

REVIEW AND ANALYSIS OF PROCUREMENT METHODS FOR GEOTHERMAL PROJECTS – APPLIED TO THE CASE OF DOMINICA

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ABSTRACT

Procurement is a fundamental part of any project. A specialized industry such as geothermal requires the development of a good procurement strategy tailored to meet the needs of the procuring entity and the project. The most common practice in geothermal procurement is the use of competitive tendering, particularly open competitive tendering, to procure the goods, works, and services that a project requires at any given time. This method has been proven to work successfully for the Commonwealth of Dominica's geothermal project, whose procurement is guided by the World Bank's Procurement Regulations, which prefer an open competitive process. Competitive dialogue, a closed competition method, could be beneficial for projects as it allows for more collaboration between the procuring entity and the suppliers, which could in turn provide a better tailored product to satisfy project needs.

1. INTRODUCTION

The use of geothermal energy has been said to span about 10,000 years, the first recorded uses being for cooking, bathing, and warmth. The first industrial use was recorded in Pisa, Italy in the 18th century, with the first power plant invented at a dry steam field in Tuscany, Italy in 1904 (Conserve Energy Future, 2019). Presently, geothermal energy is considered one of the most important sources of energy, accounting for about 1% of the global power demand (Conserve Energy Future, 2019). As the world moves towards a sustainable future with renewable and sustainable energy sources as the forefront, development of geothermal energy will continue to grow.

The development of geothermal resources worldwide is driven by the world's commitment to low-carbon development and the Sustainable Development Goal on energy (SGD-7) as well as the increasing demand for energy. As such, investments in the geothermal sector are set to increase significantly in the coming years, expecting an increase to US\$3 billion by 2026 (Balkan Green Energy News, 2021). With more and more financing available for geothermal development, it has become increasingly important to employ proper project planning to achieve a successful outcome. An important aspect of project planning is procurement.

The main objective of procurement is “to acquire the right quality of material, at the right time, in the right quantity, from the right source, at the right price” (Baily et al., 2015). An organization may employ

different procurement methods to meet this objective. A procurement method is the procedure used by a procuring entity to acquire goods, services, and works (Khataka, 2014). Procurement is a fundamental part of the geothermal project development cycle and is responsible for the acquisition of all goods, services, and works that a geothermal project may require during its lifetime. These may include drilling services, Owners-Engineer services, Environmental and Social Impact Assessments (ESIAs), civil works, construction, well casings, well heads, and drilling equipment.

Geothermal energy projects have been around for decades, and standard procurement methods have been established in the industry, such as Competitive Tendering, Direct Negotiation, and Best and Final Offer. This paper seeks to a) identify the common methods used in geothermal projects, b) outline the strength and weaknesses of these methods, and c) demonstrate how these methods have been applied successfully in the Commonwealth of Dominica's geothermal development project.

2. INTRODUCTION TO DOMINICA

Dominica (formally The Commonwealth of Dominica) is a Small Island Developing State located in the Lesser Antilles measuring 750 km² (290 mi²) with a population of approximately 72,000 people. Dominica is home to nine active volcanoes, which makes it a hotspot of geothermal activity and the perfect candidate for geothermal development.

Dominica has one of the highest costs of electricity in the Caribbean, approximately US\$0.39 per kWh (National Renewable Energy Laboratory, 2015). Though there is an installed capacity of 6.5 MW of hydro, the majority of electricity production comes from diesel generation. As such, the cost of electricity is high due to the volatility in the price of diesel on the market.

With the intention of reducing the cost of electricity and providing a reliable alternative to diesel for baseload electricity production, the Government of the Commonwealth of Dominica (GoCD) embarked on a journey to pursue geothermal energy development.

In 2005, an exploratory survey was carried out in the Wotten Waven area under the Eastern Caribbean Geothermal Development Programme funded by the Organization of American States (OAS) to establish the existence of geothermal potential. Following this, the European Union (EU) initiated the Geothermal Energy in Caribbean Islands (Géothermie Caraïbes) programme under the European INTERREG IIIB Programme Espaces Caraïbes. The programme focused on the Roseau Valley Geothermal Field with geoscientific surveys conducted in 2008 by the BGRM Group. The surveys identified a potential geothermal reservoir in the Roseau Valley area.

