



MA ritgerð

Þróunarfræði

**Icelandic Development Aid to the Geothermal
Exploration Project in East-Africa:
Evaluation with a gender perspective**

Tabitha Rose Jonsson

Dr. Geir Gunnlaugsson
Júní 2019



HÁSKÓLI ÍSLANDS
FÉLAGSVÍSINDASVIÐ

FÉLAGS- OG MANNVÍSINDAEILD

Icelandic Development Aid to the Geothermal Exploration Project in East-Africa:

Evaluation with a gender perspective

Tabitha Rose Jonsson

Lokaverkefni til MA gráðu í þróunarfræðum

Leiðbeinandi: Dr. Geir Gunnlaugsson prófessor í hnattrænni heilsu

30 einingar

Félags– og mannvísindadeild

Félagsvísindasvið Háskóla Íslands

Júní, 2019

Icelandic Development Aid to the Geothermal Exploration Project in
East-Africa: Evaluation with a gender perspective

Ritgerð þessi er lokaverkefni til MA gráðu í þróunarfræðum
og er óheimilt að afrita ritgerðina á nokkurn hátt nema með leyfi rétthafa.
©Tabitha Rose Jonsson, 2019

Prentun: Háskólaprent ehf.
Reykjavík, Ísland, 2019

Foreword

This desk analysis represents 30 ECTS towards achieving my MA degree in Development Studies at the University of Iceland. I would like to thank my supervisor Dr. Geir Gunnlaugsson, professor of Global Health, for his guidance and direction in this evaluation undertaking. His passion for international development cooperation has been a major inspiration to me and has encouraged me to further pursue Development Studies.

I would also like to extend my gratitude to the staff of the International Development Cooperation Office at the Ministry for Foreign Affairs, for their time and invaluable feedback, which gave me a clearer understanding of the scope of the project, and led to further lines of inquiry.

Finally, I am eternally grateful to my family for their support and encouragement throughout this process.

Table of Contents

Foreword	4
Table of Contents	5
Útdráttur	8
Executive Summary	11
Tables	14
Figures	14
Abbreviations	15
1 Introduction	17
1.1 The Aid Effectiveness Agenda	17
1.2 Evaluation and Development	20
1.2.1 Evaluation Domains	21
1.2.1.1 Relevance	21
1.2.1.2 Efficiency	23
1.2.1.3 Effectiveness	23
1.2.1.4 Impact	24
1.2.1.5 Sustainability	25
1.3 Energy and Development	26
1.4 Energy and Gender	28
1.5 Icelandic Development Cooperation	30
1.5.1 Background	30
1.5.2 Legal Framework	31
1.5.3 Organisational Framework	31
1.5.4 Bilateral Cooperation	32
1.5.5 Multilateral Cooperation	33
1.5.5.1 United Nations Universities	33
1.5.5.2 The World Bank	34
1.5.5.5 Humanitarian Aid	35
1.5.6 Development Strategy	35
1.5.7 Geothermal Energy Development	37
1.5.8 Gender Equality Policy	38
1.6 Evaluation of the Geothermal Exploration Project	39
2 Methodology	41
2.1 Summative Evaluation	41

2.2	Desk Review	41
2.3	Secondary Research	41
2.4	Methodological Limitations	42
2.5	Code of Conduct	43
3	Scope of the GEP Evaluation	45
3.1	Evaluation Purpose	45
3.2	Objectives of the Evaluation	46
3.3	Evaluation Approach	47
3.4	Evaluation Questions	48
3.5	Programme Theory	50
3.6	Programme Logic	50
4	Scope of the GEP	51
4.1	Stakeholders	51
4.1.1	<i>Donors</i>	51
4.1.2	<i>Participant Countries</i>	52
4.2	Funding	52
4.3	Activities	53
4.4	Parallel Activities	53
4.5	Implementation	54
4.5.1	<i>Time Plan</i>	54
4.5.2	<i>External Factors (Risks)</i>	55
4.5.3	<i>Expected Results (Outputs)</i>	56
4.5.4	<i>Outcomes</i>	56
4.6	Cross Cutting Issues	56
4.7	United Nations University- Geothermal Training Programme	56
4.7.1	<i>Rationale</i>	57
4.7.2	<i>Inputs</i>	57
4.7.3	<i>Activities</i>	58
4.7.4	<i>Funding</i>	58
5	Evaluation Findings	60
5.1	Appropriateness	60
5.1.1	<i>Donor level</i>	60
5.1.1.1	<i>Alignment with National Development Strategy</i>	61
5.1.1.2	<i>Partnership Strategy</i>	62
5.1.2	<i>Participant Country level</i>	62

5.1.3 Population level	66
5.2 Efficiency	66
5.3 Effectiveness	69
5.4 Impact	72
5.5 Sustainability	74
5.5.1 Financial sustainability	75
5.5.2 Legal and Policy Sustainability.....	76
5.5.3 Capacity Building	76
5.6 Gender Equality	77
5.7 Overall Evaluation Findings.....	80
6 Lessons and Recommendations	82
6.1 Pro-poor Considerations.....	82
6.2 Stakeholder Engagement.....	84
6.3 The Gender-Energy Nexus	85
6.3.1 Recognise Barriers	85
6.3.2 Gender Responsive Policy and Planning	87
6.3.3 Gender Responsive Monitoring and Evaluation	88
7 Discussion	90
8 Conclusion	94
9 References	97
Appendices.....	104

Útdráttur

Árið 2012 hóf Ísland samstarf við ýmsa aðila í þeim tilgangi að þróa jarðvarma auðlindir í nokkrum löndum í Austur-Afríku. Þetta samstarf leiddi af sér „Verkefnið um þróun jarðvarmarannsóknir“ (e. Geothermal Exploration Project -GEP) sem fór á laggirnar árið 2013 og náði til 13 landa sunnan Sahara sem talin voru vænleg til að þróa nýtingu jarðvarmaorku vegna staðsetningar þeirra meðfram Austur-afríska sigdalnum (e. East African Rift Valley). Samstarfið miðaði við að tengja íslenska þekkingu og reynslu í orkumálum við fjármagn öflugra styrkjenda og fjárfesta ásamt því að undirstrika mikilvægi jarðvarmanýtingar sem mótvægisáðgerð gegn loftslagsbreytingum, stuðning við efnahagslegan vöxt og vinna gegn fátækt í þróunarlöndum.

Áætlun GEP var innan Þróunarsamvinnuáætlunar Íslendinga fyrir 2013 -2016 og Þúsaldarmarkmiða Sameinuðu þjóðanna (e. Millenium Development Goals) frá 2000 til 2015. Við framkvæmd þessa verkefnis reyndist GEP mikilvægur þáttur í framlagi Íslands til alþjóðlegra þróunarmála, bæði hlutfallslega í heildarframlagi til þróunarsamvinnu (e. Official Development Aid) auk þess sem hún byggði á sérstakri þekkingu Íslendinga á málaflokknum. Aðalmarkmið verkefnisins var að leggja til veigamikla viðbót af jarðvarmaorku í heildarorkunotkun á svæðinu og jafnframt vega upp á móti töluverðum upphafskostnaði og öðrum áhættum tengdum jarðhitavæðingu.

Sú ritgerð sem hér er lögð fram er framlag til þess að bæta skipulagningu og framkvæmd þróunarverkefna. Í henni eru lagðar fram ákveðnar spurningar, sem tengist hönnun, framkvæmd og niðurstöðum GEP verkefnisins og jafnframt gerð grein fyrir framlagi verkefnisins til að bæta velferð, lífsviðurværi og færni hinna margvíslegu þáttakenda, þess sérstaklega kvenna.

Mat á þróunarverkefnum eru veigamikill þáttur í að öðlast skilning og skýrari mynd af þeim áhrifum sem það, ásamt tengdri starfsemi, hefur átt í framförum (eða skorti á þeim), áætluðum eða ekki. Slíkt mat getur auk þess dýpkað skilning á því hvernig verkefnið falli að viðmiðum DAC (e. Development Assistance Committee) um hversu viðeigandi það sé, árangri þess og skilvirkni, útkómu og sjálfbærni. Nálgun matsins byggir á hugmyndafræði um mikilvægi þess að læra af framkvæmd og útkomu verkefna með GEP-verkefnið sérstaklega til skoðunar:

- Lýsa og útlista margvíslega þætti GEP-verkefnisins, eins og kenningarlegan bakgrunn þess og rökræna uppbyggingu og fela í sér aðföng, starfsemi, útkomu, forsendur og ytri þætti þess;
- Greina og meta GEP-verkefnið í ljósi þess hversu viðeigandi það sé, og árangur þess, skilvirkni, útkomu, sjálfbærni og kynjajafnrétti við framkvæmd verkefnisins.
- Varpa ljós á jákvæð áhrif og kosti GEP-verkefnisins, ásamt möguleikum á úrbótum.

Með aðferðafræði skrifborðsrannsókna (e. desk analysis) var matið háð aðgengi að áreiðanlegum og aðgengilegum gögnum svo hægt sé að meta hönnun og framkvæmd þróunarverkefnisins ásamt árangri og útkomu þess. Með þessari samantekt á árangri verkefnisins stefnt að því að draga fram lærdóma og að niðurstöður matsins stuðli að því að bæta aðlögun stefnumótunar of verkefna að árangursmiðaðri stjórnun þeirra og gefi traustar og gagnlegar upplýsingar sem nýtastmuni við ný verkefni í framtíðinni.

Helstu niðurstöðurnar matsins gefa til kynna framlag Íslands til þróunar jarðvarmavæðingar í löndum Austur-afríka sigdalsins, fyrir tilstilli GEP framtaksins, endurspegli skuldbindinga landsins við Þúsaldarmarkmið Sameinuðu þjóðanna. Framlagið er einning í samræmi við forgangsatriði í Þróunarsammvinnuáætlun Íslands fyrir 2013-2016 og var beitt til stuðnings þróunar á sviðum þar sem sérþekking landsins er þekkt og samkeppnishæf. Samstarf við Alþjóðabankann og Norænna þróunarsjóðin, ásamt fjölda annara samstarfsaðila sem komu að innleiðingu GEP-verkefninu. Leiddi til þess að Ísland gat tekið þátt í stuðningu við aðföng og útkomu sem landið hefði að öðrum kosti ekki átt völ á vegna smæðar framlagsins. Það má leiða rök að því að komu Íslands hafi stutt við aukna tæknileg þekking of færni á svæðinu og í einstaka tilvikum skipt sköðum til að auka aðgengi og nýtingu á jarðvarma.

Vegna bágrar stöðu jarðvarma auðlinda, sem einkenna vestur svæði sigdalsins, var ákveðið að draga töluvert úr umfangi GEP-verkefnisins og einblínt á þau fjögur lönd þar sem sýnti hafði verið fram á skilyrði til jarðvarmanýtingar. Því reyndist örðugt að greina hvort jákvæðar niðurstöður væru beinar afleiðingar GEP-verkefnisins, eða vegna fyrirbyggjandi grunnstoða í notkun jarðvarma á svæðinu, t.d. í Keníu. GEP-verkefnið setti

sér jafnframt árangurstengd viðmið um þáttöku kvenna, en þrátt fyrir það vantaði töluvert upp á að kynjuð sjónarmið hefðu áhrif á framkvæmd þess. Því miður var matið eining takmarkað af skorti á aðgengilegum gögnum um fjármögnum og útgjöld auk árangurs og útkomu þess til skemmri eða meðallangstíma.

Í dag hafa 1,6 milljarða einstaklingar ekki aðgang að raforku, og langt í land með að ná Heimsmarkmiðum fyrir árið 2030 á því sviði. Því verður að innæeiða nýjar aðferðir í þróun orkumála með sérstaka áherslu á svæði þar sem skortur á orku er hvað tilfinnanlegastur. Slík nálgun felur m.a. í sér vinnu í nánu sambandi við nærsamfélagið við skipulag, hönnun og dreifingu orkunnar. Jafnframt ættu þróunarsamtök að skipuleggja og forgangsraða verkefnum til að mæta orkubörfum þeirra samfélaga í samræmi við væntingar þeirra.

Þörf á orku í heiminum fer stöðugt vaxandi, og mest vöxtur í jarðvarmanýtingu á sér stað í þróunarlöndum. Því er þörf á alþjóðlegu átaki í þróunarsamvinnu til að vinna með fátækustu samfélögunum sem eru í þörf fyrir orku sem er ekki er fyrirsjáanlegt að einkareknar orkuveitar né landsnet raforku landanna muni sinna. Samtímis eru miklar væntingar í þróunarlöndum að alþjóðlegir þróunarsamvinnuaðilar mæti þessum þörfum og valdefli fátækt fólki í dreifbýli. Frekari vinnu of fjárfestinga er þörf til að tryggja að nauðsynlegur rammi sé til staðar að hægt sé að aðstoða lönd til aukinnar orkunýtingar og jafnframt að sú orku sem er framleidd sé í raun ódýr og aðgengileg þessum samfélögum.

Til að ná Heimsmarkmiðum Sameinuðu þjóðanna um sjálfbær þróun og auka almenna, sjálfbæra orkunýtingu fyrir árið 2030 mikilvægt að einginn sé skilinn eftir. Það þýðir áform um orkuvinnslu sérstaklega þegar vinnan er í höndum þróunarsamtaka sem ráðstafa þróunarframlögum þurfa að taka meira tillit til þeirra sem minna mega sín við ákvarðanatöku. Það felur í sér að huga vel að þeim sem eiga að nota orkuna, skilgreina hverjir séu haghafar verkefnanna og tryggja aðkomu þeirra á öllum stigum skipulagningar þess, og stefni að framleiðslu á orku sem fellur þörfum þeirra og því samfélagi sem markmiðið er að aðstoða.

Executive Summary

In 2012, Iceland collaborated with an array of donors and organisations in order to develop the geothermal resources of a number of East African countries. The partnership led to the development of the Geothermal Exploration Project (GEP). Launched in 2013, it included 13 sub-Saharan African countries with potential for developing geothermal energy, due to their geographical location along the East African Rift Valley. The partnership aimed to align Iceland's expertise and knowledge of geothermal development with the financial resources of major donors and investors and highlight the importance of geothermal energy production as a means of offsetting climate change, stimulating economic growth and reducing poverty in developing countries.

The implementation of the GEP was guided by the National Strategy for Development Cooperation of Iceland (2013-2016), and the (2000-2015) Millennium Development Goals (MDGs). When undertaken the GEP represented an important contribution to Iceland's international development cooperation efforts, both as a significant proportion of Iceland's Official Development Aid (ODA) and drew extensively on Iceland's areas of expertise. The main objective of the project was to add substantially to the contribution geothermal energy as a share of primary energy in the region and offset the initial high start-up costs and risks associated with geothermal energy ventures.

As a contribution to efforts to improve future planning and implementation of development initiatives, this evaluation asks a number of questions relating to the design, implementation, and results of the project. It seeks to analyse the role that the Geothermal Exploration Project (GEP) played in improving the wellbeing, livelihoods and skills of the various participants involved, with a specific focus on gender issues. Conducting an evaluation of development initiatives is essential to understanding and developing a clearer picture of the extent to which the project and related activities have resulted in progress (or the lack thereof), the intended and unintended results of the project, as well as an understanding of the way in which the initiative measures against the DAC criteria of appropriateness, effectiveness, efficiency, impact and sustainability. Using a learning and outcomes approach the evaluation will:

- Describe and outline the various components of the GEP logic and theory, that include inputs, activities, outputs, outcomes, assumptions and external factors.

- Analyse and evaluate the GEP against the criteria of; appropriateness, effectiveness, efficiency, impact, sustainability and gender equality.
- Identify the positive impacts and benefits of the GEP, as well possible strategies for improvement.

Adopting a desk analysis methodology, this evaluation is reliant on available secondary data, to assess the design and implementation of the project as well as the results and outcomes. As a summative evaluation, the author hopes that the lessons drawn and conclusions reached will add to the efforts to better align policy and programmes with the managing for results agenda, and provide credible and useful information upon which future projects can build.

The main findings of the evaluation suggest that Iceland's contribution to development of geothermal resources in the East African Rift Valley States (EARS), through the GEP initiative, demonstrates its commitment to the MDGs, and the priorities set out in the National Strategy for Development Cooperation 2013-2016. ODA resources have been largely prioritised to support development in areas of donor expertise and comparative advantage. The strategic partnership with the World Bank and Nordic Development Fund, as well as the various other partners in implementing the GEP helped to deliver both inputs and outputs that Iceland would have otherwise been unable to deliver due to its limited resources. Icelandic involvement can be seen as having contributed to increased levels of technical knowledge and expertise in the region and a key factor in removing a number of roadblocks to increased geothermal uptake and utilization.

Due to low heat resources characterising most of the western area of the Rift Valley, the scope of the GEP was drastically reduced, and resources were focused on four countries that had proven high heat resources. Thus making it difficult to ascertain whether the positive impacts were a direct result of the GEP, or due to already well established geothermal development systems, as found in Kenya. The project also set itself a number of targets regarding the inclusion of women, however there was a lack of gender mainstreaming throughout the project. Unfortunately, the evaluation was severely limited by the lack of available and accessible data regarding the funding, expenditures, short term and medium term outputs and outcomes of the project.

In order to close the global energy access gap and reach the additional 1.6 billion individuals that currently lack access to electricity, and deliver on the 2030 agenda, new approaches to energy development projects must be employed which build on close engagement of last mile, and other hard to reach communities in the planning, design, and delivery of energy development initiatives. Additionally development actors must plan for and prioritize sites of development and deliver energy outputs in line with community expectations.

Demand for energy is growing, and most of the geothermal energy growth is taking place in developing countries, there remains considerable scope for international development projects to address the poorest communities, where private systems and other national grid services have not met, and cannot meet energy needs. Additionally, there are significant expectations that ODA financed international development programmes that are launched in developing countries, fulfil this need and empower rural and poor communities. Additional work and investments are required in order ensure that the necessary frameworks are in place that will assist countries in their energy transitions and ensure that the energy being produced is in fact affordable and accessible for local communities.

In order to achieve the SDG targets of increasing sustainable energy access for all by 2030, it is important that no one is left behind. This means that energy development projects, particularly when implemented by development actors, directing ODA resources, must do more to include the traditionally powerless and voiceless. Integral to this, is envisioning the end users of the energy produced, deciding who key stakeholders are, planning for their inclusion at all levels of programming, and delivering results that are aligned with the social context and needs of those who the initiative is targeted at.

Tables

Table 1 - Relationship Between the Five Domains and Programme Stages	49
Table 2 – Managment and Inclusion of Cross-Cutting Issues in the Project cycle	75
Table 3 - Managment and Inclusion of Gender Concerns in the Project cycle	79

Figures

Figure 1 - The main characteristics of an RBM strategy	18
Figure 2- The four pillars of RBM	19
Figure 3 – Structure and priorities of Icelandic development cooperation strategy	36
Figure 4 - Main agents in the East Africa Rift Valley geothermal development	52
Figure 5 - Potential workflow of activities in the Geothermal Exploration Project	54
Figure 6 - Estimated time plan for geothermal development under the Geothermal Compact	55
Figure 7- Core funding of the Icelandic State to the UNU-GTP programmes	59
Figure 8 - Factors influencing the sucessful deployment of renewable energy in Sub-Saharan Africa	63
Figure 9 -Gender entry points throughout the geothermal project cycle.	88

Abbreviations

AfDB	African Development Bank
ARGeo	The African Rift Geothermal Development Facility
AU	African Union
CSO	Civil Society Organisation
CSP	Country Strategy Paper
DAC	Development Assistance Committee
EARS	East African Rift States
EARV	East African Rift Valley
ESIA	Environmental and Social Impact Assessment
ESMAP	Energy Sector Management Assistance Program
FDI	Foreign Direct Investment
GAP	Gender Action Plan
GEP	Geothermal Exploration Project
GGA	Global Geothermal Alliance
ICEIDA	Icelandic International Development Agency
IDA	International Development Association
IGA	International Geothermal Association
IRENA	United Nations International Renewable Energy Agency
ISK	Icelandic Krona
LDC	Least Developed Country
MDGs	Millennium Development Goals
MFA	Ministry for Foreign Affairs
MW	Mega Watts
NDF	Nordic Development Fund
NGO	Non-Governmental Organisation
ODA	Official Development Aid
OECD	Organization for Economic Cooperation and Development
RBM	Results Based Management
SDG	Sustainable Development Goals

STEM	Science Technology Engineering Math
UFGE	The Umbrella Facility for Gender Equality
UN	United Nations
UN Women	United Nations Entity for Gender Equality and the Empowerment of Women
UNCTAD	United Nations Conference on Trade and Development
UNDP	United Nations Development Programme
UNEG	United Nations Evaluation Group
UNEP	United Nations Environmental Programme
UNICEF	United Nations International Children's Emergency Fund
UNU	United Nations University
UNU-GTP	United Nations University - Geothermal Training Programme
WB	World Bank
WHO	World Health Organisation

1 Introduction

1.1 The Aid Effectiveness Agenda

The application of results-based management (RBM) to the development cooperation sector, was influenced by and drew on changes that had taken place in broader public sector management (Markiewicz and Patrick, 2016). The Development Assistance Committee (DAC) of the Organisation for Economic Cooperation and Development (OECD) was influential in providing the leadership and co-ordination for the sector wide take up of the 'managing for results' agenda, which was spurred on by the formulation of the eight Millennium Development Goals (MDGs) in the year 2000 (Zwaart, 2017). To this end a number of high-level forums and other conferences were held in order to define global development standards, increase policy coherence, improve aid effectiveness, and measure progress towards the MDGs. The agreements that resulted from these fora, have provided the groundwork for international development cooperation since, in regards to results and outcomes (Zwaart, 2017 p:7).

The OECD defines RBM as "a management strategy focusing on performance and achievement of outputs, outcomes and impacts" (OECD, 2010, p: 34). Authors Markiewicz and Patrick (2016) state that the objective of RBM is "to gear organisational and programme efforts to improving performance and the achievement of results" (Markiewicz and Patrick, 2016 p:31). Implementing an RBM strategy means that the focus is on improving the effectiveness of the project and increasing levels of accountability. This is done through defining which expected results are realistic, monitoring progress towards the achievement of expected results, and making lessons drawn from evaluation processes an integral part of management decisions (UNDP, 2000). Overall the purpose of aligning development programming and initiatives with an RBM strategy is to improve the effectiveness of implementation, and use information gathered through monitoring and evaluation in order to improve decision making.

There are a number of key features of the RBM approach. Firstly, the results chain is an important element that helps to illustrate and visually represent the casual relationship between the various components of the project. The results chain sets out a series of 'conditional statements', demonstrating the likely connection between inputs and outputs. Secondly, the results chain also takes into consideration various external

factors that affect the intervention particularly at the outcome and impact levels. Since there are many factors, and conditions that are either beyond the control of the programme or internal to the intervention, it is essential to analyse those risks against the results framework of a programme, this makes risk management a second integral feature of results-based management (UN Habitat, n.d.).

In order to successfully manage for results, implementers must establish frameworks at various levels of project management and implementation, that make use of results chains which link to inputs, activities, and impacts, with each link of the results chain providing information on results. This approach allows for the continuous flow of information at each stage of the programme, as demonstrated in figure 1 (Zwaart, 2017). The RBM approach also requires that management continually reflect on the information received at each stage and adjust the programme accordingly, to ensure that the desired results or outcomes are realised (UN Habitat, n.d.).

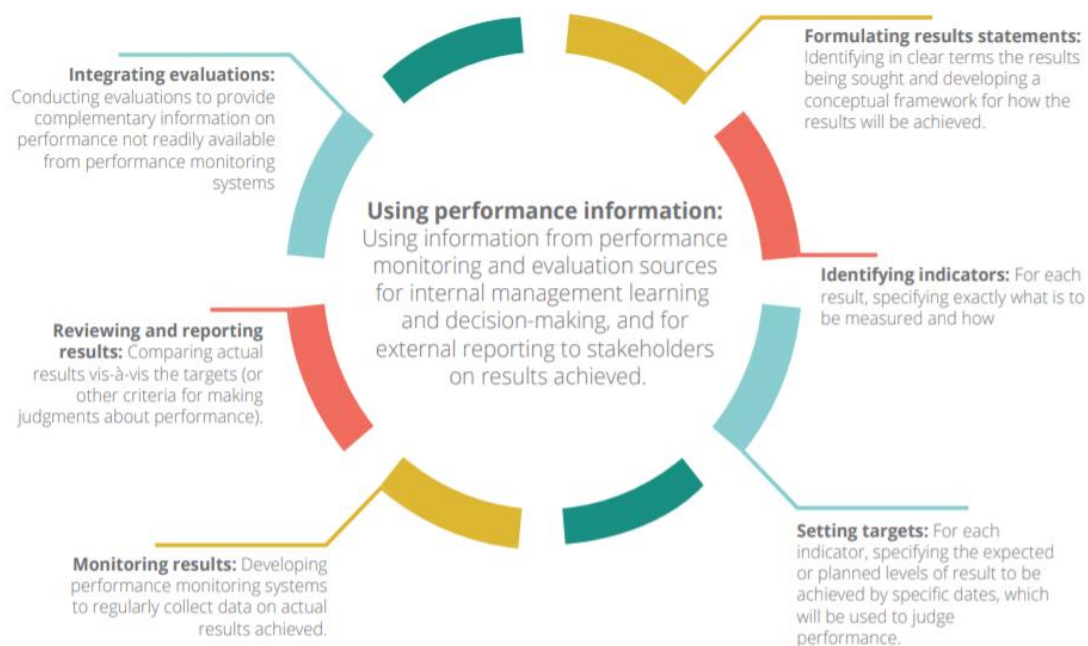


Figure 1 - The main characteristics of an RBM strategy (U.N. Habitat, n.d. p:11).

