs, and their geothermal technical capacity and capability. Doing this will ensure that partners are supported to proactively identify critical areas of support aligned to their most relevant priorities to support geothermal development.
- Beyond being 'demand driven' the needs assessment should explore activities or initiatives that AGF can supply or influence to progress geothermal mandates at the national level. These could be initiatives such as engaging policy makers, policy and legislation or engagement of the private sector. This initiative should be based on a country-by-country basis and informed by evidence that the support will progress or unlock the geothermal mandate in that country. If feasible, consider a programme of support or stakeholder engagement initiatives or forums to build knowledge and understanding of geothermal potential as a form of renewable energy.

Retain the use of NZ based suppliers, enhance the visibility of their scope of services and embed mechanisms for local knowledge and skills transfer

Findings indicate implementing partners found the NZ based suppliers to be respectful, friendly, technically competent, and professional. The Evaluation recommends that this should continue with mechanisms and platforms embedded to support local skills transfer. Feedback from implementing partners also note the value of understanding scope of the NZ suppliers in order to align requests but also to assess whether their support has been effective.

Considerations for the future:

- Enhance visibility of the NZ based suppliers' scope by sharing their TOR with the implementing partners before support missions so they know what they can reasonably expect from NZ based suppliers.
- Support sustainability of local knowledge through systematic knowledge sharing and knowledge management platforms where the AGF's key learning documents can be uploaded and shared with a wider audience (see recommendation on the AGF communication and branding).
- The next design should explore the role that AGF can play in facilitating the connection of the NZ private sector with the implementing partners especially for countries that have confirmed their resource (Kenya and Ethiopia) for private sector investments. One option recommended was AGF finding ways to share the AGF pipeline of projects for countries with confirmed resources with the NZ private sector to encourage them to take part in the tendering process

6.3 Considerations for technical strategy and programme area of focus

Expanding the AGF: considerations for geographic scope

From the Evaluation, arguments emerged on whether to scale AGF to the 11 eligible countries or to deepen engagement with the current five countries. Future scope should be informed by the implementing partners priorities and demand, MFAT's objectives for the future phase of the AGF, available resources, and the absorptive capacity of the AGF**.**

Considerations for the future:

- Some stakeholders noted that should effectiveness and impact be of importance to MFAT, then sustaining scope in the current five countries and deepening support if resources permit will make more sense. This will support building on the gains made in the current phase, deepen relationships and support countries progress on their geothermal resource development.
- Should enhancing regional footprint be of importance to MFAT, then expanding to the 11 countries is critical. However, this should be informed by a strict criterion that MFAT and relevant partners can agree upon in the next design of the next phase of AGF
- Should there be expansion to other countries with low to medium temperatures, direct use technical support should be considered because of the low potential for energy production
- Given that AGF is already reaching the 11 eligible countries through the webinar series, the other option would be for the AGF to consider online learning and training webinars as a package of support to all 11 countries, and other African countries, and retain technical assistance and bilateral capacity building to the five countries. This is already happening in the current phase.

Continue deepening bilateral engagement with implementing partners and explore regional engagement to support joint learning, collaboration and networking

The AGF national support to implementing partners and programme support has worked well. However, evidence from the Evaluation shows interest and high appetite of implementing partners for regional activities to support shared learning. Most implementing partners noted that a regional approach seems the natural step in their geothermal resource development journey. Acknowledging that regional activities might be expensive and likely to take away resources that might be used to support programming, the next phase should explore opportunities for what can be delivered at the bilateral level and what can be delivered at a regional level.

Considerations for the future:

- Deepen bilateral engagement to support implementing partners based on needs assessment.
- Explore regional activities for shared learning, networking and for trainings that could benefit all implementing. partners such as technical reviews with NZ based suppliers, training on software and resource identification.

Enhance visibility of AGF at the national level

Evaluation notes that the visibility of AGF can be enhanced at the national level. Greater engagement could enhance relevance, raise the profile and visibility of the AGF at the national level especially in countries at the early stage of geothermal development process.