The GoCD undertook the Geothermal Energy Project and established the Geothermal Project Management Unit in the Ministry of Public Works to oversee exploratory drilling and well testing. Three exploratory wells were drilled between 2011-2012, confirming the resource. Subsequently, two full-sized wells (one production and one reinjection) were drilled.

In 2016, the GoCD established the Dominica Geothermal Development Company (DGDC) Ltd as a special purpose vehicle to lead all aspects of geothermal development in the country. In 2019, the GoCD was able to secure funding of US\$27 million for construction of a 7 MW power plant in the Roseau Valley using the existing wells.

The current scope for the project includes drilling of two new wells (one for reinjection and an additional production well), construction of a 10 MW power plant for domestic use, and an upgrade of the existing transmission network. There are plans to potentially export power to neighbouring islands in the future and to further increase domestic production by an additional 5 MW. The project is being funded through funds being administered by the World Bank.

3. LITERATURE REVIEW

3.1 Introduction

Geothermal development is a complex process, which requires a broad range of skills and specialized services such as technical consultants, drilling companies, equipment suppliers, and EPC contractors, among others (Gonzalez et al., 2014). Most of these skills and services will need to be sourced outside of the organization. Procurement, therefore, plays a key role in determining the successful outcome of a geothermal development project.

The Individual Competence Baseline by the International Project Management Association (IPMA), version 4.0 (ICB4), describes procurement as the “process of buying or obtaining goods and/or services from external parties and includes all processes, from purchase planning to making the purchase and contract administration” (International Project Management Association, 2015). The ICB4 goes on to describe the key competence indicators for procurement, which includes agreements on procurement needs, options and processes, evaluation and selection of suppliers and partners, negotiation, and agreement of contractual terms and conditions, and supervision of the execution of contracts, address issues, and seek redress where necessary.

The Project Management Institute (PMI, 2017) considers procurement as one of the ten knowledge areas, Project Procurement Management, where it is defined as “the processes necessary to purchase or acquire products, services or results from outside of the project team”. The processes described in the guide are plan procurement, conduct procurement, and control procurement.

Usually, an organization develops a procurement plan or strategy. The plan or strategy will meet the key competence indicators as it details the procurement objectives, the types of goods and services needed, types of contracts to be used, roles and responsibilities, and supplier selection procedures (procurement methods), which will be employed to ensure that the procurement objectives are met.

All procurement activities for Dominica’s geothermal project are carried out by the DGDC including planning, seeking, and evaluating bids, and awarding and managing contracts, led by the DGDC Procurement Team (Dominica Geothermal Development Company Ltd, 2019) under the guidance of the World Bank Regulations for IPF Borrowers.

The World Bank Regulations are not the only standard regulations for procurement; for example, the EU has its own set of regulations, and procurement in Iceland is governed by the country’s procurement regulations. This paper will only mention the World Bank Regulations as these are what Dominica follows.

The literature review will illustrate the different procurement methods used for geothermal projects as well as the World Bank’s interpretation for use of these methods under the Procurement Regulations.

3.1.1 World Bank Procurement Regulations

Procurements for contracts to be executed using World Bank administered funds will be guided by the World Bank Regulations for IPF Borrowers. The Regulations are designed to support a modern, fit for purpose procurement framework and detail many options to tailor individual procurement processes to meet operational needs and deliver the right result (The World Bank, 2020).

The Regulations stipulate all aspects of the procurement process and details procurement provisions, such as standard procurement documents, standards and technical specifications, contract types and arrangements, evaluation criteria for bids, among others. The Regulations also outline approved selection methods for goods works and non-consulting services, and for consulting services, as well as market approach options. The Procurement Regulations follow the core procurement principles of value for money, economy, integrity, fit for purpose, efficiency, transparency, and fairness (World Bank, 2020).

3.2 Procurement Methods

There are a variety of procurement methods available for use by a procuring entity, however the most used methods in the geothermal industry include Competitive Tendering and Direct Negotiations. These methods will be further explored in this chapter.

3.2.1 Competitive Tendering

Competitive tendering is a process that requires interested parties to compete directly against each other, on the same terms, for the opportunity to develop a project (African Legal Support Facility, 2019). Competitive tendering can be either an open tender or a closed tender.