A key way in which information is provided at various stages of the programme is through monitoring and evaluation (U.N.Habitat, n.d.). In order to effectively implement RBM the initiative must be systematically monitored and evaluated. The focus of monitoring and evaluation within a results-based management framework is on, a) the active application of monitoring and evaluation information towards programme improvement, b) monitoring for results as opposed to simply inputs and activities carried out, c) ensuring that monitoring and evaluation takes place alongside programme implementation, rather than 'after the fact' (UNDP 2000, p: 7). RBM is built on four main pillars, as shown in figure 2: planning, monitoring, evaluation and learning (UN Habitat n.d.). According to Markiewicz and Patrick, RBM links together and integrates the processes of monitoring and evaluation, emphasising their interdependence and integration, and acts to refute the splitting off of evaluation as a separate activity from monitoring (Markiewicz and Patrick, 2016 p:32). Since RBM is highly dependent on credible and timely information, the generation of reliable evidence through monitoring and evaluation processes is an essential factor for decision making and improved performance.



Figure 2- The four pillars of RBM (U.N Habitat, n.d. p:9).

The increased take up of RBM throughout the development sector, has put a renewed emphasis on accountability in project planning and implementation. According to Markiewicz and Patrick, this has led to a larger role for monitoring and evaluation in the sector, as well as heightened expectation about what monitoring, and evaluation can, and should deliver (Markiewicz and Patrick 2016).

1.2 Evaluation and Development

An evaluation can be defined as “the planned, periodic and systematic determination of the quality and value of a programme, with summative judgement as to the achievement of a programmes goals and objectives” (Markiewicz and Patrick, 2016 p:150). It looks at and assesses a number of components of an initiative, in order to ascertain what the long-term impacts are, whether objectives have been achieved, and identify what worked well, and what did not, as well as the possible reasons for success or failure of the programme (Markiewicz and Patrick, 2016 p:151).

Evaluation plays an important role in development cooperation initiatives and activities, as it aims to improve and optimize resource use and allocation, support accountability and maximise the benefits of the programme, it is also an important tool in developing capability, knowledge and organisational learning (UN Women, 2015 p: 5). When evaluating development related policies, programmes or projects, which are generally designed to have a positive impact or effect on people’s lives, the focus will tend to be on whether or not the programmes intentions and objectives were in fact achieved, not only in terms of inputs and immediate outputs, but whether the programme was of value to the beneficiaries and improved lives and well-being overall (UN Women, 2015). Additionally, it will aim to assess whether alternative strategies should be considered and what lessons can be learned, in order to channel development resources more effectively and improve project design and implementation (Gertler, Martinez, Premand, Rawlings and Vermeersch, 2011 p: 3).

Conducting a thorough analysis of projects, process and implementation through monitoring and evaluating is “at the heart of evidence-based policy making” (Gertler et al., 2011). Monitoring and evaluation are the main pillars upon which results can be verified in order to improve programme quality, efficiency, and effectiveness, and are an integral part of results-based management.

The design, method, and cost of an evaluation can and will vary depending on the type of questions the evaluation is trying to answer (Markiewicz and Patrick, 2016). Additionally, an evaluation can take place at various 'points' in the project cycle, whether at the implementation phase, at the completion phase, or afterwards. The timing of the evaluation will also affect what can be expected to be gained from the evaluation. Evaluations conducted upon completion of the project aim to document the resources used, outcomes, achievement of results, and draw lessons in order to increase understanding and improve future programming (Gertler et al., 2011).

The use of specific evaluation domains ensures that each area of performance under investigation receives sufficient emphasis and attention. Often the domains are linked to different phases of a programme's development and implementation, and act as a guide for the evaluation questions (Markiewicz and Patrick, 2016). "Evaluation criteria or domains represent areas of investigation or topics under which evaluation questions can be usefully grouped and ordered" (Markiewicz and Patrick, 2016 p: 97). While there exists a number of ways to categorize and develop evaluation questions, one of the most commonly used approaches has been developed by the Development Assistance Committee of the OECD.

The DAC have developed and endorsed a formal and systematized approach to evaluating development projects which entail the use of five criteria (OECD, 1991). The criteria were first laid out in 1991 and have since been widely taken up, and include; relevance, effectiveness, efficiency, impact and sustainability.

1.2.1 Evaluation Domains

The five DAC evaluation criteria of relevance, effectiveness, efficiency, impact and sustainability, help to set the evaluation focus and are a key part of defining the standards against which the programme will be measured and assessed (UNDP, 2009). They will be discussed below in some detail below:

1.2.1.1 Relevance

Assesses "the extent to which the aid activity is suited to the priorities and policies of the target group, recipient and donor" (OECD, n.d.). The relevance criteria is used to ascertain whether the intended outputs or expected outcomes of the initiative are in line with the

local and national priorities and policies of the participant population and their actual needs. Additionally, the relevance criteria assess the extent to which the initiative is consistent with the strategy or policies of the implementing organisation i.e.; gender equality, human rights, women's empowerment. The use of the relevance criteria can also help to determine whether there is congruence between the programme implementers vision of what is needed and the perceptions of the intended target population of the programme, and whether there exists a consensus. Additionally, the relevance domain can assess the level of responsiveness amongst implementers, and their ability to respond to and adjust accordingly to a change in context or priorities. (UNDP handbook PG 168-170).

Although the relevance criteria has been endorsed by the DAC, there have been some attempts to adapt or adjust the term in response to wider debates and discussions around the usefulness of the criteria and in order to better reflect the considerations and developments that have taken place since the launch of the DAC criteria some decades ago (Markiewicz and Patrick, 2016 p:99). While the Authors Markiewicz and Patrick replace the criteria of relevance with appropriateness, the UNDP does not go quite as far and instead suggest that appropriateness is an important sub-category of relevance (UNDP, 2009 p: 168-170).

According to the UNDP Evaluation Handbook (2009, p:168-170) the criteria of appropriateness, assesses the cultural relevance of the programmes activities and includes broader measures of the feasibility of both the programme activities and the method of delivery. "While relevance examines the importance of the initiative relative to the needs and priorities of intended beneficiaries, appropriateness examines whether the initiative as it is operationalized is acceptable and is feasible within the local context" (UNDP, 2009 p: 170).

The authors Markiewicz and Patrick (2016 p: 99) state that the criteria of appropriateness "suggests a wider accommodation of the interests of all concerned parties" whereas the term relevance has received substantial critique for its one-sided assessment of donors or governing bodies priorities. Appropriateness can be seen to account for the wider concerns and priorities of all stakeholders equally, as it considers whether the various components of the initiative aligns with and adequately meets their

various needs. This evaluation will use the term appropriateness when assessing the relevance criteria in order to accommodate a broader understanding of the criteria.

1.2.1.2 Efficiency

Is largely an economic measure that assesses the how resources such as activities, and funding were turned into results (UNDP, 2011 p:16) Efficiency “measures the outputs -- qualitative and quantitative -- in relation to the inputs. It is an economic term which signifies that the aid uses the least costly resources possible in order to achieve the desired results” (UNDP n.d.). The efficiency criteria is a measure of ‘how well’ the initiative was managed and applies primarily to the inputs, outputs and activities and other resources, and whether or not they have been economical and appropriately used (UNDP, 2009).

For Markiewicz and Patrick the use of the efficiency criteria helps evaluators move beyond merely assessing outputs as relative to inputs, and whether or not costs were kept at the minimum. Rather it is a tool for assessing the relationship between costs and benefits. Applying the criteria of efficiency is about assessing how the available resources directly translate to outputs, variations in outputs or their quality and the reasons behind those processes (Markiewicz and Patrick, 2016 p:99).

1.2.1.3 Effectiveness

Is “a measure of the extent to which an aid activity attains its objectives” (UNDP, n.d.). Assessing effectiveness considers the way in which the contributions of the initiative or programme in the form of inputs and activities were able to achieve and deliver the outcomes intended in the programme plan (UNDP, 2011 p:16). It is a general assessment of the cause and effect process, in terms of the extent to which changes that have taken place can be attributed to the inputs and activities of the initiative. According to the UNDP evaluation handbook assessing effectiveness involves three steps, 1) determining the level of change in outcomes, 2) drawing a line between changes or progress achieved and the contributions by the initiative and, 3) making judgements of the value of the change, either positive or negative (UNDP, 2009 p:170).

According to Markiewicz and Patrick the definition of effectiveness can be associated with a wider meaning. Rather than simply the attainment of objectives, effectiveness

emphasises bringing about positive and desirable results (Markiewicz and Patrick, 2016 p:99). Importantly additional sub-criteria are suggested by the authors, that help to focus the evaluation of the effectiveness criteria, that are; fidelity, quality and value of project activities.

Fidelity or fidelity of implementation, means assessing and questioning whether the programme was implemented as originally designed as well as assessing the possible reasons for any variations.

Quality relates to the internal merit of a programme, whether it meets a stated or implied need, it can be measured or perceived, as based on experience.

Value relates to the external worth, benefit or usefulness of an initiative, to the programme stakeholders, partners, donors and beneficiaries (Markiewicz and Patrick, 2016 p: 151-152).

1.2.1.4 Impact

Is the “positive and negative changes produced by a development intervention, directly or indirectly, intended or unintended” (OECD, n.d.). The criteria of impact sets out to measure the changes in wellbeing and human development that an initiative brought about, this includes effects on local, social, developmental, gender or environmental indicators. As it is concerned with both intended and unintended results, the impact assessment should include both positive and negative impacts that took place (OECD, n.d.). Measures of impact can assess change in general, whether short, medium or long term, but more specifically it relates to long-term changes (Markiewicz and Patrick, 2016, p. 100). Generating information about the impact of a programme is also very important for future decision-making processes and supports increased levels of accountability.

Ascertaining the level of impact can at times be challenging as it may overlap with the effectiveness criteria (Markiewicz and Patrick, 2016 p:100) and may at times be difficult to confirm whether benefits or lack of benefits can be directly attributed to the programme. However, the UNDP evaluation handbook states that overall impacts can be assessed by whether direct benefits to beneficiaries are discernible and produced positive effects (UNDP, 2009 p:170).

1.2.1.5 Sustainability

“Is concerned with measuring whether the benefits of an activity are likely to continue after donor funding has been withdrawn” (OECD, n.d.). In order to assess the sustainability of programmes both financial and environmental sustainability should be considered (OECD, n.d.). The measure of sustainability is focused on the extent to which the programme continues to benefit participants once the external funding or assistance comes to an end. It takes into consideration the situational characteristics; economic, social, political and institutional that define the capacity of countries or participants to take on, or maintain, manage and ensure positive results going forward. It may assess whether a strategy or plan is in place to develop the capacity of beneficiaries, whether financial and/or technical mechanisms are in place that ensure the continuation of the project and related benefits, policy and framework needs are met, and the associated national infrastructure has been developed in order to meet that need. (UNDP, 2009 p:170).

Authors Markiewicz and Patrick (2016) argue for the broad inclusion of a number of themes within the sustainability domain. For example they argue that when assessing for sustainability, not only should the assessment include the financial or resource sustainability aspects of the programme but the ‘social sustainability’ of the programme in terms of wider processes, structures and relationships that are associated with ongoing and continuous benefits of the programme (Markiewicz and Patrick, 2016 p:101).

Although widely recognised and used, the five DAC criteria of relevance, efficiency, effectiveness, impact and sustainability may not be equally suited to all evaluations and may require some refinement or adjustment depending on the context. However, generally when evaluating development initiatives, using the five criteria, helps to ensure that the most crucial areas of the initiative are evaluated, that the conduct of the evaluation adheres to widely recognised standards and ultimately produces credible and useful results (UNDP, 2009).

The DAC criteria aim to address the practical realities of development programmes and are an essential part of the success of development planning and implementation (Picciotto, 2013). Although a number of criteria have been developed by different organisations over time, Picciotto (2013) argues the five DAC criteria “have stood the test

of time”(p:162) for the reasons that they are specifically adapted and developed to be pragmatic and results oriented, their development can be seen as the result of years of lesson learning and experience in monitoring and evaluating development practice. And finally, they have correctly replaced criteria that “had mistakenly focused on inputs and outputs rather than on outcomes and impact” (Picciotto, 2013 p:162).

1.3 Energy and Development

Globally over 3 billion people rely on traditional fuels to meet their energy needs, and over 21 percent of the global population lacks access to contemporary electricity (Bishoge, Zhang and Mushi, 2018). The World Health Organisation (WHO) estimates that annually around 4 million people die prematurely from illnesses that can be directly attributed to household air pollution due to the use of unsafe cook stoves and burning of traditional fuels (WHO, 2018). Reliance on traditional fuels is highly problematic, along with increased mortality and illnesses, the use of traditional biomass-based energy sources and has serious consequences for climate change. As climate change impacts become more wide reaching and severe, and as energy demand increases, alternative models of energy development and provision are urgently required, particularly in developing contexts, to replace dependency on traditional and fossil fuels (Marquardt, Steinbacher and Schreurs, 2016).

The global primary energy demand rose by 2 percent in 2017 and is expected to rise by 30 percent by 2035 (Bishoge et al., 2018). In order to meet this need, countries are working to expand their energy infrastructure and implement new technologies in order to offer renewable and sustainable forms of energy on a wider scale. Both as a basic development goal to stimulate socio-economic growth, as well as to offset environmental degradation, since a clear link exists between sustainable development, socio-economic activity and energy access (Bello, 2015).

Energy has been brought to the forefront of development planning and programming in recent years through a number of agreements and initiatives. In 2012 the United Nations (UN) launched the Sustainable Energy for All (SEforALL) initiative, and in 2015 energy was included as a specific objective of the sustainable development goals (SDGs). SDG 7 aims “to ensure access for all to affordable, reliable, sustainable and modern energy” by 2030 (UNDP n.d.).

Access to modern energy sources has a considerable effect on human development levels and affects various socio-economic components, from “education, medical care, small and medium scale enterprises, transportation, information and communications to lighting, heating, cooking, preservation, mechanical power for agriculture, grinding and milling” (Bello 2015, p: 35). Promoting energy security and ensuring accessible energy is a prerequisite for socio-economic development for both rural and urban populations. However, for many countries development is being hampered by low rates of access to modern energy source. This is compounded by a lack of infrastructure, lack of policies and frameworks for implementing clean energy sources, inadequate funding and low rates of technological diffusion and knowledge transferal (Mohammed, Mustafa and Bashir, 2013).

However, growth of the renewable energy sector and capacities has been most prominent in non-OECD countries (Marquardt et al., 2016). The sector is expected to increase job opportunities on a global scale, from 10 million employed in 2017, to over 24 million by 2030 (Bishoge et al., 2018. Niyibizi, 2015). Despite the growth and potential of the sector, renewable energy currently represents a relatively low ratio of global energy production, supply, and consumption which is largely dominated by the use of traditional biomass for fuel in low-income countries, currently only seven percent of households, in low income countries have access to modern sources of energy (Ritchie and Roser, n.d.).

The situation is particularly acute in Sub-Saharan Africa, where up to 80 percent of the population still rely on traditional biomass, and only 35 percent of the population have access to electricity (Sweerts, Longa, and Zwaan, 2019). In addition to low electrification rates and inadequate energy supply, poor communities are often left out of energy supply grids altogether (Bishoge et al., 2018). Population growth in Sub Saharan Africa is currently growing faster than rates of electrification, it is estimated that the power sector in Africa must increase tenfold in order to reach the SDG 7 targets by 2030. The demand for energy is projected to increase across the continent, driven by increasing rates of both population and income growth, and become an increasingly larger share of global energy consumption (Sweerts et al., 2019). However, the African continent is rich in renewable sources of energy, indeed “more than half of the world’s renewable energy

potential: hydropower, bio-energy, geothermal, solar, wind and ocean” (Niyibizi, 2015 p: 276), yet only a small fraction is currently being utilized.

Due to a number of recent developments and advancements in the renewable energy sector, such as globally recognized cost reductions for renewable technologies, along with the discovery of many new sources of renewable energy in Africa, many African countries are in a position to expand production of, and use of sustainable resources and replace fossil fuel alternatives altogether (Sweerts et al., 2019). Predictions for energy production in the region are set at several tens of thousands of Mega Watts (MW), and by 2030 production of renewable energy could supersede projected electricity demand (Onyango, and Varet, 2016).

Access to energy is a cross-cutting theme and affects many factors related to a countries ability to achieve their development targets, access to affordable, reliable energy sources can have a major impact on standard of living, levels of poverty and productivity, and “is a prerequisite for economic growth and poverty reduction” (Cecelski and Dutta, 2011 p: 1). Increasing the supply of energy from renewables is not only in the interest of the individual countries involved but pertains to wider global interests, such as the achievement of the 2030 Agenda (Sweerts et al., 2019).

1.4 Energy and Gender

Energy provision is a crucial factor in in the daily lives of women, particularly in developing settings, where women are primarily responsible for collecting and maintaining the household energy supplies. Increasingly there has been a recognition that “energy is gendered” (SEforALL, 2018 p:21), particularly in regard to access to, and levels of energy poverty.

In many developing settings there is still a heavy reliance on traditional biomass-based sources of energy such a firewood, crop waste and cattle dung, and energy sourcing is considered to be ‘women’s work’ (UNDP, 2013). Across a number of developing countries, women and girls are primarily responsible for collecting and sourcing energy for the household. The UNDP (2013) outlines some of the many health and safety risks women and girls face when engaged with energy provision, (UNDP, 2013):

1. Collecting and carrying heavy loads can have detrimental effects on women's and girls' such as increased prenatal mortality and post-delivery complications
2. The heavy workload is often compounded by poor nutrition which increases health risks, including anaemia and perinatal mortality
3. Energy poverty includes the large toll collection and sourcing of energy takes on women's and girls' time, resulting in 'time poverty'
4. Energy poverty also results in lost opportunities, since women spend long hours daily in energy sourcing, they are unable to participate in other activities such as education
5. Women often depend on small-scale agriculture, such as milling grains and producing locally sourced goods, which are biomass dependent to support their livelihoods.

In addition to being the primary household energy managers women and girls are also responsible for food preparation and are therefore disproportionately exposed to indoor air pollution from cooking stoves that burn solid fuels (SEforALL, 2018). The exposure to indoor air pollution takes a heavy toll on women's and young children's health, according to the WHO nearly half of pneumonia caused deaths among children under 5 years of age are caused by inhaling household air pollution (WHO, 2018).

Despite the central position women occupy as household energy providers, they are often overlooked by national energy policies (UNDP, 2013). Additionally, female headed households are less likely than male headed households to have access to energy (SEforALL, 2018). Overall women are less likely than men to have access to land, financing, grid electricity, and energy related technology and services (Cecelski and Dutta, 2011).

The increasing recognition that there exists an unbalanced burden of energy poverty on women (SEforALL, 2018), and that gender equality and energy are intrinsically linked (ESMAP, 2018) has led to increasing incorporation of gender concerns into the production and development of energy, on a sector wide basis. While women have largely been overlooked, viewed as primarily passive energy consumers, or a difficult to reach target

group, there is a new level of awareness of the centrality of women as drivers of the transition to clean energy (SEforALL, 2018).

The implementation of the SDGs was particularly important for the inclusion of gender and energy concerns in development cooperation, specifically, SDG 7 which is to “ensure access to affordable, reliable, sustainable, and modern energy for all” (UNDP, n.d.) and is recognized as central to making progress on SDG 5 which aims to “achieve gender equality and empower all women and girls” (UNDP, n.d.). Access to modern energy services can positively impact women’s lives, as it effects a number of factors such as health, time use, education and productivity (Cecelski and Dutta, 2011). In addition to the direct impacts of clean energy provision, such as improved living standards and reducing women’s drudgery, integrating a gender focus is smart business for the energy development and production companies. (ESMAP 2018, p:3). As primary household energy managers, women are uniquely positioned to lead the energy transition, conditioned on their access to financial support, employment and other opportunities (SEforALL, 2018 p:11). Providing women with clean energy and other energy saving devices could dramatically improve women’s lives and living standards in a number of ways, meaning that gender does matter (Ding et al., 2014) in regard to issues of access, utilization, opportunities, and control over energy choices (Ding et al., 2014).

1.5 Icelandic Development Cooperation

1.5.1 Background

Iceland's history as an aid donor began formally in 1971, under the pertaining law ‘Icelandic Aid to Developing Countries’ (Gunnlaugsson, Sigurðardóttir, Einarsdóttir and Einarsdóttir, 2018). In 2013 Iceland became a member of the DAC, however before joining the DAC Iceland had over three decades of experience as a bilateral donor (Gunnlaugsson et al, 2018). This previous experience, as well as experience drawn from the domestic sphere has greatly influenced its development cooperation strategy and foreign policy (OECD, 2017).

Iceland's international development policy has consistently placed great emphasis on poverty eradication in the worlds least developed countries, and focuses its development cooperation efforts on poverty eradication on some of the world’s poorest countries in order to improve living standards (MFA, n.d.). The basis of this focus is apparent in both

the legislative framework and overall development cooperation strategy, for example in health sector initiatives in bilateral cooperation efforts (Gunnlaugsson and Einarsdóttir, 2018).

1.5.2 Legal Framework

According to Parliamentary law 121/2008, which mandates Icelandic development cooperation, (Alþingi, 2008), the goal is to:

Support the efforts of governments in developing countries to eliminate poverty and hunger and promote sustainable development, including human rights, education, improved health, gender equality, environmental and climate protection and responses to climate change, sustainable use of resources and improved economy.

In addition, it mandates the foreign minister to present a report to parliament every other year regarding the implementation of government policy on international development co-operation, along with a five-year strategy plan, regarding Iceland's goals and emphasis in its development cooperation (Alþingi, 2008).

1.5.3 Organisational Framework

Following the adoption of law 121/2008 Iceland's International Development Cooperation institutional framework was subject to a number of organisational changes. Most prominent of which was the streamlining of bilateral and multilateral development cooperation activities. On January 1, 2016 the department that had previously managed and administered Iceland's bilateral development cooperation, was merged with the Ministry for Foreign Affairs (MFA) (OECD, 2016, Gunnlaugsson et al, 2018).

The reasons for the merger are in part due to the recommendations in the Special Review of Iceland carried out by the DAC in 2013, which recommended that due to the size of Iceland as a donor, it should consider the infrastructural change in order to better model other DAC countries and to 'remain fit for purpose' (OECD, 2016 p:16).

In response the MFA commissioned an evaluation of the entire organisational structure of Iceland's development cooperation, peacebuilding and humanitarian assistance in order to improve both results and effectiveness. The external review recommended the merger of ICEIDA with the MFA, stating that the surest way to maximize both efficiency and success of all parties working under the auspices of

international development cooperation on behalf of the Icelandic state, is to unite the various departments under one management system. According to the DAC peer review of Iceland's development cooperation, the move can be seen as having strengthened the infrastructural, institutional and operational capacity for development co-operation, whereas previously, coordination and flexibility were largely limited (OECD, 2017 p: 9).

1.5.4 Bilateral Cooperation

Iceland's partner country cooperation and programming is built on extensive cooperation with national and local governments (OECD, 2016). It is on this basis that country strategy papers (CSPs) are deployed and make up the framework for bilateral development cooperation, the CSPs emphasise collaboration, alignment with national strategies and outline the responsibilities of all partners involved (MFA, 2018). Iceland currently has two priority bilateral partner countries, Malawi and Uganda down from six which included Mozambique, Sri Lanka, Nicaragua and Namibia. Both of Iceland's priority countries are defined as fragile states and least developed countries by the OECD. In addition, Iceland also focuses its efforts on Afghanistan and Palestine where much of the support is channelled through multilateral channels, Non-Governmental Organisations (NGOs) and Civil Society Organisations (CSOs) (MFA, 2017).

Iceland's bilateral development cooperation is aligned with the Busan Principles¹, which build on and extend development commitments laid out in the Paris Declaration on aid Effectiveness (2005) (OECD, 2012). According to the Busan principles, "emphasis is placed on supporting the strategies of recipient countries, putting forward clear and simple requirements, and letting results and pro-poor management guide contributions to development" (OECD, 2016 Annex 7, p:7). According to the DAC peer review, Iceland takes its commitment to the Busan principles 'very seriously' and its commitment is reflected in its approach to bilateral cooperation (OECD, 2017). At the country level the emphasis of development cooperation is placed on district level capacity building, which is characterised by close cooperation with stakeholders and high levels of local ownership (Gunnlaugsson and Einarsdóttir, 2018).

¹ Busan Partnership Agreement, 2011.

