TP COMPANY LIMITED

BUSINESS PLAN FOR OPERATION OF NATURAL GAS DAUGHTER STATIONS AND COMPRESSED NATURAL GAS REFUELING STATIONS IN TANZANIA

FINAL REPORT

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Abstract

Why Start a Natural Gas Distribution Business?

It can be challenging to start any business, but one business which you can start with fewer challenges is the natural gas distribution business. A natural gas distribution business involves buying natural gas in wholesale from natural gas drilling and production companies and then distributing them to retailers. A natural gas distribution business is profitable, and it is a very easy business to start despite the fact that it is capital intensive. CNG stands for compressed natural gas. It is the gaseous product of petroleum and is the first product that is separated during the distillation process. CNG is odorless, tasteless and non-toxic, and is made up of 93.05% methane, nitrogen, carbon dioxide, propane and traces of ethane. It is an environmentally clean alternative fuel, as its combustion process emits a lower percentage of greenhouse gases when compared to other fuels.

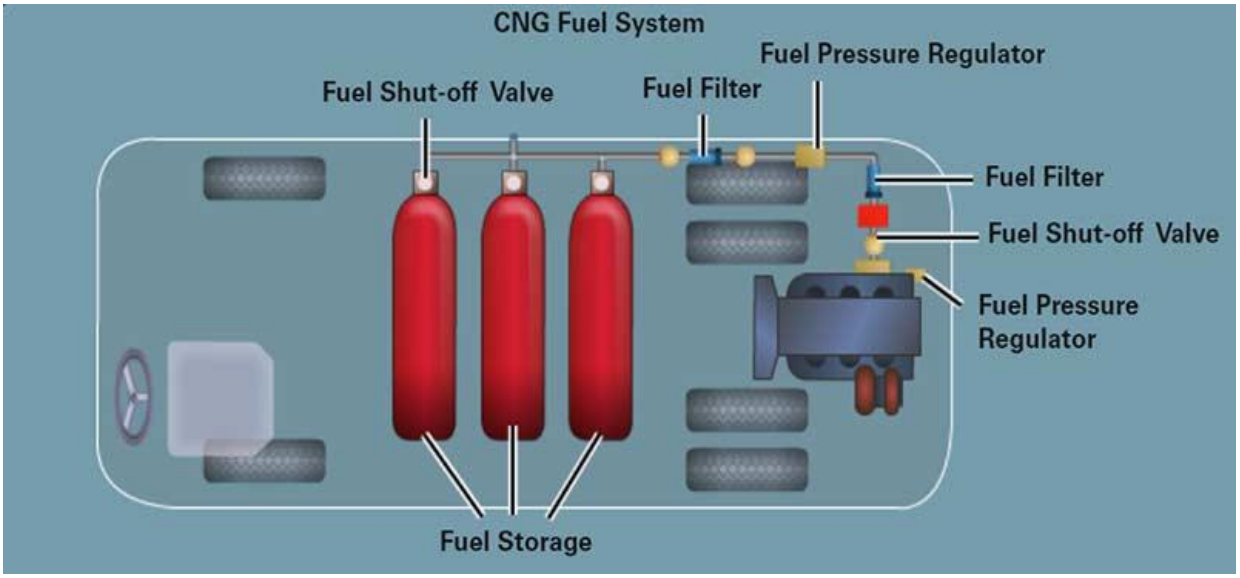


Figure 1: CNG Fuel System

While CNG fuel won't give you the same amount of power that would come from diesel fuel, it certainly has its advantages. CNG has a high octane rating that provides a high compression ratio and is adaptable to modern engines. The combustion of CNG produces less carbon monoxide, hydrocarbons and oxides of nitrogen. Overall, this type of gas can help in reducing pollution, as it is a clean burning fuel. Compressed natural gas (CNG) is a fuel which can be used in place of gasoline, diesel fuel and propane/LPG. Due to its affordability and eco-friendliness, CNG is commonly used in heavy duty transport vehicles. CNG is used in internal combustion engines initially developed for petrol and diesel, which are expected to drive the growth of the CNG industry

Executive Summary

General

This business plan relates to the development of CNG station by Turky Petroleum Company Limited. The Company is a registered natural gas distribution company in Tanzania that will be involved in the distribution of natural gas to vehicles (light and heavy duty) and households though our network of sister gas stations located in different parts of the country. Our administrative office will be located in the City of Dar es Salaam. The Company has planned to open 12 CNG gas fuel stations in phases in the first four years spread across the country for a total investment of over USD. 36 million.

We are aware that ours is essentially a new business in the country. We are aware that currently there is one Mother CNG Station owned by TPDC and only one CNG refueling station, both based in Dar es Salaam, which is why we spent time and resources to conduct our feasibility studies and market survey so as to offer services matching demand, current and future and expectations of our customers, other stakeholders and the public in general.

We have acquired a CRM software that will enable us to manage a one-on-one relationship with our customers no matter how large our distribution network may grow to. We will ensure that we get our customers involved when making some business decisions that directly affect them. Our enterprise business process capabilities combined with Microsoft Dynamics CRM for Sales, gives us the tools to deliver business applications that will improve customer relationship management and manage our business as efficiently as required.

Industry Analysis:

The Natural Gas Distribution industry is a thriving sector of the economy of many countries in the world and is responsible for the employment of over 2 million people around the world. According to the report published by Allied Market Research, the global compressed natural gas market generated $9.9 billion in 2020, and is estimated to generate $22.3 billion by 2030, witnessing a CAGR of 8.2% from 2021 to 2030. Growing importance of CNG as a vehicular fuel in several regional markets in the world is the main factor to drive industry growth over the mentioned period.

Some of the factors and incentives that encourage aspiring entrepreneurs to venture into the business is that the market is growing rapidly in the world and it is not seasonal. That makes it easier for entrepreneurs who are interested in the business to come into the industry at any time they desire; the entry barriers might be high but any serious – minded entrepreneur can comfortably raise the startup capital even if it means collecting loans from the bank.

Natural Gas is one of the most valuable natural resources abundantly available in our Country. Tanzania’s estimated natural gas reserves (2016) stand at 57 trillion cubic feet (TCF).

Project Description and Implementation

The proposed development aims to create a network of CNG stations across the country that will enable NGV to move from one destination to another using natural gas as the primary and main fuel. The project has been divided into four phases starting within the main roads that connects different zones of the country and have high traffic of goods in transit. According to the plan implementation of the Project would involve development of 12 CNG daughter stations across the country done in four phases spanning for four years with Phase 1 involving construction of seven (7) stations.

Project Funding

The projected funding required for the implementation of the Project amounts to USD 36,200 spread over a period of four years and would be financed through a mixture of equity (30%) and a Term loan (70%).

Target Market & Key Marketing Strategy

The target customers for the proposed project would be the vehicles (light and heavy duty) running on CNG fuel and the house hold users of natural gas already connected to the natura gas pipeline. Projected vehicles to be serviced: year 1: 120 year 5: 300.

One of the key marketing strategy we will employ is to highlight economic fact that the vehicular natural gas is cheaper and it offers a better performance for cubic meter than other fuels such as gasoline and diesel. As such the overall running cost of the vehicle is considerably low.

5 Year Projected Unit Sales

Year of Operations	Projected Monthly Vehicles Refilled	Projected Monthly Sales [MMBTU]	Projected Annual Sales [MMBTU]
Year 1	3600	42527	510324
Year 2	4800	62066	744432
Year 3	6600	85303	1023636
Year 4	7800	100812	1209744
Year 5	9000	116321	1395852

Summary of 5-Year Income and Expenditure Projections

	Year 1	Year 2	Year 3	Year 4	Year 5
Revenue	6,629,035	8,588,102	11,162,982	12,695,281	12,641,481
Gross Income	1,952,852	2,579,912	3,156,782	3,357,074	3,380,068
Expenses	1,209,984	1,525,954	1,978,013	2,227,131	2,136,516
Net Income Before Tax	742,868	1,053,958	1,178,769	1,129,943	1,243,551

Sustainability and Expansion Strategy

The future of a business lies in the number of loyal customers that they have, the capacity and competence of their employees, their investment strategy and business structure. One of our major goals of starting Turky Natural Gas Company, is to build a business that will survive on its own cash flow without the need for injecting finance from external sources once the business is officially running.

Our company's corporate culture is designed to drive our business to greater heights and training and retraining of our workforce is at the top burner. In projecting the sustainability and expansion of our company we will employ the strategy of the market leader and seek to capture and maintain the largest market share possible.

Contents

Part 1. Introduction & Background

Why a Natural Gas Distribution Business in Tanzania

This business plan relates to the development of construction and operation of natural gas daughter stations and compressed natural gas refueling stations in Tanzania at an estimated principal cost of US $. 36,120,000 and is expected to be implemented in four phases covering a whole cross section of the country.

TP Company Limited is intending to expand its business portfolio by investing in the construction and operation of Natural Gas Daughter Stations (NGDS) and Compressed Natural Gas (CNG) Refueling Stations in Tanzania. The intention is to take advantage of the huge natural gas reserve in Tanzania, which is extracted on and offshore Southern Tanzania and transported to Dar es Salaam via a 12" pipeline. Due to the cost and time effectiveness of CNG, TP Company Limited is aiming at investing in CNG infrastructure allowing the local markets (including vehicles and, households and institutions to be served with natural gas without the need of a pipeline.

In the year 2016, TP Company Limited conducted a Feasibility Study intended, among other things, to provide basis for expanding its business by investing in natural gas infrastructure development in Dar es Salaam city with the ultimate goal of supplying and distributing natural gas to household, Institutions and industries in some selected areas in the city. The proposed investment by TP Company Limited was expected to trail part of the already existing and proposed Dar es Salaam city natural gas distribution master plan, popularly known as Dar es Salaam Gas Main Ring and CNG refueling stations layout.

Due to the changing business and investment environment in oil and gas sector Tanzania, TP Company Limited, reviewed and updated its Feasibility Study in 2021, regarding implementation of this project. The outcome of the reviewed Study has provided basis for the development of this Business Plan.

Purpose of the Business Plan

The intent of this CNG distribution Business Plan is to guide decisions by the Turky Group of Companies in the implementation of the Project. It is also intended to provide information to potential vendors and other project stakeholders about how the business will be operated and managed. It is also intended to describe the key aspects of the proposed development, its current development as well as its business prospects. It is also intended to provide strategic benchmark against which actual performance can be measured and reviewed

Strategic Direction

Vision

A culture whereby mobile natural gas solutions are no longer an alternative, but a primary source of energy for our customers around the country.

Our Mission

To deliver the most comprehensive natural gas fueling solutions in Tanzania

Part 2: Industrial Overview

1. General Outlook

Compressed Natural Gas (CNG) as a fuel is clean, economical and has been in use worldwide to power vehicles. There are over 1,200,000 vehicles running on CNG in the world. Existing petrol vehicles can use CNG by installing a bi-fuel conversion kit and the converted vehicle will have the flexibility of operating either on CNG or petrol.

CNG is lead free and its use substantially reduces harmful engine emissions and helps keep the environment clean. Besides, operational cost of vehicles running on CNG is approximately one third that of petrol. Due to its relative advantages and superiority over conventional fuels, CNG is the most promising alternative fuel for city and highway transport. It is a transportation fuel for today and the future.

The natural gas distribution industry comprises of businesses that basically manage gas distribution systems consisting primarily of gas mains and meters that transport gas to end users. Other companies are gas marketers that buy gas directly from the well and sell it to a distribution system, while others still are gas brokers or agents that arrange for gas to be sold via distribution systems operated by other companies.

The Natural Gas Distribution industry has performed erratically over the past five years. Revenue declined significantly in 2012 in line with the shale gas boom, which resulted in a flood of domestic natural gas production. When combined with a shortage of pipeline infrastructure and export facilities, this triggered a collapse in natural gas prices.

The economic significance of natural gas has grown over the past decade, with manufacturers and electricity utilities relying increasingly on natural gas as an energy source due to declining prices. Over the five years to 2022, natural gas production is projected to slow, while infrastructure investments will boost pipeline and export capacity.

The Natural Gas Distribution industry is a profitable industry and it is open for any aspiring entrepreneur as long as you are able to obtain the required license and permits. You can choose to start on a small-scale natural gas distribution a as broker or agent that arranges for gas to be sold via distribution systems operated by other companies or you can choose to start on a large scale as a gas marketer that buy gas directly from the well and sell it to or operate a distribution system with distribution networks spread across key cities all around the country.

2. Global Outlook

The Natural Gas Distribution industry is a thriving sector of the economy of many countries in the world and is responsible for the employment of over 2 million people around the world. According to the report published by Allied Market Research, the global compressed natural gas market generated $9.9 billion in

2020, and is estimated to generate $22.3 billion by 2030, witnessing a CAGR of 8.2% from 2021 to 2030. Growing importance of CNG as a vehicular fuel in several regional markets in the world is the main factor to drive industry growth over the mentioned period.

It should also be noted that there are a number of barriers to entry into the Natural Gas Distribution industry. A major barrier to entry is posed by the large sums of capital and considerable expertise required to successfully establish an enterprise. Regulatory requirements at both the national and local level, requiring industry specific expertise and knowledge of industry structure can deter would-be participants.

Some of the factors and incentives that encourage aspiring entrepreneurs to venture into the business is that the market is growing rapidly in the world and it is not seasonal. That makes it easier for entrepreneurs who are interested in the business to come into the industry at any time they desire; the entry barriers might be high but any serious – minded entrepreneur can comfortably raise the startup capital even if it means collecting loans from the bank.

3. Industry Insights

The shift in trend towards adoption of unconventional transportation fuels to reduce carbon footprints is expected to remain a key driving factor for global compressed natural gas (CNG) market. CNG emerged used as a substitute transportation fuel for gasoline, diesel and LPG on account of low emission of greenhouse gases (GHG) production on combustion. CNG can be used in traditional internal combustion engines that have been originally designed or modified for gasoline/diesel which has been further propelling its market growth.