An open tender refers to an approach where a tender published on the market by a procuring entity inviting any interested party to submit a proposal. A closed tender refers to an approach where only pre-selected suppliers are invited to submit proposals for a project. Tenders under this approach are not advertised on the market.

According to Chapter 6 of The APMG Public-Private Partnership Certification Guide (2016), generally there are four main stages into which any tender process may be divided:

- Pre-qualification (in open tenders with a pre-qualification stage) or short listing (in a process with a short listing or pre-selection of candidates);
- Bid period – from launching through bid submission or reception (in open tenders without pre-qualification) or from invitation to offer (or to negotiate) through bid submission in other processes;
- Bid evaluation (including qualifications in a one-stage open tender) and award – the procuring agency receives, analyses/assesses, evaluates, and selects a winner (usually named the preferred bidder); and
- Contract signature (from decision to award to the signing of the contract) – financial close may occur at the end of this period or at a later time after contract signature.

Figure 1 depicts the process for both a one stage and two stage open tender.

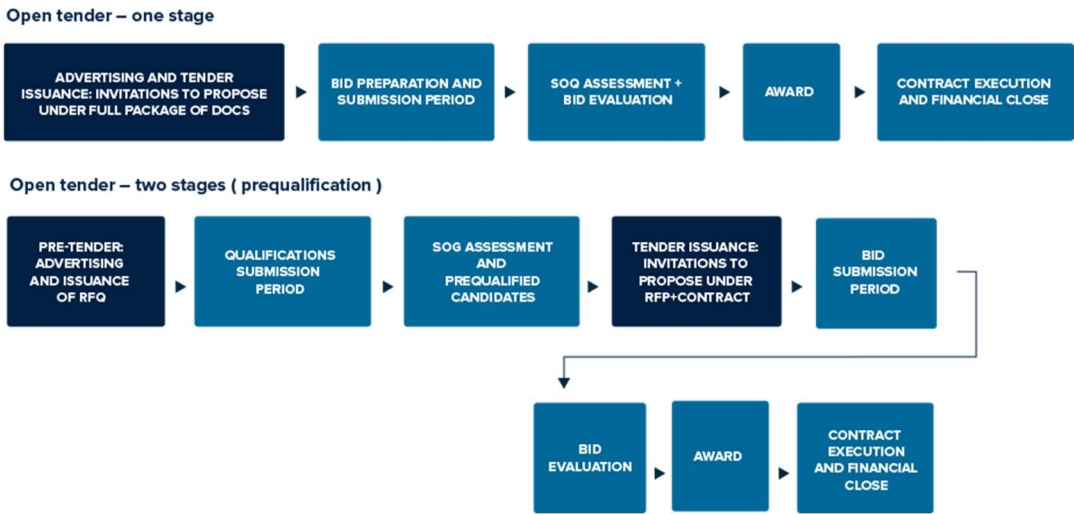


FIGURE 1: Open Tender Process (ADB et al., 2016)

Prequalification may take the form of a Request for Qualifications or Expressions of Interest (EOI). Depending on the goods, works, or services to be procured, the procuring entity may then choose to

publish a tender in the form of a Request for Proposal (RFP), Request for Bid (RFB), or a Request for Quotations (RFQ). In some instances, a procuring entity may opt to engage in a Competitive Dialogue with potential suppliers.

3.2.1.1 Expression of Interest/Request for Qualification

A procuring entity may choose to start the procurement process by advertising a Request for Expression of Interest (REOI) or Request for Qualification. A REOI will describe the proposed project in general terms and invite potential investors to express their interest in the opportunity, provide views on project design/project structure, and raise other matters for the procuring entity's consideration (African Legal Support Facility, 2019). This gives the procuring entity a good sense of the market

A Request for Qualification will set criteria which interested suppliers have to meet in order to pre-qualify for bid. The Request can ensure that RFP bidders have the necessary qualifications and experience to develop the project, thus streamlining the RFP review and evaluation process (African Legal Support Facility, 2019).

3.2.1.2 Request for Proposals (RFP)

A RFP is a tender document published inviting potential suppliers to submit proposals for goods, works, or services. It should include a description of the project, the project site(s), a list of available studies and raw information, and instructions on how to conduct due diligence, and should describe the tender process in detail including the evaluation approach and criteria (African Legal Support Facility, 2019).