The district level programmes are aimed at providing a number of basic services relating to health, sanitation, education and water (Gunnlaugsson et al, 2018; Gunnlaugsson and Einarsdóttir, 2018). In line with the overarching goal of Iceland's development strategy all of Iceland's district level programmes and activities are aligned with the partner countries national development strategies and policies. As a bilateral donor, Iceland channels its funding directly through district level governments, therefore making extensive use of the respective countries financial systems for reporting, financial management and procurement, contributing to local capacity and skill building (OECD, 2016).

1.5.5 Multilateral Cooperation

Iceland's multilateral official development aid (ODA) is focused on four priority multilateral organisations, they are, the World Bank (WB), four United Nations Universities (UNU), United Nations Entity for Gender Equality and the Empowerment of Women (UN Women), and the United Nations Children's Emergency Fund (UNICEF).

1.5.5.1 United Nations Universities

There are currently four UNUs in Iceland, the programmes “are a top priority for Iceland's multilateral assistance, making up more than a quarter of Iceland's multilateral funding envelope” (OECD, 2017 p:16). Since the opening of the first UNU in 1979, the universities have been key factor in Iceland's international development co-operation, as they represent the medium through which specialised technical knowledge that exists in Iceland is communicated and shared with developing countries (Alþingi, 2018).

Over a 1,000 professionals from developing countries have attended the UNU training programmes Iceland, funded mostly through scholarships provided by Icelandic ODA (OECD, 2017). The four UNU are; the Geothermal Training Programme (GTP) launched in 1979, followed by the Fisheries Training Programme (FTP) eighteen years later in 1998, the Land Restoration Training Programme (LRT) which was established in 2007, and the most recent, The Gender Equality Studies and Training Programme (GEST) became a UNU in 2013 (MFA, n.d.). The four programmes capitalise and are designed to draw on Iceland's built up expertise within the four sectors, with the goal of transferring and sharing its knowledge in order to build capacity in developing countries, this is mostly

delivered through five to six-month training programmes in Iceland and shorter courses offered in partner countries (Ljungman, Carneiro, Engstrand, and Newson, 2017).

The MFA has identified the UNU as an important implementing partner in its development cooperation agenda, for knowledge transmission and capacity building, particularly in the sectors of natural resources and energy management, including geothermal energy and fisheries, and in the cross-cutting themes of gender equality and environmental protection (UNU, n.d.).

1.5.5.2 The World Bank

When the World Bank was established in 1944, it was initially conceived as a mechanism for rebuilding Europe post World War II. Since then it has become one of the largest sources of funding for developing countries, with its primary role being the promotion of socio-economic development through the provision of investments, grants and loans to developing countries (World Bank, n.d.).

The largest share of Iceland's contributions to the World Bank go to the International Development Association (IDA), which provides grants and loans on favourable terms, advisory services to the poorest countries in the world, as well as debt relief. Iceland has been a member of the IDA from the outset and its contributions make up 0.03% of the institutions capital. Additionally, Iceland has contributed 112 million ISK to the Equality Fund of the bank, the Umbrella Facility for Gender Equality (UFGE) (MFA, 2018).

1.5.5.3 UNICEF

Iceland's financial support to the UNICEF in 2017, was targeted at, health services in Palestine, water and sanitation projects in Mozambique and towards programme implementation in 17 African countries with the goal of eradicating female genital mutilation. In 2016 Iceland donated 216 million ISK to UNICEF and the previous year, Iceland had been the fourth largest donor to UNICEF (Alþingi, 2018).

1.5.5.4 UN Women

Iceland has been a donor to UN Women since the agency's inception in 2011 (Alþingi, 2018). In recent years, Iceland has emphasized increasing the weight of core contributions in alignment with the agency's request that donors reduce the earmarking

of contributions, allowing the agency to respond more quickly to changing circumstances and prioritize its projects better.

On that basis, Iceland's contributions to UN Women in Afghanistan and Palestine are directed towards the general implementation projects (Alþingi, 2018). In addition, donations were made to the Agency's missions in the Zaatari refugee camp in Jordan, where women refugees from Syria receive job opportunities, education and day care for their children. Additionally, Iceland contributed to the UN Women led implementation of United Nations Security Council Resolution no. 1325 in Mozambique, which seeks to ensure that equality and empowerment of women and girls are addressed, and that programmes implemented promote peace, security and restoration. In 2016, Iceland was the largest per capita donor to UN Women (Alþingi, 2018).

1.5.5.5 Humanitarian Aid

Icelandic support for humanitarian programmes in its focus countries, Afghanistan and Palestine, is provided through its multilateral partners (OECD, 2017). Iceland generally relies on its partners to inform its humanitarian aid funding policies particularly by responding to international appeals by United Nations (UN) and other agencies (OECD, 2017). Its humanitarian aid contributions also tend to be targeted at a small number of crises, for example in 2014, 12 out of 19 projects supported two humanitarian crises in the Middle East (OECD, 2017).

Crisis management is one of the key motivations for Iceland's development co-operation strategy, with implementation efforts focused on Afghanistan, the Middle East, and Ukraine. In line with its overarching development strategy, Iceland engages in crisis management or post-conflict contexts in two ways, by supporting multilateral partners or by deploying technical experts to international missions (OECD, 2017 p: 43).

1.5.6 Development Strategy

The national strategy for Iceland's development cooperation (2013-2016) "identifies international development cooperation as one of the key pillars of Iceland's foreign policy" (MFA, n.d.) and was developed in order to contribute towards the objective of meeting the MDGs (OECD, 2016).

The strategy defines the three priority areas for Iceland's official development aid as; “social infrastructure (education and health), natural resources (fisheries and renewable energy), and peacebuilding (good governance and reconstruction)” (MFA, n.d.). Within the broad themed priority areas special attention is also placed on gender and environmental considerations which are upheld as cross-cutting issues (MFA, n.d.).

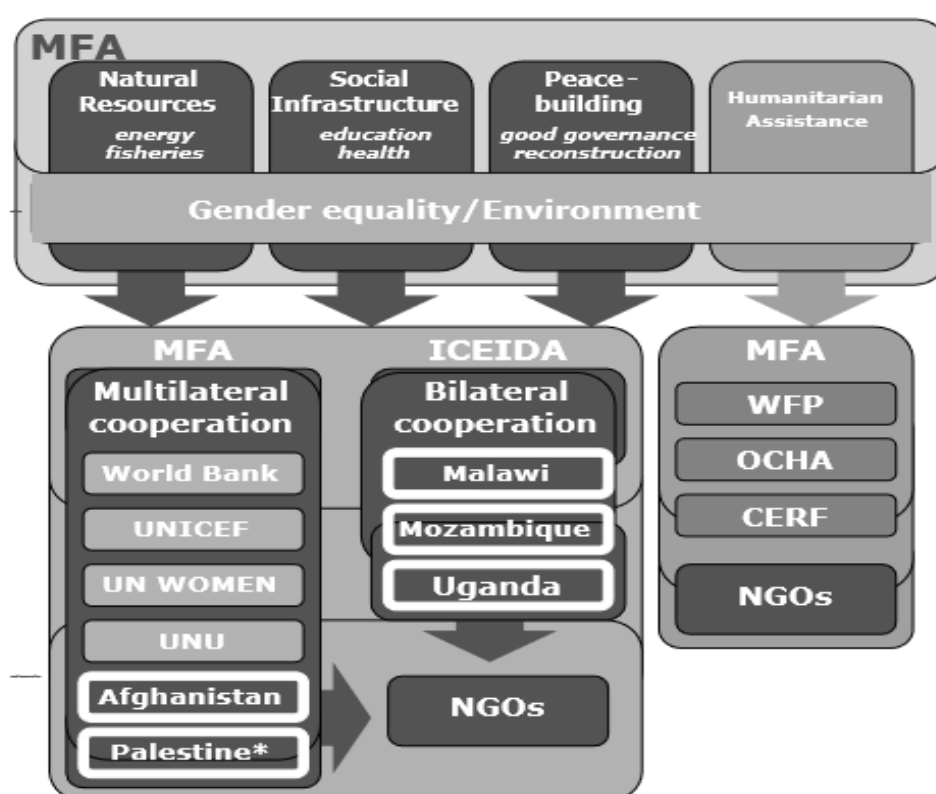


Figure 3 – Structure and priorities of Icelandic development cooperation strategy (MFA, n.d. p:2).

According to the strategy for development cooperation, depicted in figure 3, gender equality and environmental considerations are to be incorporated into all development projects and programme cycles as cross-cutting issues. As gender equality and environmental considerations are integral to development progress, mainstreaming the issues throughout the project means striving for positive outcomes in these two areas. Mainstreaming an issue throughout the duration of a programme involves making it “an integral dimension of the organisation’s design, implementation, monitoring and evaluation of development policies and programmes” (OECD, 2014 p:7).

1.5.7 Geothermal Energy Development

Natural resources (renewable energy and fisheries) are defined as one of the priority areas for ODA allocation in the national strategy for development cooperation (See figure 3). In order to ensure that environmental concerns related to developmental projects are in harmony with the MDG objectives the 'Guiding Principles for Addressing Environmental Issues' was issued by ICEIDA in 2012. The guidelines aimed to ensure that all project implementation carried out by the agency upholds environmental considerations and furthermore that all efforts and initiatives, in no way "compromise opportunities and quality of the environment for future generations" (ICEIDA, 2012 p:7).

Over time Iceland has collaborated with a number of partners and organisations that highlight the importance of geothermal energy production as a means of offsetting climate change, stimulating economic growth and reducing poverty in developing countries (OECD, 2017 p: 41). Since 2006, Iceland has partnered with the Energy Sector Management Assistance Program (ESMAP) of the World Bank, to explore and assist in the development of geothermal energy sources in various developing countries. Iceland's contribution to the project consists of sponsoring experts as well as direct financial contributions (Alpingi, 2018 p:98). From 2013 till 2016 Iceland's contributions to the World Bank energy sector totaled nearly 220 million Icelandic Krona (ISK), and in 2016, Iceland renewed its agreement with ESMAP for an additional four years. The partnership aims to assist developing countries in energy policy formulation, technical advice and implementing investments (MFA, 2018 p:23).

In 2015 an important international resolution was reached at the UN Climate Change Conference in Paris, France. It was agreed that a number of international efforts, collaborations and activities would be undertaken in order to limit the increase in global temperatures to 2 degrees celcius (MFA, 2018 p:11). To that end on December 7, 2015 Iceland, Kenya and the UN International Renewable Energy Agency (IRENA) set up the global geothermal alliance (GGA). The initiative included 51 states and international organisations, and aimed to create a platform for cooperation for potential stakeholders looking to increase the role of geothermal energy production as a proportion of global energy production and reduce the effects of greenhouse gasses. Additionally, the platform was to be an important factor in facilitating transnational funding for

geothermal projects and offsetting risks associated with geothermal development (Alþingi, 2016 p:6).

1.5.8 Gender Equality Policy

Iceland's Gender Equality Policy for the period 2013-2016, was launched by the MFA and ICEIDA jointly in 2013, the policy acts as guide to mainstreaming gender throughout the agencies efforts (OECD, 2017 p:17). The policy was designed to meet the MDG goals, specifically the two goals directed at gender equality and women's empowerment. MDG 3 aimed to promote gender equality and empower women, and MDG 5 aimed to improve maternal health. Additionally, the policy was aligned with MDG 1, which seeks to eradicate extreme poverty and hunger by placing an emphasis on gender equality. The policy states "in general, gender equality and women's empowerment are regarded as a premise for attaining the Millennium development Goals" (MFA, 2013 p:4).

The policy focuses development cooperation efforts on four key areas; health, education, natural resources and environment, and finally, women peace and security (MFA, 2013). In line with the gender focus on energy and natural resources in the policy, it states that by assisting developing countries to utilize their geothermal energy resources, living conditions can be improved, through increased access to energy and a reduction in pollution. In turn energy access can provide greater opportunities for girls and women for work and education along with increased security (MFA, 2013 p: 7) As set out in the policy, climate change consequences are different for men and women. Women often bear the heavier burden of dealing with the consequences of climate change impacts, despite having a smaller ecological footprint (MFA, 2013 p: 8).

Bearing these inequalities in mind the policy states that the aim of Icelandic development cooperation is to promote opportunities for women, empower them in decision and policy making in the areas of climate change, resources and environmental related issues. The overarching goal set out in the policy is "that gender equality and women's empowerment is integrated into all aspects of development programmes" (MFA, 2013 p:8).

1.6 Evaluation of the Geothermal Exploration Project

In 2011, Iceland collaborated with the World Bank on a bilateral basis to assist a number of East African countries develop their geothermal resources. Its partnership with the World Bank led to the development of the Geothermal Compact for East Africa, and one of the sub-projects undertaken by the compact was the Geothermal Exploration Project (GEP) in The East African Rift Valley (2012-2018).

Development cooperation on the GEP is based on the premise that geothermal energy has an important role to play in increasing the global share of clean and reliable energy, and thereby reduce greenhouse gas emissions and contribute to the battle against climate change. Additionally, the development of clean energy is considered to hold the potential for improving living standards and increasing economic growth (OECD, 2016).

When undertaken the geothermal exploration project represented an important contribution to Iceland's international development cooperation effort, as it drew on Iceland's main areas of expertise: geothermal energy development and gender equality. Therefore, conducting an evaluation of the project can contribute to understanding and developing a clearer picture of whether Iceland was able to deliver its technical and specialized knowledge in the above fields, and therefore increase the capacity and ability of participants to move forward with, and achieve their own development targets.

As a contribution to efforts to improve future planning and policy implementation this evaluation asks a number of questions related to the design, implementation, and results of the project, and seeks to analyse the role that the GEP played in improving the wellbeing, livelihoods and skills of the various participants involved.

The main aim of this evaluation is to promote and contribute to the field of gender-responsive evaluations in development contexts, by analysing the way in which gender concerns were accounted for during project implementation, the differential effects of the project on men and women and to provide an assessment of what the project was able to achieve in terms of increasing levels of gender equality.

The secondary aim of this evaluation is to assess the broader aspects of the GEP in the context of a development project, this includes alignment of the project with the national development strategy, relevance of and fulfilment of objectives, and to

determine how the project measures against the DAC criteria of appropriateness, effectiveness, efficiency, impact and sustainability.

2 Methodology

2.1 Summative Evaluation

A summative evaluation is often conducted once a programme or initiative is completed, it 'looks-back' on, or assesses retrospectively how a programme was implemented, and what it was able to achieve. A summative evaluation can be seen as an important exercise in accountability and is often conducted by those not associated with the implementation of the initiative (DFID, 2003 p:12.4).

An evaluation conducted at the summative stage of a programme aims to determine whether the programme was of quality and value in the broadest sense of the terms (Markiewicz and Patrick, 2016 p:154). As a summative evaluation, this report will attempt to examine the implementation of a completed set of activities or interventions, the impact and changes it brought about and draw important lessons in order to inform future programming.

2.2 Desk Review

This evaluation will be conducted using the desk review or desk analysis method. All the research is conducted by gathering the data from existing sources, which will inform the data upon which this report is built. Using the desk research method has proven to be a cost effective and time saving method of gathering relevant information as compared to field research (Management Study Guide, n.d.).

2.3 Secondary Research

This evaluation is completely reliant on secondary data, data produced by others for various purposes, in order to draw the evaluation conclusions and recommendations. There are a number of advantages of using secondary data, firstly the information is for the most part easily accessible and available online which is a relatively low cost and time efficient method of gathering the necessary information. Johnston states that "in a time where vast amounts of data are being collected and archived by researchers all over the world, the practicality of utilizing existing data for research is becoming more prevalent" (Johnston, 2014 p:619).

Primary data that was initially gathered and produced by someone for a specific purpose, informs the basis of secondary research, it is an important option for

researchers with limited time and resources, and presents a convenient research method (Johnston, 2014). In some cases, primary data may be the only available source of specific pieces of information such as government collected data, often this documentary evidence is very useful when there is a significant lack of data such as baselines, indicators and targets which are important for understanding levels of change and measuring differences in inputs and outcomes. The UNDP handbook states that although secondary data research is not the preferred method, it is useful and at times essential in recreating baseline data and determining targets. (UNDP, 2009 p:173).

If conducted with the same rigour and thorough application of the same principles as primary data collection, secondary research can present an important opportunity to take advantage of existing data and contribute to scientific knowledge (Johnston, 2014).

2.4 Methodological Limitations

Primary data is data that was collected, compiled and published by someone else for a specific purpose, therefore the use of that same data for secondary purposes can present some challenges. (UNDP, 2009 p:173). Firstly, it is very important that the researcher understands and specifies how that data will inform their research. Large data sets are often collected by governing or other organisational bodies and provide crucial information, yet when used for secondary research purposes the data must be re-analysed, re-interpreted and reviewed in order to address the research question in an ideal way (Do, n.d.). Additionally, the quality of the data set may not be completely reliable or valid, often this is problem where infrastructural or knowledge capacity is lacking, particularly in developing contexts, furthermore the necessary data may at times not be available or even exist (Adou, 2017 p: 35).

Since the researcher conducting the secondary analysis did not take part in the data collection process of the primary research, a clear picture of how the research was conducted may be lacking. The researcher will also lack important information regarding the response rate, or misunderstandings regarding the survey or interview questions (Johnston, 2014). Taken together these factors can present some drawbacks to reliance on secondary data alone. The UNDP handbook recommends that secondary data act as a complement or supplement to data that is collected by primary methods, rather than a replacement to primary data. (UNDP, 2009 p:173).

Since secondary data was collected in order to answer a different research question it may be limited in its application of the new research purpose, therefore “successful secondary analysis of data requires a systematic process that acknowledges challenges of utilizing existing data and addresses the distinct characteristics of secondary analysis” (Johnston, 2014 p: 626).

This evaluation faces some of the various limitations outlined above, particularly relevant is the lack of data regarding the GEP. The lack of available data has constrained the findings considerably, and the author has had to rely on the findings of the midterm review of the GEP as well as the more general findings of the DAC peer review of Iceland’s development cooperation (2017), in order to evaluate the outcomes of the GEP. The data limitations present a challenge and limit the findings to more general themes.

2.5 Code of Conduct

In a field such as evaluation, where the context varies and there exist a multitude of approaches to evaluation practice, a number of efforts have been undertaken to develop overarching guidelines in order to “promote common high standards of professional practice” (Markiewicz and Patrick, 2016 p: 167).

Some important terms have been emphasised that aim to capture the principles upon which reliable research can be conducted and credible information produced. According to Markiewicz and Patrick (p:169) *independence* and *objectivity* are held up and emphasised as important guidelines for evaluation conduct. Since evaluation conclusions and recommendations are often highly politicized and researchers often conduct their studies in politicized environments these concerns become even more amplified. They argue that often the above terms are used interchangeably to portray undertaking an autonomous or impartial position when conducting an evaluation. The ability to conduct an unhindered or completely objective evaluation may be at times impeded by various factors in the context or environment, therefore it is important that evaluators are able to undertake an unbiased and objective assessment of the programme, without external pressures to produce particular outcomes and allow for unbiased evaluation conclusions (Markiewicz and Patrick, 2016 p: 169).

The DAC sets out *impartiality* and *independence* as key factors in determining whether the evaluation is credible, and sets as a requirement that the two factors are

taken into consideration at all stages of an evaluation. At all costs the evaluators should avoid bias in their analysis, findings and conclusions and should seek to legitimise their work through employing external evaluators, declaring and/or avoiding any conflict of interest, and producing reports under authors names (OECD, 1991 p:6). Based on the norms for evaluation as laid out by the United Nations Evaluation Group (UNEG) “an evaluation should provide evidence-based information that is credible, reliable and useful, enabling the timely incorporation of findings, recommendations and lessons into the decision-making processes of the organization” (UNEG, 2016 p:10).

In line with the above principles and standards this evaluation will attempt to implement an objective and impartial assessment that can provide credible and reliable evidence-based information regarding the extent to which the GEP and related activities have resulted in progress (or the lack thereof), intended and/or unintended results regarding gender equality and the empowerment of women, and a clearer understanding of the way in which the initiative measures against the DAC criteria of appropriateness, effectiveness, efficiency, impact and sustainability. Additionally, the author declares no conflict of interest financial or otherwise.

3 Scope of the GEP Evaluation

In 2011, Iceland collaborated with the World Bank on a bilateral basis to assist a number of East African countries develop their geothermal resources. Its partnership with the World Bank led to the development of the Geothermal Compact for East Africa, and one of the sub-projects undertaken by the compact was the Geothermal Exploration Project (GEP) in The East African Rift Valley (2012-2018). The partnership aimed to align Iceland's expertise with the financial resources of the World Bank and various other donors, in order to develop potential geothermal resources of the East African Rift States (EARS). The main objective of the project was to add substantially to the contribution of geothermal energy in the region and offset the initial high start-up costs of geothermal energy ventures (OECD, 2017).

3.1 Evaluation Purpose

When undertaken the geothermal exploration project represented an important contribution to Iceland's international development cooperation effort, as it drew on Iceland's main areas of expertise: geothermal energy development and gender equality. Therefore, conducting an evaluation of the project can contribute to understanding and developing a clearer picture of whether Iceland was able to deliver its technical and specialized knowledge in the above fields, and therefore increase the capacity and ability of participants to move forward with, and achieve their own development targets.

As a contribution to efforts to improve future planning and policy implementation this evaluation asks a number of questions related to the design, implementation, and results of the project, and seeks to analyse the role that the GEP played in improving the wellbeing, livelihoods and skills of the various participants involved.

Since the project has officially reached completion it is important to 'look back' on what was accomplished and analyse what the project entailed, how it was implemented and most importantly what it was able to achieve. By evaluating the project at the end of its life span, the aim is to, provide a clear understanding of what the project set out to achieve, and the results of those efforts.

As a summative evaluation, the author hopes that the lessons drawn and conclusions reached will add to the efforts to better align policy and programmes with national

development strategy, uphold gender equality concerns and provide credible and useful information upon which future projects can build.

Additionally, this report aims to advance a gender analysis of the GEP by undertaking a gender-responsive evaluation. Gender responsive evaluations are important for three main reasons: (Adapted from UN Women Evaluation Handbook, 2015 p: 5).

1. It provides information regarding programme process, intended and unintended effects of a programme on women's empowerment and gender equality
2. On the basis of the information provided in the evaluation about the various components of the programme, decision making processes can be improved
3. It provides a more thorough picture of what is or is not working and contributes valuable lessons on the normative and operational context, in the areas of women's empowerment and gender equality, and can provide a better understanding of what factors and/or modalities can help or hinder goal achievement

Gender responsive evaluations are aimed at assessing and analysing the way in which development initiatives may affect women and men differently and are better able to contribute towards achieving commitments to uphold gender concerns throughout the process of project planning and delivery (UN Women, 2015 p: 4).

3.2 Objectives of the Evaluation

The main aim of this evaluation is to promote and contribute to the field of gender-responsive evaluations in development contexts, by analysing the way in which gender concerns were accounted for during project implementation, the differential effects of the project on men and women and to provide an assessment of what the project was able to achieve in terms of increasing levels of gender equality.

The secondary aim of this evaluation is to assess the broader aspects of the GEP in the context of a development project, this includes alignment of the project with the national development strategy, relevance of and fulfilment of objectives, and to determine how the project measures against the DAC criteria of appropriateness, effectiveness, efficiency, impact and sustainability.

The objectives of this evaluation can be summarised as to:

- Describe and outline the various components of the GEP logic and theory, that include: inputs, activities, outputs, outcomes, assumptions and external factors.
- Analyse and evaluate the GEP against the criteria of; appropriateness, effectiveness, efficiency, impact, sustainability and gender equality.
- Identify the positive impacts and benefits of the GEP, as well possible strategies for improvement.

3.3 Evaluation Approach

An evaluation can be essentially understood as the generation of objective evidence upon which informed decisions and strategic planning can be based. (UNDP, 2009 p:127). To this end a number of evaluation approaches have been developed, each approach reflects a different worldview, methodology, set of values, or orientation to evaluating the social world. Whether or not the approach is set out and defined at the outset of the evaluation, the choices made that inform the monitoring and evaluation framework reflect underlying commitments to either a certain approach or a number of approaches (Markiewicz and Patrick, 2016 p:161). However, as Markiewicz and Patrick point out, efforts to define and delineate evaluation approaches is a 'contested area with a history of significant debate' (p:162). Although the authors outline eight broad headings of evaluation approaches, they also argue that the various approaches also have considerable overlap and are 'intermingling' rather than mutually exclusive or discrete (Markiewicz and Patrick, 2016).

This evaluation will combine two general approaches; a learning approach (Markiewicz and Patrick, 2016 p: 62) and an outcome approach (UNDP, 2009 p:133).

A learning approach adopts an 'explicit learning focus' (Markiewicz and Patrick, 2016 p: 62). The aim is to support a general reflective process, it tends to emphasise the positive features of the programme and supports learning as the basis for further programme development. The approach can be defined as a 'strengths based' rather than a 'deficits based' approach, meaning the focus is on the positive features of the

programme rather than problems that need resolving. Additionally, a learning approach may be applied at various levels; within the programme, within the wider organisation undertaking the programme and with stakeholder or beneficiaries involved in the programme (Markiewicz and Patrick, 2016).

