

**CRITICAL SUCCESS FACTORS FOR A SOUTH
AFRICAN COMPANY DOING PROJECTS IN
OTHER DEVELOPING COUNTRIES**
“A Case Study of SASOL’s Project in Mozambique”

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ABSTRACT

The main purpose of this research was to establish the critical success factors that impact project success for major projects in the Sub-Saharan Africa region. The motivation was that South African companies were geographically well positioned to expand into this region which holds some of the world's untapped natural resources with potential for high returns. However the business environment presented unique challenges due to lack of institutional capacity, infrastructure and a weak private sector. This resulted in a dominant role of government as well as community concerns in project execution.

Sasol's project, commissioned in 2004, to bring natural gas from Mozambique to South Africa was selected as a case study. The project team, business clients, contractors and independent consultants were interviewed on what were the critical project success factors. The results indicated that the leadership role of the sponsor and an experienced and committed team were critical to project success. The roles of the country manager and the performance of contractors were also highlighted.

External to the business organisation were the role of government and the involvement of the community. Government's role on institutional and physical infrastructure development was highlighted. The importance of alignment of all project stakeholders was emphasised as critical. Further, additional time and resources spent on alignment and the initial planning phase were critical to an efficient implementation phase.

DECLARATION

I declare that this research project is my own, unaided work. It is submitted in partial fulfilment of the requirements of the degree of Master of Business Administration for the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other university.

.....

Date:

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TABLE OF CONTENTS

ABSTRACT	II
DECLARATION	III
ACKNOWLEDGEMENTS	IV
TABLE OF CONTENTS	V
LIST OF TABLES	VII
TABLE 2.1: A CLASSIFICATION OF LITERATURE ON PROJECT SUCCESS FACTORS ..	VII
TABLE 2.2: CRITICAL SUCCESS FACTOR LISTS BY AUTHORS	VII
TABLE 5.1: SUB-SAHARAN NATURAL GAS RESERVES	VII
CHAPTER 1: INTRODUCTION TO THE RESEARCH PROBLEM	1
1.1. INTRODUCTION.....	1
1.2. COMPANY BACKGROUND.....	2
1.3. THE SASOL NATURAL GAS PROJECT IN MOZAMBIQUE	4
1.4. SASOL’S PROJECT ACTIVITIES IN SUB-SAHARAN AFRICA	5
1.5. SASOL FUTURE PROJECTS IN OTHER DEVELOPING COUNTRIES.....	5
1.6. CONCLUSION	6
CHAPTER 2: LITERATURE REVIEW	9
2.1. INTRODUCTION.....	9
2.2. PROJECT DEFINITION	9
2.3. MAJOR PROJECTS	11
2.4. PROJECT LIFECYCLE.....	13
2.5. CRITICAL SUCCESS FACTORS FOR PROJECTS	16
2.6. COMPETITION IN THE DEVELOPING MARKET REGIONS	22
2.7. THE BUSINESS ENVIRONMENT OF DEVELOPING MARKETS.....	23
2.8. THE BUSINESS ENVIRONMENT OF SUB-SAHARAN AFRICA	24
2.9. THE ROLE OF GOVERNMENT	25
2.10. INSTITUTIONAL INFRASTRUCTURE.....	28
2.11. PHYSICAL INFRASTRUCTURE	30
2.12. COMMUNITY INVOLVMENT	31
2.13. CONCLUSION	32
CHAPTER 3: PROPOSITIONS	34
3.1. RESEARCH PURPOSE.....	34
3.2. RESEARCH PROPOSITIONS	34
CHAPTER 4: RESEARCH METHODOLOGY	36
4.1. DESCRIPTION OF METHODOLOGY	36
4.2. MOTIVATION FOR METHOD SELECTION	36
4.3. UNIT OF ANALYSIS.....	37
4.4. POPULATION OF RELEVANCE.....	38
4.5. SAMPLING METHOD.....	38
4.6. RESEARCH INSTRUMENT	39
4.7. DATA COLLECTION METHOD	39
4.8. DATA ANALYSIS	40
4.9. RESEARCH LIMITATIONS.....	40
CHAPTER 5: RESULTS	42
5.1. INTRODUCTION.....	42
5.2. THE SUB-SAHARAN REGION PROFILE.....	43
5.3. THE BUSINESS ENVIRONMENT OF SSA COUNTRIES	46
5.4. MAJOR PROJECTS IN MOZAMBIQUE.....	48
5.5. THE BUSINESS ENVIRONMENT OF MOZAMBIQUE.....	49
5.6. THE SASOL NATURAL GAS PROJECT.....	50
5.7. INTERVIEW CANDIDATES	50



5.8.	PROJECT OBJECTIVES AND GOAL ALIGNMENT.....	51
5.9.	PROJECT MANAGEMENT EFFICIENCY AND FUNCTIONALITY	55
5.10.	THE ROLE OF THE SPONSOR AND PROJECT TEAM	60
5.10.1.	THE ROLE OF THE COUNTRY MANAGER	61
5.11.	CONTRACTOR’S PERFORMANCE	62
5.12.	THE ROLE OF GOVERNMENT AND POLITICS	65
5.12.1.	THE ROLE OF THE SOUTH AFRICAN GOVERNMENT	70
5.13.	INSTITUTIONAL INFRASTRUCTURE.....	71
5.14.	PHYSICAL INFRASTRUCTURE	75
5.15.	COMMUNITY AND STAKEHOLDER ENGAGEMENT	78
CHAPTER 6: DISCUSSION OF THE RESULTS		82
6.1.	THE SSA BUSINESS ENVIRONMENT PROFILE	82
6.2.	PROJECT OBJECTIVES AND GOAL ALIGNMENT.....	83
6.3.	PROJECT MANAGEMENT EFFICIENCY AND FUNCTIONALITY	86
6.4.	THE ROLE OF THE SPONSOR AND PROJECT MANAGEMNT TEAM.....	88
6.5.	CONTRACTOR’S PERORMANCE	91
6.6.	THE ROLE OF GOVERNMENT AND POLITICS	93
6.7.	INSTITUTIONAL CAPACITY	96
6.8.	PHYSICAL INFRASTRUCTURE	98
6.9.	COMMUNITY AND STAKEHOLDER INVOLVMENT	100
6.10.	A CRITICAL SUCCESS FACTOR FRAMEWROK FOR MAJOR PROJECTS.....	102
CHAPTER 7: CONCLUSION AND RECOMMENDATIONS.....		105
7.1.	PROJECT OBJECTIVES AND ALIGNMENT	105
7.2.	PROJECT MANAGEMENT EFFICIENCY AND FUNCTIONALITY	107
7.3.	THE SPONSOR AND THE PROJECT MANAGEMENT TEAM.....	109
7.4.	CONTRACTOR’S PERFORMANCE	111
7.5.	THE ROLE OF GOVERNMENT	113
7.6.	INSTITUTIONAL CAPACITY CHALLENGES	114
7.7.	PHYSICAL INFRASTRCTURE CHALLENGES	115
7.8.	COMMUNITY INVOLVEMENT	116
7.9.	RECOMMENDATIONS	119
7.9.1.	FURTHER STUDY	121
REFERENCES		122
APPENDICES		126
APPENDIX A: INTERVIEW QUESTIONNAIRE.....		127
APPENDIX B: INTERVIEW CANDIDATE PROFILE		129

LIST OF TABLES

Table 2.1: A classification of literature on project success factors

Table 2.2: Critical success factor lists by authors

Table 5.1: Sub-Saharan natural gas reserves

LIST OF FIGURES

FIGURE 1: PROJECT LOCATIONS AND INDUSTRY SECTORS..... 12

Figure 2: Project Lifecycle

Figure 5.1: Ranking the top ten SSA countries by size

Figure 5.2 Ranking the top SSA countries by US\$ GNI per capita

Figure 6: Project organogram for a major project in a developing country

Figure 6.2: A Critical Success Factor Framework for a major project in a developing country

LIST OF ABBREVIATIONS

CSF: Critical success factors

CTL: coal-to-liquid

GTL: gas-to-liquid

GDP: Gross Domestic Product

GNI: Gross national Income

FDI: Foreign Direct Investment

Mozal: Mozambique Aluminium – BHP Billiton’s smelter project

MD: Managing Director

SNGP: Sasol Natural Gas Project

SAIIA: South African Institute of International Affairs

SSA: Sub-Saharan Africa



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CHAPTER 1: INTRODUCTION TO THE RESEARCH PROBLEM

1.1. INTRODUCTION

This research report seeks to analyse the critical success factors for project execution for South African companies doing major industrial projects in other developing countries, with a focus on the Sub-Saharan Africa (SSA) region. A large number of South African companies have successfully completed major, complex industrial projects locally but have historically shied away from similar endeavors in SSA. South Africa is the dominant economy in the region with a GDP of US\$214 billion and the most advanced physical and institutional infrastructure. It was ranked 29th by the World Bank on ease of doing measures, and thus does not present some of the major challenges to business as faced in other SSA countries (World Bank a, 2006).

The SSA region presents a natural starting location for most South African companies following a globalization strategy to expand their business operations internationally (Games, 2004). South Africa is strategically located for these companies to take advantage of the opportunities presented by the African continents' natural resources. However these opportunities normally require large capital investments in complex industrial projects before the gains can be realized. One of the South African companies that have recently successfully completed such a project in the energy sector is Sasol.

In 2004 Sasol commissioned a major project to bring natural gas from Mozambique to South Africa. Mozambique is one of the poorest economies in SSA, with a GDP of US\$ 5.9 billion and a ranking of 140 according to the World Bank's ease of doing business measures (World Bank a, 2006). The project which represented some of the highest single foreign direct investment (FDI) in that country's history was successfully completed (Grobbelaar, 2004) amidst all the infrastructural challenges. It thus presents an appropriate case study for analysing the critical success factors required to successfully implement such an investment in a developing country.

1.2. COMPANY BACKGROUND

Sasol is “an integrated oil and gas company with significant chemical interest” (www.sasol.com). Its vision as stated by the CEO, P Davies on the company website, is “to be a respected global enterprise, harnessing our talents and competitive technologies to excel in selected markets in the energy, fuels, and chemicals related sectors in Southern Africa and worldwide” (www.sasol.com). The company was founded by the South African government in the early 1950's with the objective of producing synthetic liquid fuels from coal to ensure energy self-sufficiency against uncertain global oil supply markets. Sasol is the only company globally, that has managed to successfully commercialize Fisher-Tropsch (FT) technology to produce synthetic fuels from coal.

Sasol operates the world's only commercial scale coal-to-liquids (CTL) complex in Secunda, in the Mpumalanga province. It also operates a large chemical complex in Sasolburg which was recently converted from using coal as feedstock to using natural gas. The company has extended its FT technology to also use natural gas to produce synthetic fuels in so called gas-to-liquid (GTL) plants. Meanwhile some of the technology is not patented, as there are other players trying to roll-out similar commercial scale plants Sasol possesses the competitive advantage of successfully commercializing it.

One of the main challenges facing the company as it seeks to expand its global footprint is to rapidly roll-out commercial scale plants based on either CTL or GTL technology in countries with substantial coal or natural gas reserves. This requires a competitive skill in the successful design, construction and project management of these large industrial projects.