According to the World Bank Regulations (2020), a RFP 'should be used when, because of the nature and complexity of the Goods, Works, or Non-consulting Services to be procured, the Borrower's business needs are better met by allowing Proposers to offer customized solutions or Proposals that may vary in the manner in which they meet or exceed the requirement of the request for proposals document'.

3.2.1.3 Request for Bids (RFB)

A RFB, also referred to as an Invitation for Bid (IFB), is a tender document published inviting potential suppliers to submit bids for goods, works, or services. A RFB requires a sealed bid process to ensure a level playing field for vendors, which means that there cannot be any negotiations about price or services required by the contract (Bidnet, 2022). RFBs are usually evaluated based on price.

According to the World Bank Regulations (2020), a RFB 'should be used when, because of the nature of the Goods, Works, or Non-consulting Services to be provided, the Borrower is able to specify detailed requirements to which Bidders respond in offering Bids'.

3.2.1.4 Request for Quotations (RFQ)

A RFQ is tender document used to source prices for goods, works, or services. According to the World Bank Regulations (2020), a RFQ 'may be more efficient than the more complex methods for procuring limited quantities of readily available off-the-shelf Goods or Non-consulting Services, standard specification commodities, or simple civil Works of small value'.

3.2.1.5 Competitive Dialogue

A competitive dialogue occurs when a procuring entity invites selected bidders to engage in dialogue on project specifications. This could include identification of the best technical solutions, adjustment of commercial structure, and reallocation of risk among project stakeholders (African Legal Support Facility, 2019). An RFP is then sent to all pre-identified bidders. A competitive dialogue is usually used in instances where a project is more complex. Figure 2 illustrates a competitive dialogue process.

According to the World Bank Regulations (2020), a Competitive Dialogue may be appropriate in two instances:

- a) where a number of solutions that satisfy the Borrower’s requirements may be possible, and where the detailed technical and commercial arrangements required to support those solutions require discussion and development between the parties; and
- b) due to the nature and complexity of the procurement, the Borrower is not objectively able to either adequately define the technical or performance specifications and scope to satisfy its requirements; and/or fully specify the legal and/or financial arrangements of the procurement.

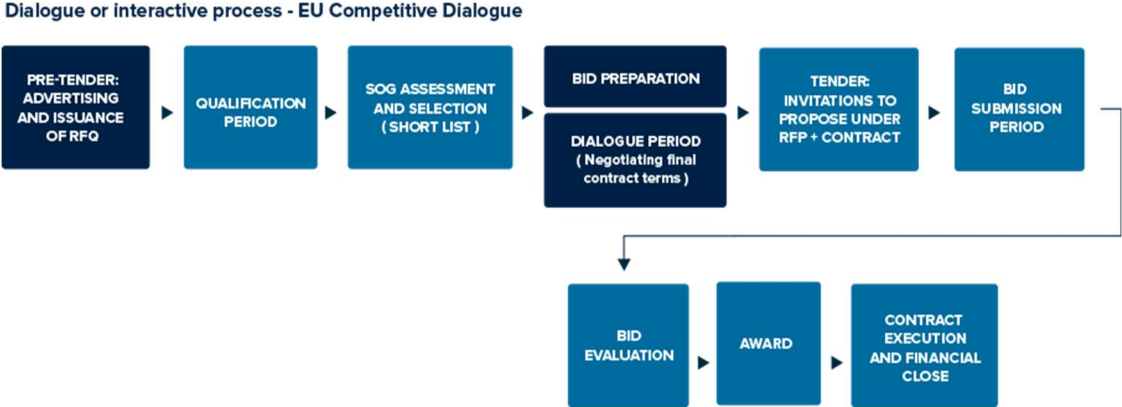


FIGURE 2: Competitive Dialogue Process (ABD et al., 2016)

3.2.2 Direct Negotiation

Direct Negotiation is a method in which the procuring entity negotiates directly with a selected supplier for provision of goods, services, or works. Negotiations may be solicited (where the procuring entity initiates the negotiation) or unsolicited (where a potential supplier initiates the negotiation).

Direct Negotiation may be appropriate when there is only one suitable firm or there is justification to use a preferred firm (The World Bank, 2020).

4. RESEARCH METHODOLOGY

Quantitative research was conducted to collate information to answer the three research questions posed at the start of this paper, a) identify common procurement methods used in geothermal projects, b) outline the strengths and weaknesses of these methods, and c) to demonstrate how these methods have been applied successfully in the Commonwealth of Dominica’s geothermal development project.