Evaluations undertaken using an outcome approach focus on the progress made in achieving planned or anticipated outcomes and take into consideration the various factors that contributed to the programmes outcomes, both the intended and unintended outcomes or effects of the initiative (UNDP, 2009 p: 133). Additionally, an outcome approach will seek to understand the wider effects of the changes that have taken place, either regional national or global, as “outcomes provide a clear vision of what has changed or will change globally or in a particular region, country or community within a period of time” (UNDP, 2011 p: 3). An outcomes focused evaluation is therefore primarily concerned with the wider changes that take place due to the implementation of initiatives, whether in the short, medium or long term.

Outcomes can be seen as overall results and may pertain to institutional changes, or to behavioural changes in the wider population, and tend to reflect the cooperation of developmental partners, and the momentum that is built through the initiative (UNDP, 2011 p: 3). Outcomes are not to be confused with outputs, they are substantially different in that they are often the product of all the inputs i.e. services and products delivered by the programme. Outcomes “occur when outputs are used by primary stakeholders to bring about change” (UNDP, 2011 p:3). When knowledge or services provided by the programme are taken up and used by beneficiaries in their everyday lives, the positive changes that result are the outcomes of the initiative. This does not mean that the other measures and criteria are given less priority in the evaluation, instead the evaluation seeks to assess the way in which the programme brought about positive changes (UNDP, 2011 p:4).

3.4 Evaluation Questions

Evaluation questions serve the purpose of identifying what needs to be known and provide the overall focus and direction for the evaluation framework. As such it is important that evaluation questions are developed in the early stages of the evaluation, and fulfil the criteria of being “agreed on, practical and useful” (Markiewicz and Patrick,

2016 p: 96). When drawing up the evaluation questions it is essential that they analyse not just what has been achieved, but also ask about the successes, failures and lessons that can be learned. Well-developed evaluation questions make clear the underlying 'chain of assumptions' in the programmes logical framework about how it expects to pursue outputs and outcomes.

The chosen questions must therefore reflect the evaluators understanding of the context, the initiatives operations and objectives and must meet the evaluations criteria and purpose (UNDP, 2009 p:171). Stakeholder consultation in the formulation of evaluation questions helps to ensure that the evaluation questions selected are meaningful and most likely to yield relevant information (UNDP, 2009 p:171). Soliciting feedback and input from stakeholders in order to inform and design the questions asked is an important element in ensuring that "the questions that, when answered, will give intended users of the evaluation the information they seek in order to make decisions, take action or add to knowledge" (UNDP, 2009 p:196).

Table 1 - Relationship between the five domains and programme stages (Markiewicz and Patrick, 2016 p:102)

Domain	Stage of Programme
Appropriateness (Relevance)	Programme Planning and Design
Efficiency	Programme Implementation
Effectiveness	Programme Objectives
Impact	Programme Results
Sustainability	Sustainability of Results

When drafting the evaluation questions, it is essential that the evaluation approach and evaluation domains act as guide in determining the questions. The domains of appropriateness, efficiency, effectiveness, impact and sustainability each relate to a

specific phase of an initiatives implementation (See Table 1) and questions should aim to address the criteria (UNDP, 2011 p:17).

The evaluations questions relevant to this evaluation can be found below in Annex 6.

3.5 Programme Theory

Outlining the programme theory makes explicit the casual relationships between what the project did and the results it hoped to achieve. Making explicit the programme theory is a key component of a results-based management approach and represents a “core understanding of the programmes intent and mode of operation” (Markiewicz and Patrick, 206 p:71). It is essential that the programme theory is in place before monitoring and evaluation commences as it helps to form hypotheses corresponding to cause and effect, as well as identify key variables (Markiewicz and Patrick, 2016). A programme theory may be represented in a narrative or diagrammatic form, however the aim is to make explicit the links between the programmes efforts and intended results, as well as identify the how and why of expected changes (Markiewicz and Patrick, 2016 p: 72). The evaluation will attempt to test the theory, once outlined, in order to assess the changes that were hoped for or expected, the mechanisms driving that change, as well as the actual change that took place (Markiewicz and Patrick, 2016 p: 73). The programme theory for the GEP is included below in Annex 1.

3.6 Programme Logic

The programme logic helps to outline and clarify the pathways in a programme from action to results (Markiewicz and Patrick, 2016 p:74). The programme logic includes and often presents diagrammatically certain key features of the programme, which are: inputs, activities, outputs, outcomes, assumptions and external factors. In order to be effective, the logic model must clearly depict coherent casual relationships, and must be based on correct and valid reasoning in order to communicate meaning clearly (Markiewicz and Patrick, 2016 p:76). This section will outline the various components of the GEP programme logic (See Annex 2) which include certain key features of the programme, such as programme stakeholders, inputs, activities, outputs, outcomes, assumptions and external factors, in order to clarify the various components of the project.

4 Scope of the GEP

Cooperation on the geothermal exploration project is based on the premise that geothermal energy has an important role to play in increasing the global share of clean and reliable energy, and thereby reduce greenhouse gas emissions and contribute to the battle against climate change. Additionally, the development of clean energy is considered to hold the potential for improving living standards and increasing economic growth (OECD, 2016).

The GEP was implemented in collaboration with ICEIDA, the MFA and in partnership with the Nordic Development Fund (NDF). The project initially included 13 Sub-Saharan African countries with potential for developing geothermal energy due to their geographical location along the East African Rift Valley (EARV) (OECD, 2016).

At the project's inception in 2013, the thirteen Sub-Saharan African countries participating in the GEP had a total population of 340 million, and total electricity consumption levels at 6.600 megawatts (MW), of which only 216 MW was met by geothermal energy (ICEIDA, n.d. p:8). However due to population growth and increased development, the regional demand for electricity was expected to reach 340.000 MW in the following years (ICEIDA, n.d. p: 8). According to the GEP project outline, each one of the EARS can be characterized as having low levels of access to electricity and require significant support in order to produce more electricity at both the national level, as well as to address rural areas energy needs (ICEIDA, n.d. p:8).

4.1 Stakeholders

4.1.1 Donors

Under the partnership agreement for the exploration project, ICEIDA takes on the role of lead agency, while the NDF is primarily a co-financer. Accordingly, as the lead agency, ICEIDA “provides administrative and technical oversight and management” (ICEIDA, n.d. p:13). According to the project document the main role of the MFA is to act as funding and facilitating agent from stages one to four, ICEIDA has the role of the lead agency and is involved in stages one, two and four. The NDF provides funding through stages one to four, while the UNU-GTP is involved in capacity building from stages one through nine. Other notable stakeholders involved in the GEP are the United Nations Environmental Programme (UNEP), The African Rift Geothermal Development Facility (ARGeo) and the

African Union (AU). The inclusion and co-ordination the above actors is to “ensure alignment with regional objectives and enhance ownership” (OECD, 2017 p: 41). Figure 4 outlines the participating agencies and partners, as well as their various roles at different stages of the project.

Agents	Roles	Stages		1	2	3	4	5	6	7	8	9
		Recon.	Exploration	Exploration drilling	Pre-feasibility	Drilling	Feasibility	Design	Constr.	Operations		
African Union	Political Guidance	X	X	X	X	X	X	X	X	X	X	X
ARGE	Facilitator and coordin.	X	X	X	X	X	X	X	X	X	X	X
World Bank	Funding			X	X	X	X	X	X	X	X	X
MFA Iceland	Facilitator and funding	X	X	X	X							
ICEIDA	Lead agency Exploration	X	X		X							
NDF	Funding	X	X	X	X							
UNEP	Technical Assistance					X	X	X	X	X	X	X
OFID	Funding					X	X	X	X	X	X	X
BADEA	Funding					X	X	X	X	X	X	X
KfW	Funding					X	X	X	X	X	X	X
Other funds	Funding					X	X	X	X	X	X	X
BGD	Geological research	X	X	X	X							
IEA Iceland	Framework and capacity	X	X	X	X	X	X	X	X	X	X	X
UNU-GTP	Capacity building	X	X	X	X	X	X	X	X	X	X	X

Figure 4 - Main agents in the East Africa Rift Valley geothermal development (ICEIDA n.d. p:13).

4.1.2 Participant Countries

The East African Rift Valley covers thirteen countries in East Africa, beginning in Eritrea in the North and ending in Mozambique in the South. The estimated total geothermal potential of these states is as high as 14.000 MW (ICEIDA, n.d. p: 8). The countries that opted into the project were at different stages of geothermal development at the start of the project. For example, Kenya and Ethiopia already had operational geothermal plants, while Rwanda and Djibouti were prepared to commence drilling at a number of sites. However, most of the participant countries lacked a thorough overview of their resources (ICEIDA, 2017 p:8). Of the thirteen participating countries, three were Iceland's bilateral partner countries at the time, Uganda, Mozambique and Malawi.

4.2 Funding

ICEIDA and NDF each contributed USD 6.5 million (EUR 5 million), for a total budget of USD 13 million (ICEIDA, n.d. p:17). In line with its agreement with the NDF, ICEIDA's main financial responsibility is for stage 1, reconnaissance activities, and stage 2 exploration

activities (which are to be jointly funded with the NDF) with a possibility of funding stage 4, prefeasibility reports. Additionally, it was agreed that parallel activities would be funded by both partners (ICEIDA n.d. p:14). Due to the project being 'demand-driven' (activities commencing upon formal requests) total project costs are difficult to estimate, however a figure of USD 13 million is set as the closest total cost estimate for the entire project. Each participant country is budgeted USD 1 million, and additional activities are estimated at USD 2 million, with other administration costs set at USD 1 million (ICEIDA, n.d. p:16-17).

4.3 Activities

The GEP is made up of 20 different sub-projects in thirteen countries of which 6 projects are regional. The project is broken down into nine different stages, they are;

- Reconnaissance
- Exploration
- Exploration drilling
- Prefeasibility report
- Further drilling of wells
- Feasibility report
- Concept design and tender documents
- Detailed design and construction
- Testing, training and operations start-up (ICEIDA, n.d. p:10).

The logical framework for the project specifies the various activities that will take place at each stage (ICEIDA, n.d. Annex 3 p:23). A full description of activities can be found in Annex 3.

4.4 Parallel Activities

The project document sets out three main activities that will be conducted parallel to the nine stages of the project; they are institutional strengthening, capacity building and establishing a community of practice, these parallel activities are to be carried out over the entire lifespan of the project (see figure 5), and are expected to begin once reconnaissance has taken place in each country (ICEIDA, n.d. p:16).

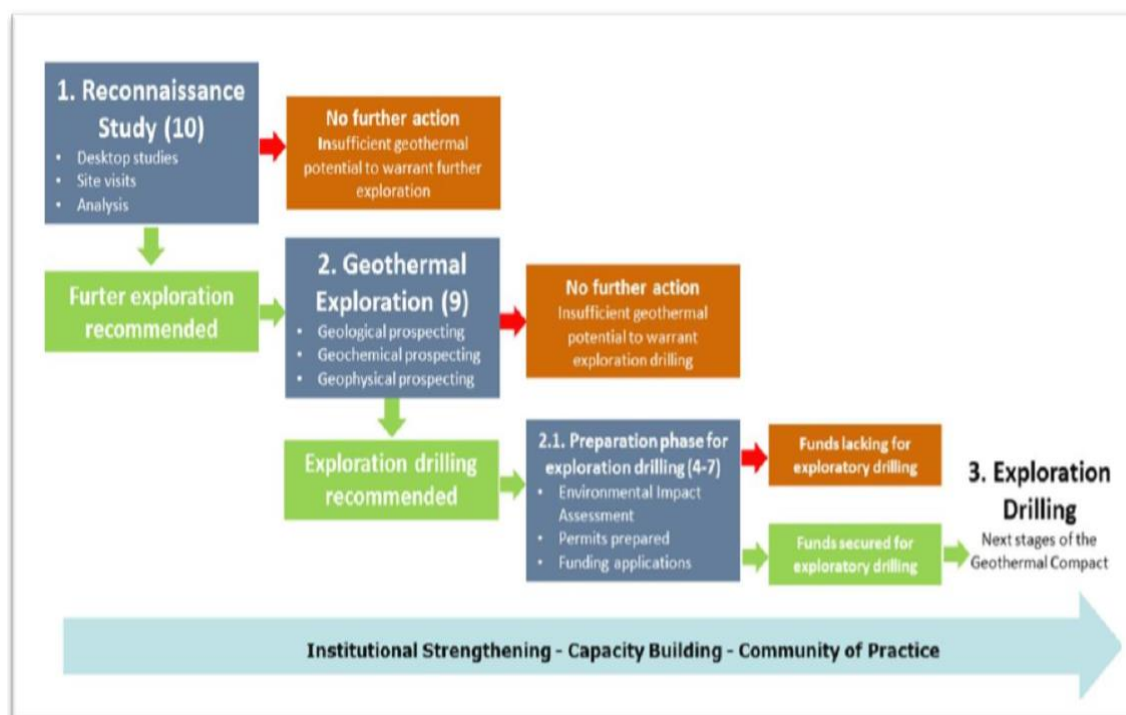


Figure 5 - Potential workflow of activities in the Geothermal Exploration Project (ICEIDA, n.d.p:11)

The parallel activities aim to increase the sustainability of the project and facilitate resource mobilization, sector governance and build capacity. They are variously targeted at the donors, participating countries and individuals (See Annex 4).

Additionally, as an implementing partner in the project, the UNU-GTP plays an important role in the capacity, technical and knowledge build-up of personnel from the participant countries. The role of the UNU-GTP will be covered more extensively in section 4.2.5.

4.5 Implementation

4.5.1 Time Plan

The project period is set out as January 2013 till December 2017 (ICEIDA, n.d. p:15). Although the first two stages were projected to be carried out relatively quickly, the overall time-frame of the project is five years. This is mostly due to the fact that geothermal development requires high levels of preparation in geological, geophysical and geochemical research, and often several exploration wells must be drilled before final drilling takes place. The entire programme is estimated to be completed within seven

years from the initiation of stage one (reconnaissance) until stage nine (start-up of operations) (See Figure 6).

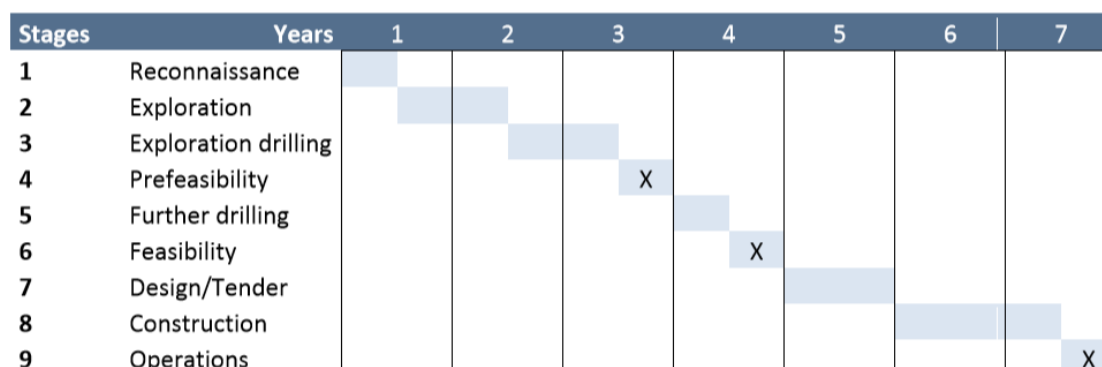


Figure 6 - Estimated time plan for geothermal development under the Geothermal Compact (ICEIDA, n.d.p:16).

4.5.2 External Factors (Risks)

The project document lists a number of risks related to the programme which are as follows;

- Negative exploration results: despite all of the EARS having geothermal potential the status of geothermal energy is still unknown/unexplored in a number of participating countries. Additionally, in countries with geothermal facilities in operation, the GEP will focus on non- explored or not yet identified sites, raising the chances of negative outcomes. It can be expected that any number of countries may produce negative results.
- Financing: ICEIDA's financing is tied to Icelandic national budget allocations, whereas the NDF is not, as such commitments and/ or cuts to funding may variate the levels of funding available.
- Rights and privileges agreement: an agreement regarding cooperation on geothermal development only exists with a few of the EARS countries, general agreements regarding rights and privileges of the various parties involved have yet to be reached with a number of countries.
- Level of complexity: the project complexity level is heightened by the fact that the programme is made up of numerous small projects over various countries, involving several stakeholders and interests.
- Donor coordination: in addition to the GEP donors there were a number of on-going geothermal development projects in the EARS. This includes the Geothermal Risk

Mitigation Facility, established by the African Union, assistance to Uganda and Rwanda, by the EU and USAID, overlap with some of the parallel activities (ICEIDA, n.d. p: 11, 17, 18).

4.5.3 Expected Results (Outputs)

Based on the various project outputs (See Annex 5), the expected results are a key factor in equipping the participating countries with the various tools needed in order to enable them to take further steps in their geothermal development and utilization processes. The outputs produced, such as, scientific data, human resources and related reports will not only have important implications for the participant countries once positive results are confirmed but will also have “significant market value in and of itself” (ICEIDA, n.d. p: 9). Additionally, once sites are confirmed as either having geothermal potential or not, the knowledge and objective understanding of potential in the region can be established and allow participants to make informed decisions regarding their next steps (ICEIDA, n.d. p:9).

4.5.4 Outcomes

At the end of the project, the goal is that the partner countries can make a realistic assessment of the possibilities for geothermal utilization, as well as possess increased knowledge and human resources to follow up on the next stages for the production of electricity and direct utilization of geothermal energy, which may include, food drying, greenhouses and other forms of utilization. (MFA, 2018 p: 42).

4.6 Cross Cutting Issues

The project document states that “in accordance with NDF and ICEIDA policies, attention shall be paid to environmental and social aspects such as gender, land rights, resettlement issues and HIV/AIDS, during the planning and implementation phase of the project” (ICEIDA, n.d. p:13). In addition to the consideration of the theses issues at the start of the project, the project document states that these issues will also be taken up and given ‘special consideration’ at the planning of policy phase (ICEIDA, n.d. p: 13).

4.7 United Nations University- Geothermal Training Programme

The Geothermal Training Programme (GTP) was launched in Iceland, in 1979, and the was first United Nations University (UNU) environment-related programme. The programme

aimed to draw on Iceland's extensive domestic experience and competence in geothermal development (Ljungman et al., 2017 p:7). The UNU-GTP operates in line with the overall mission of all United Nations Universities, which is to "contribute, through collaborative research and education, dissemination, and advisory services, to efforts to resolve the pressing global problems of human survival, development and welfare that are the concern of the United Nations, its Peoples and Member States" (United Nations University n.d. p: 5).

At the university's establishment, a contract was signed by UNU and Orkustofnun (OS), the National Energy Authority of Iceland, that classified the UNU-GTP as a postgraduate training programme, whose emphasis and focus would be on capacity building in geothermal sciences and engineering in order to build an "international community of scholars engaged in research, postgraduate training and dissemination of knowledge" (United Nations University, n.d. p: 3).

4.7.1 Rationale

The UNU-GTP is an essential link in transmitting knowledge to developing countries, regarding the application and use of geothermal energy (United Nations University, n.d. p:4). Developing sustainable geothermal resources is a multi-disciplinary task that requires extensive technical and specialized knowledge particularly in the fields of science and engineering. The objective of the training courses offered by the UNU-GTP is to assist developing countries in enhancing their institutional and individual capacity in exploring and developing their geothermal resources in a sustainable way, and to assist developing countries to move away from having to rely on traditional biomass for fuel, and instead utilize the geothermal resources available locally (United Nations University, n.d. p: 1).

As support for renewable energy is outlined as one of the priority areas in the national development strategy, the role of the UNU-GTP in Iceland's international development cooperation is to provide technical assistance, training and promote capacity building (ICEIDA, n.d. p:7).

4.7.2 Inputs

As the key implementing agent in the parallel activities of the GEP, the UNU-GTP undertook a number of activities, training and other capacity building schemes primarily

through the short and long courses, offered by the university to a select number of students from the participant countries.

4.7.3 Activities

In order to assist in increasing specialized knowledge in developing countries with geothermal potential, candidates from countries with ongoing geothermal exploration and development projects were selected to enrol in the six month post graduate training programme in Iceland, or additionally attend the short courses offered on site at geothermal development facilities in participant countries. The six-month programme consists of an introductory course followed by a specialisation course, where students choose a line of specialisation; and finally, a research project is conducted related to the specialisation (Ljungman et al., 2017 p:43). During six-month course students from countries or regions with geothermal development potential conduct research, supervised by other researchers and academics using local data where possible (OECD, 2017 Part 1, p: 16).

The short courses run by the GTP are less comprehensive than the six-month courses but serve as an important introduction to geothermal development. The course is designed to address the needs of geothermal workers within the participant countries and provide an overall understanding of the geothermal exploration and development process. The short courses fulfil a number of functions, which include “re-connecting fellows with Icelandic supervisors; creating new networks for people who have just joined the industry; introducing new perspectives and ways of doing things; and maintaining a pool of part-time lecturers” (Ljungman et al., 2017 p: 54,55).

4.7.4 Funding

According to the DAC peer review (2017) the United Nations University four training programmes in Reykjavik are a top priority for Iceland’s multilateral assistance and make up more than a quarter of Iceland’s multilateral funding envelope (OECD, 2017, part 1, p:16). The bulk of the funding for the GTP training programmes is provided by the MFA as part of Iceland’s ODA (Ljungman et al., 2017 p:17).

In 2016, the unit cost for a student to attend one of the three half-year programmes at the GTP in Reykjavik was USD 40,000 (OECD, 2017 part 1 p:16). The cost per student in

one of the short courses vary from USD 3,210 to 4,769, with average cost per attendant USD 3,536 (Helgi Torfason and Jørgensen, 2016 p: 14). The ODA contributions to the UNU-GTP are depicted in figure 7.

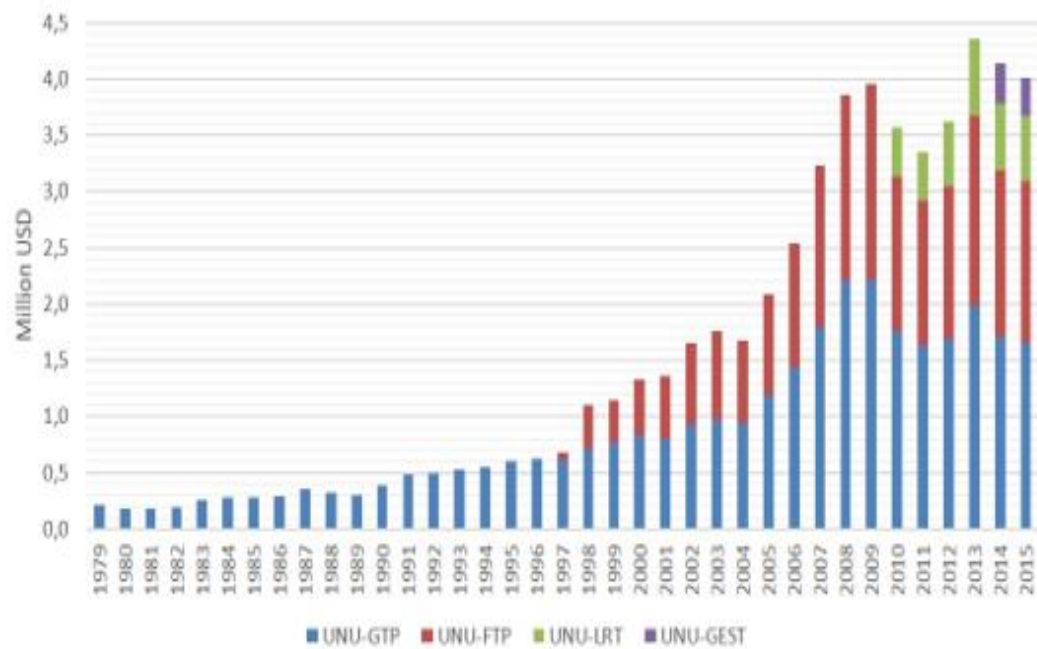


Figure 7- Core funding of the Icelandic State to the UNU-GTP programmes (UNU-GTP, n.d.).

5 Evaluation Findings

The following chapter will compare the various components of the GEP against the DAC criteria of appropriateness, efficiency, effectiveness, impact and sustainability, as well as the additional criteria of gender equality, and outline the general findings of the evaluation.

5.1 Appropriateness

5.1.1 Donor level

Iceland is naturally endowed with rich sources of geothermal energy and hydropower, utilization of these resources over the last century played a major role in Iceland's development transformation, from being one of the poorest countries in Europe, to the high levels of development it currently enjoys. Due to its geological characteristics and natural abundance of geothermal resources, Iceland has managed to actively utilize its geothermal resources for a wide range of purposes: direct-use applications, industrial process heating, district heating, greenhouse heating, snow melting, bathing and swimming pools. In fact, in no other country does geothermal energy provide a larger share of a nation's energy supply than in Iceland where the share of primary energy from geothermal sources is around 70 percent (Lund and Boyd, 2016, p: 85, Orkustofnun, n.d.).

Based on its experience of harnessing geothermal energy domestically for over one hundred years, Iceland has developed specialized skills and technical knowledge of geothermal processes, development and utilization, and has capitalized on its vast experience which now contribute a significant part of its international development cooperation efforts (OECD, 2017 p:41, MFA, 2018 p:24).