However most of the world's untapped coal and natural gas resources are in developing countries such as those in the SSA region which remain unfamiliar to foreign companies and thus pose risks for large investments. It was logical for Sasol to initially seek such resources closest to home as South Africa does not hold any major natural gas reserves. Sasol began exploration activities in the North Eastern Pande gas fields of neighbouring Mozambique in 1989, by acquiring licenses from an American company

which was already active in that region. This culminated in a project to bring natural gas via pipeline into South Africa as summarized below.

1.3. THE SASOL NATURAL GAS PROJECT IN MOZAMBIQUE

In 2001 the Sasol board approved US\$1.1 billion of capital for a project to drill and process natural gas from Mozambique and bring it to South Africa via an underground pipeline (www.pmsa.co.za SNGP Report, 2005). The project comprised the drilling and development of the Pande and Temane gas fields in Mozambique, the construction of a Central Processing Facility (CPF) in Temane for cleaning of the gas before being fed into a pipeline. An 865 km pipeline was then constructed to transmit the gas from Temane to Secunda in South Africa.

On reaching South Africa, some of the pipeline gas was integrated into the feed network of the Secunda plant as an alternative feedstock to coal. The bulk of the gas was transmitted to the Sasolburg complex of plants which was completely converted from using coal to using natural gas as the main feedstock. Surplus gas was fed into the company's extensive pipeline network to supply both domestic and industrial gas customers in the greater Gauteng region. While this was Sasol's first major cross-border project the company has been increasingly active in the greater SSA region as discussed below.

1.4. SASOL'S PROJECT ACTIVITIES IN SUB-SAHARAN AFRICA

In 1996, Sasol Petroleum International (SPI), a wholly owned subsidiary, was incorporated to focus on the exploration, drilling and processing of oil and natural gas in other countries (www.sasol.com). In Sub-Saharan Africa its activities led to major gas finds in Mozambique as described above. The company also established oil and gas drilling operations in West Africa (Nigeria, Gabon, and New Guinea). In early 2000 the Sasol-Chevron joint venture was incorporated to combine the two companies' technologies in exploiting gas-to-liquid (GTL) opportunities in countries with substantial reserves (www.sasol-chevron.com). The joint venture's first major project in SSA was to build a gas-to-liquids plant in Escravos, Nigeria. A similar plant is mooted for neighbouring Angola which also holds substantial oil and gas reserves. Sasol is also busy with similar projects in other developing regions as summarized briefly below.

1.5. SASOL FUTURE PROJECTS IN OTHER DEVELOPING COUNTRIES

As new players like China and India emerge as large energy consumers on a scenario where the key industry players have failed to anticipate demand, the demand for energy and competition there-off will most likely increase, (Verleger, 2003). These countries present a significant opportunity for Sasol and thus the company is currently busy with feasibility studies for the construction of two coal-to-liquids complexes in the coal-rich Western provinces of China (www.sasol.com). Similarly, pre-feasibility studies for construction of similar plants in India are in progress.

Sasol-Chevron meanwhile is nearing completion of a GTL plant in Qatar, due for commissioning in late 2006 (www.sasol-chevron.com). Pre-feasibility studies for similar GTL plants in Australia and Algeria are also in progress. Sasol is also due to commission an ethylene complex in Assuley, Iran, based on that country's extensive natural gas fields.

1.6. CONCLUSION

As new players like China and India emerge as large energy consumers on a scenario where the key industry players have failed to anticipate demand, the demand for energy and competition there-off will most likely increase, (Verleger, 2003). These countries present a significant opportunity for Sasol and thus the company is currently busy with feasibility studies for the construction of two coal-to-liquids complexes in the coal-rich Western provinces of China (www.sasol.com). Similarly, pre-feasibility studies for construction of similar plants in India are in progress.

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The Sasol natural gas project (SNGP) is considered successful, having won the “Project of the Year” Project Management Excellence (PME) award in 2005 (www.pmsa.com SNGP Report 2005) despite being done in Mozambique, which is one of the poorest countries in the SSA region. It thus presents an appropriate case study for analysis of a successful project implemented in a developing country.

Sasol clearly holds a competitive advantage in the commercialization of CTL and GTL technologies for production of synthetic automotive fuels. The key to exploiting this competitive advantage however will rest in Sasol’s ability to successfully roll-out these commercial plants globally before the competition. It is thus imperative for Sasol to hone its skills in the implementation of these major projects to ensure that they are brought on stream timely and successfully.

The company’s global growth map will be dictated by the location of countries with available substantial resources. As illustrated above, the majority of future projects will be in developing countries. Sasol must thus develop adaptable strategies for doing business in these developing countries.

This research report thus seeks to analyse some of the critical success factors (CSF) required for a South African company to successfully implement these mega projects in other developing countries. The report

also studies the strategies required for the different business environments presented by other developing countries. The key learning points may be applicable to Sasol's projects in other developing countries as well as for other companies and project stakeholders seeking to make similar investments.

CHAPTER 2: LITERATURE REVIEW

2.1. INTRODUCTION

A literature review was conducted to establish a theory base for analyzing the research problem as stated in Chapter 1. The focus of the literature review was on recent schools of thought on the topic of project success and particularly major (mega-projects) projects. The review was in the context of mega-projects done by the private sector in developing countries, particularly in the Sub-Saharan Africa region (SSA).

The objective of the review was to determine what comprises project success and the critical success factors required for success. The review also analysed the strategies required for project success in the business environment of developing countries. The influence of external environmental factors, particular to the SSA region, on project success was investigated. Conclusions were then drawn on what were the critical success factors for managing large industrial projects in developing countries.

2.2. PROJECT DEFINITION

The classification of work tasks into projects and the development of the project management discipline originated in the American defence and aerospace industries (Morris, 1987). Since then project management has grown as a management discipline and spread into many industries in

different countries. Many authors have published work on the subject and below are some of the definitions offered on what constitutes a project.

Kerzner (2002) defines a project as a series of multifunctional tasks with certain specifications that must be completed towards a specific objective. He elaborates that a project must have a start and end date and is normally constrained by funding, human and non-human resources.

A more concise definition by Turner (1999) states that “a project is an endeavour in which human, financial and material resources are organized in a novel way to undertake a unique scope of work, of given specification, within constraints of cost and time, so as to achieve beneficial change defined by quantitative and qualitative objectives”.

Similarly, Steyn (2003) defines a project as “any planned, temporary endeavour undertaken to create a unique product, service or other complete and definite outcome, within a limited time scale and budget”. The above definitions all concur that a project has the following characteristics;

Resources: it organizes and consumes resources (human, financial and material) in a unique manner.

Time: it is a temporary or finite endeavour with a start and end date.

Objective: it has a specific objective to produce beneficial change in a form of a unique (quality) product or service.

The above definitions are generally applicable to all types and sizes of projects; however this research report seeks to focus more on major, complex, industrial projects as discussed below.

2.3. MAJOR PROJECTS

Major (mega-projects) projects commonly arise in the WETT industries; water, energy, transport and telecommunications (Turner, 1999). Projects in the oil, gas and petrochemical industries, which are typically major projects, fall in the energy sector (Morris, 1987). These industries form the backbone for the development of most economies, which makes it imperative that we gain a better understanding of managing the typically large projects that characterize them.

The consequences of failing to develop a systematic approach like project management to deliver efficiently on these major endeavours can be severe as stated by one of the authors; “a nation that cannot institute and sustain industrial development will be politically delinquent and economically retarded” (Badiru, 1993). Understanding what constitutes major projects is a good starting point towards their successful management.

Turner (1999) defines major projects as “significant endeavours involving large dedicated teams, often requiring the collaboration of several sponsoring organizations”. This definition however does not highlight the risk inherent in large, complex projects as described by others. Morris (1987)

describes major projects as “those representing substantial opportunities but posing above average risk” He elaborates that “major projects are particularly demanding either because of their size, complexity, schedule urgency or demand on existing resources or know-how”. A similar definition is proposed for large industrial development projects; “they are complex, capital intensive undertakings that cross several fields of endeavours and thus require a systematic project approach to integrate the technical and societal issues that occur” (Badiru,1993).

Independent Project Analysis (IPA), an organization focusing on benchmarking the performance of capital project execution in the energy sector, defines major projects as those averaging a capital cost of US\$1.3 billion (www.ipa.org). The figures below illustrate the locations and spread by industry sector of major projects as observed in IPA’s database of 34 major projects authorized from 1996 (www.ipa.org).

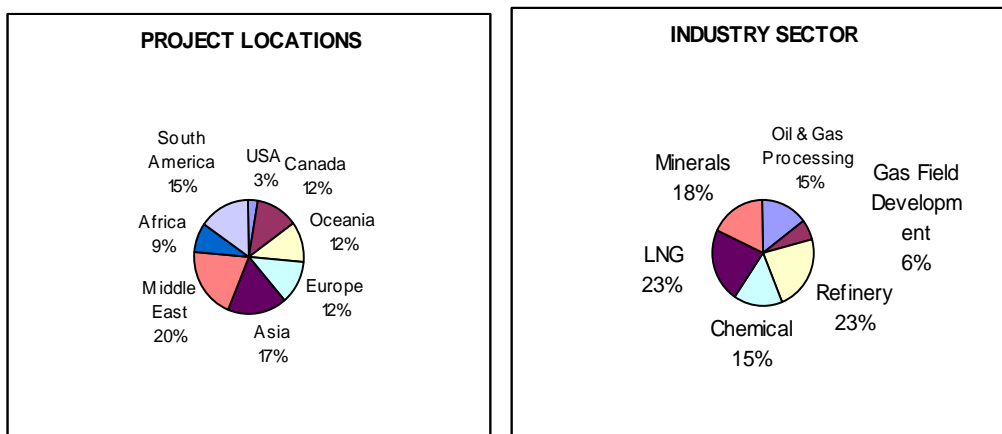


Figure 1: Project locations and industry sectors

The above figures illustrate that generally the oil and gas value chain is comprised of major projects. The majority of major projects are in developing countries, 9% of which are in Africa.

Major projects are thus large endeavours; in terms of both size and amount of resources required, complex in technical aspects and other managerial issues. They present substantial opportunities for the stakeholders involved, but with greater risk. The success of major projects thus encompasses wider, strategic issues that require the collaboration of a large number of stakeholders. However according to most project management literature, it seems projects of all size follow a similar sequence of activities or a lifecycle as described below.

2.4. PROJECT LIFECYCLE

The definitions of a project as detailed above all pointed out that a project is a temporary endeavour, with a start and end date. This implies that the project goes through a finite lifecycle and it is the understanding of the stages of these lifecycles that has contributed to the development of project management as a management discipline. While there are no standardized sets of phases that can be applied to all project lifecycles most authors (Steyn 2003, Morris 1987, Kerzner 2002, Pinkerton 2003, Badiru 1993) agree on at least the following phase descriptions for a complete project lifecycle;

- Project definition, initiation, pre-feasibility or conceptual,
- Planning or feasibility
- Design, development, procurement and contract negotiation
- Implementation, construction, project execution
- Commissioning, testing and handover
- Operations support, maintenance

Major projects go through similar lifecycle phases as described above and their overall success depends on the relative success of each of the above phases. It is common practice to divide the project lifecycle into two main phases comprised of the planning and implantation stages of the project as detailed below.