Research was carried out in two parts: literature review and a semi-structured interview.

4.1 Literature Review

An extensive literature review was done was done to gain an understanding of procurement. The review was largely focussed on procurement methods used in geothermal projects. As procurements for Dominica’s project are guided by the World Bank’s Procurement Regulations (2020), this was factored into the literature review. The literature review was conducted over a period of three weeks.

4.2 Semi-Structured Interview

A semi-structured interview is designed to be focused on terms of the topics covered, but flexible enough that it is possible to steer questions into areas that may provide additional insights (Lancaster, 2005). This research method was chosen as it provides a structure for the interview without it being as rigid as a questionnaire.

Interviews were conducted with professionals working in the geothermal industry, both in Iceland and Dominica from 14 - 26 September 2022, based on the availability of the interviewees. The interviews generally lasted for 30 - 45 mins and loosely followed a framework of predefined interview questions.

The interview questions were broken up into categories and framed, as shown in Figure 3, to get information that could help answer the three research questions that were posed for this study. Interviewees from Dominica were asked additional country-related questions (see Figure 4).

INDIVIDUAL SEMI-STRUCTURED INTERVIEW	
The semi-structured individual interview is designed to be focused on terms of topics covered and yet flexible in that it is possible and often desirable to steer questions into areas that appear promising from the point of view of providing rich data and/or additional insight.	
Data Objectives	Question(s)
Background	1. Could you briefly describe your educational background?
	2. Could you briefly describe your current company and your role in the company?
General Procurement Experience	3. What is your experience with procurement in projects?
	4. What is your experience with procurement for geothermal projects?
	5. What are the similarities and differences between procurement for geothermal projects and procurement for other types of projects?
WB Procurement Experience	6. Have you had any experience with the WB Procurement regulations?
	7. In your experience, do the regulations make the procurement easier and how?
	8. Under WB regulations, the development of a PPSD is a requirement. How has the PPSD helped to shape the overall procurement strategy development projects funded by the Bank?
Procurement Methods	9. Common procurement methods for geothermal projects include competitive tendering and direct negotiations. How have you used these methods in your projects?
	10. Have you had any experiences where these methods did not produce the best outcome? If yes, what would you have done differently?
	11. What in your opinion are strengths and weaknesses of current procurement methods?
Procurement Strategy - General	12. What, in your opinion, constitutes a successful procurement strategy for geothermal projects?
	13. Could you give an example procurement strategy you have used in previous projects?

FIGURE 3: Interview Framework

Interviewees participated freely and gave permission for their names to be mentioned in this report. The interviews were recorded, with permission, and transcribed for processing.

Interviewees from Dominica were asked country specific questions to better understand the procurement environment in Dominica under the World Bank Regulations (2020).

Country Specific Questions	
1.	With Dominica being a small island developing state, what difficulties, if any, have you faced in procurement for the project?
2.	Recalling the most recent procurement, would there have anything you would have differently?
3.	How has the use of the World Bank Regulations for IPF Borrowers helped to shape the overall procurement strategy of the DGDC?
4.	Is there anything you would have done differently had it not been a requirement to follow the Regulations?
5.	Are there any other comments which you would like to add?

FIGURE 4: Country Specific Questions for interviewees from Dominica

5. RESULTS

5.1 Introduction

A total of seven interviews were conducted with professionals working in geothermal projects both in Iceland and Dominica. Table 1 below gives a summary of the individuals interviewed, their educational and professional backgrounds, and their procurement experience.

TABLE 1: Summary of interviewees

No.	Interviewee	Country	Professional Background	Justification for choice	Procurement Experience
1	Pall Valdimarsson	Iceland	- International Consultant and university professor - PhD in Mechanical Engineering	Experience working internationally in the geothermal industry	As a vendor selling turnkey geothermal systems to private investors
2	Bjarni Palsson	Iceland	- Executive Director of geothermal development, Landsvirkjun - PhD in Mechanical Engineering	Broad experience supporting procurement for geothermal development	Broad experience supporting procurement for geothermal development
3	Carine Chatenay	Iceland	- Marketing Manager in charge of business development, Verkís - MSc in Civil Engineering, MSc in Project Management	International consultant in geothermal development, a teacher in the GTP program.	No direct involvement in procurement Involvement in some contract negotiations
4	Valur Knutsson	Iceland	- Executive Manager for Green field projects, Landsvirkjun ¹ - MSc in Electrical Engineering, MSc in Project Management	Lead the Theistareykir Geothermal Station project in Iceland	Supported procurement activities for the Theistareykir Geothermal Station project