Considerations for the future:

- As part of communication of the next phase of the AGF, consider official communication to both the ministries and implementing partners on the scope of the AGF. In the absence of a Memorandum of Understanding, this can be done in the first instance through official communication from the NZ Embassy and the AUC to the countries.
- Consider how NZ based suppliers in-country visits can include de-briefing and updates to the policy makers on the programme area of support and what has been achieved.

Enhance the visibility of the AGF scope to implementing partners

Key findings from the Evaluation from implementing partners indicate an overall lack of visibility of the scope of services delivered by the AGF. Even though there was a high-level understanding of what can be provided, implementing partners reported that this could be better communication to support alignment but also efficiency in the requests made.

Considerations for the future:

- Provide a 'menu of services' to implementing partners and their ministries as part of the next phase of the AGF. Doing this will help implementing partners understand what is in and out of scope. This can also be included on the official AGF website (see recommendation on communication and branding).

Retain current programme areas of support focus and explore opportunities for direct use

The Evaluation found that the AGF's programme areas of support are relevant in addressing geothermal exploration, resource development and resource utilisation in accordance with needs of implementing partners. Overall data management, data security and knowledge management were identified by the NZ based suppliers as a key weakness by most of the implementing partners. Evaluation findings also indicated that understanding of direct uses of geothermal energy can make the AGF more relevant to countries especially those without geothermal resources suitable for power generation. This coupled with NZ expertise and experience in direct use can enhance capabilities of implementing partners to harness geothermal for direct use for various productive uses.

Considerations for the future:

- Retain the current geothermal programme areas of support in line with the countries' needs and priorities as well as explore geothermal data and knowledge management, project management as other areas of support to implementing partners.
- Depending on MFAT's policy drivers and objectives for the future phase of the AGF, explore supporting direct use beyond GRMF Heat applications and what the scope of the AGF's support would look like. This is particularly relevant for countries with low to medium temperature resources, and countries that have high temperature resources that have cascaded extraction of low to medium temperature geothermal brine.
- Should direct use be adopted by AGF then technical assistance and capacity building for implementing partners regarding direct use will be required to be coupled with technical assistance and capacity building for policy makers and national ministries regarding direct use to address regulatory and compliance gaps, particularly for environmental and social aspects.

6.4 Considerations for programming and ways of working

Advance MEL from results tracking to strategic analysis and evidence generation to support decision making

Evaluations findings indicate that the AGF has a good MEL system that has guided its progress reporting based on the theory of change. This should continue. If the AGF enters a new phase, it will be an opportune time to elevate MEL from tracking to evidence and outcomes generation to support course correction, learning and decision making.

Considerations for the future:

- Develop a MEL plan to accompany the theory of change, results framework and MEL table at design that outlines how monitoring, evaluation and learning will be conducted for the AGF and how data will be synthesised to generate evidence on progress (tracking) and outcomes achieved. Learning component of the MEL system should be structured to ensure that learning actually takes place and informs programming.
- This being a modality with programming and partnerships components, embed mini-evaluations, studies, and case studies to assess not just the programming but also the health of the partnership.
- Reinstate partner check-ins and high-level partnership dialogues as part of the monitoring process to proactively assess the health of the partnerships and make course corrections.

Strengthen gender and social inclusion in programming

Development practice and literature indicate that embedding gender equality and social inclusion into activities can contribute to the effectiveness and achievement of broader development outcomes. As analysis indicates, inclusiveness is not yet well-grounded in the AGF. There are opportunities for the AGF to strengthen gender equality and social inclusion in its programming and help to deliver better results and support a clearer understanding of the distribution of activity benefits.