Planning; The planning phase comprises the conceptual work required in the initial three stages, from initiation to design, as listed above. International Project Analysis (IPA), an international project benchmarking company, refers to this phase as Front-End-Loading (FEL) (www.ipa.com), highlighting the importance of the front-end preparatory work. While this phase may require some visits to the selected project site it is normally completed between the project office of the Owners project management team (PMT) and the Contractor. The main deliverable of this phase is a detailed scope of work that is sufficient for the completion of the implementation phase.

Implementation; The implementation phase comprises the last three phases as listed above, and includes procurement, execution of the scope of work and final handover to the Owner’s Operations Team. The implementation phase logically occurs on the project site. Most of the project management literature mark the hand-over phase to the client as the end of a project lifecycle and exclude the operational or service phase in defining success (Jugdev, 2005).

The above section on project definition, especially major projects and their lifecycle laid the foundation for analyzing the critical success factors necessary for project success. Figure 3 illustrates the project lifecycle and its phases as discussed above.

PROJECT LIFECYCLE							Operation
Planning			Implementation				
Initiation	Pre-feasibility	Feasibility	Basic Development	Execution	Commissioning	Hand-over	
VENTURE (Product) LIFECYCLE							

Figure 2: Project lifecycle (adapted from Jugdev, 2005)

Importantly, it also shows the comparison with the product lifecycle or in the case of major projects; the venture lifecycle which extends into the operation phase. Clearly the project lifecycle is a subset of the venture lifecycle which occurs over a longer period including operation (Project Management Institute, 2004).

While project management success focuses on the efficiency of the implementation process, the overall success of a major project includes operational and service issues. Thus recent literature distinguishes project success as being measured against the overall objectives of the project (Cooke-Davies, 2002). This is consistent with the definition of major projects above which due the large investment required are of strategic importance to organizations.

2.5. CRITICAL SUCCESS FACTORS FOR PROJECTS

In spite of the large volumes of work published on project management there is no universal agreement on what constitutes project success. However the understanding of this subject has evolved with time and as projects become an increasingly valuable way of doing work across organizations of all types (Jugdev, 2005).

There is however a trend towards accepting that project success varies across the different project classes and industries. Belassi and Tukel (1996) provide a summary of the literature on project success, differentiating between theoretical and empirical studies as illustrated in table 2.1 below.

Table 2.1: A classification of literature on project success factors

Theoretical Studies	Empirical Studies
Avots (1969)	Rubin and Seeling (1967)
Jonason (1971)	Baker, Murphy and Fisher (1983)
Archibald (1976)	Pinto and Slevin (1987)
Martin (1976)	Morris and Hough (1987)
Markus (1981)	Pinto and Prescott (1988)
Hughes (1986)	Magal, Carr and Watson (1988)
Schultz, Slevin and Pinto (1987)	Nutt (1989)
	Pinto and Slevin (1989)
	Pinto and Prescott (1990)

Meanwhile the list in the above table is not exhaustive; it covers most of the earlier work on project success factors. The first empirical studies appear in the late 1960, followed by mostly theoretical studies till the late 1980's. In this period the focus was on the efficiency measures of project implementation as defined by time, cost and specifications (Belassi, 1996).

A similar article by Jugdev and Muller (2005) focuses on the developments in literature on project success. They concur that most of the initial work was focused on implementation efficiency measures. During this period both articles agree that there was almost no link between project success factors and operations management or the product cycle. The late 1980's however saw a return in focus to empirical studies and the development of critical success factor lists.

The focus on empirical studies began a shift from efficiency measures to effectiveness measures. The latter manifested in consideration for

satisfying the objectives of the owner and other stakeholders. Some authors (Belassi, 1996) began classifying success in terms of tactical and strategic factors.

In this period also lists of success factors were identified and described, however they were neither grouped nor integrated in a coherent manner (Jugdev, 2005). A summary of the critical success factor lists as described by most of the authors is given in the table below (Belassi, 1996).

Table 2.2: Critical Success Factor Lists, by various authors

Sayles and Chandler (1971)	Martin (1976)	Cleland & King (1983)	Locke (1984)
Project manager's competence	Define Goals	Project Summary	Make project commitments known
Scheduling	Select project organizational philosophy	Operational concept	Project authority from the top
Control systems and responsibilities	Top management support	Top management support	Appoint competent project manager
Monitoring and feedback	Organise and delegate authority	Financial support	Set up communication and procedures
Continuing involvement in project	Select project team	Logistic requirements	Set up control mechanisms
	Allocate sufficient resources	Facility support	Progress meetings
	Provide for control and information mechanisms	Market intelligence	
	Require planning and review	Project schedule	
		Executive dev. and training	
		Manpower and org. Acquisition	
		Info and comm.. channels	
		Project review	

Table 2.2; Critical Success Factor Lists (continued)

Baker, Murphy and Fisher (1983)	Pinto and Slevin (1989)	Morris and Hough (1987)
Clear goals	Top management support	Project objectives
Goal commitment and project team	Client consultation	Technical uncertainty
On-site project manager	Personnel recruitment	Innovation
Adequate funding to completion.	Technical tasks	Schedule duration urgency
Adequate project team capability	Client acceptance	Financial contract legal problems.
Accurate initial cost estimates	Monitoring and feedback	Implementation problems
Minimum start-up difficulties.	Communication	Politics (Government)
Planning and control techniques	Trouble-shooting	Community involvement
Task vs social orientation	Characteristics of the project manager	
Absence of bureaucracy	Schedule urgency	
	Power and politics	
	Environment events	

The above table shows that there are common factors listed by most of the authors above. Clarification of project objectives, selection of the appropriate project team, capability of the project manager and top management support are highlighted by most authors. Similarly, control mechanisms for schedule planning, efficient communication, monitoring and reviewing are emphasised. The listed factors however focused on internal efficiency measures of the implementation phase of the project lifecycle.

Some authors made a distinction between planning and tactical factors but these were still only limited to the project lifecycle (Pinto, 1989). Pinto further suggested that some success factors were project specific and that the relative importance of success factors varies along the project lifecycle. This view is supported by others where a distinction is made between short term measures for project implementation and long term business success factors (Shenhar, 1997). Most of the authors in table 2 however seem to have focused only on listing the factors but did not analyse interdependencies between them.

The development of integrated success factor frameworks was pioneered by Morris and Hough in their book; “Anatomy of Major Projects” (Morris, 1997) as listed on table 1 above. They empirically determined critical success factors based on a study of eight complex, mega-projects. They concluded that major project success maybe objective or subjective depending on the definition by different stakeholders. Their work is important in that they identify other factors external to the organization such as the role of government and socioeconomic pressures on project success.

Others concur with the view that the interface between the internal and external environment affects project success (Kezner, 1987). The role of stakeholders and external environment factors such as political, social and

economic pressures are listed as further dimensions of project success by others (Hartman, 2000).

Recent literature on critical success factors for projects emphasizes the need for a broader definition of project success. “The notion of defining project success along the internal efficiency measures of budget, scope and schedule of project management processes is no longer valid and may be misleading” (Shenhar, 1997).

Success measures have to include the projects external effectiveness and impact on the owner’s bottom-line profit (Cooke-Davies, 2002). Belassi and Tukel (2002) propose a new framework that groups the success factors into four areas as follows;

- ✓ Factors related to the project
- ✓ Factors related to the project management team
- ✓ Factors related to the owner organization, and
- ✓ Factors related to the external environment.

They emphasize the size and value as project inherent factors that impacts project success. They also highlight the need of a project sponsor or champion. The sponsor must be a senior executive and have the support of senior management (Helm, 2005). This is in agreement with the findings of an empirical study done by others on large European projects where the need for greater cooperation between the project manager and sponsor is emphasized (Turner, 2004).

Belassi et al conclude that for large projects the most critical factors are those related to the project team and the organization (Belassi, 1996). The work of Belassi and Tukul (Belassi, 1996) is also in agreement with that of Morris and Hough (Morris, 1987) described above that government and other external environmental factors are critical to success. They further stretch the definition of external factors to competitors that may be competing for similar project resources (Morris, 1987).

2.6. COMPETITION IN THE DEVELOPING MARKET REGIONS

The frameworks presented thus far are mostly on projects completed in the West (North America and Europe). However it is expected that most growth and thus major project will come from developing countries which present the fastest growing markets for both products and services (Khanna, 2005). Khanna and his co-authors elaborate that it is necessary to develop unique strategies that suit the conditions of developing countries to ensure business success.

This sentiment is echoed by others; “as protectionist barriers crumble in developing countries around the world, multi-national corporations (MNC’s) are rushing in to find opportunities for growth” (Dawar, 1999). It is thus imperative to understand the business environments of developing countries and the strategies required for competing effectively in these regions.

South African companies seeking to invest in developing economic regions will face competition from both developed nation multi-national corporations (MNC's) and emerging market MNC's from Asia, Eastern Europe, and Latin America. "The African continent is becoming the new commercial competitive space for China which is increasingly displacing traditional European commercial interests on the continent" says Dr Martyn Davies, CEO of Emerging Market Focus (Engineering News, 2006).

The article by Dawar on survival strategies for local companies in emerging markets proposes that local companies can successfully compete with foreign MNC's by dodging, defending, extending or contending depending on the transferability of assets and industry pressure to globalize (Dawar, 1999). The article concludes that local companies can successfully contend with MNC's provided they move away from competing on a cost basis alone, towards the productivity, quality, and service levels of competitors from developed countries. However, an understanding of the different developing economic regions is a pre-requisite to developing competitive strategies.

2.7. THE BUSINESS ENVIRONMENT OF DEVELOPING MARKETS

Research on the business environment of developing countries identified the absence of specialized intermediaries, regulatory systems, and contract enforcement mechanisms as obstacles to the globalization strategies of most multinational corporations (Khanna, 2005). The paper by Khanna cautions against blindly using composite indices used for country rankings

as they may be similar for most developing countries, but the reality is that their market infrastructure may be widely different, thus requiring different entry strategies.

An understanding of the business environment in developing countries as detailed above is a pre-requisite to developing the appropriate business strategies for developing countries especially in SSA.

2.8. THE BUSINESS ENVIRONMENT OF SUB-SAHARAN AFRICA

The above findings concur with those found by other researchers on the SSA business environment. The lack of an enabling business environment due to political instability, civil war and various socio-economic and structural challenges have detracted foreign direct investment which typically funds major industrial projects in developing countries (Badiru, 1993, Fafachamps, 2001). Similar sentiment is echoed by other authors; “generally, operating in African countries is challenging and complex, because of on-going conflict, internal strife and agitation, corruption and poor corporate governance (Agbazue, 2005)”.

Empirical research work commissioned by the World Bank on the African business environment also agrees that macro-economic stability, a precondition for external financial assistance or foreign direct investment has been particularly hard to secure in the SSA region (Hoskinsson, 2000). Hoskinsson and his co-authors also identify missing institutional features,

thin capital markets, infrastructure problems and the lack of strong legal frameworks and well defined property rights as impediments to external investment in SSA.