¹ National Power Company of Iceland founded in July 1965

5	Fred John	Dominica	- Managing Director, Dominica Geothermal Development Company - MSc in Electrical Engineering, MBA	Leads procurement at the DGDC for Dominica's geothermal project	Consulting in US supply chain & procurement for private sector and US Government. Leads procurement at the DGDC
6	Rita Edmund	Dominica	- Finance & HR Manager, Dominica Geothermal Development Company - BSc in Economics and Accounting, MSc in Project Management	Supports procurement activities at DGDC for Dominica's geothermal development project	Worked with projects funded by the Caribbean Development Bank Supports DGDC's Managing Director with procurement activities
7	Sigurgeir Björn Geirsson	Iceland	- Project Manager - Construction & Planning Landsvirkjun - MEng	Experience with procurement in geothermal projects for the National Power company in Iceland	Extensive experience with procurement in geothermal projects

5.2 Results from the interviews

The results from the interviews will be presented here following the interview structure presented in the research methodology.

5.2.1 What are the similarities and differences between procurement for geothermal projects and procurement for other types of projects?

It was noted that procurement in geothermal projects and procurements in projects in general are very similar in the processes and methods used. However, the main difference with procurement for geothermal development is that it is very specialized in terms of drilling as there are not many available companies in the field. Another difference mentioned by Interviewee 1 was that procurement done by a privately owned company may not be handled as rigorously as that done by a public company as "the whim of the owner has much to say".

5.2.2 Have you had any experience with the World Bank Procurement Regulations?

The interviewees from Iceland have no experience with the World Bank Regulations, but the interviewees from Dominica have gained the experience through working on the geothermal project, which is funded using World Bank administered funds; thus the Regulations are being applied to all procurements for the project.

5.2.3 In your experience, do the World Bank regulations make procurement easier and how?

Both interviewees from Dominica agreed that the Regulations make the process easier in some ways as they provide clear guidelines on how to handle procurement issues and everything is highly structured, so vendors are accustomed to the process. They also agreed that sometimes the Regulations do not make things easier as Interviewee 5 noted that "the World Bank Regulations do not cater to a market where the vendor has a lot of power, for example, drilling services."

5.2.4 Under the World Bank regulations, the development of a PPSD is a requirement. How has the PPSD helped to shape the overall procurement strategy development of projects funded by the World Bank?

Both interviewees from Dominica agreed that the PPSD is beneficial to the development of a procurement strategy as it provides a guided approach to help to determine the best procurement approach for a project. As Interviewee 5 stated, 'it forces you upfront to understand what you are going to buy and the market and gives a guided structured approach in a positive way'.

5.2.5 How have you used common procurement methods such as competitive tendering and direct negotiation in your projects?

Procurement for geothermal project is mostly done through an open competitive tendering process. In Iceland, projects are usually tendered through open competition. The National Power Company of Iceland usually employs traditional open tender procedures for all works, direct negotiations are not allowed. Both competitive tendering and direct negotiation have been used in Dominica's geothermal project. Contracts funded through the World Bank are done through open tender, as the World Bank prefers this method for transparency and direct negotiations have been used for small interventions due to limitations of resources available and sometimes time constraints. Interviewee 7 was of the view that a competitive dialogue could be a better option for more complex procurements.

5.2.6 Have you had any experiences where these methods did not produce the best, outcome?

In the case of Dominica, it is noted that the procurement methods have all worked for what they have been used for. Interviewee 7 noted that there was one procurement which was unsuccessful as the tendering process used was incorrect based on the scope and complexity of the project. Interviewee 1 shared that in his experience as a vendor he has seen "non-methodical procurement produces bad results".