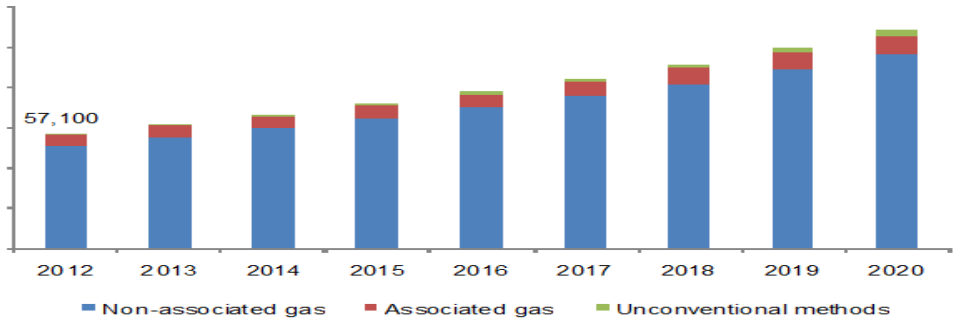


Figure 2.1 Global CNG market performance by source, 2012-2020 (million cubic meters)

The emergence of CNG as low-cost fuel coupled with growing energy demands is expected to have a positive influence on global CNG market growth. It costs lower than traditional fuels such as gasoline and diesel and produce energy equivalent on combustion. Exploration of shale gas and other non-conventional sources of energy particularly in North America have brought down global CNG prices. Increasing government regulations on account of environmental concern is expected to significantly have a significant effect on global CNG market over the next ten years.

Placement and costs of CNG storage tanks in automobiles coupled with a limited number of filling stations is expected to remain a key challenge for market participants. Traditional gasoline vehicles require additional CNG tanks storage space in trunks usually utilizing the free space. Initial installation costs of storage tanks are higher than traditional gasoline engines are already installed in automobiles. With increasing CNG powered automobile, fuel tanks costs are gradually decreasing, and efforts are being made to bring costs to an acceptable level. In addition, automobiles manufactures have been providing in-build CNG installed tanks under vehicles body and providing free space for trunks. Increasing R&D investment on dual fuel technology engines by leading automobile manufacturers is expected to open up new gates for market participants.

4. Natural Gas Situation in Tanzania

Natural Gas is one of the most valuable natural resources abundantly available in our Country. Tanzania's estimated natural gas reserves (2016) stand at 57 trillion cubic feet (TCF). The Ministry of Energy and Minerals implements its oil & gas exploration and development policies through the Tanzania Petroleum Development Corporation (TPDC). TPDC estimates that the country's gas fields are large enough to cover the domestic power requirements and make Tanzania the next natural gas hub in Africa.

Most parts of Tanzania do not have natural gas pipeline networks yet. However, Dar es Salaam region has a well-developed pipeline network followed by Pwani, Mtwara and Lindi. Nonexistence of natural gas pipelines in some areas/regions is a drawback for the local economy. Current policies give mandate to TPDC as the main developer of the mother station network in the country thus leaving the private investors with the interest in CNG business to invest downstream by developing daughter stations network.

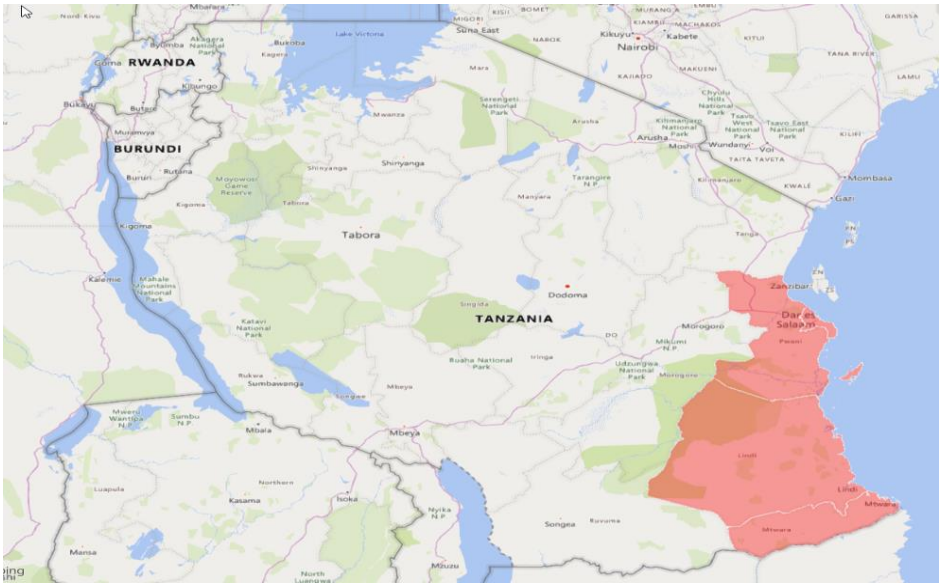


Figure 2.2: Regions in Tanzania currently with NG pipeline Network

5. Future Outlook

Transport is one of the most essential sectors of an economy and direct customer for this project. This sector facilitates the people not only in traveling but also in the transportation of goods and services throughout the country. The population of Tanzania is growing at the rate of around 2.8 percent per annum which shows an increase of 3.6 Million people each year. In order to facilitate the growing population not only the number of motor vehicle is increasing (370,000 to 380,000 in years 2014, 2015 respectively) which has increased the demand for petroleum products throughout the country. Not only transport sector, but Industrial, agriculture and other sectors of the economy are also growing with a greater pace hence further strengthening the demand for petroleum and lubricant products.

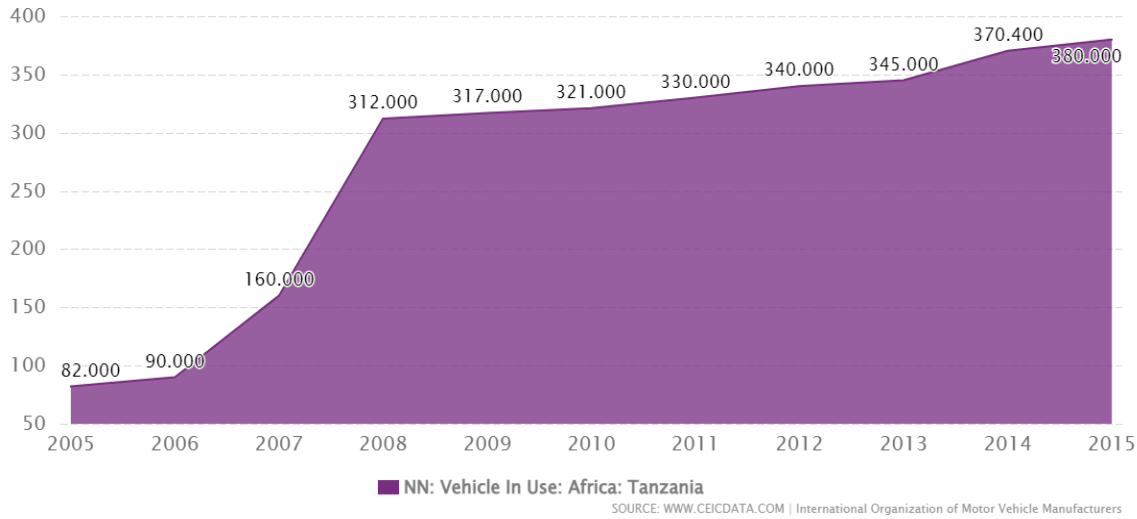


Figure 2.3: Estimated Number of Cars in Tanzania

Part 3: The CNG Mother-Daughter Station Concept

The CNG mother-daughter station concept has evolved in areas without connection to pipeline gas, whereby the connected mother station is set up with sufficient compressor capacity to supply mobile natural gas cascades to non-connected daughter stations, a virtual gas network.

Mother-daughter refueling system is the ideal concept for transporting and distributing natural gas in regions without an existing natural gas pipeline system Mother stations are used to dispense large volumes of gas into mobile storage trailers which transport the gas to sites that do not have access to a natural gas pipeline.

Mother stations are used to fill large volumes of CNG into mobile storage trailers. A mother station will always be located near a natural gas pipeline. Mobile storage allows transportation of natural gas to a site that does not have access to a natural gas pipeline. Typical applications where mother stations are used are to supply gas to: daughter CNG stations, industries and city gas distribution systems.

Mother-daughter refueling systems can be designed with tree or more mobile storage systems depending on requirements, thus safeguarding 100% availability of natural gas at the offline or daughter station. Daughter stations are used where a CNG fueling station is needed and there is no natural gas pipeline. Pressure Reduction Systems are used to adjust the pressure for offloading to Daughter stations or other gas distribution systems.

Daughter Stations are installed where a CNG fill station is desired but there is no natural gas pipeline. Natural gas is brought to the CNG station by mobile storage A daughter station compressor quickly and efficiently moves the natural gas from the mobile storage to a stationary storage (cascade storage) for fast fill operation. The daughter station compressor can also be used to directly fill vehicles through time operation.

Station equipment is sourced and configured for specific fueling situations. Standard stations for NGV fueling with CNG will generally include an inlet dryer to remove moisture, compressor sheds consisting of a motor, compressor and cooling unit, a priority panel that manages the gas flow into storage vessels and controls panels.

Building a CNG station for a retail application or a fleet requires calculating the right combination of pressure and storage needed for the types of vehicles being fueled. Making the right choices about the size of compressor and the amount of storage at the station will impact the cost of fuel and range for vehicles.

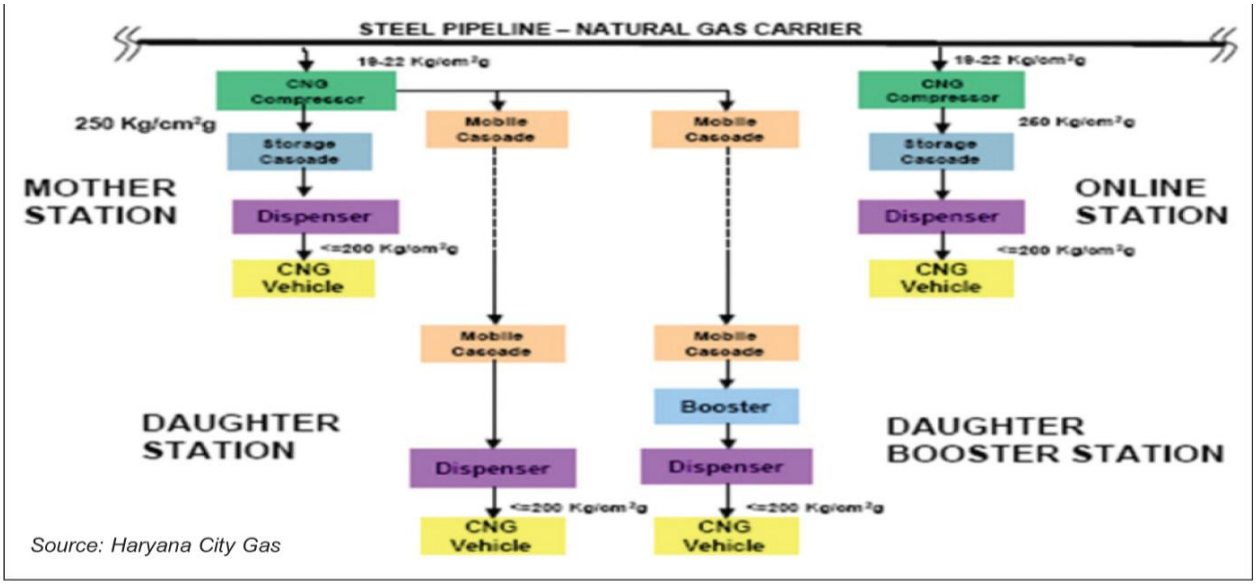


Figure 3.1: CNG Supply Value Chain

There are two types of CNG infrastructure: time-fill and fast-fill. The main structural differences between the two systems are the amount of storage capacity available and the size of the compressor. These factors determine the amount of fuel dispensed and time it takes for CNG to be delivered.

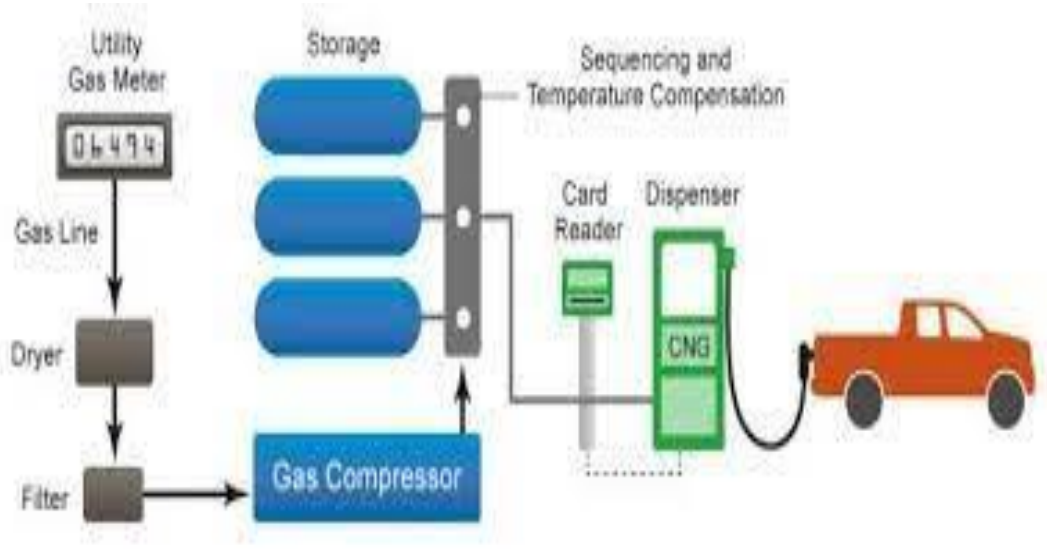


Figure 3.2: Example of Fast Fill CNG Station

There are many safety guidelines that need to be considered when developing infrastructure which applies to the design and installation requirements of CNG refueling facilities.