According to the DAC peer review of Iceland's international development cooperation (2017) the GEP in East Africa is a good example of an initiative based on Iceland's 'expertise and comparative advantage' in the field of geothermal, and a prime example of Iceland utilizing its strengths, despite the relatively small contribution and impact it has as a donor in comparison with other DAC countries. The review states that Iceland has managed to prioritise and utilize its strengths in key policy areas in order to "shape global development in areas where it can add value: gender equality, geothermal energy, fisheries' management and land restoration" (OECD, 2017-part 1 p:1). Iceland's contribution to development of geothermal resources in the EARS, through the GEP

initiative, demonstrates its commitment to the global development cooperation agenda, which can be characterized as focused and strategic, as it prioritises its development efforts in areas of expertise and utilizes its comparative advantage (OECD, 2017 p:7).

5.1.1.1 Alignment with National Development Strategy

When launched in 2013, the geothermal exploration project (GEP) fell under the auspices of the Strategy for Iceland's Development Cooperation (2013-2016), which had as its overarching goal the achievement of the MDGs (OECD, 2016 annex1 p:1). In the year 2000, the United Nations Millennium Declaration was adopted and set out a total of eight goals (MDGs) which were targeted to be reached by 2015. However, energy was not set as an explicit target of the MDGs, yet "the provision of modern energy services during their development was recognized as a critical foundation for reaching these goal" (Brynhildur Davídsdóttir, 2016 p: 2).

The project can be seen to be aligned with and contribute to the MDGs as well as the Sustainability Energy for All (SE4ALL) initiative launched by the UN in 2012, which sought to "double the share of renewable energy in the global energy mix by 2030" (ICEIDA, n.d. p: 8). Since geothermal energy has the potential to provide energy that is cost effective and low in emissions, the project was well aligned with and contributed to the MDG target of environmental sustainability (ICEIDA, n.d. p:8). The Strategy for Iceland's Development Cooperation (2012) denotes renewable energy as one of three priority areas for ODA, making ODA contributions to the GEP compatible with the focus and priorities laid out in the Strategy.

Additionally, Iceland's Development Cooperation Strategy places the fight against poverty and hunger, as a clear priority of its development work, placing the emphasis on supporting the poorest countries in the world, and poor people in those countries (MFA, 2018). According to the DAC peer review (2017), Iceland's commitments can be characterized as largely aligned with this goal (OECD, 2017 p:13). This is reflected in the choice of participants in the GEP where all but one (Kenya) of the thirteen participant countries in the GEP were defined by UNCTAD as least developed countries in 2013. However, a caveat in alignment with the pro-poor focus of the National Development Strategy regards the selection of candidates, as well as the programmes offered by the UNU-GTP, the programmes were not designed to support poor or marginalized people

directly, and the candidates enrolling in the courses, hence the direct benefactors of the programme, are relatively well educated and gainfully employed (Ljungman et al, 2017). However, the courses can be seen to contribute indirectly to the eradication of poverty at a more general level by promoting sustainable economic growth and increasing overall capacity, particularly in regard to the short courses (Ljungman et al., 2017 p:118).

5.1.1.2 Partnership Strategy

The DAC review states that the GEP is a good example of how “Iceland uses its role in international fora to develop partnerships to support shared global outcomes” (OECD, 2017 p:8). The implementation of the GEP in East Africa in partnership with an array of donors is one of the ways in which Iceland has capitalized on and built linkages with larger donors and other international organisations in order to pave the way for larger outcomes and positive results, such as increased FDI and higher levels of capacity and knowledge (OECD 2016, p: 25). While Iceland’s actual role in the GEP is somewhat limited to the first two stages of project implementation, its partnership with the WB and NDF is exemplary of the way in which its engagement in strategic partnerships, particularly with other Nordic donors, acts to increase the impact of its development co-operation and maximises the impact of its otherwise limited resources (OECD, 2017 p: 41). The partnership with the WB and NDF, as well as the various other partners in implementing the GEP helped to deliver both inputs and outputs that Iceland would have otherwise been unable to deliver due to its limited resources.

5.1.2 Participant Country level

The East African Rift Valley is one of the key regions in the world for potential geothermal energy development, yet the region is still at an early stage in its geothermal development, with the first geothermal plants having operated for only a few decades and others just recently commencing production. Overall energy production in the region is relatively low and currently only Kenya is producing a few hundred MWs from geothermal energy (Onyango, and Varet, 2016).

The GEP is an ambitious project as it aims to bring together an array of donors and organisations and harness their resources in order to develop geothermal resources in the EARS. The project aims to address some of the main barriers to the successful deployment and utilization of renewable energy in the region (See figure 8), and address

some of primary concerns relating to the regional context in order to adequately assist the EARS in developing and utilizing their renewable energy resources.



Figure 8 - Factors influencing the successful deployment of renewable energy in Sub-Saharan Africa (Bello, 2016 p:41).

5.1.2.1 Capacity Building

The development of clean energy resources requires high levels of technical know-how, skills and expertise, therefore capacity building and training in the field of geothermal utilization and policy making is essential and in high demand. According to the midterm review “there is inter alia a lack of necessary technical expertise to meet the demand” (Helgi Torfason and Jørgensen, 2016 p:7).

The midterm review states that a gap analysis conducted by the UNEP and ARGeo in 2015, found that a total of 12,000 geothermal experts are required in the region, additionally similar studies conducted by other agencies confirm these findings, and call for an increase in geothermal scientists, engineers, and technicians to meet the growing demands of the industry (Helgi Torfason and Jørgensen, 2016). Although all the EARV

countries have to varying degrees competence in the field, the need for geothermal expertise is rapidly growing (Helgi Torfason and Jørgensen, 2016 p: 13). Therefore, the emphasis on capacity building in the project design, which is scheduled to take place throughout the duration of the project can be seen as appropriate to the context and aimed at meeting an essential need.

5.1.2.2 Institutional Strengthening

Due to the potential that geothermal energy holds in addressing the energy needs of the region, there is also a need for formulating and implementing a strategy that allows for the widespread deployment and take up of geothermal energy (Bello, 2016 p: 40). This includes; policy development, development of a legal framework for geothermal projects, business practice alignment, plans for engaging developers, investors and other supporting organizations (ICEIDA, n.d.). Having an institutional, legislative and policy framework in place, allows for the formulation of suitable government policies which are conducive to the needs of the renewable energy sector, wider public needs, and addresses pertinent factors such as taxes, authorization and permits, entrepreneurs and technological issues (Bello, 2016 p:42). One of the ways the programme intends to address this need is through the development of a 'Community of Practice', which is envisioned as a mechanism that allows the partners to "join hands in resource mobilization and work together to strengthen the capacity within all participating institutions" (ICEIDA, n.d. p:10).

5.1.2.3 Resource Assessment

One of the needs the GEP aimed to address is assisting the participant countries in developing a clear understanding of their national geothermal resource potential. At the projects inception two of the participant countries (Ethiopia and Kenya) had geothermal plants in operation, as well as sites with undeveloped potential. Two countries (Djibouti and Rwanda) had begun stage 3 (drilling), yet most of the other countries were still in the early stages of development. The programme aims to assist the participant countries to develop an objective understanding of their geothermal potential, through the necessary processes of reconnaissance and exploration. An important outcome is the relevant scientific data produced by the above activities, on which the participants can make informed decisions regarding the next steps in development. Furthermore, eliminating

fields previously thought to have potential is an important component in resource assessment (ICEIDA, n.d. p: 9).

5.1.2.4 Improved Pathways for Investments

According to the World Energy Council, geothermal energy projects are more costly to implement due to higher installation costs and take longer to reach production stage in comparison to other sources of renewable energy such as solar, hydro and wind power. Due to this fact, many countries are wholly reliant on government incentives and support for geothermal development (World Energy Council, 2016 p:2). However, for many developing countries, low levels of government spending mean a higher reliance on foreign investors for large projects. Yet, attracting foreign direct investments (FDI) is often hampered by both perceived and actual risks, which are higher for least developed countries (LDCs) as they relate to financial stability, political stability, as well as the regulatory and institutional capabilities of the country (Sweerts et al, 2019).

According to Bello (2015, p:41) the private sector plays a key role in the renewable energy sector in terms of financing and expertise, and acts as an important complement to government or aid funded efforts. Once the GEP has established positive exploration results, it aims to support countries with a considerable amount of preparatory work that includes planning for exploratory drilling, conducting environmental and social impact assessments (ESIA) where necessary, preparing legal documents such as drilling permits and institutional support for funding applications. Once this takes place, the countries will be able to move potential projects into funding pipelines and attract private funding and investments (ICEIDA, n.d.p:7).

5.1.2.5 Risk Mitigation

Related to improving pathways for private and other financing of geothermal development, is risk mitigation or risk minimalizing in the process of geothermal exploration. According to the World Bank validating the geothermal resources of a particular site through drilling is a costly and unavoidable step in geothermal development, with each field costing upwards of USD 15 to 25 million. Often times this cost may represent over 15 percent of the project capital, with no guarantee on the return (World Bank, n.d.). Furthermore, commercial investments are unlikely at this stage, which may at times take up to two years to provide sufficient information on the

possibilities for energy production. The project document notes that reservoir risks, such as 'negative outcomes' is currently one of the main barriers to geothermal development financing (ICEIDA, n.d. p: 8).

By financing and assisting with the early stages of the programme, the GEP works to offset and reduce some of the major barriers that currently exist in geothermal development. These include: 1) high up-front development costs, 2) reservoir and drilling risks, 3) lengthy development time and, 4) lacking legal and regulatory frameworks (ICEIDA, n.d. p:7). It is assumed that once the GEP has assisted with the initial stages of the project and set in place the necessary frameworks, major infrastructure financing agents such as the WB and the African Development Bank (AfDB) will collaborate with governments to proceed on to the next stages of the project (ICEIDA, n.d. p:12).

5.1.3 Population level

Nearly half of the global total of people (620 million) that lack access to electricity live in Sub-Saharan Africa. Over 75 percent of the regional population lack access to electricity and the problem is even more profound in rural areas where less than 8 percent have access (Niyibizi, 2015 p: 276). Although the project document states that "each country requires additional electricity into its national grid as well as smaller, local solutions for increased electricity access in rural areas" (ICEIDA, n.d. p:8), the project document does not outline how the project has planned for improving energy access for rural and poor populations within the region, nor does it outline how specifically it will address the energy needs and challenges faced by those most lacking and in need of energy, the poor. The underlying assumption is that with increased energy production, improved energy access for all, will follow.

5.2 Efficiency

The report to parliament by the Foreign Minister (2018) states that by 2017, stages one and two; reconnaissance and exploration had for the most part been completed in four countries with the exception of one area in Ethiopia (Alpingi, 2018 p: 108). According to the same report, in 2017 the emphasis and focus of the project was on the four countries with proven resources which are, Ethiopia, Kenya, Tanzania and Djibouti, as reconnaissance and exploratory studies had confirmed high levels of geothermal potential in those countries (Alpingi, 2018 p: 108). By the end of 2017 surface exploration

had been completed in three areas of Kenya and Ethiopia, where plans were in place for the WB to finance exploratory drilling, and an additional site in Kenya had been found to have proven resources. In 2017, support to Djibouti meant it was on course to begin exploratory drilling, and reconnaissance was scheduled to begin in one additional area. Reconnaissance had begun in two areas in Tanzania, and additional research in collaboration with the UNEP was concluded on a third area as well. In Malawi, the WB contributed and supported the GEP in reconnaissance activities (Alpingi, 2017 p: 58-59).

The midterm review finds that capacity building/training, mainly through cost-effective short courses and on-the-job training has been carried out and for the most part receive positive ratings by attendants (Helgi Torfason and Jørgensen, 2016 p:11). In its role as a capacity builder and implementer in the GEP project the UNU-GTP carried out a number of short courses and workshops on various topics dealing with geothermal energy development (Ljungman et al., 2017 p: 13). A total 246 people attended the short courses and workshops at the time the midterm review was conducted and a total of 3 students had undertaken the six months course taught in Iceland (two from Ethiopia and one from Rwanda). Short courses had been held in Kenya, Ethiopia, Rwanda and Djibouti and covered the following topics (Helgi Torfason and Jørgensen, 2016 p:13)

- Deep Geothermal Exploration
- Training in Drilling
- Short Course for Decision Makers (repeated once)
- Workshop for Geothermal Development Donors
- Well Design and Geothermal Drilling Technology
- Preparation of Bankable Documents (repeated once)
- Geothermal Project Management (repeated twice)

One of the expected outputs of the project is the development of legal and policy frameworks in the respective countries, as well as strengthening of support to financial institutions in the sector. This component is considered essential in order to increase private sector involvement, and speed up the development of geothermal electricity production (ICEIDA, n.d.). However, the midterm review found that this component of the project had not been carried out (Helgi Torfason and Jørgensen, 2016 p:15). And the

author of this evaluation was unable to verify with the MFA whether there had been any change in the status of this component.

Although the project was formally completed by the end of 2017, the implementation of several non-completed components continued on into 2018 (Alpingi, 2018, p:108) with a few small projects still remaining in 2019 (Author interview).

The DAC peer review of the memorandum (2016) states that implementation of the GEP represents a new approach in Icelandic development cooperation. As the management of the projects are carried out from a head office located in Iceland as opposed to previous bilateral programming that was implemented and managed through country offices in the respective participant countries. This new method of conducting development programmes, particularly in East Africa is stated as being both cost effective and well suited to thematic projects, such as the GEP, as they require similar knowledge basis and approach, irrespective of the country of implementation (OECD, 2016 p:25).

The GEP project document states that funding allocation to the various project components are to be driven by demand: “all activities and implementation of the project will be demand-driven. Governments and/or appropriate geothermal authorities will be invited to express interest for support under the project” (ICEIDA, n.d. p:14). As such the funding allocation for the project is determined to a large extent by the beneficiaries themselves as well as the results of the reconnaissance stage. According to the midterm review, the direction and emphasis of project support had changed significantly from the beginning of operations, while at the outset emphasis was placed on reconnaissance and exploration, for which 78 percent of allocations had been budgeted, funding allocation had undergone a decisive shift, and had increasingly been allocated to support capacity building. While capacity building had initially only been allocated 15 percent of the budget, in 2015, 38 percent of approved disbursements had been spent on capacity building. The midterm review supports the demand-driven character of the funding allocations and holds up the demonstrated flexibility of funding allocation as a positive aspect of responsive programme management (Helgi Torfason and Jørgensen, 2016 p:16-17).

The agreement between the NDF, WB and ICEIDA include a general framework for tracking the progress of the GEP, it stipulates that ICEIDA will provide its partners with a

progress report bi-annually, as well as any and all information regarding the GEP upon request, meetings between the partners to discuss progress are to take place at least annually, and upon project completion a financial audit of the programme will be conducted by the Icelandic State Auditor. Additionally, a final evaluation is scheduled to be conducted in 2018, (which is underway, as the author was able to confirm with the MFA) (ICEIDA, n.d. p:14,15). According to the midterm review of the GEP (2016), while the logical framework for the GEP is clear and well-structured and allows for planning of subprojects, the framework is not in place that allows for monitoring of those same projects as their progress is not broken down and indicators put in place (Helgi Torfason and Jørgensen, 2016 p: 10).

The DAC peer review (2017) finds that in general, Iceland adheres to commitments made in international agreements such as the Busan Principles, and Paris Declaration on Aid Effectiveness, and monitors its cooperation efforts to a large extent. However, it also states that until now Iceland's monitoring activities have been limited to the outputs and outcomes of its programmes and has yet to implement a framework in order to monitor and evaluate the results of its development interventions. By strengthening its ability to monitor and learn more about the development results of its programming, mutual accountability and responsibility can in turn be strengthened (OECD, 2017 p: 41).

5.3 Effectiveness

Due to the lack of available data regarding the outcomes of the programme the findings on the projects effectiveness in attaining outcomes are rather limited, although some general conclusions can be surmised from the existing data.

The project document states that one of the main objectives of the initiative is to assist all thirteen countries in completing the exploratory phases of geothermal development (ICEIDA, n.d. p:9). As set out in the project document Icelandic involvement in the project is mostly limited to the first few stages of the project, which include reconnaissance and exploration. According to the DAC (2016, p:25) by 2016, eleven of the thirteen countries had submitted requests for participation in the project. Based on findings from the midterm review, in 2015, Uganda, Rwanda, Burundi, Zambia, Malawi, Mozambique, Comoros and DR Congo had no proven high heat geothermal resources, whereas Tanzania had the possibility of resources, Eritrea, Djibouti and Ethiopia had

proven resources, and finally, Kenya already had geothermal power plants producing electricity (Helgi Torfason and Jørgensen, 2016 p:6).

Due to lack of relevant data, it has been impossible to confirm whether Stage 1 (Reconnaissance and gathering of existing data) and Stage 2 (Exploration) were in fact undertaken in all thirteen potential participating countries, however based on the findings of the midterm review it can be assumed that the first two stages were undertaken in the participant countries where necessary. By undertaking the costly work of eliminating poor heat sites the GEP assisted the participant countries in gaining a more realistic picture of their geothermal resources and helped to remove uncertainties in overall geothermal development planning.

The second main objective of the project was to build capacity within the participant countries along two main fronts. Firstly, to increase knowledge and expertise of geothermal development and utilization, this was envisioned as mostly being carried out at an individual level with the UNU-GTP acting as the main implementing partner. And secondly enable the participant countries to take the necessary steps in accessing funding and strengthening national policy and legal frameworks for geothermal development (ICEIDA, n.d.).

The evaluation of the UNU programmes states that while it is difficult to quantify the exact levels to changes in national policy and governance systems that can be attributed to the training programmes, there are a number of positive examples that demonstrate the contribution the fellows have been able to make and positive impact they have had on research and policy making in their home countries. Those interviewed in the evaluation of the UNUs, stated that the training they had received in Iceland was a major factor in increasing their knowledge and abilities. The evaluation also states that UNU programmes had had the most positive impact at the micro level, in terms of individual change (Ljungman et al., 2017 p: 40).

The project provided assistance in the form of project plans, that is; reconnaissance and exploration reports, environment social impact assessments (ESIA) for planned exploration drill sites, preparation of drilling permits and funding applications. This can be seen as a key factor in assisting countries in planning the next steps of geothermal development once drilling targets had been identified and assisting the countries with

confirmed resources apply for funding to the relevant institutions. There are some positive signs that this has been successful, according to Future Energy East Africa, the AfDB has approved a loan of USD 49.5 million for the Menengai geothermal project in Kenya, and an additional USD 21.7 million to geothermal energy development in Tanzania (Future Energy East Africa, n.d.). In 2017, the World Bank supplied funding for exploratory drilling in two sites in Ethiopia (Alpingi, 2017). Furthermore, through ESMAP, Djibouti received a USD 1.1 million grant for upstream development of geothermal resources (World Bank, 2017 p: 24).

ODA funding to the GEP has in many cases been catalytic to further geothermal development as it has acted to “mitigate and distribute the risks associated with geothermal exploration, and it clears many bottlenecks to private sector investment” (OECD, 2017 p10). Additionally, as all the ODA funding provided by Iceland to the GEP has been grant based it has been catalytic in the sense that it supports sustainable investments in renewable energy, which in turn strengthens human capacity and capital, and increases the capacity of project participants to attract further funding and private finance (OECD, 2017 p:10). The DAC peer review states that one of the main reasons Iceland has placed an emphasis on renewable energy development projects in its international development efforts, is that Iceland recognises the role non-ODA financing can play in this sector and sees its contributions as an essential component in mobilizing the private sector (OECD, 2017 p:10).

The midterm review reported that the project implementation had in a number of instances been delayed due to the legal and policy environments in the countries where the GEP was being implemented. For example, the laws regarding geothermal areas in Kenya and Ethiopia were based on mining laws and were undergoing much needed reform. Most of the delays in the revision of legislation in those countries were centred around debates taking place in the respective parliaments regarding the role of private companies in the production of geothermal energy. With the increased involvement of the private sector, it was argued that energy costs would be increased, and some in parliament argued that energy production should remain in the hands of the government. (Helgi Torfason and Jørgensen, 2016 p: 15).

5.4 Impact

Due to lack of available data it is not possible to verify how many MW from geothermal energy production have been added to the national electricity grids of the participant countries, as a direct result of the GEP.

Currently, only in Kenya and Ethiopia is geothermal energy being utilized to supply energy to the national electricity grids (Mariita, Onyango and Varet, 2016). The midterm review reported that by mid-2015, some 595 MW had been installed, yet most of that energy had been developed by Kenya over the past three decades (Helgi Torfason and Jørgensen, 2016 p: 10). The International Geothermal Association (IGA) reported that in 2018, Kenya was the only country in the EARS with operational geothermal plants, as well as being on a fast track to increase production and improve utilization of geothermal energy. The highest rates of geothermal utilization in the region are found in Kenya, where geothermal energy is being utilized for grid systems, green houses for flower growing, spas, swimming and crop drying. Although Djibouti has plans in place to drill wells, production of geothermal energy has not yet begun. In Ethiopia geothermal energy production has been intermittent but as of 2014 maintenance challenges has caused operations to cease, although plans for development are ongoing at other sites and financing been approved for a pilot plant (IRENA, 2018).

The MFA also reported that due to the low heat resources found in the western region of the EARV, a number of projects were undertaken to utilize geothermal resources on a wider basis. This included financing a feasibility report for use of dual-purpose power plants, support for utilizing geothermal energy for drying agricultural products in Rwanda and Kenya. In 2016 preparations had begun for installing a geothermal dryer in the Menengai area of Kenya to utilize geothermal energy for drying agricultural products, and in 2017 a project was set up in Ethiopia using geothermal heat for dehydrating foodstuffs (MFA, 2018).

Icelandic support to the GEP was also delivered in the form of technical support and capacity building. In 2017, 19 specialists from the Geothermal Development Company (GDC) of Kenya came to Iceland. The employees were trained in their specialist fields at different Icelandic companies and institutions that participated in the project. The training projects included, implementation of quality standards in laboratories, design

and operation of steam engines, distribution models for air pollution and borehole measurements. This training was a key factor in allowing the GDC to get its laboratory certified (Alþingi, 2018 p: 108).

The MFA reported that as of 2018, extensive work had been undertaken to increase and improve regional cooperation and collaboration of the various donors and organisations involved in geothermal development. One of the ways this had a positive impact on increased synergies is through an agreement between Iceland and the AU that Iceland continue to provide support for geothermal development on the continent. Additionally, a number of donor conferences have been held in collaboration with the UNEP, WB and other partners that has improved collaboration and management of geothermal issues (MFA, 2018 p: 42-43).

It is possible to speculate on a number of positive impacts that are associated with increased geothermal development and utilisation more generally. For example, local employment opportunities at various stages of geothermal development and operations are positively associated with major geothermal development projects and have beneficial effects on communities such as improved livelihoods and decreased poverty levels (de Jesus, 2016). Additionally, large geothermal companies can provide a number of additional services, for employees and the wider community through their corporate social responsibility mandates, this may include private schools, building of highways and other infrastructural projects that directly benefit local communities (deJesus, 2016).

The project document states that the initial emphasis of the project will be on assisting countries “where full project development and financing appears more likely” (ICEIDA, n.d. p:12), but will also address and assist the countries in the initial stages of development (ICEIDA, n.d. p:12). As a result of this decision the project was reduced in scope somewhat, as instead of developing geothermal resources in thirteen countries, it became clear that the resources of the GEP would be mostly focused on the four countries with high heat resources. Although sub-projects were carried out in some countries with low heat resources, the bulk of project resources were focused throughout, on a few countries with proven high heat resources. Since geothermal exploration and development has been taking place in the EARS for many decades, it is likely that the resources of the GEP were best utilized and directly benefited countries

such as Kenya and Ethiopia that previously had relatively well established geothermal legal and policy frameworks, capacity and infrastructure, in comparison to countries in the beginning stages of geothermal development.

The project document states that most of the funding for geothermal exploration under the project is primarily geared towards areas which have not been designated as private concessions (ICEIDA, n.d. p:12). Although largely directed at increasing production of energy for nationally owned energy grids, the resources of the GEP were not exclusively directed at national firms, this raises some complex issues regarding the degree to which private firms may profit indirectly from ODA funded ventures. The midterm review states that in cases where independent companies are successful in energy production, donor and aid policies may have to be adjusted (Helgi Torfason and Jørgensen, 2016 p: 16).

5.5 Sustainability

According to the DAC, Iceland's commitment to sustainable utilization of natural resources is reflected in its development efforts, particularly within projects relating to fisheries, land restoration and geothermal energy (OECD, 2017 p:17). Environmental concerns that aim to ensure that developmental projects are in harmony with sustainability goals and objectives are outlined in the 'Guiding Principles for Addressing Environmental Issues', issued by ICEIDA in 2012. (ICEIDA, 2012 p:9,10). The core guiding principles are stated as the following:

1. "Promote environmental protection and sustainable development by prioritising the economic, social and environmental needs of people in the partner countries while simultaneously reducing poverty".
2. "Strengthen awareness and knowledge about the environment, build capacity, promote cooperation of stakeholders and enhance institutional ability for mainstreaming the environment into development programmes"

Although the GEP project document does not expound how it will consider or adhere to the 'Guiding Principles', it states that: "In accordance with NDF and ICEIDA policies, attention shall be paid to environmental and social aspects such as gender, land rights,

resettlement issues and HIV/AIDS, during the planning and implementation phase of the project. These issues will also be given special consideration in the planning of policy level support” (ICEIDA, n.d. p:13). Additionally, the contracts with five of the 13 countries outline in some detail how environmental concerns will be upheld.