Most economies of developing countries especially in SSA are relatively small. Therefore major investments such as those that come with mega-projects will inevitably draw the attention of government as well as all other major stakeholders in the host country (Grobbelaar, 2004). Government involvement is inevitable especially when the major project utilizes the country's natural resource which is typical of most major investments in Africa. The investing party must thus have a strategy to engage government in a manner beneficial to the overall investment.

2.9. THE ROLE OF GOVERNMENT

One of the pre-conditions for major investments is political stability such that investors have assurance of being able to repatriate their profits. Political uncertainty and instability discourages investment and damages a country's growth prospects (Wilson, 2003). However there is very little written on the impact of politics and the role government in both project management literature and literature focusing on strategy issues for developing countries. Only two authors, in table 2.2 above, list government and politics as critical success factors for projects.

It is however the text by Morris and Hough on major projects that makes a direct link between the role of government and major project success (Morris, 1987). Morris and his co-author argue that especially in developing countries, political considerations dominate decision making in major projects. They identify the different roles of government as owner, sponsor, regulator or champion and conclude that government involvement can have a positive impact in setting the right economic and regulatory climate supportive of major investments. Government is more pronounced in developing economies which tend to have weak private sectors.

The private sector of most SSA countries is relatively underdeveloped and plays a minority role especially in capital and technologically intensive sectors such as energy and mining. Thus this sector remains dominated by government through public sector parastatal companies. This economic ownership structure is also due to central planning and nationalization policies adopted by most SSA governments in the past. This is compounded by the relatively slow pace of donor-led reforms and privatization programs (World Bank, 2006).

On analyzing the business environment in Mozambique as experienced by South African investors and companies, Grobbelaar concluded that the available entry strategies for major investors are normally through acquisitions of public sector assets through privatization programs or through greenfield projects with government as a minority shareholder

(Grobbelaar, 2004). The author cautions however that both strategies are vulnerable to rent seeking, corrupt political elites. Major projects in the energy and minerals resource sectors tend to follow the greenfields strategy.

The sheer size of the investment of major projects give the investing companies leverage to negotiate for the establishment of economic development zones with a better business environment policies such as lower taxes and tariffs. However the large investing companies have a huge role to play once such zones are established. One of the key challenges of the private sector in Africa is that it tends to be fragmented and dispersed. This view is supported by others in “stressing the value of having dense networks of firms operating in a competitive environment and able to generate thick markets and learning externalities” (Eifert, 2005).

The above is further supported by cluster theory which states that firms must be organized in a cluster of a network of firms for higher competitiveness (Porter, 2003). Porter points out that the most efficient clusters are highly integrated as compared to the less competitive fragmented cluster of developing countries. Thus major projects may set the platform for the establishment of clusters by ensuring that conditions negotiated for economic zones are applicable to all firms within the zone including micro enterprises. This supports the development of clusters and growth of the private sector.

There is generally a lack of institutional capacity and skills in most public sector and civil services of SSA countries. “This may lead to costly bureaucratic systems and inefficient business services” (Eifert, 2005). Investing companies as described above must plan for internal capacity to negotiate through the bureaucracy as well as facilitating the development of capacity in these sectors. The governments of the countries involved may also serve to pave the way by lobbying their political country parts in the host nation to facilitate the business implementation process (Sunday Times, K. Dlamini, 2006).

2.10. INSTITUTIONAL INFRASTRUCTURE

Developing countries lack the institutional or “soft” infrastructure that creates an efficient business environment similar to that found in most developed countries. A report analyzing appropriate strategies for emerging markets indicates that “institutional voids” such as the absence of specialized intermediaries, regulatory systems, and contract enforcing mechanisms, makes it difficult for MNC’s to implement their business models (Khanna, 2005).

In the project environment, where all work is executed on a formal contract with the client company, the lack of service providers, equipment suppliers’ skilled personnel, and ineffective legal systems makes executing even the simplest of tasks both risky and costly. For instance, restrictions on imports allowed and work permits and the issuing there-of, have caused delays in

some projects in developing countries (Turner, 1999). In an interview with the Business Times (Sunday Times, 2006) Arnold an executive of a South African construction company said “Uniformly, experiences of projects in Africa are bad” and the reasons cited are corruption, lack of security and political instability.

Khanna and his co-authors caution against the blanket use of composite indices and propose a framework for mapping a country’s institutional context based on political and social systems, openness to foreign direct investment and understanding of the product, labour and capital markets (Khanna, 2005). They conclude that investing companies must adapt their business models for each individual country without losing their competitive advantage or otherwise stay away and diversify elsewhere.

Similar research by others on emerging markets strategies identify the lack of institutional features such as legal infrastructure, skilled labour shortage, thin capital markets and clearly defined property rights as impediments to business efficiency (Hoskisson, 2000). Hoskisson and his co-authors argue that institutional constraints limit the growth of firms and propose that firms change the institutional environment by developing strategic responses instead of passive adaptation.

They also propose hierarchical governance modes as a control measure for limiting transactional costs, such as measurement and enforcement, which

tend to be higher in developing countries. Lastly, they also emphasize the importance of good relationships with government for firms to benefit from resource-related capabilities and substitute for the lack of institutional infrastructure (Hoskisson, 2000).

2.11. PHYSICAL INFRASTRUCTURE

The lack of developed infrastructure in developing countries especially Africa is normally cited as one of the major impediments to doing business. The logistical challenges posed by bad roads, underdeveloped sea and airports, and badly maintained railway lines have been listed *ad nauseum* as contributors to high business costs in Africa. The lack of reliable utilities such as electricity, water and telecommunication systems are also listed as high costs for businesses (Games, 2003, Grobbelaar, 2004, Eifert 2005, and Badiru, 1993). It is the impact on project implementation and business efficiency however that must be understood.

Turner for instance cautions that project manager have to plan and budget for schedule delays on procurement and import of supplies and raw materials due to logistical constraint and customs inefficiencies (Turner, 1999). These constraints may also affect labour supply and result in security and safety concerns as goods and personnel navigate through long distances to site locations. Most literature agrees that government has a significant role to play in developing and maintaining infrastructure to reduce the cost of doing business and attract more investment.

2.12. COMMUNITY INVOLVMENT

It is again Morris and Hough in table 2.2 who list community involvement in major projects as a critical success factor (Morris, 1987). They conclude that community resistance may destabilize implementation and highlight the importance of political support for major projects and the ability of project management teams to manage public relations.

The importance of communication and public relations is also emphasized by others especially for the transition from major contract work which employs significant amounts of labour to operation which requires a few skilled employees (Turner, 1999).

Turner also highlights the lack of social infrastructure such as hospitals, schools, and other amenities as de-motivators to attracting employees with scarce or high skills (Turner, 1999). Most Sub-Saharan regions are prone to malaria and cholera outbreaks and have a high incidence of HIV/AIDS and thus the lack of modern local medical facilities and efficient transport systems for emergencies may detract recruitment of highly skilled personnel with sought after skills. Other factors that may influence project progress are language barriers, religion and cultural practices which may result in different approaches to management (Games, 2004).

2.13. CONCLUSION

The literature review highlighted that there is clearly a need for further research in the development of critical success factor frameworks of major projects. The paradigm of judging project success according to the efficiency measures of time, cost and quality must change to a wider scope beyond the project lifecycle. This is imperative for major projects which are a large and long term commitment of a company's resources.

Companies also have to consider external environmental factors that affect project success. External factors have a more significant impact on projects in developing countries because of the unique challenges they present. Thus companies have to develop strategies that are appropriate to developing markets before committing to an investment.

However, companies must realize that a developing region like Sub-Saharan Africa is not homogeneous and an understanding of the different regions and constituent countries is a pre-requisite to developing competitive strategies. The following key factors were identified as critical to success.

The role of government and politics is amplified due to the under-developed private sector. Companies must therefore develop capabilities for engaging government. Similarly, community involvement and engagement at the appropriate level is key to project success.

Lastly, companies must develop strategies to compensate for the institutional voids in the business environment of developing countries. Similarly, forward planning and budgeting for lack of physical and social infrastructure is recommended. These inefficiencies and gaps are likely to cause delays and increase costs.

Further research is recommended in understanding the business environment of developing countries, especially the Sub-Saharan Africa (SSA) region. An understanding of these business environments may offer a better basis for further research on factors that influence project success.

CHAPTER 3: PROPOSITIONS

3.1. RESEARCH PURPOSE

The purpose of the research was to determine the critical success factors for project success, particularly major industrial projects by the private sector. The research was done in the context of South African companies investing in Sub-Saharan Africa which is perceived to be a difficult business environment.

However as the business environment in Sub-Saharan Africa improved, there have been an increasing number of South African companies investing in major projects with success. The objective of this research was thus to confirm the propositions made below which are supported by literature as major contributors to project success in developing countries.

3.2. RESEARCH PROPOSITIONS

The literature review highlighted the following factors as critical to project success. The research proposition is that the understanding and management of these factors can lead to project success.

- Project objectives and goal alignment
- Project efficiency and functionality
- The role of the sponsor and the project management team
- Contractor's performance

The above factors are critical for success of all projects in any environment. However the external business environment of developing countries has an impact on these factors. Particularly, project success is also affected by the following external factors particular to the business environment of developing countries.

- The role of government and politics
- Institutional Infrastructure
- Physical infrastructure
- Community and stakeholder engagement

An understanding and proper management of these factors by South African companies doing major projects in Sub-Saharan Africa can lead to project success.

CHAPTER 4: RESEARCH METHODOLOGY

4.1. DESCRIPTION OF METHODOLOGY

The proposed methodology is the case study method, which is itself a subset of historical research. Our understanding of projects is in hindsight of how previous projects performed. The case study method is appropriate when a limited number of units of analysis, typically one unit, are studied intensively.

This approach is “directed towards understanding the uniqueness and the idiosyncrasies of a particular case in all its complexity” (Welman, 2005).

The proposition is thus to focus on one major project that was completed by a South African company in another country in Sub-Saharan Africa and study it intensively to understand the critical factors that contributed to its success or failure. One such project as stated in the research problem is the Sasol Natural Gas Project (SNGP) between South Africa and Mozambique.

4.2. MOTIVATION FOR METHOD SELECTION

Major projects are large endeavours that consume a significant number of resources in both capital and human terms. Political instability and the slow economic development of the SSA region meant only a few such projects have been implemented by the private sector in the past and thus there are a limited number of case studies for analysis.

The SNGP is one of only two major projects implemented in the history of Mozambique. However its sheer size and complexity commands a dedicated focus and intensive study to understand the dynamics that led to its success. A case study analysis of a single major project is thus an appropriate research methodology for this instance.

4.3. UNIT OF ANALYSIS

The unit of analysis for this research is a single major project completed by Sasol, a South African company. The selected case study method is so defined because its objective is “to investigate the dynamics of a single bounded system” (Welman, 2005). In this case the bounded system is the Sasol Natural Gas Project (SNGP) completed between Mozambique and South Africa in 2004. Reference shall be made to other major projects in Mozambique and the rest of Sub-Saharan Africa but the focus will be on the SNGP.

The selected case is bounded or limited to a study of major (mega) industrial projects, completed by South African private sector companies. A major project was previously defined in the literature review and typically ranges at US\$1 billion capital investment. The SNGP for instance was funded by US\$1.2 billion of capital. This then excludes smaller investments in other sectors. The research was also limited to investments in developing countries, especially in the SSA region and excludes projects in developed countries.