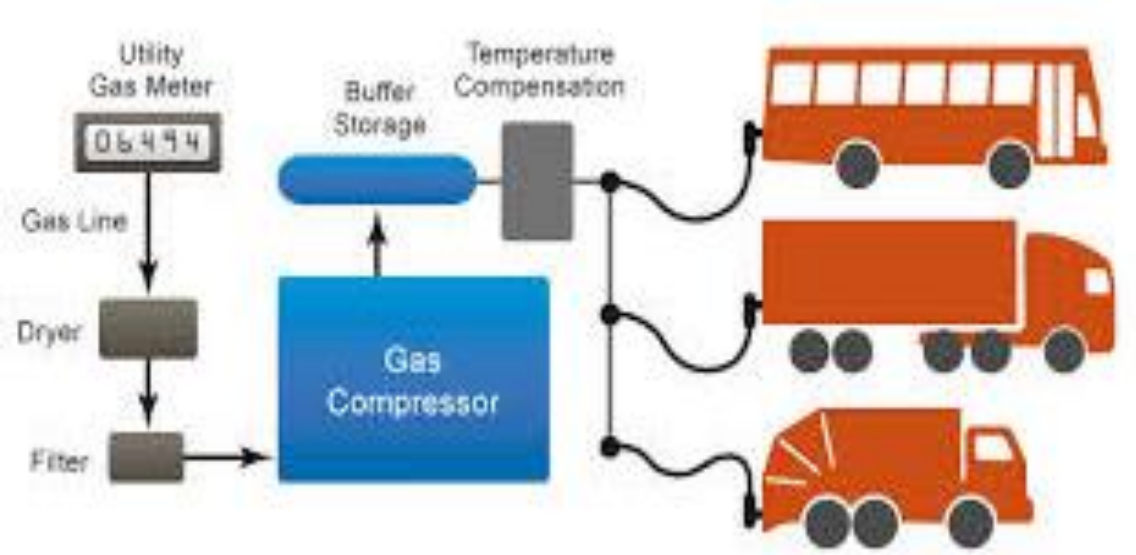


Figure 3.3: Example of Time Fill CNG Station

Costs of installing natural gas infrastructure varies based on size, capacity, and the type of natural gas (LNG, CNG, or both) it dispenses. It also varies in the way the natural gas is dispensed (fast-fill, time-fill). Mother-daughter refueling system is the ideal concept for transporting and distributing natural gas in Tanzania as the regions in the country are without natural gas pipeline systems.

Part 4: Description of the Project

1. Introduction

The proposed development aims to create a network of CNG stations across the country that will enable NGV to move from one destination to another using natural gas as the primary and main fuel. The project has been divided into four phases starting with the main roads that connects different zones of the country and have high traffic of goods in transit. In the proposed phasing Dar Es Salam CNG filling stations are not included.

2. Proposed CNG Filling Station Network

Figure 4.1 Indicate location of the proposed stations and Table 4 indicates proposed project phases and the average distance between the CNG stations.

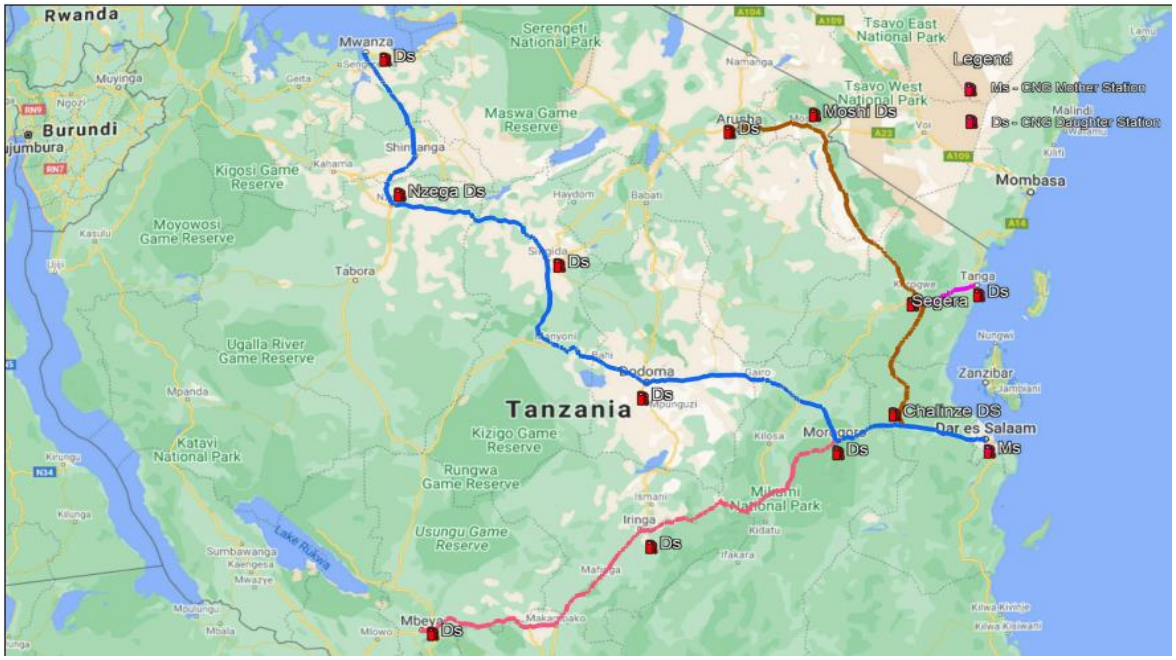


Figure 4.1: Proposed Compressed Natural Gas (CNG) Stations Network in Tanzania

Table 4.1: Proposed CNG Filling Station Network

Phase I			
No	Location of CNG Station	Road Serving	Distance [km]
1	Morogoro	Dar - Morogoro	246
2	Dodoma	Morogoro - Dodoma	285
3	Singida	Dodoma - Singida	256
4	Nzega	Singida - Nzega	245
5	Mwanza	Nzega - Mwanza	230
6&7	Dar es Salaam 1 & 2	Nyerere Rd & Bagamoyo Rd	
Phase II			

No	Location of CNG Station	Road Serving	Distance [km]
1	Iringa	Morogoro – Mbeya	305
2	Mbeya	Mbeya -Iringa	335
Phase III			
No	Location of CNG Station	Road Serving	Distance [km]
1	Segera	Dar – Segera	280
2	Moshi	Segera -Moshi	285
3	Arusha	Mosi - Arusha	80
Phase IV			
1	Location of CNG Station	Road Serving	Distance [km]
2	Tanga	Segera -Tanga	75
3	Chalinze	Dar - Chalinze	110

3. The Case for Dar Es Salaam City

Currently Dar Es Salaam has one CNG filling station located at Ubungo. The demand of NG has increased in recent years due to the increase of NGVs to more than 300 which include light duty vehicle (Taxes, SUV, etc.,). The demand is anticipated to potentially grow. To cater for the supply deficient in Dar Es Salaam region the study proposes two CNG daughter stations. Figure 4.2: Indicates the location of the CNG stations in Dar es 68 Salaam city. Daughter station No.1 is proposed to be located along Nyerere road and Daughter station No.2 in Africana area (Mbezi Beach along Bagamoyo road).

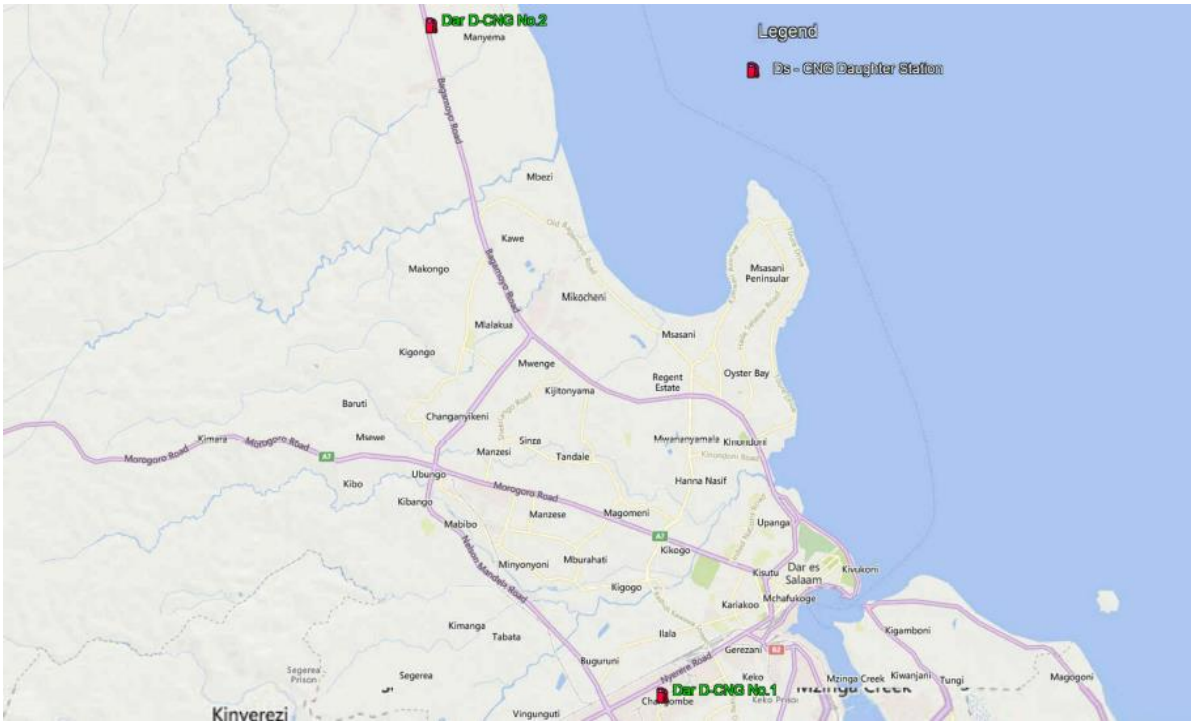


Figure 4.2: Proposed CNG stations in Dar es Salaam Region.

4. Our Products and Services

We are in the natural gas distribution industry to make profits and we will ensure that we do all that is permitted by the law in the country to achieve our business aim and objectives. Our products and services offerings are listed below;

- Buying natural gas from mother station (TPDC), compress it and selling it to natural gas vehicles via our distribution network of daughter stations across the country.
- Selling natural gas to homeowners for domestic use
- Selling natural gas to institutions and business entities for commercial use

5. CNG Filling Station Equipment

The CNG mother station consists of natural gas compression and truck loading facilities.

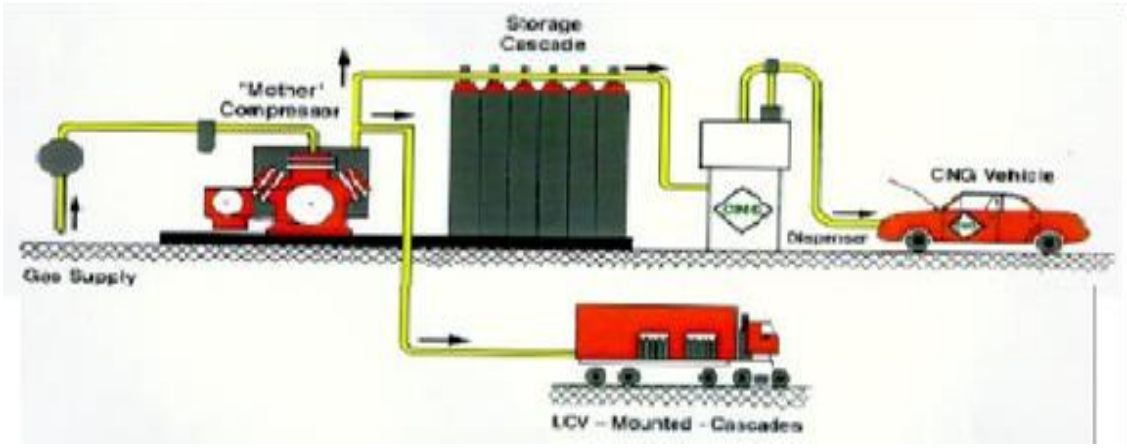


Figure 4.3: Typical CNG Mother Station

CNG daughter station consist of truck offloading, heating, pressure reduction system and metering facilities. The site provides an entrance and exit with two NGV dispensing positions. A double hose fill dispense provides two hoses, one for each NGV connection. The station has security fencing to limit entry to authorized personnel only from rear and side of the site.

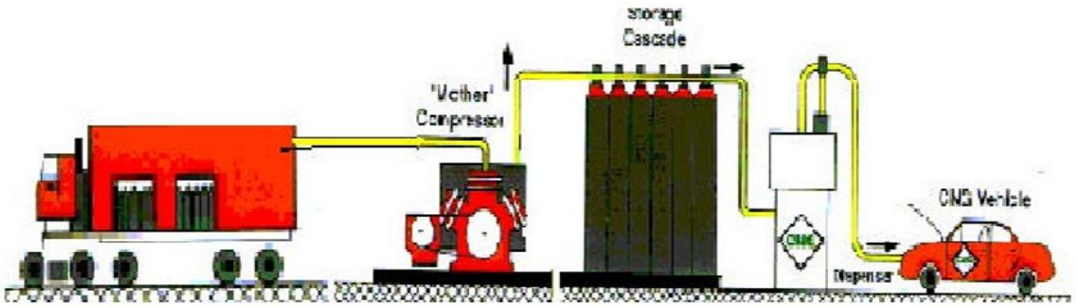


Figure 4.4: Typical Daughter Booster Station

Equipment:
The following equipment is required for a CNG filling station:

Gas Compressor:
The purpose of compressor is to compress the gas enabling it to discharge the gas for refueling. This compressor requires an input pressure of 4 to 8 bar from the main gas supply with the outlet pressure of 250 bar.

Electric Control Panel:
Electric control panel is required to operate the gas compressor. This panel will be mounted in the control room.

Storage Cascade:
Storage cascades/cylinders are used to store the natural gas for fast-filling.

Priority Panel:
The panel of valves that facilitate switching gas supply from compressor and cascade storage to the fuel dispenser. During rush hours, the compressor is directly connected to the dispenser, bypassing the storage cascades/cylinders with the help of priority panel, facilitating the refueling of vehicles at a faster rate.

CNG Dispenser:
Gas is filled into the vehicles with the help of dispenser. Dual hose dispenser is capable of handling two vehicles at a time. There are various foreign manufacturers providing the CNG filling station equipment. Based on our pre-feasibility study, a European made compressors are the preferred option for this project based on their low electricity consumption, low maintenance, durable working, longer periods between overhauls and good market repute and domestic presence.

Table 4.2 provides summary of the specifications of some of key equipment considered for the proposed project.