Table 2 – Management and Inclusion of Cross-Cutting Issues in the Project cycle

Country	Objective
Djibouti	Environmental aspects relating to geothermal development will be covered in the training courses (ICEIDA, n.d.).
Tanzania	Preliminary ESIA will be conducted where potential exploration drilling sites have been identified, in order to ensure that environment and social impacts are considered relative to the potential sites (ICEIDA, NDF, n.d.).
Ethiopia	An ESIA will be carried out at potential exploration drilling sites, in order to ensure that environment and social impacts are considered relative to the potential sites (ICEIDA, NDF, n.d.).
Kenya (GDC)	Environmental and social concerns relating to geothermal development will be incorporated in the training courses (ICEIDA, NDF, n.d.).
Rwanda	An ESIA has been conducted for one project and the project will adhere to the environmental and safety instructions presented there (ICEIDA, NDF, n.d.).

5.5.1 Financial sustainability

The project document envisions a partnership strategy whereby once the initial barriers to geothermal development have been removed, through completion of stages one and two, funding agents such as the World Bank and other donors will provide the necessary funding for subsequent stages of the programme. Based on the support planned for in the project document, the participant countries will have the necessary means to apply for funding to the relevant agencies, on the basis on positive results (Helgi Torfason and Jørgensen, 2016 p:7).

Although the World Bank has no formal obligation to the project, findings from the midterm review show that WB has shown a positive interest in providing the necessary funding for the ongoing phases of the project (Helgi Torfason and Jørgensen, 2016 p: 8).

5.5.2 Legal and Policy Sustainability

The three parallel activities planned for in the project which are focused on the sustainability of the project are: 1) establishing policy and legal frameworks in each country, 2) building up capacity and expertise in the field of geothermal utilization, and 3) strengthening the capacity of supporting institutions (ICEIDA, n.d.p:11). The project document states that these activities are to be carried out during the duration of the project or over a five-year time span (ICEIDA, n.d. p:15). The strengthening of the ability of development and financial institutions activities are targeted at increasing and synthesizing their ability to engage with, and provide support to, the geothermal development process, and primarily aimed at external organisations such as donors and other development actors through supporting initiatives, to increase “dialogue, learning and information sharing” (ICEIDA, n.d. p:11). Secondly, the development of the legal and policy framework of participant countries was aimed at the strategic management and inclusion of the private sector in the development of geothermal energy and improving legal and development frameworks, including, business modelling, engagement of developers/sponsors, investors and financiers is seen as essential for engaging the various interested parties. The midterm review reports that actions had been taken to strengthen the capacity of supporting institutions but had received no reports on the status of the development of the policy and legal framework initiative, (The author was unable to confirm the status of this initiative with the MFA). Although it is noted by the midterm review that there are a number of other development organisations such as DIFID and USAID that are assisting in that respect (Helgi Torfason and Jørgensen, 2016 p: 6, 16, 17).

5.5.3 Capacity Building

The midterm review reports that competence levels in geothermal development, research and exploration in some East African countries has increased enormously over the last few decades. Some of the short courses held by the UNU-GTP were given by Kenyan and Ethiopian lecturers who had been previously trained in Iceland (Helgi Torfason and Jørgensen, 2016 p: 15). The assessment of capacity building, by the midterm review concludes that training conducted in places like Iceland and elsewhere has been an important factor in the competence, knowledge and skill levels that have been

acquired in countries such as Kenya, Rwanda and Ethiopia, to the extent that the role of overseas countries will soon be limited to an appraisal and advisory capacity to a well-established geothermal community in Africa (Helgi Torfason and Jørgensen, 2016 p: 16).

The establishment of the African Geothermal Centre of Excellence (AGCE) in Kenya, in 2015, in collaboration with the MFA, UNEP, AU, and the Kenyan Government was an important factor in developing long term institutional and infrastructural capacities in the region and added significantly to the sustainability of geothermal development overall. The centre was envisioned as a hub of training and research that would benefit the countries in the region with geothermal potential. According to the midterm review those interviewed expressed the importance of having an 'African centre' for training, supported by partners and donors (Helgi Torfason and Jørgensen, 2016 p:14). It is expected that the centre will add considerably to the knowledge, skills and competence levels of the region over the coming years, and is an important factor in increasing the self-sufficiency of the region.

5.6 Gender Equality

The Development Strategy (2013-2016) upholds gender equality as a cross cutting issue, making the mainstreaming of gender issues into all projects and programmes undertaken by Iceland's international development cooperation an important objective. Included in this is "the importance of equal opportunities for women and men to have an impact on, participate in, and enjoy the benefits of projects that Iceland supports" (MFA, 2013 p:5). Projects undertaken by Icelandic development agencies and funded through Icelandic ODA, must therefore, analyse the effect the project will have on women vs. men, and must plan for and include both women and men in decision-making and implementation processes, and "this applies equally to those involved in preparing or implementing projects, along with the beneficiaries" (MFA, 2013 p:5).

One of the focus areas of Iceland's gender equality policy in development cooperation is natural resources and the environment. Included in this focus is the utilization of geothermal energy for improving living standards and wellbeing, through increased opportunities for education, employment, food production and various other benefits. Through the increased access to and utilization of geothermal energy it is expected that income generating activities will be directed at both men and women, and

that both men and women will be involved in decision and policy making in regard to environmental, and resource issues, and overall it is expected that the empowerment of women will be integrated into all aspects of the programming (MFA, 2013 p: 6, 7,8). The project document does not specify how it will consider and manage the cross cutting issues in practice, but states that in accordance with the development strategy “attention shall be paid to environmental and social aspects such as gender, land rights, resettlement issues and HIV/AIDS, during the planning and implementation phase of the project. These issues will also be given special consideration in the planning of policy level support” (ICEIDA, n.d. p:13).

According to the midterm review (2016, p: 14) there remains a pronounced gender bias in favour of male participants in regard to gender ratios of lecturers, students, employees and project staff. Only 15 percent of lecturers in the courses given, are female. Overall female experts were found to be in the minority at all stages of the initiative, although some women were heading offices in Rwanda and Kenya. Other gender ratio findings include (Helgi Torfason and Jørgensen, 2016 p:14-15):

- Of the 35 people met in meetings 5 were women or 15%.
- Meetings in Iceland in January: 15 attendants, 2 female.
- In Ethiopia, Short Course on Drilling: 30 attendants, 1 female.
- In Ethiopia, Geothermal Modelling, all attendants were male
- In Ethiopia, Geothermal Project Management: 25 attendants, 3 female.
- In Kenya, Geothermal Development for Decision Makers: 24 attendants, 3 female.
- In Kenya, Decision Makers; Burundi, DRC, Rwanda: 13 attendants, 1 female.
- In Kenya, Validation Workshop: appr. 63 attendants, 13 female.
- Tanzania, ISOR Survey Field Team: 6 researchers, 1 female

While the main project document does not expound on the planning of, nor implementation of gender equality issues, the sub-contracts with five of the thirteen EARS outline in some detail how the issue of gender equality and gender considerations will be observed. They are outlined in table 3.

Table 3 - Management and Inclusion of Gender Concerns in the Project cycle

Country	Objective
Djibouti	Gender ratio of trainees will be observed, an application from a female trainee for the UNU-GTP 6-month programme will be encouraged (ICEIDA, n.d.).
Tanzania	Gender ration of trainees will be observed, and participation of both genders in any training conducted will be encouraged. Social impact studies will address gender aspects (ICEIDA, NDF, n.d.).
Ethiopia	Gender ratio of trainees will be observed, and participation of both genders encouraged, applications from female trainees for the UNU-GTP 6-month programme will be encouraged. Social impact studies will address gender aspects (ICEIDA, NDF n.d.).
Kenya (GDC)	Gender ratio of trainees will be observed, and participation of both genders encouraged in all training courses. Throughout the implementation of the project gender and environmental concerns will be considered, this includes the incorporation of environmental and social issues related to geothermal development in the development of training components and curriculum (ICEIDA, NDF, n.d.).
Rwanda	Gender ratio of trainees will be observed, an application from a female trainee for the UNU-GTP 6-months programme will be encouraged (ICEIDA, NDF, n.d.).

Geothermal research, drilling, engineering, construction work and developing is a male dominated industry, incorporating gender concerns is no easy task. Yet, the midterm review of the GEP reports that there are signs that show levels of gender equality to be increasing gradually and are overall positive of the trajectory the industry is taking in including women. However, the report also states that implementing gender equality faces a number of barriers particularly “in areas where male dominance is part of the heritage and culture. Gender equality has to come from within, and should be encouraged by establishing a precedent, which is not done in the running of the Project” (Helgi Torfason and Jørgensen, 2016 p: 15).

In terms of the capacity building activities, the UNU-GTP did not have a specific gender policy in place but attempted to address gender inequality to a certain degree by nominating female fellows and introducing a short course on gender and geothermal in the curriculum. Since, the geothermal industry is improving in female inclusion, there are a number of competent female lecturers in a wide variety of subjects, and efforts are being made to recruit female lecturers for the short course as well as visiting lecturers (Ljungman, 2017 p: 50, 51). Over its history the GTP programme has managed to recruit and train a total of 670 candidates, of which 22 percent have been female fellows, and in 2016, females accounted for 41 percent of the students. Despite a concerted effort inclusion of female candidates was hampered in a number of countries due to cultural and social practices (Ljungman, 2017 p:120).

The evaluation of Iceland's gender equality policy states that while Iceland has experience and knowledge to share regarding gender mainstreaming and best practice, it recommends that Iceland put its knowledge and experience to even more use to strengthen synergies between gender equality results and impacts (IPE, 2017 p: 34). Overall, the main focus of energy development projects has been concentrated on geothermal exploration and training with a limited gender focus (IPE, 2017 p:17).

5.7 Overall Evaluation Findings

The general findings of this evaluation, based on a desk review of reports and other relevant data, has been largely positive. The GEP set itself an ambitious goal, in line with the MDGs to increase renewable energy supply and access through the development of geothermal energy in a number of East African countries. The logical framework of the GEP was well structured and explained the partner agencies, their respective tasks and laid out a clear strategy for implementation. Additionally, in place was a clear and strategic plan for addressing the sustainability and capacity building aspects of the project, and a strong rationale for addressing some of the main barriers to geothermal energy development. The findings show that capacity levels and knowledge in the field of geothermal utilization and development have vastly improved, although mostly concentrated in Kenya, it has the potential to positively benefit the EARV region.

The project did not clarify how it would engage the wider stake holder community (i.e. beneficiaries and end users of the energy produced), nor plans for directly increasing

energy access of rural and other vulnerable communities. Additionally, legal and policy framework work, an essential component in managing and organisation of energy distribution, was not undertaken, leading to delays in project implementation in some instances. The findings suggest that there was some incompatibility of the project with the development strategy (2013-2016) as some of the parallel activities, aimed at capacity building, exclusively addressed the more well-off sectors of the population. The project set out to develop geothermal resources in thirteen countries, yet due to low heat resources characterising most of the western area of the Rift Valley, the scope of the project was drastically reduced, and resources were focused on four countries that had proven resources, making it difficult to ascertain whether the positive impacts were a direct result of the GEP, or due to already well established geothermal development systems as in the case of Kenya. The project also set itself a number of targets regarding the inclusion of women, however there was a lack of gender mainstreaming throughout the project, and was not reflected in the project leadership.

Unfortunately, the evaluation was severely limited by the lack of available and accessible data regarding the expenditures, short term and medium-term outputs, results and outcomes of the project, as the documents from the bi-annual meetings, stakeholder meetings, progress reports and other project relevant documents have not yet been made accessible, meaning the evaluation domains of effectiveness and impact could mostly be speculated upon.

Despite the lack of data pertaining to the GEP, important lessons can be drawn from these findings as well as a number of recommendations for improving effectiveness, delivery and outcomes in major energy development projects.

6 Lessons and Recommendations

6.1 Pro-poor Considerations

The concept of social inclusion is an important lens through which energy access can be viewed, and important for linking energy development projects with the ‘sustainable energy for all’ (2012) agenda. The employment of a social inclusion lens is an important factor in identifying the groups most excluded, poor populations and others who are denied opportunities, and monitoring how they are impacted by programmes and projects, either positively or negatively (SEforALL, 2018 p:10). Social exclusion is not an immutable state, however concerted and targeted efforts are required, to bring about social inclusion (SEforALL, 2018 p:10).

The roadblocks to energy access faced by rural communities are different to those faced in urban areas. For example, in East Africa low levels of connectivity to national energy grids and poor infrastructure mean that, energy produced is often directed to urban centres, serving only a minority of the population, while the majority of the population is dispersed over rural areas and remains predominantly reliant on traditional forms of biomass energy (Hafner, Falchetta, Tagliapeitra, Occhiali, 2019). According to Mariita, Onyango and Varet (2016) if an energy source is to be considered a viable alternative and taken up on a wide scale it must be easily available, easily applicable and low cost. This has been a barrier to geothermal energy take up in a number of settings due to the high cost and lengthy development time. To successfully address this problem, detailed surveys must be undertaken regarding the potential of the resource alongside a community needs assessment, in order to prioritise sites of development and deliver energy outputs in line with community expectations (Mariita et al., 2016).

For many geothermal development projects, as in the case of the GEP, the focus of energy production has been to significantly add to electricity production through major grid systems that are supplied from high heat resources. While this *modus operandi* has been successful to a certain extent, in the East African context, meeting the high maintenance costs of running geothermal production facilities, and the high levels of technical know how required for consistent geothermal energy production and development are often not feasible. Additionally, in many cases national grids are limited in their reach, and a pertinent need exists in rural and other hard to reach areas. As a

result of the focus on high heat resources, low heat areas are ruled out of the project in favour of high heat resources, meaning that some countries and areas are excluded from funding due to the type of resource available. However, low heat resources can be developed and employed for a number of other purposes, particularly if developed in line with community and stakeholder participation (Mariita et al., 2016). Small size geothermal utilization projects, which rely on low and moderate temperature resources can be utilized by local communities in a variety of ways, in the commercial, agricultural and tourism sectors (Mariita et al., 2016).

Winther, Ulsrud and Saini (2018) propose that cross-sectoral initiatives are essential in understanding the need and delivering on the organisation of and management of energy resources (Winther et al., 2018). For example rural households faced with energy provision choices, whether to invest in off grid solutions, local grids or national grids where available, project planners and implementers must be able to coordinate with governments, the private sector and other actors such as NGOs and CSOs, to offer incentives in the forms of payments, subsidies or other strategies along with educational programmes to influence a change in the social norms and collective behaviour of communities and influence take up of renewable energy solutions.

There remains considerable scope for international development projects to address the poorest communities, where private systems and other high tariff services have not met and cannot meet energy needs. Additionally, there are significant expectations that ODA financed international development programmes that are launched in developing countries, fulfil this need and empower hard to reach communities.

Although there has been an increase in investors and investments by funding bodies such as the WB and the African Development Bank (AfDB), which play a significant role in the expansion of large geothermal projects and grid extension, often the investments are not maximised due to infrastructural, policy and legal framework gaps. Political will and local policies are a key factor in successful deployment and take up of modern energy sources, particularly in developing contexts (Hafner et al., 2019). Additional work and investments are required in order ensure that the necessary frameworks are in place that will assist countries in their energy transitions and ensure that the energy being produced is in fact benefitting the wider population.

The World Energy Council states that “energy sustainability relies on three pillars: energy security, energy equity (access and affordability), and environmental sustainability” (World Energy Council, 2016 p:36). Although geothermal energy has historically enhanced national energy security and in some cases improved public access to energy, the biggest challenge it now faces is providing affordable energy. As demand for energy is growing, and most of the geothermal energy growth is taking place in developing countries, in order to remain a viable option, the World Energy Council argues that innovation in the geothermal industry is desperately required. If the geothermal industry is to grow and thrive in the 21st century “the existing steam field and drilling costs structure is simply not sustainable” (World Energy Council, 2016 p:36). Where geothermal resources are abundant and funding available to develop resources, improving delivery is essential.

6.2 Stakeholder Engagement

Stakeholder engagement and donor coordination is a key factor in illuminating policy implications and deploying funding efficiently (Hafner et al., 2019 p:16). In order to reach rural populations, ‘last mile’ communities and other energy poor populations, it is essential that programme and project planners actively engage those the project is targeted at, to gain a better understanding of the realities of the situation, in order to design and implement initiatives that can address structural inequalities, and meet the needs of the beneficiaries (Winther et al., 2018). The planning stage of energy interventions must include:

An assessment of who the future user might be, who becomes involved and the wider social implications of such involvement, and the way users actually gain – or do not gain – influence over access and usage and how they experience the adhering benefits from using electricity’s services (Winther et al., 2018 p:71).

Although renewable energy projects require considerable capital, specialized knowledge and expertise for their development, which are far beyond the capabilities of many communities, there are a considerable number of ways in which project planners and implementers can engage the local communities, raise awareness and build their capacity and knowledge of geothermal development, so they can become a part of the process of energy transformation (Onyango, and Varet, 2016).

Stakeholder engagement is a key factor in RBM and an important factor in ensuring that the needs of all stakeholders are considered in the planning and policy phases of projects, and essential in delivering the limited project resources to the most needy. Engaging local communities involves not just seeing beneficiaries as the target of project impacts, but also as key actors driving the expected changes, this involves an assessment of local usages of geothermal resources whether for traditional, ritual or other practices and purposes, and adopting empowerment strategies that are aligned with the community needs and expectations.

In order to close the global energy access gap and reach the additional 1.6 billion individuals that currently lack access to electricity, and deliver on the 2030 agenda, new approaches must be employed which build on close engagement of last mile, and other hard to reach communities in the planning, design, and delivery of energy development initiatives (SEforALL, 2018 p:4).

6.3 The Gender-Energy Nexus

Inclusion of gender concerns in major energy development projects requires that: 1) programme planners and implementers are aware of the contextual social and cultural barriers that hinder or restrict women's participation, 2) actively plan for strategies to remove or bypass those barriers and engage women directly at various levels of policy, planning and implementation, 3) and plan for the monitoring and evaluation of those activities in order to improve project outcomes.

6.3.1 Recognise Barriers

The dominant cultural and social norms of a particular context are one of the main barriers to women's full participation in various spheres of society (IRENA, 2019). This inequality is often reflected in the gendered division of labour, that sees women take on the majority of caring and household responsibilities, thus limiting their engagement with the formal sector, which tends to be male dominated as a result. In many cases gender inequality is not limited to the division of labour but affects women's ability to access education, training, services, technology and capital thus their decision-making power and agency are also limited (IRENA, 2019).

Cultural and social norms are an important factor in women's ability to access energy and participate in energy development programmes and projects (IRENA, 2019). Women are more often restricted in their movement outside the home, are more at risk to various forms of violence, and overall have less access to resources, information, skill development and training opportunities (Cecelski and Dutta, 2011 p:51). Often women have lower literacy rates and less access to technology than men, meaning women may rely on other forms of communication than men, and may not access information through the same channels as men (IRENA, 2019 p: 60).

Many studies have shown that women are often severely disadvantaged in relation to men in energy related opportunities, access and agency. This is often manifested by women's inferior position in the household, where men make decisions regarding purchases and energy solutions that may be cost-beneficial but have no effect on reducing women's drudgery or time poverty (Baruah, 2017). The result of these prolonged and deep-rooted inequalities means that women in developing contexts are being affected on a larger scale by energy poverty, extreme poverty and face greater risks as a result of climate change (SEforALL, 2018 p: 4).

Cultural and social norms also represent a pervasive barrier to the employment and inclusion of women in the energy production sector. Often energy infrastructure and development projects will tend to employ men for both skilled and unskilled jobs (ESMAP, 2018 p:17). If women are employed in these projects they tend to fill traditionally 'feminine' positions that involve hospitality and other service-related tasks, this trend often entrenches already highly gender segregated energy projects and workplaces (ESMAP, 2018 p: 21). Women's labour force participation and employment rates in energy development projects are additionally hampered by a number of other factors such as traditional gender division of labour, women's lack of technical and professional skills, lagged entry into the science, technology, engineering, and math (STEM) fields, as well as a number of legal and regulatory restrictions on women's employment (ESMAP, 2018).

Although there are indications that women's inclusion in the renewable energy development sector has improved, there are still a number of significant cultural and social barriers to women's levels of energy access and employment, skills, knowledge and

opportunities (ESMAP, 2018 p:32). Gaining a clear understanding of gender hierarchies and its effects at various levels, national, societal or household is crucial for designing programmes that can effectively address these imbalances.

6.3.2 Gender Responsive Policy and Planning

In order to achieve the SDG targets of increasing sustainable energy access for all by 2030, it is important that no one is left behind (SEforALL, 2018 p: 3). This means that energy development projects must actively plan for the inclusion of the traditionally powerless and voiceless, and place greater emphasis on ensuring gender equality in delivery to, and benefactors of, development initiatives. It is no longer possible to adopt a 'gender-blind' approach (Cecelski and Dutta, 2011 p: 51) to programming and development efforts. Project planning must take into account the specific constraints faced by women and adopt strategies to overcome them.

Although project plans and proposals may adopt 'gender language' or include statements about gender, they often have not operationalised or specified activities that will be undertaken to address gender inequalities (Cecelski and Dutta, 2011 p: 21). Additionally, as argued by Winther et al., (2018) "policies, programmes and projects that adopt a gender-neutral approach, are likely to produce systems dominated by men" (p:61) which act to further entrench gender inequalities through ideas about the end users, and how the energy is used. Often 'gender neutral' policies may be compounded by social and cultural norms and practices that further hinder the empowerment of women and increase the dominance of men throughout the energy sector (Winther et al., 2018).

In order to offset these trends, it is essential that policy planning includes interventions that are context specific, and specifically targeted at, and designed to address gender inequalities. The linkages in the gender energy nexus must be analysed and thoroughly explored, and interventions must be evaluated in order to identify and understand the key gender issues and their context (ESMAP 2018, p:4). Adopting a gender perspective in renewable energy projects is critically important, project designers and policy makers must actively engage women and take their skills and views into consideration in order to produce more gender equal outcomes (IRENA 2019. p: 9). Integral to this is envisioning the end users, deciding who key stakeholders are and

planning for their inclusion at all levels of programming, and assessing how they will benefit from the energy produced (Winther et al., 2018).

Policy and project planners are in a key position to organise, manage and plan for the supply of energy, and therefore are able to influence gendered energy access by addressing key issues such as women's lands rights, ownership, security and empowerment (Winther et al., 2018). Closing the gaps in gender inequalities to energy access and usage must organize the delivery of energy in such a way "that navigates existing discrimination and responds to the central roles played by women and those on the margins of society" (SEforALL, 2018 p:10). Without a concerted effort in this regard gender inequalities will persist and be perpetuated.

6.3.3 Gender Responsive Monitoring and Evaluation

Gender and energy issues and concerns differ by region, context and situation, yet a systematic gender-sensitive analysis can reveal gender inequalities as well as priorities, and opportunities (Cecelski and Dutta, 2011 p:5). Part of this analysis includes disaggregating and analysing data collected by sex and using the data as the basis for adjusting project planning and evaluating outcomes (See figure 9).

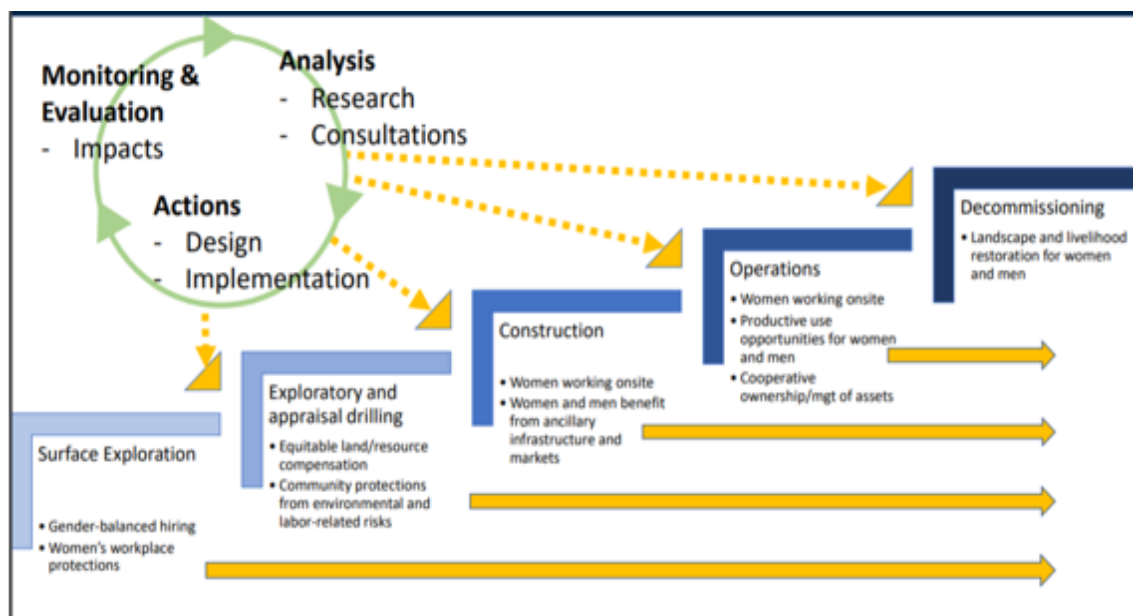


Figure 9 -Gender entry points throughout the geothermal project cycle. (Janik, Friðriksson and Morris, 2018)

The application of a gender strategic framework or gender action plan (GAP) is another way to ensure that a concrete gender equality strategy is employed in project implementation. The strategy must be well defined and include measurable targets and indicators that are closely aligned with the SDGs. Other important components of the gender action plan include, agreement on a gender goal or objective, specific activities and outcomes to meet that gender objective, mainstreaming of gender into the project, planning for long term capacity building in order to implement activities, and putting in place a monitoring and evaluation framework to track achievement of gender objectives (Cecelski and Dutta, 2011 p:2).