Considerations for the future:

- Ensure that the design of the next phase is informed by gender and social inclusion analysis. This should build on the situational analysis and the study to ensure that the right approaches are selected in line with the regional context.
- Progress mainstreaming gender and social inclusion by ensuring gender-balanced training and workshop participants as is now, having gender quotas for all training and capacity building activities, and applying a gender lens in project activities to understand how interventions affect men and women.
- Develop targeted gender and social inclusion activities by working with existing women in geothermal networks such as AWAG to develop key regional activities that target women in geothermal in East Africa.
- Develop gender and social inclusion-sensitive indicators as part of the AGF results framework that goes beyond counting women's participation to measuring the change and impact of gender equality and other social inclusion efforts.

Consider strategic communication, branding and visibility of the AGF

The Evaluation findings indicate that the overall and external communication for AGF has been weak with opportunities to enhance this in the next phase.

Considerations for the future:

- Prioritise implementation of the communication and branding strategy for the AGF to help raise the profile of the AGF, embed consistent approaches to communication responsibilities, capture knowledge and share success stories.
- When refreshing the communication and branding strategy, consider the feasibility and value of developing a website for the AGF that will not only enhance the joint visibility of the AGF but also act as knowledge and resource sharing platform for geothermal development.
- Consider consistent formal communication of the AGF's support to implementing partners to support shared understanding of the programme areas of support to implementing partners but also support the visibility of the AGF to the national ministries and policy makers.
- All AGF branding and external communication should incorporate the key governance partners' logo and branding as appropriate.

Explore opportunities for donor coordination and harmonisation of geothermal technical assistance and capacity building

The Evaluation indicates that though there is coherence of the AGF's programme of work and that of other donors, coordination and harmonisation of technical assistance and capacity building was lacking. This was noted by implementing partners and other donors that as JICA and ICEIDC continue to provide technical assistance and capacity building for geothermal, there have been cases of duplication. As the AGF is fully operational and is in a position to communicate its offering and results to the geothermal sector, a future phase of the AGF should explore opportunities for greater donor coordination and harmonisation so that implementing partners receive targeted and well-rounded support.

Considerations for the future:

- Explore opportunities to harmonise training and capacity building especially with World Bank and KfW who are the other main donors geothermal technical assistance and capacity building in East Africa that is aligned to the AGF.
- Where possible, participate in existing donor coordination committees to understand more about the support being offered to implementing partners and national policy makers to ensure minimal duplication and fill potential gaps.