4.4. POPULATION OF RELEVANCE

The population of relevance was defined as all the stakeholders involved throughout the project lifecycle and expert consultants on the business environment of Mozambican and the greater SSA region. Stakeholders include the project management team, financiers, consultants, contractors and subcontractors, government officials, community members, project clients and customers.

The case study method also allows the use of content analysis to further substantiate the information gathered. These could include mass media reports, project report, journals and diaries of witnesses. However, information gathered from primary witnesses that were directly involved in the case is favoured as the most accurate.

4.5. SAMPLING METHOD

The non-probability type method termed purposive sampling was used to obtain the appropriate units of analysis. This method allows the researcher to use their experience and lessons from previous research by others to select a sample that is most representative of the population of study. In this case the literature review and project reports were used to identify critical members of the sample. The project sponsor and project management team are identified as critical to project success (Belassi, 1992). Similarly the project client and contractor's are also influential stakeholders in project success (Morris, 1987).

In the constituent group's selected preference was given to the most experienced members who were able to articulate best the factors affecting success. Thus the contractor's project manager was preferred over a project administrator. Lastly, the case study method dictates preference to primary witnesses who were directly involved in the case study. This results in preference of the actual project team members over ordinary members of the community who may have been impacted by the project but were not directly involved in its' implementation.

4.6. RESEARCH INSTRUMENT

The recommended method for case study research is face to face, unstructured interviews between the researcher and the respondents as selected by the above sampling method. The researcher then serves as the research instrument gathering data with the assistance of short notes to capture key points.

4.7. DATA COLLECTION METHOD

Kruger and Welman suggest participant observation or unstructured interviews as methods of data collection. The interview method was selected as the former requires the researcher to be actively involved in the actual case as a unit in the population of relevance. Unstructured face to face interviews were conducted with individual members of the population selected as detailed above in the sampling method. Questions were based on the research proposals as stated in chapter 3.

The researcher took notes of the interviewees' answers and these were typed out into formal data after the interviews. Data was also collected in the public domain such as project reports submitted for awards (Project management South Africa awards, 2005), and other mass media reports. Other publications on related to the study were used for triangulation of the collected data.

4.8. DATA ANALYSIS

The analysis of data is based on information gathered during unstructured interviews. The researcher took notes during the interviews to capture the information gathered. Interview notes were structured along the research propositions made in chapter 3. The data was thus analysed according to the different interview propositions and triangulated with information gathered from content analysis of project reports, mass media publications and journals. A detailed analysis of the data is presented in chapter 6.

4.9. RESEARCH LIMITATIONS

The large capital and human resource requirements of major projects imply that only a few are implemented at a time. This is compounded by the political and economic environments which influence such investment decisions. Thus there were a limited number of major projects that have been implemented by South African companies in SSA that could be studied or referenced.

The economic ranking of the constituent countries in the literature review clearly illustrated that the SSA region is not homogeneous. The external

factors that led to project success in Mozambique therefore may not have the same impact in another country in SSA.

Lastly, all projects are unique endeavours with different objectives, schedule urgency and degrees of complexity and their success is dependant on the particular project team and other stakeholders involved. However, the propositions made in this research positively contribute to the body of knowledge in project management and success in the African business environment.

CHAPTER 5: RESULTS

5.1. INTRODUCTION

This chapter presents research results collected over a three months period from interviews, literature and project reports and general mass media. The results presentation begins with content analysis of research on the business environment profile of Sub-Saharan Africa. This is followed by a more focused content analysis of the Mozambican environment.

Major project investments by South African companies in Mozambique are briefly presented. The purpose of this information was to contextualise and substantiate results obtained by interviews as detailed below. A brief introduction of the Sasol Natural Gas Project (SNGP), the selected case study project, between South Africa and Mozambique was presented.

Lastly, results of the interviews held with ten selected candidates are presented. Of the ten candidates, half were Sasol employees directly involved with the project and the other half were external candidates indirectly involved with the project or with experience of the SSA business environment.

The interview results were presented under the different research propositions as detailed in the chapter three. The responses of the candidates were grouped into the sponsor and project managers, the project

clients, the project consultants and contractors and lastly the independent consultants.

5.2. THE SUB-SAHARAN REGION PROFILE

The SSA region is comprised of 48 countries located below the Sahara desert, and with a combined population of about 730 million (World Bank b, 2006). The region excludes the five North African countries of Egypt, Morocco, Libya, Algeria and Tunisia, which tend to be classified with the Middle East region. The SSA region lags behind other developing economic regions as documented by a study of the global economic outlook which identifies Brazil, Russia, India and China as the dominant economies of the future (Wilson, 2003).

The World Bank ranks countries' prosperity according to gross national income per capita (US\$ GNI/capita) and offers a global ranking of all countries according to four classes of income namely; low-income, lower middle-income, upper middle-income and high income. No African countries feature in the high-income bracket. However, six SSA countries feature in the upper middle income group namely; South Africa, Botswana, Gabon, Equatorial Guinea, Seychelles and Mauritius. The lower middle-income bracket features Angola, Namibia, Lesotho, Swaziland, Cameroon, Cape Verde and the Republic of Congo. The remaining thirty four SSA countries are classified as low-income, making up more than sixty two percent of this category (World Bank b, 2006).

Similarly, research on globalization challenges facing the continent ranks all the countries in Africa as follows; high performers ready to globalize, countries on an upward trajectory, large – poorly performing countries, poorly performing countries and countries in collapse (Herbst, 2005). The author draws positive parallels between governance and economic performance and highlights that with the exception of South Africa, the four most populous countries, consisting of 41% of SSA’s population have performed poorly (Nigeria, Ethiopia, DRC and Sudan) to the detriment of their respective regions (Herbst, 2005). Figure 5.1 below shows the largest countries by population size in SSA.

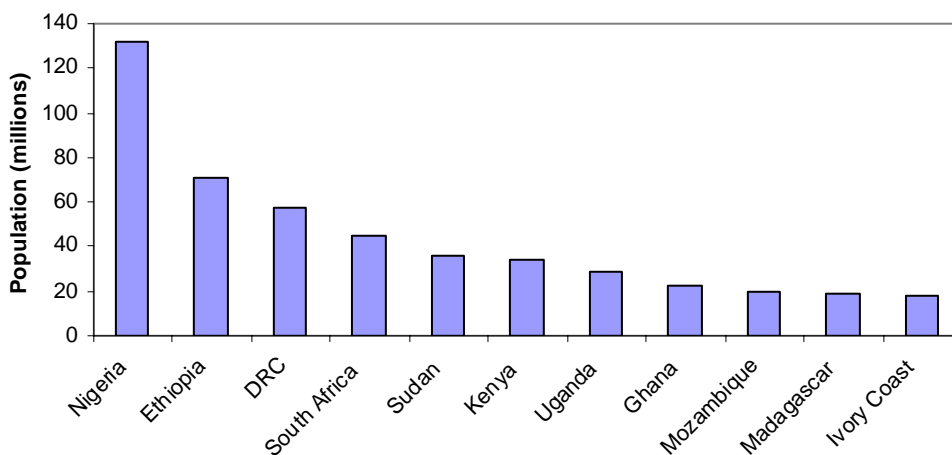


Figure 5.1: Ranking the top ten SSA countries by population size

In contrast, again with the exception of South Africa, the top economic performers generally have small populations, and have implemented relatively successful reforms and governance measures (Herbst, 2005).

Figure 5.2 below ranks the top ten countries by income per capita and illustrates that with the exception of South Africa (45, million), Cameroon (16

million) and Angola (12 Million) all the top performers have a population of less than 2 million. These results have major implications for investors and clearly paint a different picture to the blanket approach of foreign aid assistance for the whole continent.

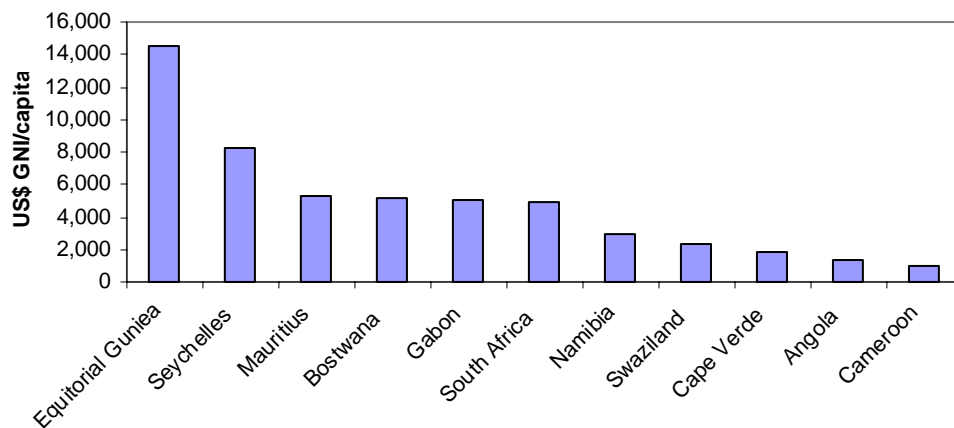


Figure 5.2: Top ten SSA countries by US\$ GNI per capita.

The decision for major investments is also influenced by the industry sector and the availability of raw materials. Herbst acknowledges that oil producing countries for instance do not fit into the proposed categories due to the high cash flows from oil exports and show a different economic profile (Herbst, 2005). Similarly, for the purpose of this research project investment decisions in major gas-to-liquid projects are influenced by individual country's available natural gas reserves. Table 3 below ranks SSA countries according to their natural gas reserves.

Table 5.1; SSA Natural Gas Reserves ((www.eia.doe.gov))

Country	Reserves (trillion cubic feet)	Percentage reserves
Nigeria	178.5	83.0%
Angola	13.1	6.1%
Republic of Congo	4.1	1.9%
Cameroon	3.5	1.6%
Sudan	3.0	1.4%
Namibia	2.5	1.1%
Equatorial Guinea	2.5	1.1%
Mozambique	2.2	1.0%
Gabon	1.1	0.5%
Sub-Saharan Africa	215	97.3%
AFRICA (total)	497	

The above table illustrates that there are less than ten countries with significant gas reserves in the SSA region, with Nigeria and Angola holding close to 90% of the continent's total reserves. Other factors such as geographic location, political and economic stability may then be considered once the target countries are identified.

5.3. THE BUSINESS ENVIRONMENT OF SSA COUNTRIES

A Business in Africa research project commissioned by the South African Institute of International Affairs (SAIIA) studied the experience of South African companies in various business sectors across Africa. The researchers found that South African companies are increasingly displacing European and American companies as the main investors on the continent (Games, 2004). The final report identified the following impediments

pertinent to the business environment of most African countries as experienced by investing South African companies;

- Political and fiscal risk
- A weak private sector coupled with a strong government presence
- Poor leadership and governance
- High business and finance costs coupled with currency fluctuations
- Low levels of economic development and investment in people
- High dependency on donor funding
- Insufficient infrastructure development
- Corruption, bad governance and poor leadership

The rest of this report narrowed the focus to a single country, Mozambique that has maintained high economic growth and was a recipient of major investments from South Africa. The selected case study for this research was one such investment where a South African company invested in a major natural gas project in Mozambique. Below is a brief presentation of the country's profile and business environment. Major investment projects are also presented.