7 Discussion

As a member of the DAC and, signatory to a number of agreements regarding the effective and improved delivery of international development aid, Iceland has committed itself to certain principles and common goals shared by all partners in international development cooperation. The overall objectives of the adoption of these principles is to ensure that aid initiatives are implemented and delivered effectively and most of all, produce positive outcomes.

Iceland's commitments to the aid effectiveness agenda and the Millennium Development Goals are reflected in its Strategy for development Cooperation (2013-2016), Gender Equality Policy (2013-2016) and Guiding Principles for Addressing Environmental Issues (2012). The development of these strategies and policies were an essential part of aligning Icelandic development cooperation efforts with the international community and overarching principles of, prioritising the ownership by developing countries, of the development goals, and models for implementation, focusing on results, recognizing the importance of policies and programmes having a lasting sustainable positive impact, building partnerships, inclusion and recognition of the importance of partnerships across many sectors, and ensuring that development cooperation is transparent and accountable to all stakeholders (OECD, 2012).

The Geothermal Exploration Project, when launched was an ambitious project that aimed to ensure Iceland's commitments as a member of the DAC, and support for the MDGs were reflected in the planning and delivery of the project. Expectations regarding ODA funded projects undertaken by DAC members are high, regarding what those projects can and should deliver, and the GEP is no exception.

The GEP was designed to build on and deliver in the areas of Icelandic expertise; geothermal energy development and gender equality and represented a significant contribution to Icelandic development cooperation efforts. Although geothermal exploration and development in the EARS has been taking place for many years, Icelandic involvement can be seen as having contributed to increased levels of technical knowledge and expertise in the region and a key factor in removing a number of roadblocks to increased geothermal uptake and utilization. Addressing barriers is important and offered

an opportunity to put Iceland's many years of geothermal energy development and utilization to good use.

Yet, despite these and many other efforts, geothermal energy production and utilization remains very limited in East Africa. Most of the progress being made in increasing geothermal energy production and utilization is taking place in Kenya, although there are some positive developments taking place in a few other countries along the Rift Valley. Kenya has been developing its geothermal resources for over four decades, and as a result it has seen rapid expansion in the scope and scale of geothermal utilization, as well as in skills, technical expertise and knowledge of geothermal energy production and utilization. With the establishment of the knowledge hubs and training centres in Kenya, important research is being undertaken and more and more data on the status of geothermal development in the region is becoming available. Kenya is on a fast track to be not only self-sufficient in geothermal development, but has acquired the know-how and institutional capacity to lead the region, with little to no external assistance. This can be seen as an important step in the increased uptake of geothermal energy, as well as fulfilling the main aim of international development cooperation efforts. However, for the other countries in the region considerable efforts are still required to ensure the take up of renewable energy sources and assist with the transition from reliance on traditional bio mass to clean and sustainable energy.

For many of the countries along the Rift Valley which are characterized by large rural populations and low-income households, the delivery of modern energy cannot be realized through national grid energy services. Although this model of energy delivery was highly efficient and successful in a number of other settings (i.e.; Iceland) the realities of many developing contexts are not compatible with this delivery model. Additional efforts must be made by development planners and implementers to engage the end users of energy produced as well as the local communities, whom the project aims to assist, in order to improve the design and delivery of modern energy sources, whether they be from off grid, local grid or national grid suppliers. In order for aid to be effective it must reach, first and foremost those who are most needy, and secondly must be aligned with the priorities and needs of those whom it aims to assist.

There remains considerable scope to address the role of the private sector and the involvement of the for profit sector in the development of geothermal resources in developing contexts. The aim of the GEP was to remove roadblocks to increased private sector involvement which is largely considered a necessity and supported by all parties involved. However, as demonstrated in Ethiopia and Rwanda, there is considerable disagreement as to what that involvement will mean for energy consumers and whether it will raise end user fees, thus making take-up less likely. Additionally as an ODA funded venture, it is imperative that resources provided through the project are not in fact laying the groundwork for large corporations to profit off the inputs, but are achieving the targets set out in the development strategy which are to directly benefit the poor.

In line with the RBM strategy and overall aid effectiveness agenda, increased emphasis has been placed on accountability in project planning and implementation, which in turn has increased the central importance of monitoring and evaluation of development initiatives. The comprehensive implementation of monitoring and evaluation throughout the project is seen as a key way to ensure that planners and implementers are able to deliver positive outcomes and adjust project implementation on the basis of information produced. These concerns are highlighted by the adoption of the five DAC evaluation criteria of appropriateness (relevance), efficiency, effectiveness, impact and sustainability. In addition to the application of standardised evaluation criteria, donors and other implementers can ensure accountability by making public and accessible all documents and relevant information related to programme implementation. As demonstrated a number of times throughout this evaluation, there is a significant need to improve the availability of documentation, and reports related to geothermal development efforts undertaken by Icelandic development cooperation agents, in order to maximise transparency and increase accountability in the implementation of ODA funded initiatives in the sector.

The agreements reached in Busan (2011) and taken up by all DAC members, set out a number of guidelines for development actors that are aimed at improving the effectiveness of development cooperation and encourage DAC members to ensure that their aid investments and contributions are aligned with the wider goals of human rights protection, gender equality and environmental sustainability. Iceland's various policy and

strategy guides have been unequivocal that gender equality is a definitive priority for Icelandic development projects and set as a central goal the empowerment of women through specific measures and policies, as well as an overall take up of gender equality concerns throughout the project cycle. Iceland is not only a world leader in gender equality and human rights but has assumed a leadership role in a number of international efforts to increase gender equality on a global scale. Although the guidelines and policies for implementing gender concerns in development projects are clear, much more can and should be done to improve gender mainstreaming overall in development projects. Although energy development projects have long been the traditional domain of men, there are a number of ways that planners and implementers can incorporate gender equality concerns throughout the project cycle from planning and implementation, till delivery and beyond.

As a leader in the sectors of geothermal development and gender equality, Iceland has much to contribute to international development cooperation efforts. As reflected in its various commitments to the aid effectiveness agenda, Iceland aims to ensure positive outcomes and results of its ODA supported initiatives. However, there are a number of ways in which programme and project planning, and resource delivery can better reflect the concerns set out in the Development Strategy and other policy targets, in order to improve overall outcomes and ensure positive results.

8 Conclusion

The global energy transition has been brought to the forefront of development planning and programming in recent years, through the Sustainable Energy for All initiative, the MDGs, and the SDGs. This emphasis is reflected in Icelandic development cooperation efforts, which has placed renewable energy as a priority area for ODA allocation in the national strategy for development cooperation, and recognises that energy security and ensuring accessible, affordable energy is a prerequisite for socio-economic development. For many countries development is being hampered by low rates of access to modern energy sources, which are compounded by a lack of infrastructure, lack of policies and frameworks for implementing clean energy sources, inadequate funding and low levels of technical expertise and knowledge of energy development from renewable sources.

The GEP was designed to build on and deliver in the areas of Icelandic expertise; geothermal energy development and gender equality and represented a significant contribution to Icelandic development cooperation efforts. Although geothermal exploration and development in the EARS has been taking place for many years, Icelandic involvement can be seen as having contributed considerably to increased levels of technical knowledge and expertise in the region and a key factor in removing a number of roadblocks to increased geothermal uptake and utilization.

In order to achieve the SDG targets of increasing sustainable energy access for all by 2030, it is important that no one is left behind. This means that energy development projects, particularly when implemented by development actors, directing ODA resources, must do more to include the traditionally powerless and voiceless. Integral to this, is envisioning the end users of the energy produced, deciding who key stakeholders are, planning for their inclusion at all levels of programming, and delivering results that are aligned with the social context and needs of those who the initiative is targeted at.

Although there are some indications that women's inclusion in the development of renewable energy development sector has improved, there are still a number of significant cultural and social barriers to women's levels of energy access and employment, skills, knowledge and opportunities. For development actors, gaining a clear understanding of gender hierarchies and its effects at various levels, national, societal or household is crucial for designing programmes that can effectively address

these imbalances. It is essential that project planning takes in to account the specific constraints faced by women, adopts strategies to overcome them, and place greater emphasis on ensuring gender equality in delivery to, and benefactors of, development initiatives.

Improving project design, implementation and delivery of project resources, as called for in the aid effectiveness agenda means an increased focus on effectiveness and accountability. Accountability can be better addressed through increasing project transparency and access to project relevant information. Improved project effectiveness means that comprehensive monitoring and evaluation frameworks must be in place that can track progress towards the achievement of expected results, and importantly, make lessons drawn from evaluation processes an integral part of management decisions. In order to manage effectively for results, ensure gender equality concerns and stakeholder engagement, well defined, measurable targets and indicators that are closely aligned with the SDGs must be in place. With clear indicators in place for monitoring projects, crucial information regarding progress in focus areas such as gender equality, pro poor considerations and inclusivity can be fed into the project cycle and provide the basis for necessary programme adjustments.

Increased access to renewable energy is a key factor in reducing poverty, improving wellbeing, and driving the global energy transition to reliance on sources of sustainable energy. Icelandic development contributions through the GEP and development of geothermal resources may have contributed considerably to this aim and are a reflection of Icelandic commitments to ensuring positive change.

Tabitha Rose Jonsson

9 References

- Adou, J. Y. (2017, September 30). Evaluation in the era of the SDGs. *Evaluation Matters Magazine*. Retrieved from <http://idev.afdb.org/sites/default/files/documents/files/Current%20evaluation%20methods.pdf>
- Alþingi. (2017). *Skýrsla Guðlaugs Þórs Þórðarsonar utanríkisráðherra um utanríkis- og alþjóðamál*. Reykjavík: Alþingi.
- Alþingi. (2018). *Skýrsla Guðlaugs Þórs Þórðarsonar utanríkisráðherra um utanríkis- og alþjóðamál*. Reykjavík: Alþingi.
- Alþingi. (2016). *Skýrsla Gunnars Braga Sveinssonar utanríkisráðherra um utanríkis- og alþjóðamál*. Reykjavík: Alþingi.
- Alþingi. (2008, September 17). *Lög um alþjóðlega þróunarsamvinnu Íslands*. Retrieved from Althingi.is : <https://www.althingi.is/lagas/nuna/2008121.html>
- Baruah, B. (2017). Renewable inequity? Women's employment in clean energy in industrialized, emerging and developing economies. *Natural Resources Forum*, 41, 18-29. doi:10.1111/1477-8947.12105
- Bello , M. (2015, July). Renewable Energy for Sustainable Socio-Economic Development in Developing Countries: A Case Study of Sub-Saharan Africa. *Advanced Materials Research*, 1116, pp. 33-44. doi:10.4028/www.scientific.net/AMR.1116.33
- Bishoge, O. K., Zhang, L., & Mushi, W. G. (2018). The Potential Renewable Energy for Sustainable Development in Tanzania: A Review. *Clean Technology* , 1(1), 70-88. doi:10.3390/cleantechnol1010006
- Brynhildur Davídsdóttir. (2016). United Nations Sustainable Development Goals and Geothermal Development. (pp. 1-6). Santa Tecla: UNU-GTP, La Geo. Retrieved from <https://rafhladan.is/bitstream/handle/10802/13444/UNU-GTP-SC-22-02.pdf?sequence=1>
- Cecelski, E., & Dutta, S. (2011). *Mainstreaming Gender in Energy Projects: A Practical Handbook*. ENERGIA . Practical Action . Retrieved from https://www.energia.org/cm2/wp-content/uploads/2016/02/01.-Mainstreaming_gender_in_energy_projects_A_practical_Hand_book1.pdf
- de Jesus, A. C. (2016). 17 Environmental benefits and challenges associated with geothermal power generation. In *Geothermal Power Generation, Developments and Innovation* (pp. 477-498). Elsevier . doi:<https://doi.org/10.1016/B978-0-08-100337-4.00017-6>
- DFID. (2003). *Tools for Development: A handbook for those engaged in development activity*. Department for International Development.

- Ding, W., Wang, L., Chen, B., & Li, H. (2014, September). Impacts of renewable energy on gender in rural communities of north-west China. *Renewable Energy*, 69, 180-189. doi:<https://doi.org/10.1016/j.renene.2014.03.027>
- Do, T. L. (n.d.). *Secondary Research*. Retrieved from Design Research Techniques: <http://designresearchtechniques.com/casestudies/secondary-research/>
- ESMAP . (2018). *Getting to Gender Equality in Energy Infrastructure: Lessons from Electricity Generation, Transmission and Distribution Projects*. The World Bank Group, The International Bank for Reconstruction and Development. Washington, D.C.: ESMAP, World Bank . Retrieved from <http://documents.worldbank.org/curated/en/639571516604624407/pdf/122887-REVISED-GenderEquality-Report-WEB-2-2-18.pdf>
- Gertler, P. J., Martinez, S., Premand, P., Rawlings, L. B., & Vermeersch, C. M. (2011). *Impact Evaluation in Practice*. Washington, D.C.: The World Bank .
- Gunnlaugsson G, Sigurðardóttir Th, Einarsdóttir M, Einarsdóttir J. (2018). Iceland and foreign aid: from recipient to donor. In No one is an island. An Icelandic perspective, p. 111-134. Baruchello G, Kristjánsson JTH, Jóhannesdóttir KM, and Ingimarsson S (Eds.). Cambridge Scholars Press
- Gunnlaugsson G, Einarsdóttir J. Iceland and development aid in the era of MDGs: case study of an Alma Ata inspired primary healthcare project in southern Malawi. *Development Studies Research* 2018;5 Suppl 1:S14-S26. <https://doi.org/10.1080/21665095.2018.1494510>
- Hafner, M., Falchetta, G., Tagliapietra, S., & Occhiali, G. (2019). *East Africa Regional Energy Outlook*. Springer Nature Switzerland AG. doi:10.1007/978-3-030-11735-1_2
- Helgi Torfason, & Jørgensen, S. (2016). *Mid-Term Review of Geothermal Exploration Project ICE23066-1301*. Nordic Consulting Group . Retrieved from <https://www.stjornarradid.is/lisalib/getfile.aspx?itemid=b8301681-a074-11e8-942c-005056bc530c>
- ICEIDA . (n.d.). *Capacity Building and Technical Assistance for Geothermal Development in Djibouti*. Reykjavík: ICEIDA .
- ICEIDA . (n.d.). *The Geothermal Exploration Project : Sub-project of the Geothermal Compact in East Africa*. Reykjavík.
- ICEIDA. (2012). *Guiding Principles for Addressing Environmental Issues*. Reykjavík: The Icelandic International Development Agency. Retrieved from <http://www.iceida.is/media/pdf/Guiding-Principles-for-Environmental-Issues.pdf>
- ICEIDA. (n.d.). *The Geothermal Exploration Project*. ICEIDA . Retrieved from https://www.government.is/library/01-Ministries/Ministry-for-Foreign-Affairs/Iceida/Publications/Geothermal_Exploration_Project_PD.pdf

- ICEIDA, NDF . (n.d.). *Capacity Building and Technical Assistance for GDC* . Reykjavík : ICEIDA, NDF .
- ICEIDA, NDF . (n.d.). *Capacity Building and Technical Assistance for Geothermal drilling in Rwanda* . Reykjavík : ICEIDA, NDF .
- ICEIDA, NDF . (n.d.). *Surface Exploration and Capacity Building for Geothermal Development in Ethiopia* . Reykjavík : ICEIDA, NDF .
- ICEIDA, NDF . (n.d.). *Surface Exploration and Capacity Building for Geothermal development in Tanzania* . Reykjavík : ICEIDA, NDF .
- IPE . (2017). *Evaluation of Gender Equality Policy 2013-2016 in Iceland's International Development Cooperation*. IPE/Triple Line . Retrieved from <https://www.stjornarradid.is/lisalib/getfile.aspx?itemid=631818ee-a074-11e8-942c-005056bc530c>
- IRENA. (2018). *Geothermal Outlook in East Africa: Perspectives for Geothermal Development*. IGA . Retrieved from <https://www.irena.org/-/media/Files/IRENA/Agency/Events/2018/Jan/Geothermal-financing/S1-p1-IRENA-IGA-Presentation-31-01-2018.pdf?la=en&hash=52618994FFFF6833CFF3B51C6199982BC042741C>
- IRENA. (2019). *Renewable Energy: A Gender Perspective* . Abu Dhabi: IRENA.org. Retrieved from <https://www.irena.org/publications/2019/Jan/Renewable-Energy-A-Gender-Perspective>
- Janik, V.L., Friðriksson, P., and Morris, E. (26, Apr, 2018) Gender and Geothermal: Global Geothermal Development Plan. Geothermal Conference. ESMAP, World Bank Group. Iceland, Reykjavík. Retrieved from https://www.esmap.org/sites/default/files/events-files/Gender%20and%20GeothermalEllenMorris_Final.pdf
- Johnston, M. P. (2014, January). Secondary Data Analysis: A Method of which the Time Has Come. *Qualitative and Quantitative Methods in Libraries*, 3(3), 619 –626. Retrieved from https://www.researchgate.net/publication/294718657_Secondary_Data_Analysis_A_Method_of_Which_the_Time_has_Come
- Kenya: *Menengai geothermal project receives funding*. (n.d.). Retrieved from Future Energy East Africa : <http://www.future-energy-eastfrica.com/kenyageothermal>
- Ljungman, C. M., Carneiro, G., Engstrand, K., & Newson, J. (2017). *Evaluation of the UNU Programmes in Iceland*. Niras indevelop. Retrieved from <https://gest.unu.edu/static/files/evaluation-of-the-unu-programmes-in-iceland.pdf>
- Lund , J. W., & Boyd, T. L. (2016). Direct utilization of geothermal energy 2015 worldwide review. *Geothermics*, 60, 66-93. doi:<https://doi.org/10.1016/j.geothermics.2015.11.004>

- Management Study Guide . (n.d.). *Desk Research - Methodology and Techniques*. Retrieved from Management Study Guide: <https://www.managementstudyguide.com/desk-research.htm>
- Mariita, N. O., Onyango, S., & Varet, J. (2016). Potential for Small Scale Direct Applications of Geothermal Fluids in Kenyas Rift Valley. (p. 9). Addis Ababa: African Rift Geothermal Conference.
- Markiewicz, A., & Patrick, I. (2016). *Developing Monitoring and Evaluation Frameworks*. London, UK: Sage Publications.
- Marquardt, J., Steinbacher, K., & Schreurs, M. (2016, August). Driving force or forced transition?: The role of development cooperation in promoting energy transitions in the Philippines and Morocco. *Journal of Cleaner Production*, 128, 22-33. doi:<https://doi.org/10.1016/j.jclepro.2015.06.080>
- Ministry for Foreign Affairs . (2018). *Icelandic Foreign Affairs 2018: Excerpt from the report by the Minister for Foreign Affairs to Parliament 2018*. Reykjavík: Ministry for Foreign Affairs .
- Ministry for Foreign Affairs ; ICEIDA ;. (2013). *Gender Equality in Iceland's International Development Cooperation*. MFA, ICEIDA . Retrieved from <https://www.government.is/library/01-Ministries/Ministry-for-Foreign-Affairs/Iceida/Publications/UTR-GenderEquality-2013.pdf>
- Ministry for Foreign Affairs. (2017). *Íslensk Utanríkismál 2017, Úrdráttur úr skýrslu utanríkisráðherra til Alþingis 2017*. Ministry for Foreign Affairs . Retrieved from <https://www.stjornarradid.is/lisalib/getfile.aspx?itemid=9925f5ef-3a41-11e7-941a-005056bc530c>
- Ministry for Foreign Affairs. (2018). *Framkvæmd þingsályktunar um áætlun um alþjóðlega þróunarsamvinnu Íslands fyrir árin 2013–2016*. ICEIDA . Ministry for Foreign Affairs. Retrieved from https://www.althingi.is/altext/pdf/149/fylgiskjol/s0416-f_III.pdf
- Ministry for Foreign Affairs. (n.d.). *Strategy for Iceland's Development Cooperation 2013-2016*. Ministry for Foreign Affairs of Iceland. Retrieved from <https://www.government.is/library/01-Ministries/Ministry-for-Foreign-Affairs/Iceida/Publications/MFA-StrategyforIcelandsDevelopmentCooperation-2013-2016-Fact-Sheet.pdf>
- Mohammed , Y. S., Mustafa , M. W., & Bashir, N. (2013, November). Status of renewable energy consumption and developmental challenges in Sub-Sahara Africa. *Renewable and Sustainable Energy Reviews*, 27, 453-463. doi:<https://doi.org/10.1016/j.rser.2013.06.044>
- Niyibizi, A. (2015). SWOT Analysis for Renewable Energy in Africa: Challenges and Prospects. *Renewable Energy Law and Policy Review*, 6(4), 276-293. Retrieved from <http://www.jstor.org/stable/26256470>

- OECD . (2012). *The Busan Partnership for Effective Development Cooperation* . OECD DAC . Retrieved from <https://www.oecd.org/dac/effectiveness/Busan%20partnership.pdf>
- OECD . (n.d.). *DAC Criteria for Evaluating Development Assistance*. Retrieved from OECD.org: <http://www.oecd.org/dac/evaluation/daccriteriaforevaluatingdevelopmentassistance.htm>
- OECD. (1991). *DAC Principles for Evaluation of Development Assistance*. Paris: OECD.org. Retrieved from <https://www.oecd.org/development/evaluation/2755284.pdf>
- OECD. (2010). *Glossary of Key Terms in Evaluation and Results Based Management*. The Development Assistance Committee Working Party on Aid Evaluation. OECD . Retrieved from <https://www.oecd.org/dac/evaluation/2754804.pdf>
- OECD. (2016). *OECD DAC Peer Review of Iceland Memorandum*. OECD. Retrieved from <https://www.oecd.org/dac/peer-reviews/Memorandum-of-Iceland-2016.pdf>
- OECD. (2017). *OECD Development Co-operation Peer Reviews: Iceland 2017*. Paris : OECD Publishing. doi:<https://doi.org/10.1787/9789264274334-en>
- Onyango, S., & Varet, J. (2016). Future Geothermal Energy Development in the East African Rift Valley Through Local Community Involvement: Learning from the Maori's experience. *6th African Rift Geothermal Conference* (pp. 1-16). Addis Ababa, Ethiopia: ARGeo. Retrieved from <http://theargo.org/fullpapers/FUTURE%20GEOTHERMAL%20ENERGY%20DEVELOPMENT%20IN%20THE%20EAST%20AFRICAN%20RIFT%20VALLEY%20THROUGH%20LOCAL%20COMMUNITY%20INVOLVEMENT.pdf>
- Orkustofnun. (n.d.). *Iceland a Leader in the use of Renewable Resources* . National Energy Authority . Retrieved from https://orkustofnun.is/gogn/Frettir/Iceland_Loader_RenewableEnergy.pdf
- Picciotto, R. (2013). The logic of development effectiveness: Is it time for the broader evaluation community to take notice? *Evaluation*, 19(2), 155-170. doi:<https://doi.org/10.1177/1356389013483715>
- Ritchie , H., & Roser , M. (n.d.). *Renewable Energy: Empirical View* . Retrieved from Our World in Data: <https://ourworldindata.org/renewable-energy#global-renewable-energy-consumption-over-the-long-run>
- SEforALL. (2018). *Levers of Change: How Global Trends Impact Gender Equality and Social Inclusion in Access to Sustainable Energy*. Vienna: Sustainable Energy for All. Retrieved from <https://www.seforall.org/resource/levers-change-how-global-trends-impact-gender-equality-and-social-inclusion-access>
- SEforALL- People Centred Accelerator . (2018). *Evaluating Government and Business Landscapes on Women's Empowerment in Sustainable Energy* . People Centred

Accelerator . Vienna : SEforALL. Retrieved from
https://www.seforall.org/sites/default/files/Women_Empowerment_Sustainable_Energy_0.pdf

Sweerts, B., Longa, F. D., & van der Zwaan, B. (2019). Financial de-risking to unlock Africa's renewable energy potential. *Renewable and Sustainable Energy Reviews*, 102(C), 75-82. doi:10.1016/j.rser.2018.11.039

Tanzania is set to develop Ngozi geothermal steam field. (n.d.). Retrieved from Future Energy East Africa : <http://www.future-energy-eastafrica.com/TanzaniaDevelopNgoziGeothermal>

The World Bank . (n.d.). *The World Bank : History* . Retrieved from World Bank.org : <http://www.worldbank.org/en/about/archives/history>

The World Bank . (n.d.). *The World Bank: Who We Are* . Retrieved from World Bank.org : <https://www.worldbank.org/en/who-we-are>

United Nations University UNU-GTP (n.d.) Current Status. Retrieved from www.unugtp.is.
<http://www.unugtp.is/static/files/Organization/Status/governmentcontribution2017.jpg>

UN Habitat. (n.d.). *Applying RBM Concepts and Tools for a Better Urban Future*. UN Habitat Results Based Management Handbook . Retrieved from <https://unhabitat.org/books/results-based-management-handbook/>

UN Women. (2015). *UN Women Evaluation Handbook: How to manage gender-responsive evaluation*. New York: UN Women. Retrieved from <http://www.unwomen.org/en/digital-library/publications/2015/4/un-women-evaluation-handbook-how-to-manage-gender-responsive-evaluation>

UNDP . (n.d.). *Sustainable Development Goals* . Retrieved from UNDP : <https://www.undp.org/content/undp/en/home/sustainable-development-goals.html>

UNDP. (2000). *Results Based Management: Concepts and Methodology* . UNDP . Retrieved from <http://web.undp.org/evaluation/documents/RBMConceptsMethodgyjuly2002.pdf>

UNDP. (2009). *Handbook on Planning, Monitoring and Evaluating for Development Results*. New York: UNDP.