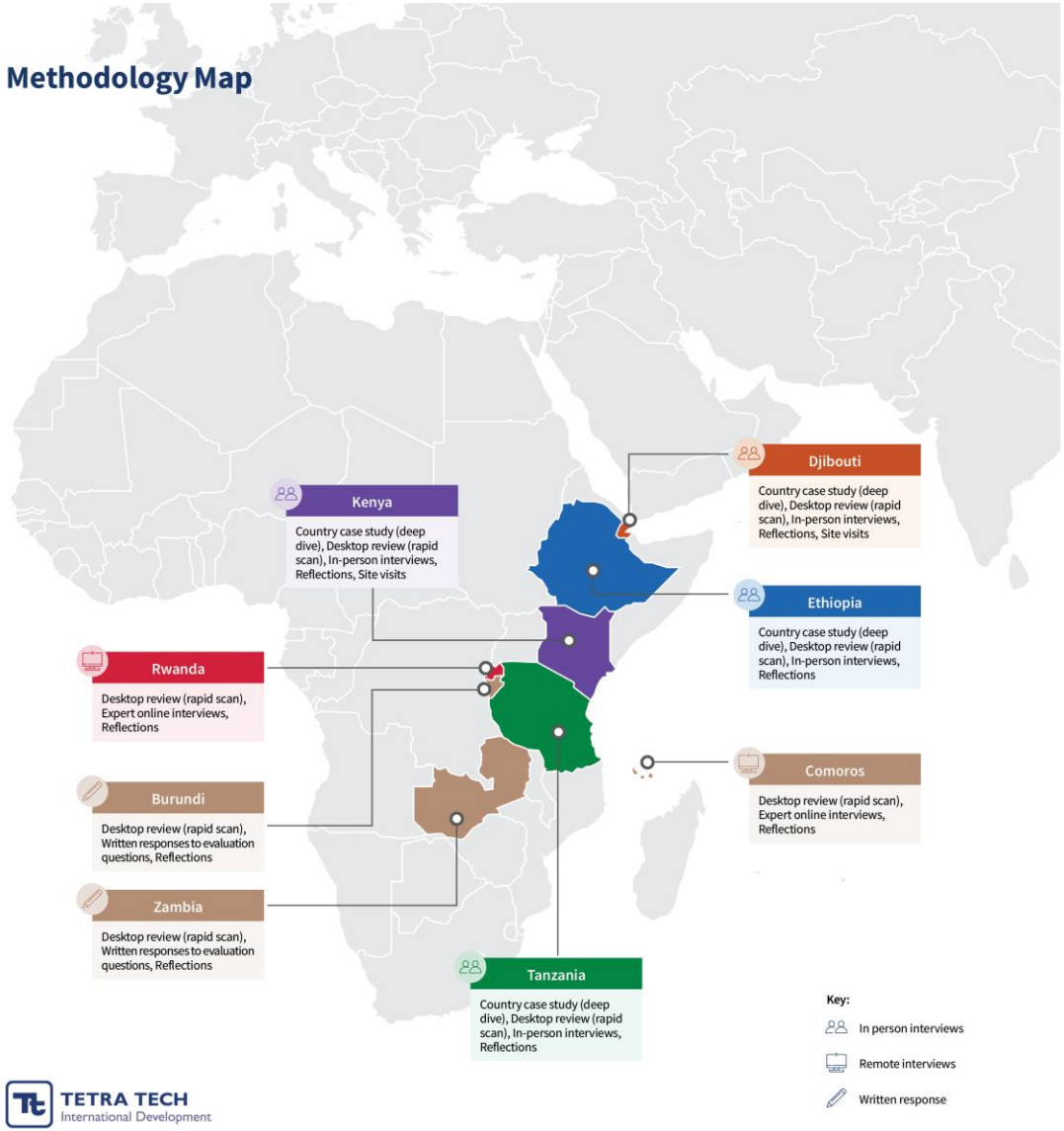
Annexes

Annex 1: Evaluation methodology map

The Evaluation used a mixed methods approach to assess the relevance, coherence, effectiveness, impact and efficiency of the AGF and provide insight for the future direction of the AGF's activities, in line with AUC and MFAT priorities.

This map is presented in Figure 9 over the page.

Figure 9. AGF Evaluation methodology map



Methodologies Applied

Mixed methods
Combined qualitative and quantitative data collection techniques to answer the key evaluation questions.

Country Case Studies
Deep Dive – Derived from in-person stakeholder consultations.
Rapid Scan – Derived from desktop research and virtual stakeholder interviews.

Key-informant and Expert Interviews
Online and in-person interviews as well as written responses received to evaluation questions with key stakeholders and subject matter experts.

Focus group discussions
Grouped interviews with multiple stakeholders from different countries to gather their insights.

Field Reflections
Reflections from country consultations were gathered to supplement the analysis.

Summative and formative
Combined both summative and formative elements to examine the current modality of the AGF to identify areas of support and focus of activities that should be considered in the future.

Progressive Inquiry
Findings from each key evaluation question were synthesised to identify new opportunities for further research, consultation, and design in preparation for future phases.

Realist approach
Examined key contextual changes (i.e. shifts in policy/strategic directions at a regional or multi-country level, effects of the COVID-19 pandemic, demand-driven approach, etc) to understand complex challenges that impacted the effectiveness and efficiency of the Facility during a particular period.

Sensemaking workshops
High-level remote sensemaking workshop with ERG comprised of AUC and MFAT to validate current findings and synthesise learnings to develop recommendations.

Site visits
Conducted site visits in Gale Le Koma (Djibouti) and Menengai (Kenya).