5.4. MAJOR PROJECTS IN MOZAMBIQUE

The first major (mega) project in Mozambique was BHP Billiton's \$2.1 billion Mozal aluminium smelter. This was the largest single foreign direct investment in the history of Mozambique. The main shareholders were BHP Billiton, Mitsubishi from Japan, and South Africa's IDC. The Mozambican government held a minority stake of 8%.

The project comprised the construction of a green field smelter complex about 50 km outside Maputo. The project had to include the construction of new berth facilities at the Matola Harbour for export logistical support. Furthermore, the scope had to include land mine clearing, road access, a construction village for the labour force and expatriate project personnel, installation of new power supply, portable and industrial water and a sewage plant (van Niekerk, PMSA 2002).

The project was completed ahead of schedule and below budget, meanwhile achieving the highest quality ratings for that industry. It went on to win the Project Management Institute award for best managed project in 2002. Currently a second phase expansion, Mozal 2, with a capital value of \$865 million is in progress. This was closely followed by Sasol's Natural Gas Project, the second largest investment in Mozambique's history, confirming South Africa as a major investor in that country.

5.5. THE BUSINESS ENVIRONMENT OF MOZAMBIQUE

Mozambique gained independence in 1975 from colonial Portugal. However this was followed by sixteen years of civil war that destroyed most of the country's infrastructure and held back both human capital and economic development. The country's second president, Joachim Chissano, initiated political and economic reforms towards a multi-party democracy and a free market economy. This resulted in high economic growth rates averaging 10% between 2000 and 2005.

However most of the country's estimated 19.5 million population continued to live in poverty with a GNI per capita of US\$310 compared to South Africa's US\$ 4,960 and an estimated unemployment rate of over 50% (World Bank, 2006). This disparity between high economic growth and low living standards resulted in a multitude of social problems and labour militancy (Grobbelaar, 2004).

The World Bank ranks Mozambique at number 140 on ease of doing business measures, compared to South Africa's ranking of 29 (World Bank, 2006). The main issues of concern were difficulty in enforcing contracts, trading across borders, registering property and employing workers, as well as the procedures and time required to start a business.

5.6. THE SASOL NATURAL GAS PROJECT

In 2002 the Sasol board approved a capital investment of US\$1.1 billion for a major project to develop and commercialise the Pande and Temane gas fields North-East of Mozambique. The project comprised the drilling and piping of natural gas to a cleaning facility constructed in Temane. The cleaned gas was then piped via an 865 km underground pipeline constructed from Temane to Secunda in South Africa to feed Sasol's petrochemical plants and other energy customers. The project was completed in 20 months within the project schedule and approved budget (SNGP Report, 2005).

5.7. INTERVIEW CANDIDATES

The members of the Sasol project management team interviewed were three senior project managers, each in charge of a sub-project as described above, and the construction manager for the cleaning facility. Appendix B lists brief profiles of all the interview candidates.

The project sponsor, representing Sasol top management, and the governance portfolio manager were also interviewed. The remaining Sasol employees were the project clients represented by the managing director of Sasol Gas for the pipeline and operations manager of the cleaning facility in Mozambique.

The external candidates included the project manager of Foster Wheeler SA, the principal contracting company as well as the managing directors of an engineering management company and an environmental consulting company respectively. These three candidates were directly involved as service providers in the project lifecycle.

Lastly, an independent consultant specialising on major project intelligence in SSA and a senior research consultant heading the Business Africa research project commissioned by SAIIA, were interviewed.

5.8. PROJECT OBJECTIVES AND GOAL ALIGNMENT

Response from Project Sponsor and Project Managers

The project sponsor, project managers and country manager played a key role in aligning all the main project stakeholders. Initially different stakeholders such as governments, communities, financiers and business owners had different expectations of project success. Numerous alignment sessions were held with all stakeholders to ensure all had a shared vision for success and worked as a team towards attaining it.

Project managers felt that there was more time required for communicating project objectives and making sure all stakeholders were aligned than would have been required in South Africa. The main stakeholders that required alignment with Sasol's objectives were the government and the community. Sasol appointed a country manager at pre-feasibility phase to

establish an office in Mozambique. This initiative established the company's presence and was instrumental in the development of relationships with government and the community.

The main objective of the Mozambican government was to monetise the country's natural gas resources for economic development, income generation, job creation and human capital development. However they did not have a market for the resource and Sasol was an anchor client with infrastructure capability and a market.

Sasol also consulted extensively with BHP Billiton on their experience during the construction of the Mozal smelter. They applied the lessons learnt in aligning all stakeholders including communities on the project objectives and goals.

The environmental assessment and social impact studies which involve extensive community and public participation also contributed to identifying the needs of the masses and supported alignment on project objectives.

The principal contractors, Foster Wheeler, were also aligned on objectives by regular project meetings where important project drivers were communicated and roadmaps developed.

In the end both Sasol and the Mozambican government were committed to making the project a success and spent years negotiating an outcome that would benefit all stakeholders. Overall the extra time spent upfront was beneficial to the alignment of all stakeholders and project success.

Response from Project Clients

The main objective of business was to expand the gas value chain. This objective spans wider than the project implementation phase of the venture. Hans Naude, the managing director of Sasol Gas, highlighted three focus points that ensured that the objective of business was met.

Firstly, was to establish that there was sufficient amount of product to warrant the required infrastructure investment and to meet the forecast demand growth. Secondly was to determine the feasibility of developing infrastructure to deliver the product cost effectively and safely to the market place. Lastly was to ensure that there was an existing market, with an anchor client (Sasol Gas) and favourable growth prospects. This required alignment of the Sasol businesses internally before engagement of external stakeholders.

Sasol Petroleum International had to ensure that there were sufficient reserves to warrant the required capital investment. Sasol Gas had to establish that there was sufficient market demand to justify the project. Lastly, the Sasol Technology project team was responsible for

assessing the feasibility of implementing the project to meet the objectives of the business clients.

Response from Service Providers

Project objectives were clarified in various alignment sessions with Sasol and Mozambique government representatives at the early stages of the project. Foster Wheeler (FW), the principal contracting company, did a lot of upfront work during the planning stage to ensure alignment with overall project objectives and goals.

Mark Wood, the consultant responsible for the environmental impact and social assessment studies, asserted that these studies constitute one of the major hurdles for major industrial projects. Projects must consider all the inputs from interested and affected parties as per public participation process, financier's and government's requirements. Only then may Government grant approval to proceed with the project. The role of the consultant was to align the requirements of all stakeholders such that approval was granted for the project to proceed to the next phase. The consultant however built on goal alignment sessions already initiated by the company.

Response from Independent Consultants

Neuma Grobbelaar a senior researcher at SAAI concurred with the project managers' view that the Mozambican government had both a social and economic agenda, to develop local skills, create employment and earn

taxes and foreign exchange via imports and exports respectively. These projects were also of strategic national importance as they utilised the country's natural resources. Sasol thus had to align its business objectives with those of government to ensure that the project had political support and that government facilitated its implementation.

Paul Runge, an independent consultant focusing on project intelligence in SSA felt that the SNGP was different from similar projects on the continent because it had a good business case and all parties stood to gain and were thus easily aligned. Most other projects are marginal and depend on the availability and willingness of donors for funding. Examples were the Maputo Corridor Development project which would not have progressed easily without the Mozal project as an anchor client. Similarly in South Africa the Coega IDZ in the Eastern Cape is struggling to take off without an anchor client.

5.9. PROJECT MANAGEMENT EFFICIENCY AND FUNCTIONALITY

Response from Project Sponsor and Project Managers

Elmore Marshal, the project sponsor, saw the key success factors for project management efficiency in being able to select and maintain the right project managers and supporting teams for the particular job. Once selected, project managers were given full responsibility for their projects with decision making powers. According to the sponsor, project managers were allowed some mistakes as long as they learned from them and

implemented plans to recover any schedule slippage. The sponsor supported project management decisions when presented to the joint Sasol top management and government steering committees.

Project managers of the various modules were directly responsible for the project management efficiency of their project scopes. The extra time spent on the planning phase or “front-end loading” and all the negotiations with government and communities set the basic framework for project implementation.

For instance, remuneration rates and protocol on sourcing of labour, local content of contracts and supplies, land claim settlements and approval systems were all agreed upfront. This ensured that all project implementation activities were on schedule. The sponsor and project managers cautioned on the time required for the lengthy processes of government and business negotiations and community involvement as having a major impact on schedule.

Project managers also felt that site establishment for the principal contractors and sub-contractors was longer than normal due to the remote location of the CPF and the logistical constraints of getting material and labour to site. Surprisingly, the Mozambican rainy season did not have a major impact as it was factored into the planning. There was a storm that

damaged some installations but the impact on both cost and schedule was minimal.

Costs were slightly below budget because the original planning only allowed for imported piping material from overseas but in the end some piping material was successfully sourced and manufactured in South Africa. The use of local contractors, labour and some material supplies also reduced costs but additional time was spent on training and clarifying quality standards. There were no major quality concerns throughout the implementation phase.

The SNGP was delivered on schedule and won the PMI 2004/5 award for best project. Dr de Villiers, one of the project managers, gave a speech at the awards dinner on behalf of the project team. It was hailed the best project in Sasol's history. Overall project managers agreed that success was attributed to integrated and experienced teams, good performance by contractors, and excellent planning and front-end loading.

Response from Project Clients

According to project clients the critical work was in front-end loading, which was to ensure that all the business requirements were in place for the venture to be a success. Project implementation only represented a portion of the work and went successfully because of sufficient time spent in the planning phase. The use of an integrated project team structure including

operational and business personnel ensured project functionality and a seamless transfer between the implementation phase and operation.

It was however important that the project team members and other stakeholders realise that the project was schedule driven. The need to adhere to an agreed timeline was to ensure the company made timely investment decision in order to meet the window of opportunity in the market place.

Response from Service Providers

According to the principal contractor and two consulting companies interviewed the project was implemented efficiently according to schedule and within budget. Sasol clearly explained to all stakeholders that the project was schedule driven and that schedule was more critical than cost. All respondents however highlighted that they had to spend much longer on front end loading work.

One of the major reasons for this was to establish a business network in Mozambique. This involved identifying and auditing local service providers for both capacity and capability. Once the business network was established the implementation went smoothly.

The highest contributors to cost were the associated with logistical constraints for transporting materials and labour. Incentives costs were paid to South African project personnel for working in the remote project

sites in a developing country. Other costs were related to communication systems and other utilities. These costs were factored into the price of the total contract. In general scope growth was minimal due to the additional time spent on design and planning in the early phases of the project.

There were no major problems experienced during commissioning, which is normally the most problematic phase during handover of the completed facilities to the client. This was again attributed to careful planning and the early involvement of operations personnel in the project. An excellent safety record was maintained throughout the project lifecycle through vigilant training and application of quality management systems of both in-house personnel and sub-contractors.