Table 4.2: Equipment List Specifications

40-ft CNG Tube Trailer		
	Value	Unit
CNG Carry Capacity	9600	kg
Working Pressure	250	Bar(g)
Service Life	20	Years

Material	Type 4 Cylinder	
•Tube trailer be equipped with PSV and Manual shut-off valves • Pressure equipment be CE marked or ASME stamped		
Cascade Storage		
	Value	Unit
Number of Banks	1	
Total Bank Storage (water)	4	M3
Pressure (min-max)	0-325	Bar(g)
Pressure Max Operating	250	Bar(g)
Service Life	20	Years
Service Type	Fast Fill	
Material	30CrMo + Carbon Fiber Composite	
CNG Dispenser		
Number of horses per dispenser	2	
Flow rate	1-30	Kg/min
Pressure Maximum (inlet-outlet)	250-200	Bar(g)
Measuring Accuracy	Custody Transfer Approved	
Measuring Type	Coriolis	
•Component must be sealed to prevent escape of NG • Pressure equipment be CE marked or ASME stamped		
Compressor		
	Value	Unit
Flow rate	1200	m3 /hr
Pressure (Min_inlet – Max_outlet)	10-250	Bar(g)
Type	Reciprocating Compressor	
Lubricant	Oil-free or with low-oil (lubricant shall not contaminate the process stream)	

6. Personnel Requirement:

Manpower requirement for the CNG filling station includes manager, station technician, dispenser, operators, watchman and sweeper. The total staff strength would be 10 persons for the two shifts. The staff salaries for one month are as follows:

Table 4.3: CNG Station Personnel Requirement

Designation	**No of Employees**	**Salary per staff [USD]**	**Salary per Month [USD]**
Station Manager	1	500	500
Station Technician	2	300	600
Dispenser Attendants	3	250	750
Security Officers	3	200	600
Cleaners	2	150	300
Total	**10**		**2,750**

7. Projected Investment of the Business:

The total cost of developing a CNG fueling station depends on a number of factors, including the fuel demand from the fleet and other users, the fleet's applications and duty cycles, site conditions, the complexity of equipment installation, and permitting processes. Consequently, costs can vary widely from one project to another

A breakdown of the estimated capital costs (CAPEX) and operating cost (OPEX) for the proposed daughter stations and tube trailer are shown in the Table 4.4 below. The typical capital costs are based on the listed assumptions. It must be taken into consideration that some items, e.g., Civil works, for a particular daughter station can vary relative to the site location where the station is proposed to be built. It is for this reason the cost are considered as average (normalized) estimate based on year 2021. Table 4.4 provides Capital Expenditures (CAPEX) and Operating Expenses (OPEX) summary of all proposed phases.

Table: 4.4 Summary of the Proposed Project CAPEX

PROJECT COST BREAK DOWN – SUMMARY			
CAPEX			
S/N	Phase and CNG Station	Cost [USD]	Total [USD]
Proposed Phase 1			18,060,000
1	Morogoro	2,080,000	
2	Dodoma	2,780,000	
3	Singida	2,780,000	
4	Nzega	3,480,000	
5	Mwanza	3,480,000	
6&7	Dar es Salaam Stations (2-Nos)	3,460,000	
Proposed Phase 2			5,560,000
1	Iringa	2,780,000	
2	Mbeya	2,780,000	
Proposed Phase 3			7,640,000
1	Segera	2,080,000	
2	Moshi	2,780,000	
3	Arusha	2,780,000	
Proposed Phase 4			4,860,000
1	Tanga	2,780,000	
2	Chalinze	2,080,000	
Grand CAPEX Total All Phases			**36,120,000**

Table: 4.5 Summary of the Proposed Project OPEX

S/N	Phase and CNG Station	Cost [USD]	Total [USD]
Proposed Phase 1			**70,157**
1	Morogoro	9,990	
2	Dodoma	11,307	
3	Singida	11,697	
4	Nzega	12,117	
5	Mwanza	12,665	

6&7	Dar es Salaam Stations (2-Nos)	12,380	
Proposed Phase 2			**23,264**
1	Iringa	11,330	
2	Mbeya	11,934	
Proposed Phase 3			**32,528**
1 2 3	Segera Moshi Arusha	10,073 11,155 11,300	
Proposed Phase 4			**19,681**
1	Tanga	10,708	
2	Chalinze	8,973	
Grand Total OPEX All Phases			**145,630**

Part 5: Production Plan

5.1 Introduction

The CNG mother-daughter station concept has evolved in areas without connection to pipeline gas, whereby the connected mother station is set up with sufficient compressor capacity to supply mobile natural gas cascades to non-connected daughter stations, a virtual gas network.

Most parts of Tanzania do not have natural gas pipeline networks yet. There are pipeline projects planned for some regions while other regions may currently only wish that in the near future natural gas will be made available. Figure 4.1 shows regions with natural gas pipe network in Tanzania and areas yet to be connected. Dar es Salaam is the region with well-developed pipeline network followed by Pwani, Mtwara and Lindi.

Due to the cost of building a natural gas pipeline, connection of the CNG refueling station to the natural gas pipeline becomes unaffordable beyond 1-2 kilometres and is thus eligible as a daughter station.

5.2 Prerequisites of CNG Station

The process of opening up a CNG station includes few essential steps that need to be followed in order to fulfil the criteria of gas refueling business as well as the government regulatory regime. Key requirements include:

- Applications to the Regulatory Authority. Separate applications are required for construction of gas station infrastructure and for license to operate a gas refueling station
- Feasibility Study. One of the key requirements in the application for the construction of the gas refueling station
- Obtaining of necessary approvals.
- Construction Phase. Obtaining the required approvals paves way to the construction of the gas station refueling infrastructure according to the approved standards
- Grant of License. This is obtained after successful submission of required documentation and a critical inspection of the site by the licensing Authority.

5.3 Daughter Station Concept

Mother Station are generally standard CNG stations which dispense a large volume of compressed natural gas into mobile CNG trailers, which transport the gas to sites (daughter stations) that do not have access to a natural gas pipeline.
The configuration of the daughter station depends on the extent of services the station provides. The proposed daughter station shall serve all or either the following markets:

- Commercial and Domestic demand.

- Natural Gas Vehicle (CNG) Filling station.

5.4 CNG Filling Station Technology Options

For a given CNG filling station concept different technologies are available. Table 5 outlines the options available with description on equipment requirements. For this particular project ***Technology B*** is chosen considering that most of the regions currently do not have NG pipeline.

Table 5: CNG Filling Station Technology Options

Technology	Working Principle	Limitation	Advantage
A	CNG station compose of the following main equipment: • Fixed storage (3 - bank cascade cylinders) • Dispensing units • Compressor • Priority Panel	• Pipeline NG delivery • High space requirements	• Relative low CAPEX • Relatively low OPEX • High reliability • High refueling rate
B	CNG station compose of the following main equipment: • Fixed storage (3 - bank cascade cylinders) • Tube Trailer • Dispensing units • Compressor • Priority Panel	• Relative high CAPEX • Suitable for low pressure trucks • High space requirements	• Tube trailer NG delivery • Moderate OPEX • High refueling rate
C	CNG station compose of the following main equipment: • Tube Trailer (mobile storage) • Dispensing units • Compressor • Priority Panel	• Relative high CAPEX • Relatively high OPEX	• Tube trailer NG delivery • Tube trailer NG storage • Low space requirements • High reliability • Flexibility due to mobility

5.5 Natural Gas Delivery Methodology

General Different methodologies are available for transporting gas from mother station to daughter station. The most common are: pipeline, Liquified natural gas (LNG) and Compressed natural gas (CNG). The selection of the method to be adapted depends on the distance, technology, cost and market demand of gas. For this project proposed method is virtual pipeline (VP).

The virtual pipeline (VP) transports stored gas in special containers between two points without having a fixed pipeline. CNG virtual pipeline methodology involves transportation of compressed gas (at 250 bar) into

tube trailers via normal trucks. Figure 5 shows the typical Virtual Pipeline Network to be used in this Project.

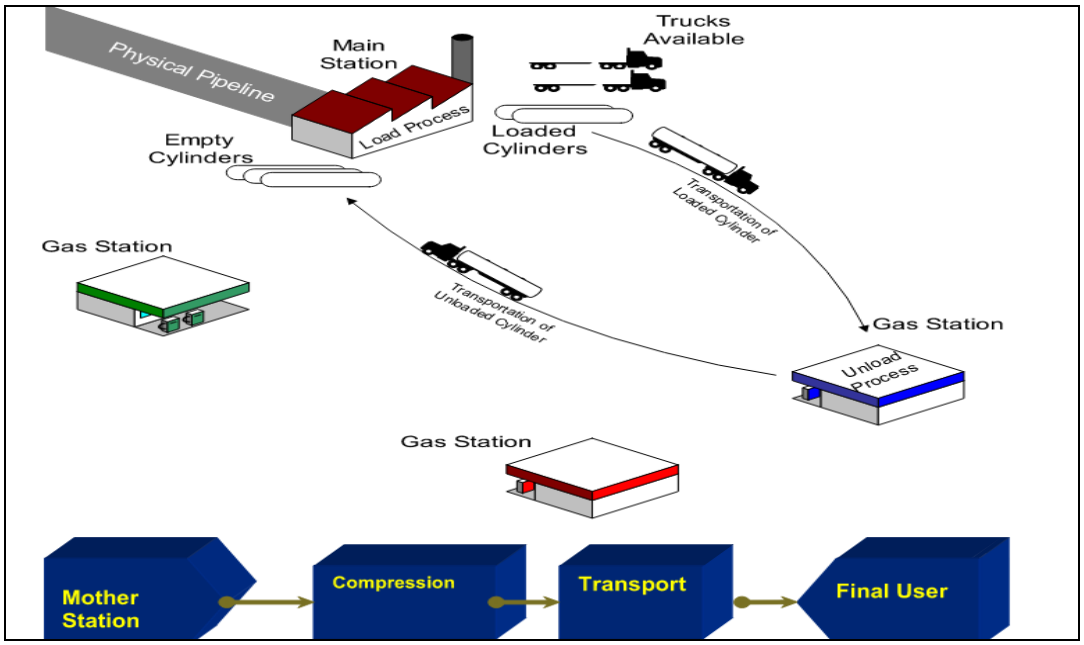


Figure 5: Typical Virtual Pipeline Network

Advantage of virtual pipeline

- FAST–Compare to pipelines, VP solution setup is faster to mobilize and setup for service quickly (~6–18 months)
- AFFORDABLE–VP solution is not capital intensive compare to convectional pipeline and liquified natural gas method.
- SAFE–VP service uses proven, decades of technology. Operation of VP works closely with local authorities having jurisdiction while complying to international standards.
- ''BRIDGE'' UTILITY-VP allows available un-utilized gas to start servicing remote customer(s) while developing the demand over time until it reached a point where a permanent pipeline solution becomes economically viable.

The main technical constraints in bulk CNG transportation are:

- The weight of the containers, which impacts the operational cost,
- The storage capacity of the tube trailer, which impacts amount of gas can be delivered per given trip.

The filling operation which should ideally proceed quickly but requires high temperature due to the compression of the gas; high temperatures limit the pressure and therefore fill capacity of the container with a negative effect on the logistical costs (more trucks). Virtual pipeline is the planned method which would be employed in this Project for the delivery of CNG to the daughter stations in the country for the foreseeable future.

Part 6: Operational Plan

6.1: General

Unlike gasoline or diesel stations, compressed natural gas (CNG) stations are not "one size fits all." Building a CNG station for a retail application or a fleet requires calculating the right combination of pressure and storage needed for the types of vehicles being fueled. Making the right choices about the size of the compressor and the amount of storage at the station will impact the cost of fuel and range for vehicles.

6.2. Assumptions of Proposed Tube Trailer Truck Delivery

Operating Characteristic of the Proposed Tube Trailer Truck Delivery The following assumption are made that define the design and operation philosophy of the tube trailer truck delivery.

- The CNG station must have a continuous and un-interrupted gas supply for sale.
- The CNG is designed for attended operation with working period of 24/7.
- The CNG station primary customers are heavy duty vehicles (HDV) with average cylinder storage capacity of 250kg of NG.
- The main source of gas is Dar es Salaam region.

6.3 Operating Proposed Tube Trailer Truck Delivery

The operation starts by the tube trailer filled with compressed gas at the mother station. The Project would be sourcing its supplies of CNG from the mother station operated by TPDC. Currently TPDC has one mother station located at Ubungo, Dar Es Salaam.

At the mother station gas is compressed into the tube trailers to 250bar. The trailer is then attached to a truck cab (also called a tractor), driven to the daughter station and dropped off. One truck can only carry one tube trailer. As needed, a new, full trailer is dropped off at the daughter station and the empty trailer is collected and taken back to the mother station. The actual filling duration of tube trailer depends on the compression capacity at the mother station. Average time to fill the CNG tube trailer is 6 – 8 hours of undivided gas supply. It is assumed that the truck cabs are operated 12 hours per day. The number of truck cabs and tube trailer required to serve particular station demand was determined through logistic study.

Considering the mother station is anticipated to serve multiple tube trailers, upfront scheduling will allow optimum operation. To estimate the number of tube trailer, truck cabs and transport operating costs required a logistic study was conducted to map the operation process. The logistic model highlights the: following important points for each daughter stations:

• The minimum number of tube trailers required.
• The minimum number of truck cabs required

6.4: Type of CNG Stations to be operated by this Project

There are two types of CNG infrastructure: time-fill and fast-fill that would be used for this business. The main structural differences between the two systems are the amount of storage capacity available and the size of the compressor. These factors determine the amount of fuel dispensed and the time it takes for CNG to be delivered. Most CNG stations include one of these two system types, but "combination fill" stations include both types. The CNG Stations as envisaged in this Project would be using fast fill type of CNG infrastructure to carry out its operations of refueling vehicles across the country.

Fast-fill: Generally, fast-fill stations are best suited for retail situations where vehicles arrive randomly and need to fill up quickly. CNG at fast-fill stations is often stored in the vessels at a high service pressure (4,300 psi/296.5 bar) so the dispenser can deliver it to a vehicle quickly.

Time-fill: Time-fill stations are used primarily by fleets and work best for vehicles with large tanks that refuel at a central location every night. At a time-fill station, a fuel line from a utility delivers CNG at a low pressure to a compressor on site. Unlike fast-fill stations, vehicles at time-fill stations are generally filled directly from the compressor, not from fuel stored in high pressure vessels.