UNDP. (2011). *Outcome Level Evaluation; A Companion Guide*. Washinton D.C: UNDP.

UNDP. (2013). *Gender and Energy: Gender and Climate Change* . Policy Brief 4, UNDP , New York. Retrieved from <https://www.undp.org/content/undp/en/home/librarypage/womens->

empowerment/gender_and_environmentenergy/gender-and-climate-change-asia-pacific.html

UNEG. (2016). *Norms and Standards for Evaluation*. New York: UNEG. Retrieved from <http://www.unevaluation.org/2016-Norms-and-Standards>

United Nations University . (n.d.). *United Nations University Strategic Plan 2015–2019*. Tokyo : United Nations University . Retrieved from https://i.unu.edu/media/unu.edu/attachment/48794/unu_strategic_plan_2015-2019_en.pdf

WHO. (2018, May 8). *Household Air Pollution and Health* . Retrieved from World Health Organisation : <https://www.who.int/news-room/fact-sheets/detail/household-air-pollution-and-health>

Winther , T., Ulsrud , K., & Saini, A. (2018, May). Solar powered electricity access: Implications for women’s empowerment in rural Kenya. *Energy Research and Social Science*, 61-74. doi:<https://doi.org/10.1016/j.erss.2018.04.017>

World Bank. (2017). *Energy Sector Management Assistance Program Annual Report 2017*. Washington D.C.: ESMAP. Retrieved from <http://documents.worldbank.org/curated/en/171191523257054613/Energy-sector-management-assistance-program-annual-report-2017>

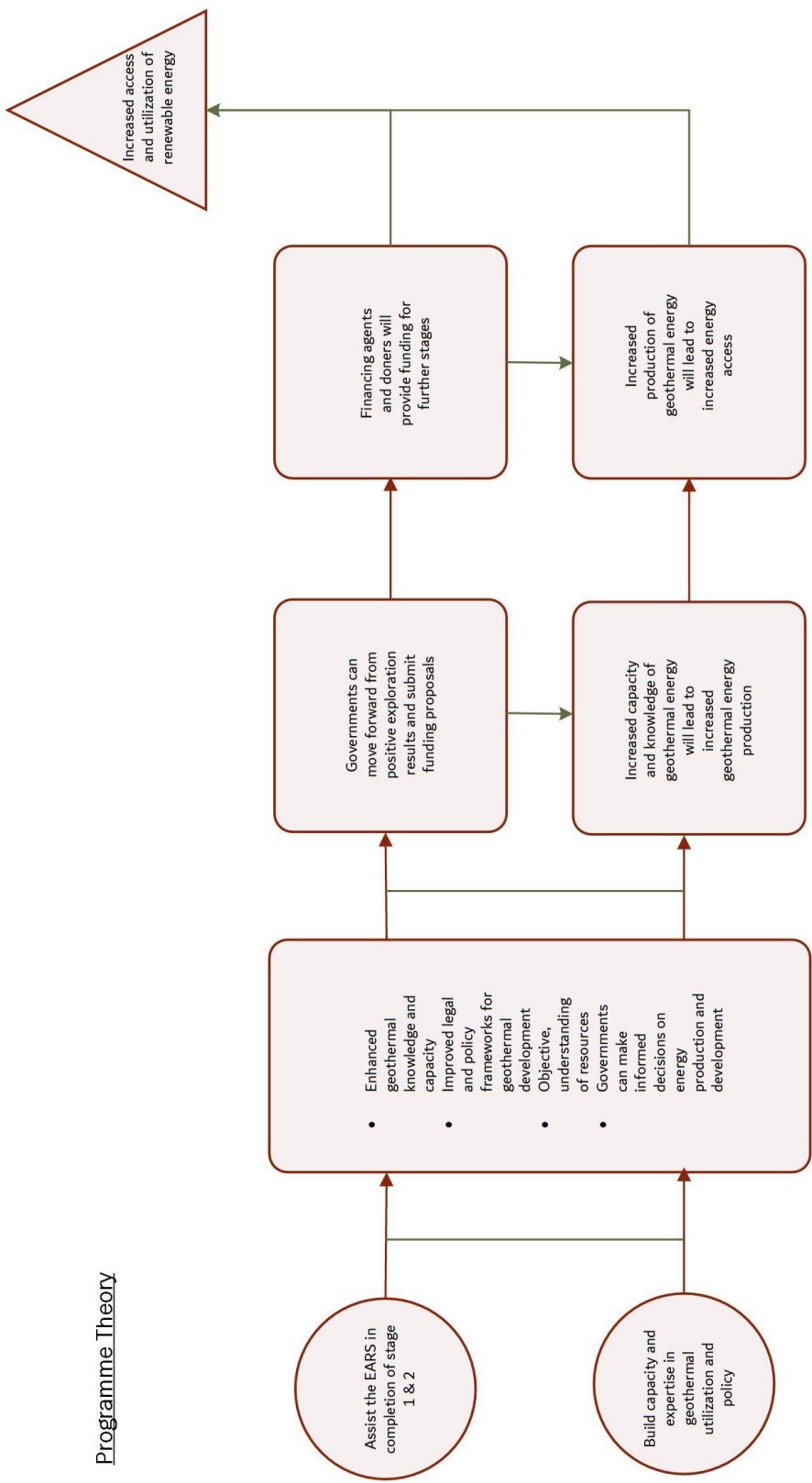
World Bank. (n.d.). *Global Geothermal Development Plan* . Washington D.C. : ESMAP. Retrieved from https://www.esmap.org/sites/esmap.org/files/DocumentLibrary/ESMAP_GGDP_FactSheet_Nov%202015-v2_Optimized.pdf

World Energy Council. (2016). *World Energy Resources 2016*. World Energy Council . Retrieved from <https://www.worldenergy.org/wp-content/uploads/2016/10/World-Energy-Resources-Full-report-2016.10.03.pdf>

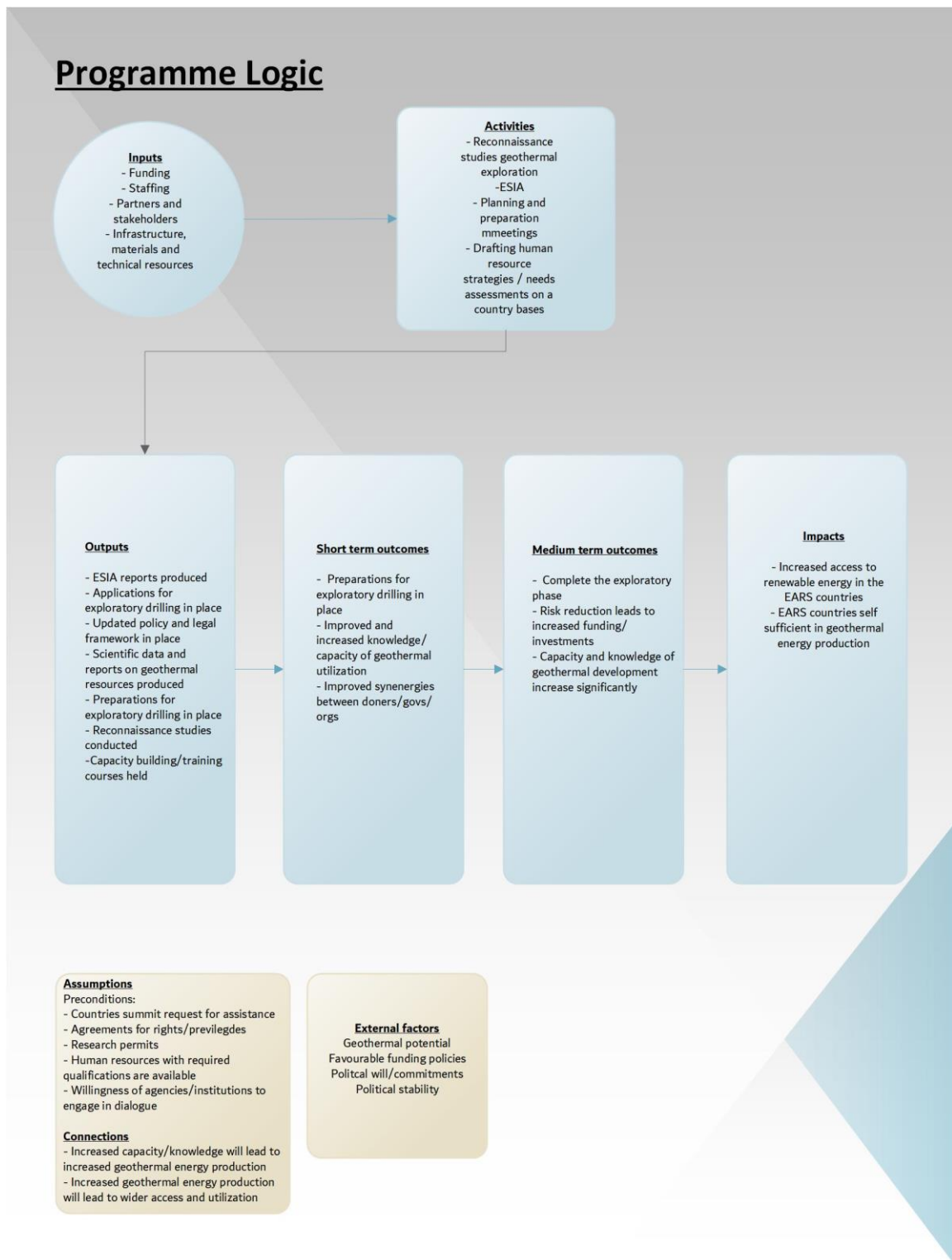
Zwaart , R. (2017). *Strengthening the results chain: Synthesis of case studies of results-based management by providers*. OECD Publishing. doi:<https://doi.org/10.1787/544032a1-en>

Appendices

Annex 1: Programme Theory



Annex 2: Programme Logic



Annex 3: Activities and Processes

Activities and processes	Input	Means of Verification	Assumptions
1. Geothermal explorations			
1.1. Reconnaissance studies			
1.1.1. Introduction of the program to respective governments and authorities.	• ICEIDA/NDF/WB/MFA/ARGeo	Official letters	Expressed interest from respective countries.
1.1.2. Request/expressions of interest	• Respective country	Letter	
1.1.3. Reply to request	•	Letter	
1.1.4. Delegation visit to respective country for further discussions and preparations.	• ICEIDA (NDF/WB) • ARGeo	Mission report	
1.1.5. Agreements made with respective governments for support.	• ICEIDA	Agreement	
1.1.6. Delineation of Reconnaissance study and preparation of Term of Reference.	• Respective government/ICEIDA	ToR	
1.1.7. Inception meetings for reconnaissance studies	• ICEIDA, Consultants, Respective governments	Meeting minutes	
1.1.8. Reconnaissance studies carried out	• Consultants	Report	
1.1.9. Debriefing for reconnaissance	• Consultant, local agency, ICEIDA		
1.1.10. Appraisal of findings.	• External reviewers	Appraisal report	
1.1.11. Consultation, present findings and discuss appraisal	• ICEIDA, Respective government	Meeting minutes	
1.1.12. Decision on further work	• ICEIDA/NDF	Minutes	
1.1.13. ToR for preparation of project plan	• ICEIDA	ToR	
1.1.14. Preparation of project plan for sub-project in each country	• Respective governments Consultants	Project plan	
1.2. Geothermal Exploration			
1.2.1. Procurement documents for exploration prepared in each country.	• Respective government/ ICEIDA/Consultants	• Procurement documents	
1.2.2. International competitive bidding for explorations in each country and selection of consultants.	• Respective government/ ICEIDA/NDF/Consultants	• Advertisement	
1.2.3. Inception meeting for geothermal exploration	• Consultants, ICEIDA, Exploration consultants	• Meeting minutes	
1.2.4. Geothermal explorations conducted	• Consultants - explorations	• Progress reports	
1.2.5. Monitoring of quality and progress of exploration	• Consultants	•	
1.2.6. Exploration report finalized with	• Consultants - explorations	• Exploration report	

recommendations on potential exploration drilling if warranted.			
1.2.7. Appraisal of exploration report	<ul style="list-style-type: none"> External reviewers 	<ul style="list-style-type: none"> Appraisal report 	
1.2.8. Consultation, findings presented and decisions on further actions.	<ul style="list-style-type: none"> Respective government/ICEIDA/NDF 	<ul style="list-style-type: none"> Meeting minutes 	
2. Improved and increased level of knowledge and capacity on geothermal utilization.			
2.1.1. Geothermal policy and regulatory review conducted in each country.	<ul style="list-style-type: none"> Consultants/OS AUC, ARGeo 	<ul style="list-style-type: none"> Policy Review report 	
2.1.2. Preparation of plans for appropriate support at the policy level.	<ul style="list-style-type: none"> Consultants/OS AUC, ARGeo 	<ul style="list-style-type: none"> Report 	
2.1.3. Support to policy and regulatory development according to plans.	<ul style="list-style-type: none"> Consultants/OS AUC, ARGeo 	<ul style="list-style-type: none"> Progress reports 	<ul style="list-style-type: none"> Political commitment for geothermal development
2.2. Capacity building			
2.2.1. Needs assessment conducted for geothermal capacity building in respective countries.	<ul style="list-style-type: none"> Consultants UNU-GTP, OS ARGeo 	<ul style="list-style-type: none"> Needs assessment report 	
2.2.2. Geothermal human resource strategy prepared in each country.	<ul style="list-style-type: none"> Consultants UNU-GTP, OS ARGeo 	<ul style="list-style-type: none"> Human resource strategy 	
2.2.3. Identification of suitable candidates for the UNU-GTP and registration.	<ul style="list-style-type: none"> UNU-GTP 	<ul style="list-style-type: none"> Diplomas and degrees awarded to participants (Gender based) 	
2.2.4. Based on human resource strategy, local training courses planned and carried out accordingly.	<ul style="list-style-type: none"> UNU-GTP OS AUC, ARGeo 	<ul style="list-style-type: none"> Training reports 	
2.3. Strengthen the ability of development and financial institutions to engage and support geothermal development.			
2.3.1. Presentation of program activities at meetings and seminars.	<ul style="list-style-type: none"> ICEIDA/MFA/WB 	<ul style="list-style-type: none"> Progress reports 	
2.3.2. Establish geothermal community of practice.	<ul style="list-style-type: none"> ICEIDA/MFA/WB 		
2.3.3. Introduce program activities and plans for finance and development institutions.	<ul style="list-style-type: none"> ICEIDA/MFA/WB 	<ul style="list-style-type: none"> Progress reports 	
2.3.4. Hold collaboration meetings with relevant/potential stakeholders. Present findings and updates.	<ul style="list-style-type: none"> ICEIDA/NDF/MFA 	<ul style="list-style-type: none"> Meeting minutes/reports 	
2.3.5. Status and updates/ briefs disseminated to relevant/potential stakeholders.	<ul style="list-style-type: none"> ICEIDA 	<ul style="list-style-type: none"> Briefs disseminated 	
3. Preparation for exploration drilling in place			
3.1.1. EIA produced for exploration drilling sites, if applicable.	<ul style="list-style-type: none"> Consultants 		<ul style="list-style-type: none"> Exploration studies have identified potential exploration drill sites.
3.2.1. Plan prepared to enter funding pipelines for exploration drilling.	<ul style="list-style-type: none"> Respective governments, consultants 	Documentation	
3.2.2. Permits for exploration drilling prepared.	<ul style="list-style-type: none"> Respective government/Consultants 	<ul style="list-style-type: none"> Drilling plans and permits 	<ul style="list-style-type: none"> Exploration studies have identified potential exploration drill sites.
3.2.3. Funding applications for exploration drilling prepared.	<ul style="list-style-type: none"> Respective government/Consultants 	<ul style="list-style-type: none"> Funding applications 	

Annex 4: Parallel Activities

Parallel Activity	Focus	Implementing Partner	Funding Agent
Parallel Activity 1: Policy development and updates. Legal and development framework for geothermal projects, business modelling, engagement of developers/sponsors/investors and financiers	Participant Countries in the EARS region	World Bank (financial guidance) and Orkustofnun (National Energy Authority of Iceland) (technical support)	NDF ICEIDA
Parallel Activity 2: Capacity Building. Includes training and other capacity building activities. A geothermal human resource strategy should be prepared in each respective country which will guide these activities. The Reconnaissance study in each country will entail a human resource needs assessment.	Participant Countries in the EARS region	UNU-GTP Orkustofnun (National Energy Authority of Iceland) AUC ARGeo	NDF ICEIDA
Parallel Activity 3: Strengthen the ability of development and financial institutions to engage and support the geothermal development process. Various supporting initiatives will be launched, notably the creation of a Community of Practice on geothermal development for dialogue, learning and information sharing.	External Supporting Agencies		

Annex 5: Expected Results (Outputs)

Expected Results (Outputs)			
1. Scientific data and reports on geothermal resources produced.			
1.1. Reconnaissance studies conducted in respective EARS countries with recommendations for further action.	<ul style="list-style-type: none"> • Reconnaissance reports with recommendations on further studies. • External appraisals 	<ul style="list-style-type: none"> • Final reports for Reconnaissance studies • Appraisal 	<ul style="list-style-type: none"> • Requests made for assistance • Required research permits available
1.2. Geothermal explorations conducted and reported.	<ul style="list-style-type: none"> • Exploration report with recommendations on potential exploration drill sites, if warranted. • External appraisals 	<ul style="list-style-type: none"> • Exploration reports • Appraisal 	<ul style="list-style-type: none"> • Positive results from Reconnaissance study
2. Improved and increased level of knowledge and capacity on geothermal utilization.			
2.1. Strengthened policy and legal framework for geothermal utilization in respective countries.	<ul style="list-style-type: none"> • Updated policy and legal framework for geothermal utilization in each country. 	<ul style="list-style-type: none"> • Updated policy and regulations. 	<ul style="list-style-type: none"> • Political will and support for geothermal energy development.
2.2. Capacity building in the participating countries, including UNU-GTP training.	<ul style="list-style-type: none"> • # number of participants trained by the UNU-GTP (by country, gender, field, and level of training). 	<ul style="list-style-type: none"> • Training reports, diplomas, papers published. 	<ul style="list-style-type: none"> • Human resources with required qualifications are available.
2.3. Strengthened ability of development and financial institutions to engage and support the geothermal development process.	<ul style="list-style-type: none"> • Community of Practice is in place. • Amount of funding available for geothermal explorations/drilling. 	<ul style="list-style-type: none"> • Funds available for geothermal development 	<ul style="list-style-type: none"> • Willingness of agencies and institutions to engage in dialogue regarding geothermal development.
3. Preparations for exploratory drilling are in place.			
3.1. Environmental and Social Impact Assessment conducted for exploratory drill sites where applicable.	<ul style="list-style-type: none"> • EIA report produced 	<ul style="list-style-type: none"> • EIA reports 	<ul style="list-style-type: none"> • Exploration work has identified areas viable for exploration drilling.
3.2. Applications in place for exploration drillings	<ul style="list-style-type: none"> • Exploration drill permits prepared • Funding applications prepared 	<ul style="list-style-type: none"> • Drill permits • Funding applications submitted 	<ul style="list-style-type: none"> • Geothermal potential

Annex 6: Evaluation Questions

Domain	Headline Questions	Subsidiary Questions
Appropriateness (Relevance)	To what extent was the design of the programme suitable in meeting the needs of key stakeholders and beneficiaries?	<p>To what extent did the programme design meet donor priorities and policies?</p> <p>To what extent did the programme meet the needs of the broader stakeholder community?</p>

Question	Highly satisfactory	Satisfactory	Unsatisfactory, with some positive elements	Unsatisfactory
To what extent was the design of the programme suitable in meeting the needs of key stakeholders and beneficiaries?		✓		
Donor level				
Comparative Advantage	✓			
Alignment with National Strategy			✓	

Partnership Strategy	✓			
Participant Country level				
Capacity Building		✓		
Institutional Strengthening			✓	
Resource Assessment		✓		
Improved pathways for investment		✓		
Wider Population level			✓	

Domain	Headline Questions	Subsidiary Questions
Efficiency	<p>To what extent were the intended outputs delivered?</p> <p>To what degree was there good governance and management of the programme?</p> <p>To what extent did monitoring systems provide a stream of data that allowed project management to learn and adjust implementation accordingly?</p>	To what extent was the programme implemented in a time efficient manner?

Question	Highly satisfactory	Satisfactory	Unsatisfactory, with some positive elements	Unsatisfactory
To what extent were intended outputs delivered?		✓		
To what extent was the programme implemented in a time efficient manner?		✓		
To what degree was there good governance and		✓		

management of the programme?				
To what extent did monitoring systems provide a stream of data that allowed project management to learn and adjust implementation accordingly?			✓	

Domain	Headline Questions	Subsidiary Questions
Effectiveness	<p>To what degree can the programme be assessed as having achieved its objectives?</p> <p>To what degree can the programme be assessed as being of value to its key stake holders and beneficiaries?</p>	What were the major factors influencing the achievement or non-achievement of the objectives?

Question	Highly satisfactory	Satisfactory	Unsatisfactory, with some positive elements	Unsatisfactory
To what degree can the programme be assessed as having achieved its objectives?		✓		
Build Capacity				
Provide the necessary scientific data that allow participants proceed with funding plans		✓		

and energy development				
Increased knowledge of resources (complete comprehensive reconnaissance of resources)		✓		
Increased knowledge of geothermal utilization and development		✓		

Domain	Headline Questions	Subsidiary Questions
Impact	What has happened as a result of the programme or project?	<p>What real difference has the project made to the beneficiaries?</p> <p>What results expected and unexpected, direct and indirect were produced by the programme?</p> <p>What factors led to positive change or contributed to lack of change?</p> <p>To what extent were changes identified attributable to the programme or its effects?</p>

Question	Highly satisfactory	Satisfactory	Unsatisfactory, with some positive elements	Unsatisfactory
What has happened as a result of the programme or project?				
What real difference has the project made to the beneficiaries?				
What factors led to positive change or				

contributed to lack of change?				
To what extent were changes identified attributable to the programme or its effects?				

Domain	Headline Questions	Subsidiary Questions
Sustainability	<p>To what extent has a sustainability strategy, including capacity development of key national stakeholders, been developed?</p> <p>To what degree is there an indication of ongoing benefits attributable to the programme?</p>	<p>To what extent are policy and regulatory frameworks in place that will support the continuation of benefits?</p> <p>To what extent have partners committed to providing continuing support?</p> <p>To what degree did the programme develop capacity (in individuals and organisations) to produce ongoing benefits?</p> <p>What factors contributed to or prevented the achievement of ongoing benefits?</p>

Question	Highly satisfactory	Satisfactory	Unsatisfactory, with some positive elements	Unsatisfac tory
To what extent has a sustainability strategy, including capacity development of key national stakeholders, been developed?		✓		
To what extent are policy and regulatory frameworks in place that will support the continuation of benefits?			✓	
To what extent have partners committed to providing continuing support?		✓		
To what degree is there an indication of ongoing benefits attributable to the programme?		✓		

To what degree did the programme develop capacity (in individuals and organisations) to produce ongoing benefits?			✓	
What factors contributed to or prevented the achievement of ongoing benefits				

Domain	Headline Questions	Subsidiary Questions
Gender Equality	<p>To what extent was the project aligned with the development Cooperation Strategy?</p> <p>To what extent did the initiative promote gender equality in the delivery of outputs?</p> <p>To what extent did the project increase gender equality overall?</p>	<p>To what extent does the initiative meet the planned requirements of targeted women and men?</p>

Question	Highly satisfactory	Satisfactory	Unsatisfactory, with some positive elements	Unsatisfactory
To what extent was the project aligned with the development Cooperation Strategy?			✓	
To what extent did the initiative promote gender equality in the delivery of outputs?			✓	

To what extent does the initiative meet the planned requirements of targeted women and men?		✓		
To what extent did the project increase gender equality overall?			✓	