Response from Independent Consultants

There were no detailed comments on project efficiency and functionality from the independent consultants as they were not directly involved in the implementation of the project. However they both did mention that the infrastructure and business environment challenges found in most developing countries in SSA contributed to higher costs and delays in implementation. These points are discussed further in the sections below.

5.10. THE ROLE OF THE SPONSOR AND PROJECT TEAM

The role of the sponsor was discussed in the sections above. Of further importance was the changing role of the sponsor between the planning and implementation phases. In the planning phase the sponsor was Pat Davies, an executive director of the company who later became the chief executive officer. This clearly highlighted the seniority of the sponsor and the importance attached to their role.

The sponsor's main contribution in the planning phase was to ensure that all business agreements with government were in place for the project to proceed. The sponsor's role changed in the implementation phase to an increased focus on implementation efficiency. The role was taken over by another senior executive, Elmore Marshal, with more hands on knowledge of implementation of major projects. In this phase the project managers reported directly to the sponsor and he managed the interfaces between the project and the combined steering committee of government and Sasol top management.

Project managers were directly responsible for implementation of the project as discussed above. All the project managers interviewed attributed their success to previous experience and that of the project team. It was important that the project team was integrated with representatives from business and other functions in the organisation. This view was supported by responses of business representatives and contractors interviewed.

These respondents also highlighted the benefit of a separate matrix organisational structure where, Sasol Technology, that was focused on project execution. The emphasis was that business should focus on operational activities and not on technical activities associated with design and construction of new plants.

5.10.1. THE ROLE OF THE COUNTRY MANAGER

It is important that a country manager be appointed early in the project lifecycle. Charles Steyn, the SNGP country manager in Mozambique, was appointed in the pre-feasibility stage of the project to establish and develop relations with key government officials and community leaders in Mozambique. This resulted in a good and trusting relationship between the Mozambican government and Sasol.

The country manager must be a mature and senior person with relationship building skills. They must be committed throughout the project to ensure relationship continuity. They must be pioneering as they are the first to go in and lay the ground for future negotiations and relations.

The role of the country manager was different from the project manager's role and focused on liaison with government and other stakeholders such as the financiers. The country manager's role supported that of the project sponsor and was instrumental in establishing the company's

presence in Mozambique. However the project manager had to maintain close communication with the country manager to ensure country specific issues such as the efficient issuing of work permits were managed proactively.

5.11. CONTRACTOR'S PERFORMANCE

Response from Project Sponsor and Project Managers

The contracting strategy for most of the project modules balanced the risk reasonably between Sasol and the contractors. Most of the principal contractors of each module were engaged on an engineering, procurement and construction or construction management contract which allowed them to select and manage their own subcontractors. This strategy worked well and most contractors performed accordingly.

The other major contributing success factor was that Sasol had previous experience and good relations with most of the contractors from other projects in South Africa. This, combined with Sasol's good relationship with the Mozambican government significantly reduced operational and financial risk for most contractors. Sasol for instance was able to negotiate favourable taxation terms and customised customs processes for the whole project.

It was important that Sasol ensured all implemented policy incentives were applicable to all service providers on the natural gas value chain. Project managers felt that the performance of subcontractors could improve with

better planning. There were a lot of human resource issues and schedules were slightly delayed. The subcontractors held spares which were normally readily available in urban areas.

Response from Project Clients

There was no comment on the contractor's performance as the interface with contractors was mostly the project management team. However the Contractor's were perceived to have performed exceptionally well, given the many challenges of such a major project.

Response from Contractors and other Service Providers

The principal contractors felt that the engineering, procurement and construction management (EPCm) contracting strategy selected was the best option for such a project in Mozambique because it allowed the contractor continuous responsibility over the project lifecycle and minimised risk. Competitive bidding for each phase would have not allowed new contractors time to do upfront work required for a greenfield project in Mozambique.

Overall the project was commercially profitable for contractors and they confirmed that they would be willing to bid for similar future projects provided the client is a reliable South African company where payment would be guaranteed. Contractors however were not prepared to bid for contracts from the Mozambican government or its subsidiary national companies as payment was not guaranteed.

Most subcontractors for the larger contracts were big South African contractors (eg Group 5 Civils, WK Pipelines and Harrison & White) with previous experience gained on BHP Billiton's Mozal project. Some smaller contracts were awarded to audited Mozambican contractors (eg construction camps and housing contracts) and with appropriate support and training they performed well. Local labour was used whenever possible especially on less skill-intensive work.

Similarly the consulting companies performed well operationally and commercially. However legislation such as the requirement to partner with local partners was followed. The main challenge in complying with such requirement was that there were relatively few local specialist consulting firms to partner with. The consultant firms thus had to conduct surveys and identify and establish capabilities of local firms. The actual process involved a lot of skills transfer towards the local partner; who in turn contributed invaluable local knowledge and networks.

Response from Independent Consultants

Neuma Grobbelaar, one of the independent consultants offered her views based on previous research of South African contracting companies doing business in Mozambique (Grobbelaar, 2004). Her research found that generally South African companies were encouraged by the Mozambican government to partner with local companies.

However this was not always possible as some of the contracts were beyond the capacity of most Mozambican companies. Government encouraged that some contracts such as transport, land clearing, building and construction, be packaged such that they could be accessed by smaller local service providers. The intent was to transfer skills, grow the local private sector and stimulate economic growth. Sasol was also expected to procure some goods and services directly from Mozambican suppliers. Local suppliers were useful in providing knowledge of the local business and regulatory environments.

There was less risk for smaller South African companies contracted to do business for larger South African companies as they benefited from the negotiated tax regimes and incentives. Small companies also felt that their payments were guaranteed as opposed to when they took up contracts from the Mozambican government and/or private sector. Smaller companies who established businesses individually had a more difficult experience.

5.12. THE ROLE OF GOVERNMENT AND POLITICS

Response from Project Sponsor and Project Managers

Governments in developing countries were normally involved in major projects especially if the investment utilised natural resources of strategic interest. In the SNGP, the Mozambican government had a positive attitude towards the project and were committed to its success as minority shareholders. Their focus as discussed under project alignment was

sustainable economic growth through industrial and human capital development.

The government strived to improve the business environment by offering tax incentives and reducing administrative and logistical bottlenecks. They were instrumental in facilitating approval processes and development of industry standards. Government also ensured decisions taken at high level were implemented in local communities.

A project leadership committee (PLC) consisting of senior ministers and Sasol top management was established in the beginning to facilitate decision making and all required approvals. Several task groups manned by provincial government officials and community leaders was also established to implement decisions made by the PLC as well as resolve issues that did not require the PLC. Task groups were very committed to facilitating project implementation and thus there were very few issues that were escalated to the PLC level. Overall the project team felt government involvement was critical to project success

Response from Project Clients

In order for the business venture to be viable there has to be an investment climate suitable for business to flourish. In this respect the role of government is crucial as they determine the nature of the environment. Government is responsible for ensuring political and social stability. The

relatively young Mozambican democracy made serious effort in ensuring certainty in the political landscape.

Government also facilitated the development of an appropriate regulatory environment for the natural gas industry. The main drive was to ensure that the environment remained attractive to both domestic and foreign environment, protected consumers and developed in a sustainable manner. A framework for offering tax incentives for instance was developed to encourage foreign direct investment, such as that of Sasol, in the industry. Government was receptive to policy input from all stakeholders, including Sasol, in the development of the natural gas industry.

In a relatively underdeveloped country such as Mozambique there is always typically a backlog in infrastructure and human development. The Government thus has a moral objective to invest in their development. A major project investment has the potential to create unemployment and spur local economic growth by the procurement of local goods and services. The sponsor plays a critical part in negotiation with government and the local communities on the appropriate framework for implementing these objectives.

Response from Service Providers

Government was perceived as helpful, cooperative and committed to the success of the project. There were no delays caused due to pending government approvals or decisions. Contractors perceived government and

the country as politically stable but were however sceptical about bidding directly for government contracts.

Contracting companies felt more confident that Sasol and other big South African companies were more likely to pay for contracts on projects than local the Mozambican government and other local companies. This was due to unfavourable experience with the national oil company where payments for additional scope to install pipeline connection to the local gas distribution network were delayed and only recovered after threat of legal action by the contractor.

Sasol presents an entry mode strategy for many sub-contracting firms to enter countries such as Mozambique. As sub-contractors to Sasol, these companies benefit from broad negotiations of incentives offered by government such as tax relief and custom arrangements. The tax incentive negotiated between government and Sasol also benefited contracting companies in reducing costs of importing equipment and goods from South Africa. However import related costs remained high for contractors not working directly for Sasol as they did not benefit from the tax incentive arrangement.

The requirement for local content in most contracts may increase costs for smaller companies as they have to spend higher amounts on training of the generally lower skilled local labour and service providers. Such costs are

more readily swallowed by Sasol than smaller companies. Smaller companies find it increasingly difficult to provide means to compensate for the lack of infrastructure in developing countries. Unless they are able to piggy-back on infrastructure arrangements made by the bigger companies such as Sasol the additional costs required become a major constraint.

Response from Independent Consultants

The independent consultants also agreed that generally governments played a significant role in major projects in Mozambique, as was observed in both the Mozal project and the SNGP. In both projects government was involved as minority shareholder but was instrumental in the successful implementation of the project.

The main reason for government's involvement was because of the weak private sector and financial system in Mozambique. There were relatively few local companies that could invest and participate actively in such major projects. The Mozambican government was also responsible for developing the regulatory and policy framework to ensure that the industry developed and utilised resources in a sustainable manner.

The involvement of government in major projects had some disadvantages. Negotiations tend to be long winded and companies had to allow for the long lead times required before a successful conclusion is reached. The establishment of one-stop investment promotion centres, funded by donors

such as the World Bank, in most SSA countries improved the situation. However capacity was lacking in the civil service and national companies.

Thus South African companies investing in SSA had to have capacity internally to compensate for the lack of capacity and skills in the Mozambican public sector. For instance they had to be willing to facilitate and assist the Mozambican government with the development of industrial regulatory frameworks and policy.

5.12.1. THE ROLE OF THE SOUTH AFRICAN GOVERNMENT

It was imperative that a plausible working relationship exist between the governments of the two countries for a cross-border project such as the SNGP to be implemented. It was important that the two governments already had a positive relationship geared towards greater economic trade. This was perceived by most respondents as being beneficial to the success of the project.

The South African government was instrumental in the implementation of a bilateral agreement for natural gas development and trade with the Mozambican government. Previous successful projects between the two countries such as the Maputo Development corridor had already established a good track record of these governments working together.

It was also important to have positive relations between Sasol and the South African government for support of investments in other African

states. This was also as supporting the NEPAD initiative towards regional integration and greater intercontinental trade. Pat Davies, the project sponsor during the planning phase held frequent meetings with the Presidents of both countries as well as the ministers whose portfolios were affected by the project.

5.13. INSTITUTIONAL INFRASTRUCTURE

Response from Project Sponsor and Project Managers

Most project managers felt that the Mozambican business environment was relatively under-developed. There were no established regulatory frameworks and industry standards. Most government processes were bureaucratic and not consistent. This was exacerbated by the lack of skills in both the civil service and private sector. The long civil war in Mozambique was felt to have held back human capital development and growth of the private sector.