Part 7: Organizational Plan

Turkys group of companies was launched in 1980 in the form of limited company. The company is wholly owned by Turky. It is currently a leading firm in trading, manufacturing, distribution of various goods as well as hospitality industry in the country. The Turky Group of Companies head office is in Migombani street Zanzibar. It operates 12 vigor companies around Zanzibar and Tanzania Mainland. Companies which form Turkys group are: Zenji Merchandise, Zainab Bottlers Co Ltd, Sea Star Ferry services, Zanzibar Grand Palace Hotel, The Grand Hotel, Global Hospital, Kisarawe Cement Company, Nitak Communication, Bay watch, Turkys Real Estates, Turkys LPG company Limited and Sea Stars Services.

Form of Ownership:
The ownership of the venture will be of sole proprietorship or partnership depending upon the amount of finance, as it is a sort of organization which is run by the private people having sufficient finance to start this venture.

Type of Business:
The nature of the venture will be of private limited as it does not involve the issuing of prospectus for the purpose of calling for investment in the shares.

Identification of the Ownership:
The ownership of the business will be in the hands of Mr. Turky, the entrepreneur who is starting the venture

Responsibilities of Employees:
• Fueling the vehicles. • Selling the lubricants. • Operating the machinery • Cash Management. • Book Keeping • Performance Reporting

Our Business Structure
Our intention of starting a natural gas distribution business is to build a standard natural gas distribution business in whole of Tanzania in phases. We will ensure that we put the right structures in place that will support the kind of growth that we have in mind while setting up the business.
We will make sure that we hire people that are qualified, honest, customer centric and are ready to work to help us build a prosperous business that will benefit all the stake holders.

In view of that, we have decided to hire qualified and competent hands to occupy the following positions that will be made available at TP Company Limited.

Chief Executive Officer
Human Resources and Admin Manager
Merchandise Manager
Sales and Marketing Manager

Information Technologist
Accountants
Customer Services Executive
Drivers / Distributors

.

Authorities & responsibilities of the employees.

The Job descriptions and Job specifications for the key positions of the business are described below:

Chief Executive Officer – CEO:

- Increases management's effectiveness by recruiting, selecting, orienting, training, coaching, counseling, and disciplining managers; communicating values, strategies, and objectives; assigning accountabilities; planning, monitoring, and appraising job results
- Creates, communicates, and implements the organization's vision, mission, and overall direction – i.e. leading the development and implementation of the overall organization's strategy.
- Responsible for fixing prices and signing business deals
- Responsible for providing direction for the business
- Responsible for signing checks and documents on behalf of the company
- Evaluates the success of the organization
- Reports to the Board

Admin and HR Manager

- Responsible for overseeing the smooth running of HR and administrative tasks for the organization
- Maintains office supplies by checking stocks; placing and expediting orders; evaluating new products.
- Ensures operation of equipment by completing preventive maintenance requirements; calling for repairs.
- Defines job positions for recruitment and managing interviewing process
- Carries out induction of new team members
- Accountable for training, evaluation and assessment of employees
- Responsible for arranging travel, meetings and appointments
- Oversees the smooth running of the daily office activities.

Merchandise Manager

- Manages vendor relations, market visits, and the ongoing education and development of the organizations' buying teams
- Responsible for the purchase of natural gas for the organization
- Responsible for planning sales, monitoring inventory, selecting the merchandise, and writing and pricing orders to vendors

Sales and Marketing Manager

- Manages external research and coordinate all the internal sources of information to retain the organizations' best customers and attract new ones
- Models demographic information and analyze the volumes of transactional data generated by customer purchases
- Identifies, prioritizes, and reaches out to new partners, and business opportunities et al
- Identifies development opportunities; follows up on development leads and contacts; participates in the structuring and financing of projects; assures the completion of development projects.
- Develops, executes and evaluates new plans for expanding sales
- Documents all customer contact and information
- Represents the company in strategic meetings
- Helps to increase sales and growth for the company

Information Technologist

- Manages the organization's website
- Handles eCommerce aspect of the business
- Responsible for installing and maintenance of computer software and hardware
- Manages logistics and supply chain software and Web servers
- Manages the organization's CCTV
- Handles any other technological and IT related duties.

Accountant/Cashier:

- Responsible for preparing financial reports, budgets, and financial statements for the organization
- Provides management with financial analyses, development budgets, and accounting reports
- Responsible for financial forecasting and risks analysis.
- Performs cash management, general ledger accounting, and financial reporting
- Responsible for developing and managing financial systems and policies
- Responsible for administering payrolls
- Ensures compliance with taxation legislation
- Handles all financial transactions for the organization
- Serves as internal auditor for the organization

Client Service Executive

- Ensures that all contacts with clients (e-mail, walk-In center, SMS or phone) provides the client with a personalized customer service experience of the highest level
- Through interaction with customers on the phone, uses every opportunity to build client's interest in the company's products

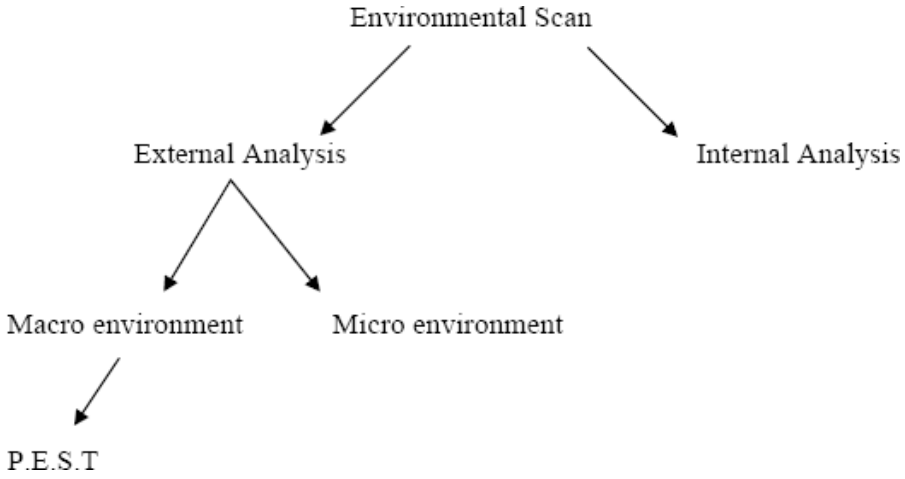
- Manages administrative duties assigned by the human resources and admin manager in an effective and timely manner
- Consistently stays abreast of any new information on the organizations' products, promotional campaigns etc. to ensure accurate and helpful information is supplied to customers when they make enquiries.

8.1 PEST Analysis:

We carried out PEST analysis for this venture in order to understand the strategic risk of the business. This analysis has helped us understand the “big picture” of Political, Economic, Socio-cultural and Technological environment. By making good use of PEST analysis, it is ensured that what is going to be done is aligned positively with powerful forces of change. It helps in operating in new area and helps in understanding the realities of that environment. the overall picture of environment can be described by the following diagram:

PEST Analysis Diagram

Figure 8.1: Pest Analysis



Political and Legal Environment:

Government agencies and pressure groups have a strong influence upon the activities of any organization in a society. Political environment strongly affects the marketing decisions. The political stability of a country has its impact on the consistency of policies of local government. Importance of public interest groups and business regulations can be found from the political environment. Tanzania has been enjoying a very stable political environment sine independence, a factor that has greatly enhanced the economic development through increased investments, local and foreign.

In Tanzania, currently, the energy potentials include natural gas, hydropower, coal, uranium oxide, biomass, solar and geothermal power. However, the main source of the electricity is natural gas. The natural gas exploration along with the study continues and the main expectations are to continue to discover more natural gas. Natural gas is rapidly growing due to the government's desire to have industrial economies and thus require gas for electrical and energy-efficient industries and therefore give rise good expectations in the future. Depending on the state of investment and implementation of relevant policies, laws and regulations, the natural gas sector has the ability to bring great benefits to Tanzania. Currently, the natural gas extracted is for domestic use rather than

exportation. The government has begun its efforts to build infrastructures for distributing the gas for domestic use, thus providing enabling environment for the future prospects for the CNG Refueling business in the country.

Legal factors include the local rules, legislation and regulations prescribed by the government. Legal issues must be understood clearly and have great importance in strategy formation. Legal environment is one of the main forces that give informational inputs which must be factored into the decision-making process of any business venture. Petroleum business is arguably the most regulated sector in the world.

EWURA, the energy sector regulatory body, governs on matters related to licensing, tariff review, monitoring performance and standards with regards to quality, safety, health and environment, including the basis for calculations of return on investment on CNG business, which this Business Plan has taken into account.

Economic Environment:
Economy of a country plays a major role in the profitability and success of any sector and organization in the parameters that how stable, good and growing is the economy of that country. Economic environment consists of factors that affect consumer purchasing power and spending patterns. Nearly all companies examine the economic environment before strategic planning. Economic environment is usually analyzed by keeping in view the following economic indicators: employment, consumer price index, housing starts, personal income, saving rate, industrial production, capacity utilization and productivity etc. Organizations must determine that how these changing incomes affect purchasing power and how they adopt it for the firm's profitability.

In general, following are some of the key factors which we considered to analyse and understand the economic environment of the country: These include information about economic growth, interest rates, exchange rate, inflation rates, impact of globalization, unemployment and labor supply and levels of disposable income and income distribution.

Socio-Cultural Environment:
During the formation of marketing strategies, companies have to look after a lot of factors. Deep study of local culture and social setups is also one of the major factors which account much in successful strategy formation. Varying types of consumer behaviors are found in different cultures. The study of culture helps to understand the consumer behavior and in turn assists firms to improve their marketing strategies by understanding issues like:

- The way how consumers think, feel and select between different brands or products.
- The psychology of how consumer is influenced by culture, family and social setups.

8.2 Porter's Five Forces Model

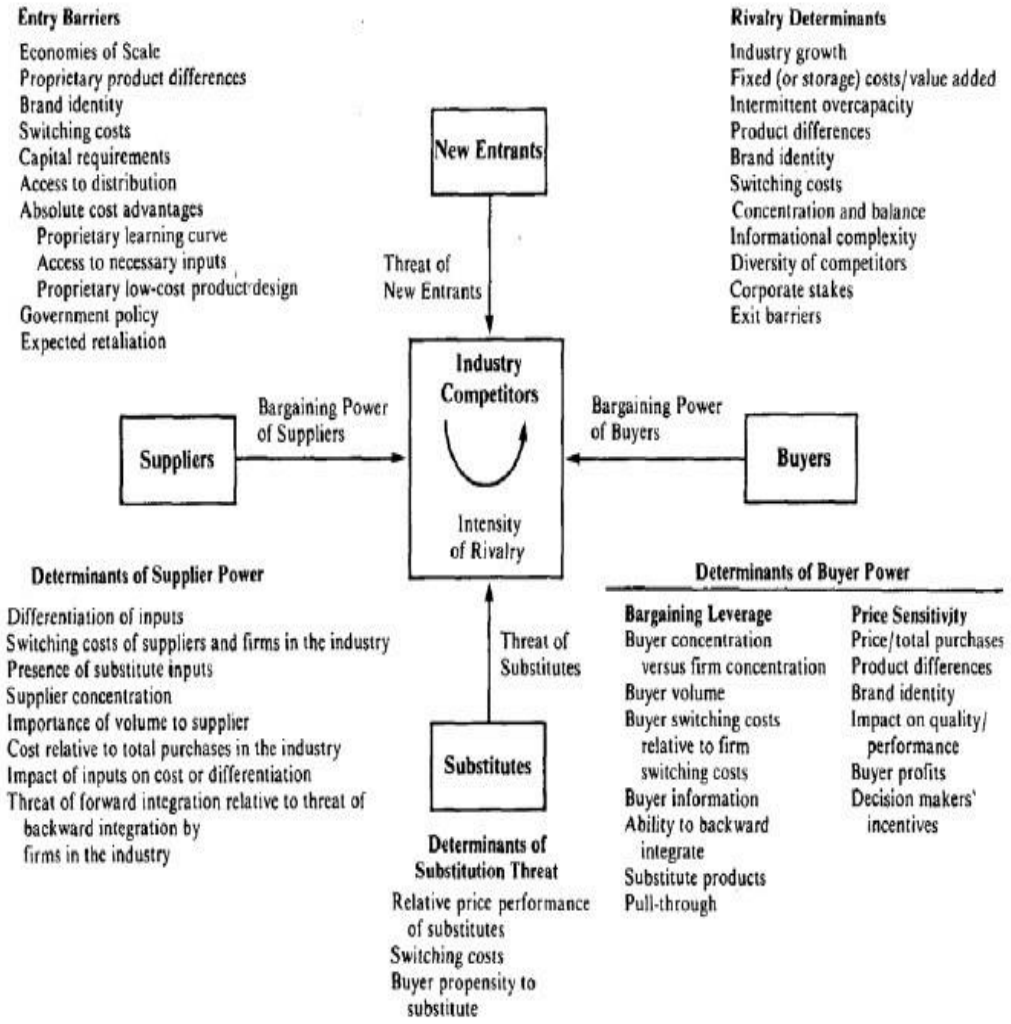


Figure 8.2: Porters Five Forces Model

8.3 SWOC Analysis

Review of the environment of the project as depicted below have indicated the internal factors to build on (strengths) and those to resolve (weaknesses) as well as external factors to the project to exploit (opportunities) and those to address (challenges).

External Environmental

While there are numerous approaches that might be utilized to scan the environment surrounding the proposed CNG Refueling stations, we have chosen to use PESTLE analysis. PESTLE incorporates four key perspectives: political, economic, social/demographic or societal, and technological. Importantly the task here is not to define/describe the business environment per se, but rather to key in on those aspects of the business environment or trends that are particularly relevant to the viability of a proposed CNG distribution business in the country.

Thus, with PESTLE analysis the exercise is threefold: to first identify pertinent trends; secondly, to determine the relative magnitude or impact of each; and then thirdly to propose or consider various approaches by which the proposed venture [the proposed CNG distribution business] might best position itself to those identified external factors to the project to exploit (opportunities) and to identify and blunt those posing a threat (challenges) to the Project.

Through the environmental scan we sought answers to questions:

- What are the political factors that are likely to affect the business?

Political factors relate to the pressures and opportunities brought by political institutions and to what degree the government policies are likely to impact the business of the proposed CNG distribution business. Considerations were given to such aspects as trading policies, funding, grants and initiatives, local political issues and bureaucracy

- What are the economic factors that will affect the business?

Economic factors relate to economic policies, economic structures and to what degree the economy is likely to impact the business of the Proposed CNG distribution business. Due consideration was given to key economic aspects, including local economy, taxation, inflation, economy trends, seasonality issues, interest, etc.