5.2.7 What, in your opinion, are strengths and weakness of current procurement methods?

The strength of the open tender is that it is a simple and transparent process, which gives all suppliers on the market the opportunity to bid on a project. However, its weakness is that it does not allow for adjustments during the process, which may lead to the possibility of losing potential suppliers. Interviewee 4 shared that it would be beneficial to "have negotiations where you can run a prequalification exercise beforehand to hear what is available, and then define key elements, which could then introduce new possibilities". Competitive Dialogue allows for updates and adjustments during the process, but it is a more complicated process where it is important to keep the process transparent. Interviewee 4 noted that the Iceland National Power Company (Landsvirkjun) is discussing the use of Competitive Dialogue for new projects.

5.2.8 What, in your opinion constitutes a successful procurement strategy for geothermal projects?

Each interviewee had a different view of what a successful procurement strategy should entail. Though different, the interviewees were of the view that a successful procurement strategy should encourage a level playing field, where all contractors/vendors know the rules while optimizing value for money and ensuring that due diligence is done beforehand.

6. DISCUSSION

6.1 Findings

The findings discussed in this section are based on the literature review and the results from interviews. Though there has been much literature written about procurement, most literature has focussed on optimizing procurement and the supply chain and not on actual procurement methods employed in the geothermal industry.

For the most part, procurement for geothermal projects is usually done in a competitive tendering process, with open competition being the most popular of the two competitive processes for public funded projects. Since most geothermal projects tend to be implemented by public entities, open competition is widely used as it is seen as being the most unbiased and offers the most transparency. It has been agreed that the standardized process offered by open competition has yielded satisfactory results for the intended procurement.

It has been noted that open competition may not offer the best possible solutions on the market as the requirements tend to be lengthy and some suppliers do not want to take the time to produce a bid when they have a slim chance of winning the bid. For example, the templates for bid documents provided by the World Bank are quite large and strict in its requirements; the requirements which could prove daunting to potential suppliers. But despite this issue, the structure of the regulations and its provided templates offer a safety net to a procuring entity as the World Bank structure is known to most, if not all, suppliers worldwide.

The use of Competitive Dialogue is not common practice in public funded projects. A Competitive Dialogue allows the procuring entity to get a better sense of solutions on the market, as discussions with suppliers happen prior to a bid being sent to market. This discussion grants the procuring entity the opportunity to refine technical specifications to better suit the project. It also allows suppliers to have a better opportunity to present a solution that would fit the project as they are not limited to the strict requirements stipulated in the bid documents. This can somewhat level the playing field for bidders based on technical specifications, and thus could come down to the best price that a supplier can offer.

Also of note is that the approach to procurement by private investors is not as structured as that being used by public entities. A private investor could easily be swayed by a supplier, and he has no compulsion to be unbiased in his approach to the market.

Based on the literature review and interviews, a table of some advantages and disadvantages which were observed is presented in Table 2.

TABLE 2: Advantage and disadvantages of Procurement Methods

Method	Advantages	Disadvantages
Open Tender	<ul style="list-style-type: none"> - Unbiased approach to the market offers equal opportunity to suppliers and transparency in the procurement process - Offers a good overview of the market and what it offers 	<ul style="list-style-type: none"> - Time consuming for both parties - Sometimes too much focus on lowest price at the expense of quality and other important considerations
Closed Tender	<ul style="list-style-type: none"> - Selecting contractors who have adequate experience, are financially sound, and have the resources and skills available can limit vulnerability and time - Having fewer bids allows for more communication and a more collaborative approach 	<ul style="list-style-type: none"> - Excludes many potential suppliers which could reduce the chances of finding the best deal on the market - May be difficult to identify a shortlist of the best vendors on the market
Direct Negotiation	<ul style="list-style-type: none"> - Potential for greater speed for procurements in a market where suppliers are limited or where a procurement is time sensitive - Easier to adapt project requirements may be adapted during the negotiation process 	<ul style="list-style-type: none"> - Difficult to ensure that prices are best on the market due to lack of price-on-price competition - Potential for imbalance between an inexperienced procuring entity and an experienced supplier

Procurement is not a one size fits all process. Tailoring is an important factor in ensuring a successful procurement. The objectives of the procurement, what is to be procured, the market as well as the overall objectives should be taken in consideration when choosing a method for a particular procurement.

6.1.1 Procurement in Dominica's Geothermal Project

Procurement in Dominica in general is complex in nature, given the fact that it is a Small Island Developing State with limited resources (both financial and human). As a result, the government is dependent on outside sources of funding and expertise for completion of larger projects. The geothermal project is one such project.