AGF Delivery Partners

New Zealand / MFAT
Expert Interviews, Reflections

African Union Commission
Expert Interviews, Reflections

Africa Geothermal Facility Management Unit (Cowater International)
Expert Interviews, Reflections

Implementation Partners

EEP – Ethiopian Electric Power
Expert Interviews, Reflections

TGDC – Tanzania Geothermal Development Company
Expert Interviews, Reflections

ODDEG – Djiboutian Office for the Exploration and Exploitation of Geothermal Energy
Expert Interviews, Reflections

GDC – Kenya Geothermal Development Company
Expert Interviews, Reflections

EDCL – Rwanda Energy Development Corporation Limited
Expert Interviews, Reflections

Government Ministries

Ethiopia Ministry of Mines
Expert Interviews, Reflections

Tanzania Ministry of Energy and Minerals
Expert Interviews, Reflections

Civil Society Organisations

Ethiopia Geothermal Association
Expert interviews, Reflections

Tanzania Renewable Energy Association
Expert Interviews, Reflections

Tanzania Women in Energy
Expert Interviews, Reflections

Women in Geothermal – Kenyan Chapter
Expert Interviews, Reflections

New Zealand Based Suppliers

Jacobs
Expert Interviews, Reflections

Contact Energy
Expert Interviews, Reflections

JRG Energy
Expert Interviews, Reflections

The University of Auckland
Expert Interviews, Reflections

P2P Energy
Expert Interviews, Reflections

Regional Organisations and Active Donors

Geothermal Risk Mitigation Facility (GRMF)
Expert Interviews, Reflections

Africa Rift Geothermal Development Facility (UNEP)
Expert Interviews, Reflections

Japan International Cooperation Agency
Expert Interviews, Reflections

World Bank
Expert Interviews, Reflections

The Evaluation in Numbers

16
In person interviews in:
Ethiopia (4)
Tanzania (7)
Djibouti (3)
Kenya (2)

In person interviews with:
African Union
Implementation Partners
Government Ministries
Civil Society Organisations

18
Remote interviews with MFAT, development partners, regional organisations and NZ suppliers:
New Zealand Ministry of Foreign Affairs and Trade (4)
Africa Union Commission (1)
Africa Geothermal Facility Management (1)
Africa Rift Geothermal Development Facility (UNEP) (1)
Geothermal Risk Mitigation Facility (1)
Japan International Cooperation Agency (1)
World Bank (1)
Jacobs (4)
Contact Energy (1)
JRG Energy (1)
University of Auckland (1)
P2P Energy (1)

Numerous...
Client Calls
One-on-one interviews
Focus Group discussions
Desktop review
Articles and Reports read

A high-level remote sensemaking workshop with the ERG (AUC and MFAT) to validate current findings and synthesise learnings to develop recommendations

24
24 documents reviewed about AGF's regional performance, governance, national reports, policies and reviews

Balanced mix of government, civil society, stakeholders and other (e.g. inclusion specialists, researchers, development partners) evaluation participants

Annex 2: Summary of stakeholders interviewed

The primary data collection phase took place from 22 January to 16 February 2024 through a combination of both key information interviews (KIIs) and focus group discussions (FGDs).

In addition to site visits in Djibouti and Kenya, the Evaluation Team conducted a total of a total 41 KIIs and FGDs, consulting with 57 interviewees:

- Africa Union Commission – Governance Partner: 2 consultations
- AGF Facility Management: 2 consultations
- MFAT: 7 consultations
- Implementing partners: 11 consultations
- CSOs: 4 consultations
- Ministries: 2 consultations
- Other East African countries: 1 consultation (and 2 written responses)
- New Zealand Suppliers:8 consultations
- Regional facilities and donors: 4 consultations

The table below presents the stakeholder groups and organisations consulted, as well as the method used for consultation (i.e., KII vs FGD).