- What societal/cultural aspects likely to affect the intended business?

Social factors relate to the cultural aspects, attitudes, beliefs, that will affect the demand for the CNG offerings and how the business operates. Considerations were given to issues related to demographics, consumer attitudes and opinions, consumer buying patterns and ethical issues.

- What technological changes that may affect the business?

Technological factors relate to the technological aspects, innovations, barriers and incentives, and to what degree these are likely to impact the business. Considerations were given to such issues as emerging technologies and information and communication needs and requirements for a more efficient management of the proposed CNG distribution business operations.

- What current and impending legislation that will affect the business?

Legal factors relate to the laws, regulation and legislation that will affect the way the business operates. These include current and future legislation, employment law, consumer protection, health and safety regulations, tax regulations, etc.

- What are the environmental considerations that may affect the business?

Environmental factors relate to the ecological and environmental aspects that will affect the demand for the offerings of the CNG distribution business and how it operates. These include the environmental regulations, ecological regulations as well as the impact of adverse weather.

Table 8.1: SUMMARY OF PERTINENT EXTERNAL FACTORS

External Factors	
Opportunities	Challenges
The proposed project would have a number of competitive advantages: ○ Tanzania's economy is expected to grow moderately over the next 1 -3 years. Economic outlook is positive for most sectors. The global economic context, while still fraught with higher than usual uncertainty and risks, has continued to deliver increasing growth opportunities. ○ CNG is being widely utilized as a transportation fuel and is gaining traction globally, as it helps in lowering carbon emissions as compared to gasoline or diesel. ○ Major companies operating in the global CNG market are increasing investments in product development activities ○ Rising prices of transportation fuels, including diesel and gasoline has resulted in a surge in the need for low-cost, low-emissive CNG, which, in turn, is fuelling the sales opportunities in the market ○ The project will provide cheaper fuel to its customers compared to the petroleum products which are already on the higher side. ○ Government has exempted the imposition of value added tax and custom duties on the import of CNG kits and CNG plant and. equipment, ○ Large quantities of proven natural gas reserves existing in the country with more explorations continuing, giving comfort of sustainable supply	The proposed project will be facing the following challenges: ○ People demands for more and better services will continue with increasing populations. ○ Possible delays in completing the Project as planned could frustrate ready vendors eager to do business in a more welcoming place ○ Just like any other business, one of the major threats that we are likely going to face is economic downturn which could pose a real challenge to do business.

lines.	

Table 8.2: SUMMARY OF PERTINENT INTERNAL FACTORS

Internal Factors	
Strengths	Weaknesses
○ Locations of the CNG stations in the distribution network of this Project will play a pivotal role in the successful implementation and running of the business across the country. The daily turnover of the cars largely depends on this important factor. ○ Selection of proper equipment is another key for carrying out the successful operations of the proposed project. As we are importing equipment mostly from abroad hence it will surely affect our performance positively. ○ Proven business acumen of the developer of this Project is a major asset in steadying the management of this venture ○ Establishing a network of CNG refuelling stations in various parts of the country would give the Turky Company a formidable head start and position of market leader. Currently there is only one gas filling station, at Ubungo in Dar es Salaam	○ Lack of expertise and experience in CNG business might be our weak point. ○ We are going to start a venture and project to expand quickly in different parts of the country where many of which have no gas distribution pipeline with possible adverse impact on operations ○ We currently have no adequate skilled workers for this venture that might be a challenge for us, at least initially.

Part 9: Marketing Plan

9.1 Mission & Vision

Our Vision
A driving force to a culture whereby mobile natural gas solutions are no longer an alternative, but a primary source of energy for our customers around the country.

Our Mission
To deliver the most comprehensive natural gas fueling solutions in Tanzania

9.2 Situation Analysis:

General Overview:
Natural Gas is one of the most valuable natural resources abundantly available in our country. The people of Tanzania have been using the petroleum products as a fuel in their automobiles, thus spending a huge amount of foreign exchange on import of petroleum products. Moreover, the Government of Tanzania has taken certain concrete steps in order to promote the use of natural gas as a fuel substitute in the automobiles. Due to the efforts made by the Government and comparatively low prices of gas, more than 300 vehicles have already been converted to operate on Compressed Natural Gas (CNG) fueling system all over Tanzania. The compressed natural gas has been used as an automobile fuel since 1940, and over the years, the technology has been modified and refined. In the recent years, the usage of CNG as an automobile fuel has significantly increased because of its low cost and environment friendly nature.

Current Situation:
Tanzania's natural gas reserves are estimated at 57 trillion cubic feet with a total annual production of 110 billion cubic feet from three fields: Songo Songo, Mnazi Bay, and Kiliwani North. Natural gas presently accounts for the largest share of Tanzania's energy use, amounting to about 53% of total energy consumption. Tanzania currently consumes all the domestic natural gas it produces. Over the past six years' period, natural gas consumption in the country has risen by an average annual rate of 10.4%, liquefied petroleum gas (LPG) by 17.6%, and coal by 22.8%.

9.3 Marketing Objectives & Goals:

Goals for Next Ten Years:
Based on the survey conducted during our Feasibility Study for this Project of CNG vehicles in the country, the number of cars assumed for revenue projections is as follows. So, our goals & objectives for the first five years of operations are as under:

Table 9.1 Projected Increase in Vehicles using CNG to be served by TP Stations

Year	Number of Vehicles/Day
1	120
2	140
3	200
4	260
5	300
6	300
7	300
8	300
9	300
10	300

9.4 Target Market:

The target customers for the proposed project would be the vehicles running on CNG fuel. House hold users of natural gas

9.5 Market Demand & Supply:

Demand

At present there are more than 300 vehicles, which have been converted to CNG fuel, and a good number of vehicles are further being converted. Due to the increasing prices of petroleum products, the trend of converting cars to CNG fueling system has been on a rise. However, there exist a large number of people who were reluctant to convert their vehicles from petrol to gas due to safety concerns. In recent time, however, many car manufacturers have started manufacturing the cars with built-in CNG fueling system. This change has led to enhancing the confidence in the minds of the general public regarding the safety concerns, and now, more people are inclined towards purchasing these factory-fitted CNG fueling system cars.

Supply

There are two CNG station in Tanzania, which are critically insufficient for meeting the growing demand of CNG in the country. Apart from the CNG stations being planned under this venture there are no other CNG stations being set up in the country.

9.6 Price Mechanism:

The purchase price of natural gas in Dar Es salaam from TPDC is yet to be agreed upon. The Tariff for Virtual Pipeline is USD 5.07 whilst that for CNG Stations is USD 2.69. The project combined tariffs for gas to CNG vehicles and Households is USD 7.77 and 5.07 respectively. The final selling price to the consumer will be determined once the gas purchase price from TPDC is agreed upon. However, by considering average industrial price of $8.35/MMBTU, Table 9.2 presents the selling price ($16.12/MMBTU) subject to investor obtaining approval for the stated margin derived from EWURA formula.

Table 9.2 COMBINED TARIFF (MMBTU)CALCULATIONS

COMBINED TARIFF (MMBTU)CALCULATIONS SUMMARY		
	CNG	HOUSEHOLDS
Purchase Price-Dar Es Salaam Mother Station Pricing	8.35	8.35
Virtual Pipeline	5.07	5.07
CNG only tariff	2.69	-
PROJECT TARIFFS MM BTU	16.12	13.42
Assumes Average price for industrial customer of $8.35/MMBTU		
As as per EWURA report 2020		

9.7 Marketing Strategy

Before making decisions on the structure of this venture Turky CNG Refueling Stations in the country and choosing locations to establish our business and launch the company we conducted a thorough market survey and feasibility studies in order for us to be able to establish ourselves in the current market and penetrate new areas of the available market. We have detailed information and data that we were able to utilize to structure our business to attract the number of customers we want.

We hired experts who have good understanding of the retailing and distribution industry to help us develop appropriate marketing strategies that will help us achieve our business goal of winning a larger percentage of the available market in all the areas we have planned to establish operations in the country.

In summary, TP Company Limited, will adopt the following marketing strategies of a market leader to develop a clientele base of CNG users in the whole of Tanzania:

- Expand Total Market Size
- Defend Market Share
- Expand Market Share

9.8 Promotion Strategy:

Despite the fact that our natural gas distribution business is well structured and is, according to our plan, well located, we will still go ahead to intensify publicity for the business.

TP Company Limited has a long-term plan of opening distribution channels all around the country which is why we will deliberately build our brand to be well accepted in whole of Tanzania before venturing out.

As a matter of fact, our publicity and advertising strategy is not solely for winning customers over but to effectively communicate our brand. Here are the platforms we intend leveraging on to promote and advertise TP Company Limited brand and products for vehicular CNG and natural gas for homeowners in the country.

- Place adverts on national and community-based newspapers, radio and TV stations

- Leverage on the internet and social media platforms like; YouTube, Instagram, Facebook, Twitter, LinkedIn, Snapchat, Google+ and other platforms to promote our business.

- Ensure that we position our banners and billboards in strategic positions in all major urban areas in the country
- Advertise our natural gas distribution business in our official website and employ strategies that will inform the users and public of locations that are near our CNG Stations around the country
- Brand all our official cars and ensure that all our staff wear our branded shirt or cap at regular intervals.

Key focus of our promotion message will be to inform the public at large of our brand and our network reach and educate of the benefits of using CNG, emphasizing the following aspects;

- Reduced reliance on expensive imported hydro carbon fuels and therefore forex related savings,
- Reduced greenhouse gas emissions
- Lower running costs as compared to both diesel and petrol,
- Locally available in the country
- Can be used by all types of vehicles
- Natural gas requires minimum processing and refining infrastructure
- Safer than most liquid fuels
- Attains noise reductions of as much as 50%
- Reduced engine wear and lower engine related maintenance costs

9.9 Our competitive advantage

Currently there are two CNG Refueling Station in the country. We are structured to establish ourselves as the market leader in the business in the country from the first year of operations, even with knowledge of other interested parties planning to enter into the CNG business in the country. We thus expect to have immense competitive advantage over any challengers in the future.

9.10 Sales Projections

We are well positioned to take on the available market in country and we are quite optimistic that we will meet our target of generating enough profits from the first year of operation and grow the business and our clientele base. Below are the sales projections [MMBTU] for the first five years of operations

Table 9.3: 5 Year Projected Unit Sales ;

Year of Operations	Projected Monthly Vehicles Refilled	Projected Monthly Sales [MMBTU]	Projected Annual Sales [MMBTU]
Year 1	3600	42527	510324
Year 2	4800	62066	744432
Year 3	6600	85303	1023636
Year 4	7800	100812	1209744
Year 5	9000	116321	1395852

10: Financial Plan

10.1 Projected Cost Estimates for the Project

Table 10.1: Projected Cost Estimates for the Project

Project Cost		USD	
		Phases 1-4	Total
Assets			
Virtual Pipeline		25,900,000	
CNG Stations		10,220,000	**36,120,000**
Total Capital Employed by:			
Bank Term Loan	70%	25,284,000	
Equity	30%	10,836,000	
Total Capital			**36,120,000**

Exch Rate $ = TZS. 2,400

Project Returns

Output	CNG	Household NG
Project IRR %	10.1	10.1
Payback Period	10.2	10.2
NPV[Million USD]	(1.39)	(7.8)

Assets comprise of:

- Land
- Building- Civil works
- CNG Equipment
- Stores and Spares
- Office Equipment
- Furniture & Fixtures

Start Up Expenditure

In setting up any business, the amount or cost will depend on the approach and scale you want to undertake. The tools and equipment that will be used are nearly the same cost everywhere, and any difference in prices would be minimal and can be overlooked. Here are the key areas where our startup capital have been spent on.

Table 10.2 Summary of Start-up Expenses

S/N	Start Up Expenditure Items
	Expense
1	Gas Connection and Installation charges
2	Electricity connection charges
3	Local expenses and charges
4	License and other permits from Ewura, others
5	Registration of Company
6	Other Approvals
7	Travelling and conveyance
8	Inspection charges
9	Other Start up Costs

The above expenditure items largely comprise the start-up expenditure to successfully set up our natural gas distribution business for Phase 1. The expenditures have all been factored in the capital expenses [CAPEX] for Phase 1.

10.2: Projected Revenue Requirement

Gas tariffs are currently being regulated by the Energy and Water Utilities Regulatory (EWURA). These tariffs are established using the Revenue Requirement Methodology that is determined by the following formula:

$RR = O\&M + D + T + (WACCxRAB)$ − (10.1)
Where:

RR = Revenue Requirement for the regulatory year
O&M = Operational and maintenance expenses
D= Depreciation Charge
T = Corporate Taxes
WACC= weighted average cost of capital
RAB = assets that are used and useful in the provision of the regulated services to the customers.