As required by the World Bank, a Project Procurement Strategy for Development (PPSD) and Procurement Plan was prepared by the DGDC. The PPSD addresses how procurement activities will support the development objectives of the project, deliver the best Value for Money under a risk-based approach, and provide adequate justification for the selection methods in the Procurement Plan (The World Bank, 2020). The level of detail and analysis put into the PPSD will be determined by the risk, value, and complexity of procurement for the project. The PPSD was then used to inform the DGDC's Procurement Plan.

All procurements for the geothermal project thus far have been carried out through an open competitive process as required by the World Bank using the Standard Procurement Documents (SPDs) provided by the Bank.

The bidding documents were developed with help from the Bank, and notices were published on the DGDC's website as well as the UNDB website. Interested bidders would then contact the DGDC for the actual document and submit their bids to DGDC by an established deadline. The bids were then evaluated, a notice of award published, then negotiations and contract signing with the winning bidder.

Procurement for Dominica's geothermal development project has been guided by a procurement plan developed according to the World Bank Regulations (2020). To date the project has undertaken seven successful procurements for both goods and services to include Owner's Engineer Services for drilling and civil works, purchase of well casings, purchase of valves, civil works for construction of well pads, and integrated drilling services, Owner's Engineer services for the design of the transmission network, and preparation of an ESIA for the transmission network.

So far, most of the procurements have been simple cost-based procurements, such as the civil works, Owners-Engineer, purchase of valves and well casings, and ESIA preparation. The procurement for drilling services was more complex, facing two major hurdles during the process.

Being a small island, getting equipment to Dominica is challenging. Though the current phase of the project requires the drilling of one well, the decision was made to scale up the offer to drilling of two wells to generate interest and reduce mobilization costs to the project. By scaling up the offer, the opportunity became more interesting to the market.

A lot of time was spent during the bid preparation stage on clarifications to bidders and extension of deadlines. The SPDs provided by the World Bank do not cater to a specialized market, such as drilling, as they do not allow flexibility, making it difficult to do negotiations. The SPDs could therefore benefit from giving a procuring entity the option of tailoring the documents based on the size of the market and complexity of the procurement.

The drilling services procurement could have benefitted from a Competitive Dialogue approach. By inviting potential bidders for discussion beforehand, the DGDC could have been better prepared to engage the market, saving time in the process.

Though nothing is without its disadvantages, the use of the World Bank Regulations (2020) comes with the strength and support of the World Bank and has proven to be the best way for the project going forward to achieve its goals. The Regulations have been beneficial to the project as the steps are laid out clearly, templates are available for use making work easier, and the World Bank also provides technical assistance. With the help of the PPSD, the procurement team was able to tailor its procurement process to produce successful outcomes for the project.

6.2 Limitations of Research

A few limitations arose while conducting research for this paper, both at the literature review stage and the interview stage as outlined below:

1. Time: there was limited time in which research could be conducted.
2. Resources: there were limited resources available on procurement methods. Most resources spoke to optimizing procurement and the supply chain.
3. Interviewees: Only seven interviews were conducted during the research period.

7. CONCLUSIONS AND RECOMMENDATIONS

It can be concluded that the procurement methods used in geothermal projects have been successful both worldwide and in Dominica. Having a standardized approach to procurement and a well-defined procurement strategy will provide the best outcomes for projects. As most geothermal projects tend to be implemented by public entities, procurement is done through mostly an open competitive process as this is said to offer the most fairness and transparency. A case has been made for the use of Competitive Dialogue (a closed competitive process) as it offers the opportunity for discussion between the procuring entity and suppliers prior to sending the bid to market. It could therefore be beneficial for a further study into the use of Competitive Dialogue vs Open Competition in procurement for geothermal projects for public entities.

The conclusions drawn and the recommendation made are limited to the findings from the research done under the limitations outlined in Section 6.2.

ACKNOWLEDGEMENTS

I would like to thank the GRÓ Geothermal Training Programme for giving me the opportunity to undertake this Fellowship. I would also like to thank the lecturers who took the time to teach us over the course of this Fellowship. Special thanks are extended to my supervisor, Helgi Thor Ingason, for guiding me through this research project and to the professionals who took the time to participate in my interviews.

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