Stakeholder type	Stakeholder organisation	Modality and number of interviews	Location
Africa Union Commission – Governance Partner			
	Africa Union Commission	1x FGD	Addis Ababa, Ethiopia
	Africa Union Commission	1x KII	Remote
AGF Facility Management			
	AGF Facility Management	1x KII	Addis Ababa, Ethiopia
	AGF Facility Management	1x KII	Remote
MFAT			
	NZ Embassy in Addis Ababa	3x KIIs	Addis Ababa, Ethiopia
	MFAT Wellington	4x KIIs	Remote
Ethiopia			
Implementation partner	Ethiopian Electric Power (EEP)	2x KIIs	Addis Ababa, Ethiopia

Stakeholder type	Stakeholder organisation	Modality and number of interviews	Location
CSO	Ethiopia Geothermal Association	1x KII	Addis Ababa, Ethiopia
Ministry	Ministry of Mines	1x FGD	Addis Ababa, Ethiopia
Tanzania			
Implementation partner	Tanzania Geothermal Development Company (TGDC)	2x FGD & 1x KII	Dar es Salaam, Tanzania
Implementation partner	TGDC	1x KII	Remote
CSO	Tanzania Women in Energy	1x FGD	Dar es Salaam, Tanzania
CSO	Tanzania Renewable Energy Association	1x FGD	Dar es Salaam, Tanzania
Ministry	Ministry of Energy and Minerals	1x KII	Dar es Salaam, Tanzania
Djibouti			
Implementation partner	Djiboutian Office for the Exploration and Exploitation of Geothermal Energy (ODDEG)	2x FGD & 1x KII	Djibouti
Kenya			
Implementation partner	Geothermal Development Company (GDC)	1x FGD	Nairobi, Kenya
CSO	Women in Geothermal Kenyan Chapter	1x KII	Remote
Rwanda			
Implementation partner	Energy Development Corporation Limited (EDCL)	1x FGD	Remote
Other East African Countries (Remote/Virtual)			
AGF webinar attendee	Comoros Geological Bureau	1x KII	Remote
AGF webinar attendee	Zambia Ministry of Energy	Written response	Remote
AGF webinar attendee	Burundi Ministry of Hydraulic, Energy and Mines	Written response	Remote
New Zealand Based Suppliers			
	Jacobs	4x KIIs	Remote
	Contact Energy	1x KII	Remote

Stakeholder type	Stakeholder organisation	Modality and number of interviews	Location
	University of Auckland	1x KII	Remote
	JRG Energy	1x FGD	Remote
	P2P Energy	1x KII	Remote
Other regional facilities and donors			
	World Bank (WB)	1x KII	Remote
	German Development Bank (KfW)	1x KII	Remote
	Japan International Cooperation Agency (JICA)	1x KII	Remote
	African Rift Geothermal Development Facility (ARGeo), United Nations Environmental Programme (UNEP)	1x KII	Remote

Annex 3: Key documents reviewed and list of references

Documents provided to date included in the document review are:

- AGF Activity Design Document 2017
- AGF AMA (Activity Monitoring Assessment) for AGF July 2018 to June 2019
- AGF AMA (Activity Monitoring Assessment) for AGF July 2019 to June 2020
- AGF AMA (Activity Monitoring Assessment) for AGF July 2020 to June 2021
- AGF Partnership Arrangement with AUC 2017
- AGF Results Framework 2019
- AGF Results Framework and Monitoring Table 2021
- Comoros Geothermal Project 2019
- East African Prospects 2019 Report
- FCG NZ AGF Annual Report 2019-2020
- FCG NZ AGF Annual Report 2020 - 2021
- FCG NZ AGF Annual Report 2021 – 2022
- Gender and Social Inclusion Programme Situational Analysis 2023

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Annex 4: Key evaluation questions