The EWURA Pricing Methodology is basically a Cost-Plus Profit margin Basis. The profit margin is a factor of investment assets times a return on investment (calculated as the Weighted Average Cost of Capital (WACC). By this policy, a producer charges, for each product unit sold, only the addition to total cost resulting from materials, direct labour and the required rate of return

Table 10.3 Projected Revenue Requirement

	USD									
	Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year 7**	**Year 8**	**Year 9**	**Year 10**
Operations and Maintenance	-	418,378	536,445	690,987	776,602	765,521	754,440	743,359	732,278	721,197
Depreciation	-	452,661	581,993	775,990	905,322	905,322	905,322	905,322	905,322	905,322
Corporation Tax	-	222,792	316,113	353,550	338,895	372,970	410,242	451,009	495,601	544,376
Capital Return (RABXWACC)	-	859,021	1,145,361	1,336,255	1,336,255	1,336,255	1,336,255	1,336,255	1,336,255	1,336,255
Revenue Requirement		**1,952,852**	**2,579,912**	**3,156,782**	**3,357,074**	**3,380,068**	**3,406,258**	**3,435,945**	**3,469,455**	**3,507,149**
Projected Consumption		697,908	930,544	1,085,634	1,096,491	1,107,455	1,118,530	1,129,715	1,141,012	1,152,423
Tariff (USD/MMBTU)		**2.80**	**2.77**	**2.91**	**3.06**	**3.05**	**3.05**	**3.04**	**3.04**	**3.04**
PROJECTED REVENUE		**1,952,852**	**2,579,912**	**3,156,782**	**3,357,074**	**3,380,068**	**3,406,258**	**3,435,945**	**3,469,455**	**3,507,149**

10.4: Projected Income Statement

Table 10.4 Projected Income Statement

		Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Revenue											
Gas Sales			6,629,035	8,588,102	11,162,982	12,695,281	12,641,481	12,760,143	12,883,227	13,011,069	13,144,038
Less: Cost of Goods Sold			4,676,183	6,008,190	8,006,200	9,338,207	9,261,413	9,353,886	9,447,283	9,541,614	9,636,889
Gross Income		-	1,952,852	2,579,912	3,156,782	3,357,074	3,380,068	3,406,258	3,435,945	3,469,455	3,507,149
GROSS INCOME		**-**	**1,952,852**	**2,579,912**	**3,156,782**	**3,357,074**	**3,380,068**	**3,406,258**	**3,435,945**	**3,469,455**	**3,507,149**
EXPENDITURE											
Term Loan Interest		-	338,945	407,516	511,035	545,207	465,674	378,680	283,525	179,444	65,599
Operations and Maintenance		-	418,378	536,445	690,987	776,602	765,521	754,440	743,359	732,278	721,197
Depreciation		-	452,661	581,993	775,990	905,322	905,322	905,322	905,322	905,322	905,322
Total Expenditure		**-**	**1,209,984**	**1,525,954**	**1,978,013**	**2,227,131**	**2,136,516**	**2,038,441**	**1,932,205**	**1,817,043**	**1,692,118**
Net Profit Before Tax		-	742,868	1,053,958	1,178,769	1,129,943	1,243,551	1,367,817	1,503,739	1,652,412	1,815,032
Corporation Taxation			222,860	316,188	353,631	338,983	373,065	410,345	451,122	495,724	544,509
Net Profit After tax		**-**	**520,008**	**737,771**	**825,138**	**790,960**	**870,486**	**957,472**	**1,052,617**	**1,156,688**	**1,270,522**
		-	520,008	1,257,778	2,082,917	2,873,877	3,744,363	4,701,835	5,754,452	6,911,140	8,181,663

10.5: Projected Statement of Financial Position [Balance Sheet]

Table 10.5 Projected Statement of Financial Position

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Assets										
Curent Assets										
Cash and Bank balances		677,979	1,575,783	2,535,860	13,604,301	14,452,734	15,301,159	16,149,575	16,997,981	17,846,376
Accounts Receivable		75,944	100,330	122,764	130,553	131,447	132,466	133,620	134,923	136,389
Inventory		16,274	21,499	26,307	27,976	28,167	28,385	28,633	28,912	29,226
Total Current Assets		770,197	1,697,612	2,684,930	13,762,829	14,612,348	15,462,010	16,311,828	17,161,816	18,011,991
Non Current Assets										
Property, plant & Equipment	5,431,930	6,531,249	8,277,227	9,053,217	8,147,895	7,242,573	6,337,252	5,431,930	4,526,608	3,621,287
Total Assets	5,431,930	7,301,446	9,974,839	11,738,147	21,910,724	21,854,922	21,799,262	21,743,758	21,688,424	21,633,278
Curent Liabilities										
Accrued Expenses		40	40	40	40	40	40	40	40	40
Accounts Payable		9,693	12,924	15,078	15,229	15,381	15,535	15,690	15,847	16,006
Tax Payable		222,792	316,113	353,550	338,895	372,970	410,242	451,009	495,601	544,376
Total Current Liabilities		232,525	329,077	368,668	354,164	388,392	425,817	466,740	511,489	560,422
Non Curent Liabilities										
Term Loan Instalment	3,898,930	4,718,220	5,967,231	6,440,160	5,592,319	4,664,944	3,650,576	2,541,053	1,327,449	(0)
Total Liabilities	3,898,930	4,950,745	6,625,386	7,177,496	6,300,647	5,441,728	4,502,209	3,474,532	2,350,426	1,120,844
Total Net Assets	**1,533,000**	**2,350,701**	**3,349,453**	**4,560,651**	**15,610,077**	**16,413,194**	**17,297,052**	**18,269,225**	**19,337,999**	**20,512,434**
Funded by										
Equity	1,533,000	1,971,000	2,628,000	3,066,000	6,132,000	6,132,000	6,132,000	6,132,000	6,132,000	6,132,000
Reserves	-	379,700	721,453	1,494,651	9,478,077	10,281,194	11,165,052	12,137,225	13,205,999	14,380,434
	1,533,000	**2,350,700**	**3,349,453**	**4,560,651**	**15,610,077**	**16,413,194**	**17,297,052**	**18,269,225**	**19,337,999**	**20,512,434**

10.6: Projected Cash Flow Statement

Table 10.6 Projected Cash Flow Statement

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
CASH INFLOWS										
Term Loan	3,577,000	1,022,000	1,533,000	1,022,000	7,154,000					
Equity	1,533,000	438,000	657,000	438,000	3,066,000	-	-	-	-	-
Gas Revenues	-	1,952,852	2,579,912	3,156,782	3,357,074	3,380,068	3,406,258	3,435,945	3,469,455	3,507,149
TOTAL CASH INFLOWS	**5,110,000**	**3,412,852**	**4,769,912**	**4,616,782**	**13,577,074**	**3,380,068**	**3,406,258**	**3,435,945**	**3,469,455**	**3,507,149**
CASH OUTFLOWS										
Capital Investment	5,110,000	1,460,000	2,190,000	1,460,000	-	-	-	-	-	-
Term Loan Interest	-	338,945	407,516	511,035	545,207	465,674	378,680	283,525	179,444	65,599
Loan Principal Repayment	-	294,690	421,959	641,052	847,841	927,374	1,014,368	1,109,523	1,213,604	1,327,449
Operations and Maintenance	-	418,378	536,445	690,987	776,602	765,521	754,440	743,359	732,278	721,197
Corporation Tax		222,860	316,188	353,631	338,983	373,065	410,345	451,122	495,724	544,509
TOTAL CASH OUTFLOWS	**5,110,000**	**2,734,873**	**3,872,107**	**3,656,705**	**2,508,633**	**2,531,635**	**2,557,833**	**2,587,529**	**2,621,049**	**2,658,754**
Net in/(out) flows	-	677,979	897,805	960,077	11,068,441	848,433	848,425	848,416	848,406	848,395
Balance Brought forward	-	-	677,979	1,575,783	2,535,860	13,604,301	14,452,734	15,301,159	16,149,575	16,997,981
Balance carried forward	**-**	**677,979**	**1,575,783**	**2,535,860**	**13,604,301**	**14,452,734**	**15,301,159**	**16,149,575**	**16,997,981**	**17,846,376**
OUTFLOWS	**- 5,110,000**	**- 1,460,000**	**- 2,190,000**	**- 1,460,000**	**- 10,220,000**					
INFLOWS	**-**	**677,979**	**897,805**	**960,077**	**11,068,441**	**848,433**	**848,425**	**848,416**	**848,406**	**848,395**
Cumulative Cashflows	**-**	**677,979**	**1,575,783**	**2,535,860**	**13,604,301**	**14,452,734**	**15,301,159**	**16,149,575**	**16,997,981**	**17,846,376**

10.7: Projected Cost of Sales

COST OF SALES CALCULATION										
	USD									
Rate of Gas /MMBTU	8.35									
Electricity Charge/Mo	180									
Maintenance Cost/Mo	1000									
Increase 10%										
Year of Operations	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Number of Stations	0	7	9	12	14	14	14	14	14	14
Number of Cars		120	160	220	260	260	260	260	260	
Annual Gas Sold/mmbtu	0	697,908	930,544	1,085,634	1,096,491	1,107,455	1,118,530	1,129,715	1,141,012	1,152,423
Rate of Gas /MMBTU		8.35	8.35	8.35	8.35	8.35	8.35	8.35	8.35	8.35
Cost of Gas Sold	0	5,827,529	7,770,039	9,065,046	9,155,696	9,247,253	9,339,726	9,433,123	9,527,454	9,622,729
Electricity Charge/Year		2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160
Maintenance Cost/Year		12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000
COSTOF GOODS SOLD										
Cost of Gas sold	0	5,827,529	7,770,039	9,065,046	9,155,696	9,247,253	9,339,726	9,433,123	9,527,454	9,622,729
Cost of Electricity	0	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160	2,160
Maintenance	0	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000
COST OF GOODS SOLD		5,841,689	7,784,199	9,079,206	9,169,856	9,261,413	9,353,886	9,447,283	9,541,614	9,636,889

10.8: Projected Working Capital

CALCULATION OF WORKING CAPITAL												
			Year1	Year2	Year3	Year4	Year5	Year6	Year7	Year8	Year9	Year10
Total No. of Days	360	Days										
Current Assets	Basis											
Cash & Cash Equivalent				677,979	1,575,783	2,535,860	13,604,301	14,452,734	15,301,159	16,149,575	16,997,981	17,846,376
Accounts Receivable	Sales	14		75,944	100,330	122,764	130,553	131,447	132,466	133,620	134,923	136,389
Inventory	Sales	3		16,274	21,499	26,307	27,976	28,167	28,385	28,633	28,912	29,226
Total Current Assets				770,197	1,697,612	2,684,930	13,762,829	14,612,348	15,462,010	16,311,828	17,161,816	18,011,991
Current Liabilities												
Accrued Expenses	Utilities Expe	30		40	40	40	40	40	40	40	40	40
Accounts Payable	Cost of Gas	5		9,693	12,924	15,078	15,229	15,381	15,535	15,690	15,847	16,006
Tax Payable	Corp Tax			222,792	316,113	353,550	338,895	372,970	410,242	451,009	495,601	544,376
Total Current Liabilities				232,525	329,077	368,668	354,164	388,392	425,817	466,740	511,489	560,422
Net Working Capital				537,672	1,368,535	2,316,262	13,408,665	14,223,957	15,036,193	15,845,088	16,650,327	17,451,569

10.9: Financial Ratio Analysis

a) Profitability

	Year1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Operating Profit		0.29	0.30	0.28	0.26	0.27	0.27	0.27	0.27	0.27
Profit before Tax		0.11	0.12	0.11	0.09	0.10	0.11	0.12	0.13	0.14
Return on Investment	0.00	0.10	0.11	0.10	0.08	0.09	0.09	0.10	0.11	0.13
Return on Equity	0.00	0.30	0.27	0.23	0.13	0.13	0.13	0.13	0.13	0.13

b) Liquidity

Current Ratio	0	3.34	5.21	7.32	38.83	37.62	36.31	34.95	33.55	32.14
Quick Ratio	0	3.27	5.14	7.25	38.75	37.55	36.24	34.89	33.50	32.09

c) Debt

Debt Ratio (Total Assets)	**0.72**	**0.65**	**0.61**	**0.56**	**0.26**	**0.22**	**0.17**	**0.12**	**0.06**	**(0.00)**
Debt /Equity Ratio	2.54	2.39	2.27	2.10	0.91	0.76	0.60	0.41	0.22	(0.00)

d) Payback Period

Method [Subtraction]

Payback Period = the last year with negative cash flow + (Amount of cash flow at the end of that year / Cash flow during the year after that year)

Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Year 11
(5,110,000)	(5,892,021)	(7,184,217)	(7,684,140)	(6,835,699)	(5,987,266)	(5,138,841)	########	(3,442,019)	(2,593,624)	(352,187)	1,889,250

10 + 352187/1889250 10.186463 **10.2 Years**

e) NPV

Net Present Value [NPV] **(1,390,270)**

The net present value of the future cash inflows of this Project show a slight negative outcome discounted at the cost of capital of the firm. This metric have to be considered along with other financial indicators while as well taking into account the size of the investment involved.

f) Internal Rate of Return [IRR]

The internal rate of return (IRR) is the discount rate at which the net present value of an investment is equal to zero. Put another way, it is the compound annual return an investor expects to earn over the life of an investment.

IRR for this Project is calculated at 10.1%

g) Calculation of WACC

WACC= Cost of Equity x % Equity + Cost of Debt x % Debt x(1-T)					
Capital Structure					
Debt to Total Capitalization			70%		
Equity to Total Capitalization			30%		
Debt/Equity			**233%**		
Cost of Equity					
Risk Free Rate	BOT 10-Yr Bond		11.44		
Equity Risk Premium			9.70		
Levered Beta	Gas Distribution		8.51		
Cost of Equity			**29.65**		8.90
Cost of Debt					
Cost of Debt			7%		
Tax Rate			30%		
After Tax Cost of Debt			**4.90%**		3.4300%
					12.30
WACC			**12.3%**		

It should be noted that the Feasibility for this Project has used the formula for calculating WACC a s provided by EWURA.

TAKE AWAY POINTS FROM THE FINANCIAL RATIOS

PROFITABILITY

Profitability ratios assess a company's ability to earn profits from its operations, its assets or the owners' equity.Profitability ratios indicate how efficiently a company generates profit and value to the shareholdrers.

In general, businesses should aim for profit ratios between 10% and 20% while paying attention to their industry's average. Most industries usually consider 10% to be the average, whereas 20% is high or above average.

In terms of profitability this Project show it is above the generally accepted average

RETURN ON INVESTMENT (ROI)

Return on investment (ROI) is a performance measure used to evaluate the efficiency or profitability of an investment or compare the efficiency of a number of different investments. ROI tries to directly measure the amount of return on a particular investment, relative to the investment's cost.

Return on Investment (ROI) is a very useful profitability metric used to evaluate how well an investment has performed.

The Return on the Investment for this Project is shown to be well above the average return due to the profitablity associated with this industry

PAYBACK PERIOD

The payback period is the amount of time it will take to recoup the initial cost of an investment, or to reach its break-even point. This is one of the most important calculations for investors when planning investments and returns. It can help investors decide between different investments that may have a lot of similarities, as they'll often want to choose the one that will pay back in the shortest amount of time.

The longer money remains locked up in an investment without earning a return, the more time an investor must wait until they can access that cash again, and the more risk there is of losing the initial investment capital.

The Payback Period for this Project is calculated at 10.2 years. It is important to understand that the cashflow used in the calculation is a net amount after considering deprectiation, payment of loan interest and corporation tax.

LIQUIDITY

A liquidity ratio is financial ratio which is used to determine a company's ability to pay its short term debt obligations. This metric helps to determine if a company has enough current or liquid assets to cover its current liabilities as they mature.