Criteria	Key Evaluation Questions	Sub-questions
Relevance and coherence	• To what extent is the AGF relevant and aligned to the renewable energy priorities of the AUC, Ethiopia, Tanzania, Djibouti, Kenya, and Rwanda, and the East Africa region?	(a) Has the AGF continued to be relevant to the AUC, in-country implementing partners, and partner governments in the East Africa region and New Zealand? (b) How have changes to the strategic, policy, and operating context at AUC, MFAT, and East Africa region affected the relevance of AGF? (c) How is the AGF adaptive, responsive, and flexible to the plans and needs of partner governments, state-owned geothermal developers, and other key local stakeholders? (d) What key niche renewable energy needs is the AGF providing in East Africa that would otherwise go unmet?
	• How are the AGF activities aligned or harmonised within themselves and with what other key donors are delivering in East Africa?	(a) How aligned and coherent are the AGF's own projects (internal coherence)? (b) To what extent is the AGF and its projects aligned to the renewable energy activities of the other donors in the region (external coherence)?
Effectiveness and impact	• To what extent has the AGF made progress towards its intended outcomes to date?	(a) Has the AGF increased the number of geothermal energy projects meeting investment criteria across the five countries (Medium-term outcome (MTO) 1)? (b) Has the AGF supported increased investment and participation in the geothermal energy sector (MTO 2)? (c) Has the AGF strengthened the enabling environment for geothermal development and private sector investment (MTO 3)? (d) To what extent has AGF been implemented in line with the New Zealand's International Development Principles?
	• To what extent has AGF enhanced local ownership and cooperation in the geothermal sector?	(a) To what extent is local ownership of the AGF developing amongst key stakeholders, including state-owned geothermal developers, regulators, and geothermal experts in the region? (b) How can MFAT better integrate inclusive development and leverage opportunities to highlight New Zealand's interests?
	• What factors constrained or enhanced the AGF's achievement of the intended outcomes?	(a) What factors have constrained or enhanced the AGF's delivery and achievement of the outcomes? (b) What elements of the AGF would need to continue through any subsequent phases of investment to ensure sustainability of the programme and its outcomes? (c) To what extent has the monitoring, evaluation, research, and learning of the AGF supported evidence-based reporting and overall effectiveness?
	• Were there any unintended outcomes as a result of AGF support in the implementing countries and in the overall partnership arrangements?	
Appropriateness of the modality and governance arrangements and efficiency	• To what extent is the AGF's modality fit for purpose to achieve its outcomes?	(a) Does the AGF Facility Management have the right skills, resources and oversight in terms of capability and capacity to achieve outcomes in the East Africa region? (b) To what extent does the current demand-driven modality enhance or constrain achievement of AGF's intended outcomes? (c) How does the current operating model for engaging technical expertise from New Zealand in implementation support implementing partners' capacity and overall effectiveness? (d) Has MFAT utilised time and resources well to support the effective and efficient delivery of the AGF?

Criteria	Key Evaluation Questions	Sub-questions
	• To what extent has the AGF's implementation and governance and management arrangements supported or hindered the achievement of its objectives?	(a) What merits/benefits and trade-offs exist to deliver the AGF via the AUC? (b) What other governance, implementation, and partnership arrangements options exist to deliver the AGF in the future?
	• What options exist to strengthen the AGF modality, governance scope, and implementation?	(a) Should any potential new phase consider the inclusion of other countries, retain, or expand on its current focus? (b) What opportunities exist to expand across subject or thematic areas and or countries, and what are the risks and benefits associated with this?
Future directions	• What are the key considerations for a future phase of AGF geothermal support to East Africa and the broader region?	(a) What are the lessons learned from the AGF that could inform the future strategy, policy direction, thematic and geographic focus, for any new phase of support? (b) What are the key priority areas of geothermal support in Ethiopia, Tanzania, Djibouti, Kenya, Rwanda and broader? (c) What factors should be considered for any future phase of AGF with expanded scope to other eligible East Africa countries (i.e., Zambia, Uganda, Eritrea, Comoros, Burundi, Democratic Republic of Congo)? (d) What opportunities exist for AGF to contribute to harmonisation of donor support to geothermal energy in Ethiopia, Tanzania, Djibouti, Kenya, Rwanda, and the broader East Africa region? (e) How can the AGF be more relevant, and partner-driven?