The liquidity metrics, both current and quick [or acid test ratio] projected for this Project indicate a healthy financial situation that show the Company will have more than adequate financial capacity to meet current maturing obligations

Part 11: Risk Analysis

In this stage we will identify the potential risks that we will have to face in this particular business & then decide about how to minimize them in order to develop the business towards progress Work conducted towards the development of this Plan established that a number of the potential risks faced by Turky Gas Stations are reasonable and/or can be mitigated, including:

- **Demand Risk** - related to whether sufficient user demand exists. Anything without demand is worthless. Conversion of vehicles to CNG use in the country is steadily increasing. Natural gas has proven to be one of the most popular alternative fuels for transportation because of its ability to reduce carbon emissions, stabilize fuel costs, and meet regulatory standards This is reflected by the cash flow analysis that is projected from potential gas sales, which show level of profitability for the facility from year 1 of operations. Development of this Project is expected to greatly spur demand of CNG in the country, both for transportation and domestic use.
- **Supplier Risk** - based on whether there is a reliable supply source that would give assurance of sufficient supply of gas at the refueling stations all the time. Tanzania has abundant proven reserves of natural gas and the Feasibility conducted for this Project has highlighted the infrastructure for natural gas in the country that provide assurance of gas supply for use at the gas refueling stations to be developed under this Project.
- **Operating Risk** - as to whether the CNG refueling stations can generate sufficient revenues and control costs to achieve profitable operating results. The Income Statement for the first ten years indicate a favorable outcome of operations
- **Financing Risk** - on whether a financial structure can be devised that does not place undue financial pressure on the business. The Project is financed by a mixture of Term loan and own funds. The financing arrangements have been duly finalized and the Project is all geared to get underway.
- **Design Risk and Construction Risk** - are assumed to be mitigatable through the selection of a capable architect and contractor and effective construction management during improvement work. Type of refueling and volumes of gas demanded will be carefully projected before constructing the CNG fueling stations in order to size correctly the station and the equipment. This function is being carried out by professionals with required expertise, capacity and experience for such work.

The most significant remaining risk to be addressed is **Management Risk** - whether Turky Group of Companies, the owner of this business is capable of taking up the mantle of effectively managing such a specialized business of gas refueling stations. The business owner is an experienced entrepreneur and will hire management professionals to manage and automate the business operations in an easy and efficient way covering Purchase, Sales, Stock, Credit Invoicing, Tank Gain/loss, Accounts and Time Attendance and Payroll.

Part 12: Sustainability and Expansion Strategy

The future of a business lies in the number of loyal customers that they have, the capacity and competence of their employees, their investment strategy and business structure. If all of these factors are missing from a business, then it won't be too long before the business closes shop.

One of our major goals of starting is to build a business that will survive off its own cash flow without the need for injecting finance from external sources once the business is officially running.

We know that one of the ways of gaining approval and winning customers over is to distribute our natural gas a little bit cheaper than what is obtainable in the market and we are prepared to survive on lower profit margin for a while.

TP Company Limited, will make sure that the right foundation, structures and processes are put in place to ensure that our staff welfare are well taken care of. Our company's corporate culture is designed to drive our business to greater heights and training and retraining of our workforce is at the top burner.

We know that if that is put in place, we will be able to successfully hire and retain the best hands we can get in the industry; they will be more committed to help us build the business of our dreams.

Project Development Timeline Summary

Table 11: Project Development Timeline Summary

Turky Natural Gas Company	2021/22		2022/23				2020/21				2021/22	
Timeline	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
Design												
Finalize Concept Plans												
Negotiate with Developers												
Development Agreement												
Contracting												
Vendors												
Vendor Selection												
Leasing												
Governance												
Appoint Station Managers												
Negotiate Operating Agreement												
Execute Operating Agreement												
Prepare for Operations												
Funding												
Submit for Loan Application												
Finalize Financial Plan												
Construction												
Build												
Grand Opening												

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Appendices

Appendix 1: COMMON CNG STATION COMPONENTS

• Gas Meter

The local gas utility supplies a meter set assembly (MSA) to regulate and measure the amount of gas being used. It is important to work closely with the utility to determine the pressures and flow rates that are available at each site, and to determine if any service upgrades will be needed.

• Dryer

Inlet gas with high moisture content will require “drying” in order to make it suitable for fueling vehicles. The dryer removes residual water vapor with desiccants that are regenerated for reuse.

• Compressor

Compressors are the workhorses of the CNG station and must withstand the rigors of heavy-duty daily use over many years.

• Storage Vessels

Compressors keep on-site storage vessels full allowing for short fill times which are usually between 3-5 minutes, depending on the amount of storage at a station and the requirements of the vehicle.

• CNG Fuel Dispenser

CNG can be dispensed through a fast-fill or time-fill system. Fast fill systems provide fill times similar to gasoline and diesel fuel dispensing, and often include fuel management and card systems for payment. Time fill dispensers may take hours to provide a “full” fill.

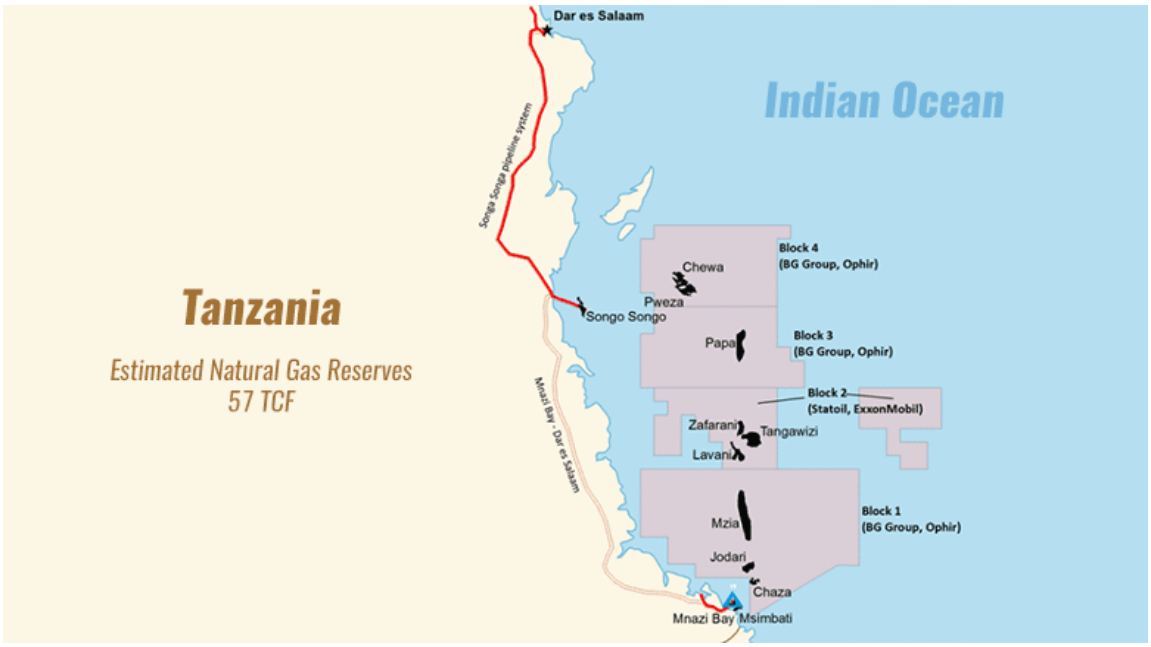
• Breakaway Devices

Breakaway devices at each dispenser hose will cut off the gas supply if a customer were to drive off with a hose still attached. Gas flow will also be interrupted if the dispenser is damaged through impact.

• Emergency Shutdown

System controls monitor equipment performance and automatically shut down a station in the event of unsafe fueling conditions. If needed, Emergency Shutdown (ESD) buttons are located in several places on-site and will cause a station to shut down entirely when pushed.

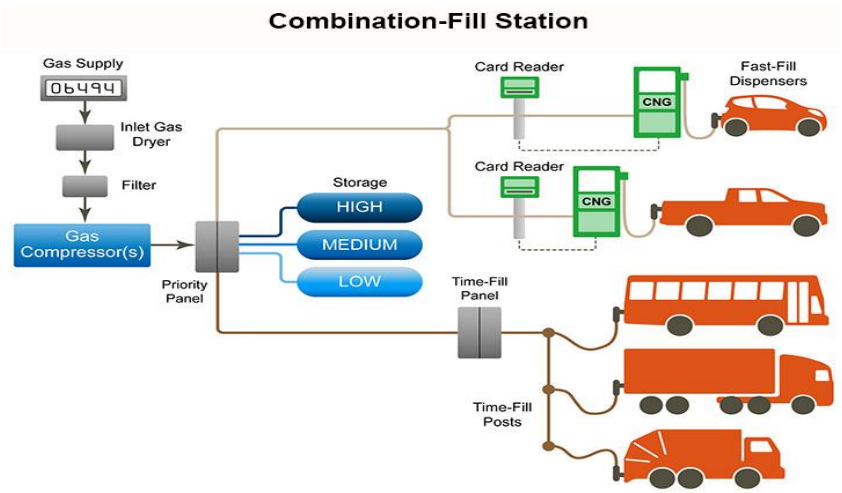
Appendix 2: Pipeline Delivery of Natural Gas To Dar es Salaam



Appendix 3: Typical System of Combination Fill Station

Combination-fill stations include both the fast-fill and time-fill components in one system. The vehicles connected to the time-fill posts are filled directly from the compressor, usually overnight. Vehicles at the fast-fill dispensers are filled from the storage vessels or from the compressor, depending upon need. This design gives a fleet flexibility.

Combination-fill stations typically cost more to build than the previous two station types. A combination-fill station can also be a revenue source if the fast-fill dispensers are made available to the public.



Appendix 4: Licensing Requirements for CNG Station Operations

LICENSING PROCEDURES

Obligation to apply for License

(1) A person shall not undertake a CNG activity without obtaining a license from the Authority.
(2) Any person who contravenes the provisions of sub rule (1) shall be liable to a fine of not less than twenty million shillings or to imprisonment for a term of not less than two years but not more than five years or to both.

Types of License

The Authority may grant the following types of licenses under these rules-
(a) CNG supply License; (b) CNG refueling License; and (c) CNG own use License

License Requirements

10.-(1) A person who intends to conduct a CNG activity shall apply to the Authority by filling appropriate form as set out in the Second Schedule of these Rules.
(2) An application for a License under sub-rule (1) shall be accompanied by:
(a) certified copies of the Memorandum and Articles of Association;
(b) a certified copy of the Certificate of Incorporation;
(c) a certified copy of Tax Identification Number Certificate and a tax clearance certificate;
(d) a certified copy of the Business License;
(e) a Business Plan;
(f) proof of the financial arrangement;
(g) a description of the premises to which the application relates, illustrated by a plan or map, description of the situation, boundaries and area of the parcel of land;
(h) where applicable, proof of consent from the aggregator to supply gas;
(i) a local content plan;
(j) an integrity pledge form dully signed by the applicant as provided in the Third Schedule;
(k) where applicable, proof of availability of natural gas to be supplied such as the existence of a gas supply agreement;
(l) where applicable, with regard to the premises, evidence that prior permission has been obtained from the relevant authorities to ensure compliance with all the statutory provisions in respect of traffic, town and country planning, public health and other relevant written law;
(m) a description of the CNGV or the type of CNG system which is to be installed, maintained or repaired;
(n) where applicable, the qualifications of the technical members of staff employed in inspection, installation, maintenance and repair of CNGV or CNG systems;
(o) evidence of the applicant's capability to obtain, operate and maintain CNG equipment to ensure safe and efficient operations; and Petroleum (Compressed Natural Gas) (Supply And Marketing Services) GN. No. 220 (ontd.)
11 (p) any other particulars as may be required by the Authority.
(3) The application shall be accompanied by an application fee prescribed by the Authority from time to time.

Inquiry

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The Authority shall, before issuing, modifying, suspending or revoking a License, conduct an inquiry in accordance with section 19 of the Energy and Water Utility Regulatory Authority Act.

Grant of License

(1) The Authority shall, within sixty days from the date of receiving the application and if satisfied that all requirements for a License have been complied with and grant a License.
(2) The Authority shall, in making a decision to grant or refuse a License take into consideration:
(a) legal, technical, economic and financial capacity of the applicant to conduct CNG activity;
(b) compliance with the local content requirements;
(c) economic efficiency and benefit to the applicant and the public in general;
(d) any representations and objections to the supply activity made by the public;
(e) a detailed emergency preparedness plan towards any accident or incident; and
(f) any other matter relevant to the orderly conduct of CNG activity.
(3) The Authority may refuse the application for a License where it determines that:
(a) the application does not comply with the provisions of these Rules, Regulations and the Act
(b) the applicant submitted false information in relation to the application for a License;
(c) the applicant has been convicted of corruption, money laundering, economic crimes or tax evasion;
(d) the applicant refused to sign an integrity pledge; and (e) any other reasons as the Authority may determine.
(4) Where the Authority refuses to grant application for a License, it shall notify the applicant in writing within fourteen days from date of the decision stating the reasons for refusal.

Validity of License

(1) Unless otherwise revoked or suspended, every License granted under these rules shall be valid for a period of five years.
(2) Notwithstanding the provisions of sub-rules (1), a License shall cease to have effect if the respective licensee fails to conduct a licensed activity within six months after issuance of the License.

Transfer and assignment of License

14.-(1) A License shall not be assigned to or transferred from a licensee to another person without a written approval of the Authority.
(2) A person who intends to transfer or assign a License shall apply to the Authority by filling an appropriate form as prescribed in the Fourth Schedule and lodge it with the Authority, together with other documents or records as may be required by the Authority
(3) Notwithstanding the provisions of sub-rule (1) no application for a transfer or assignment of a License shall be entertained by the Authority unless it is endorsed by the transferee.

(4) A License transfer application received by the Authority shall be evaluated to verify its completeness and legality of information contained therein and thereafter a notice of the application shall be published in at least two newspapers of wide circulation in Tanzania, one in English and another in Kiswahili with a view to soliciting comments and representations on the application.
(5) The costs for publication of the notice under sub-rule (4) shall be borne by the Authority.
(6) The public shall be invited to submit comments and representations within fourteen days from the date of publication of the notice and the comments and representations shall be considered by the Authority in arriving at the decision on the application.
(7) The Authority shall, after the expiration of the notice in sub-rule (6) evaluate the application together with comments received if any and make a decision whether to grant or refuse the application for transfer or assignment.