There were no established standards such as environmental impact assessment requirements and quality and inspection of material. In this case World Bank standards were adopted and in others Sasol had to assist the government and local officials to develop regulatory frameworks for the industry. This increased the duration of the planning phase and required Sasol to provide capacity to compensate for these shortcomings.

Similarly, service providers such as specialised consultants, spares suppliers and medical professionals were sourced from South Africa. Where

possible, partnerships were established with local companies for transfer of skills. This increased the cost of doing business. It was however possible that the language barrier and different basis of legal frameworks contributed to misunderstanding and misinterpretation. Government regulations had to be translated from Portuguese to English before they could be understood and applied.

Response from Project Clients

Project clients concurred with the views expressed by project managers but they took a long term view that business would have to invest in the development of human capital in Mozambique and compensate for the lack of systems such that normal operations were not affected.

Response from Service Providers

Principal contractors deemed it necessary to spend additional time and resources to compensate for lack of institutional infrastructure in Mozambique. As an example, in order to establish a business network a database of all the relevant service providers in Mozambique was compiled. The service providers were then individually audited to establish capacity and capability to execute a given scope of work. Project work was divided into smaller contracts that could be executed by local suppliers and training was given where appropriate.

The project site was located in a remote area which lacked services that were normally available in more urban areas like Maputo. There were a limited number of flights from South Africa directly to Inhambane province as

opposed to much more frequent flights to Maputo which made travel much more difficult. These were constraints to the project as it was schedule driven.

Driving at night was not allowed due to high accident risk (animals and pedestrians who tend to live next to roads).

Lack of services such as hospitals, schools, shopping malls made it difficult for project teams and external personnel to stay there. Companies had to pay incentives to attract and maintain scarce skills on the project.

Procedures for hiring and firing of labour were agreed with provincial and local government and the local bargaining council. However there was still a labour strike at the end of the first civil contract package due to dismissals. There was one fatality from the strike as police fired live ammunition at the protesting workers and killed one person.

Contractors found it beneficial to employ local “coordinators” that assisted with the renewal of expired visas, expediting of goods and equipment at customs. Relatively low levels of corruption were experienced during the project. If there was a major problem Sasol and Government intervened and sorted it out.

Customs was a major problem as it delayed urgent material required for construction progress. It was essential to understand all the lengthy procedures and approvals required for the customs process. UTi, a South

African logistics service provider with an established distribution network in Mozambique was appointed to facilitate the logistics and customs processes.

Language was a problem and Portuguese interpreters had to be readily available to facilitate all business dealings. Portuguese speaking employees of South African companies were also assigned to the SNGP project in key positions like HR when possible.

The main challenge faced by VGI, as a medium sized company doing work in Mozambique, was that the tax benefits negotiated by large companies such as Sasol are not readily approved for smaller companies. The government withheld taxes paid and thus smaller companies had to escalate their estimate costs to compensate for the tax losses to government.

Response from Independent Consultants

In a developing country starting from a low development base such as Mozambique the barriers are “hard and soft” structural barriers (Grobelaar, 2004). Hard structural barriers related to the physical infrastructure such as logistics requirements for ports, roads and railway systems, telecommunications networks, electricity and water. The existing physical infrastructure is what remains of what was destroyed during the 22-year civil war. This remained underdeveloped and there was relatively little maintenance done to maintain its condition.

The soft infrastructure related to human development in terms of education, skills and training. It also relates to the legislative, regulatory and commercial framework in the country. In Mozambique these factors are relatively underdeveloped especially in the less urban provinces and present challenges for both local and foreign business investors. South African companies had to budget for additional resources to cater for these shortfalls.

5.14. PHYSICAL INFRASTRUCTURE

Response from Project Sponsor and Project Managers

The Sasol project team did a lot of upfront work in assessing the Mozambican environment during the feasibility phase of the project. The biggest challenges identified were associated with logistical constraints for transportation of project materials and equipment from South Africa to Temane.

A major bottleneck identified was the customs clearing process at the border posts between the two countries. Essential equipment could be delayed for weeks on end and severely impact project schedules. This was also identified as a potential area for rent seeking initiatives by corrupt officials.

A special arrangement was made with government customs' officials to open a dedicated goods clearing facility in Komatiport and Maputo. The arrangement was transparent and sponsored upfront by Sasol based on

similar arrangement previously used for the Mozal project. It was specifically to allow the efficient movement of large volumes of materials and equipment procured for the project. This system worked very well and eliminated the bottlenecks normally associated with customs clearing. The transparency and wide communication also reduced the opportunity for rent seeking by corrupt officials.

Investments were also made in upgrading port facilities for importation of equipment, establishment of access roads and other infrastructure before project implementation began. The project team used backup electricity generators, satellite phones and constructed own sewage works to compensate for the lack of infrastructure in Mozambique. These initiatives provided an opportunity to utilise local contractors and were budgeted for as corporate social investment as discussed below.

Response from Project Clients

The infrastructure challenges in Mozambique in the short term had an impact on project implementation activities. However in the long term these would affect plant operations. Business representatives involved in the project team ensured that planning and design compensated for the lack of infrastructure wherever possible within the project scope. Thus accommodation, access roads and sewage works were included in the project scope. In the long term further investment was handled as corporate social investment.

Response from Service Providers

Most of the contracting companies appointed from South Africa did detailed logistics studies and other infrastructure requirements during the feasibility phase. Plant design and layout was such that it incorporated the infrastructure limitations identified during feasibility. For instance:

- During design equipment sizing was constrained by the size and capacity of available bridges on the route to site.
- A complete satellite system was installed for telecommunications.
- Back-up generators were kept in case of power shortages.

Almost all equipment was considered as a long lead item and additional buffer stock was kept even for off-the-shelf material that was readily available in South Africa. All documents were made available and approved on-line due to lack of printer services and cycle times for transporting documents for approval.

Response from Independent Consultants

Previous research on South African companies doing business in Mozambique and the rest of Sub-Saharan Africa showed that generally the infrastructure challenges highlighted above were typical of these environments. These were linked to war damage, lack of investment and maintenance and the lack of infrastructure funding. Where funding was available, governments sometimes lacked the capacity to utilise funds and implement projects.

Previously South African companies lacked the local knowledge of these environments and underestimated infrastructure constraints and the impact on doing business. However with experience they had become innovative in compensating for these infrastructural challenges. The lack of basic infrastructure increased the cost of doing business and had a greater impact on smaller companies.

5.15. COMMUNITY AND STAKEHOLDER ENGAGEMENT

Response from Project Sponsor and Project Managers

Most projects in developing countries typically have a community development aspect and this must be managed separately from project scope to minimise impact on schedule. A CSI project manager was appointed to manage CSI initiatives as identified by needs analysis sessions held with various communities. Budgets were approved per province affected by the project.

Tasks groups consisting of government and Sasol representatives were established to engage community leaders and manage the implementation of community initiatives. Agreements were made on rules of engagement with local chiefs and provincial government. Communication was transparent and frequent and delivered in diverse methods such as video shows, community forums, posters and flyers.

It was critical that local communities affected by the project were engaged and involved in a manner that contributed to project success. Each community prioritised its own projects as identified by the needs analysis. This allowed other project managers to focus on execution of main project.

The specific areas of concern identified with the community were;

- ✓ Labour appointment and remuneration
- ✓ Relocation and resettlement
- ✓ Corporate social investment initiatives
- ✓ Local involvement in procurement of contracts – the transport contracts were the most successful with more than 90% supplied by local companies.

There were generally more families that were relocated by construction of the CPF in Temane than the construction activities of the pipeline. Some of the other projects implemented were construction of schools, stadiums, clinics, market stalls, bore halls and dams. Labour protocols, land claims settlements and remuneration policies were agreed upfront with local leaders.

The project also had a corporate social investment (CSI) budget for spending on affected communities in South Africa. The projects selected for investment were selected after consultation with affected and concerned communities and went a long way in alleviating poverty. However there were

some negatives; some farmer instituted court cases against Sasol for land use and trespassing on private property and at least one farmer won.

Response from Service Providers

According to the consultant appointed for the environmental and social impact assessment studies CSI initiatives went a long way in securing the goodwill of affected communities especially during the public consultations for environmental impact assessment (EIA) studies. For instance an oil spillage from old gas lines resulted in a move to stop the project from the Department of Environmental and Tourism Affairs. However this was prevented by the rapid implementation of corrective actions by the project management team with support from local communities.

Response from Project Clients

The corporate social investment program was managed by the project team but the project clients benefited for the long term in that good relations were established with local communities. The operations team initiated training programs to ensure that the total facility is eventually operated by Mozambican employees. These involved scholarships and technical training at some of Sasol's plants in South Africa.

Response from Independent Consultants

Large South African companies establishing operations in Mozambique must understand that they become very visible in the local community. They

need to plan and develop public relations capacity to interface with the local community in a structured manner.

It is imperative that South African companies investing in developing countries such as Mozambique understand the roles of various levels of government from national level to local chiefs especially for the implementation of corporate social investment programs. Such programs must be developed in consultation with the local community.

In general major projects were frustrating for local communities as they created short term employment. Once projects were completed the operating plants, due to their highly technical nature, normally employed a smaller fraction of the workforce employed during project implementation. However workforce used skills gained during implementation to apply in other sectors of the economy. The income earned was also used to invest in small businesses. In the long term South African companies had to develop local talent to man the newly established operations.

CHAPTER 6: DISCUSSION OF THE RESULTS

6.1. THE SSA BUSINESS ENVIRONMENT PROFILE

The literature review highlighted the need to develop a greater understanding of the business environment of developing countries. The use of composite indices applicable in most developed countries was cautioned as potentially highlighting the wrong patterns in developing countries. This was confirmed by the brief profiling of the SSA region which showed a heterogeneous profile of countries. The economic environment of the different sub-regions is influenced by the performance of the large populated countries (figure 5.1). Generally, with the exception of South Africa, these have performed poorly. This influenced the economic performance of the smaller neighbouring countries (figure 5.2).

The exception was countries that are rich in natural resources, particularly oil and to a lesser extent natural gas. The economic performance of these countries was influenced by the large cash flows from trade and investment in these resources. Their resources dictated a different investment profile by foreign investors as illustrated by table 5.1 in the previous chapter. Mozambique was once such country which even though ranking very low in such measures as ease of doing business and income per capita, it was able to successfully attract major investment in its natural gas resources.

Below is a discussion of the interview results under the headings of the research proposals presented in chapter 3. The discussion compares the responses of the interview candidates to the findings of the literature review and the content analysis presented in chapter 5.

6.2. PROJECT OBJECTIVES AND GOAL ALIGNMENT

The literature review placed the alignment of all stakeholders on the initial phase of project initiation. Most of the authors also listed project objectives and clarity of goals as critical success factor in table 2.2. This was confirmed by most of the respondents during interviews that it was imperative to clearly define project goals and objectives. Most respondents also emphasised the need to allocate resources and time for this phase to ensure that objectives are well communicated and understood by all stakeholders.

The results indicate that project objectives had to be understood and established internally within the investing company first before seeking alignment with external stakeholders. Thus the client companies had to ensure there was internal alignment to support the business case. Once the business case was established alignment of external stakeholders was initiated. The development of a business case was seen as the role of the business clients.

This concurs with the evolving view of project success in literature that project success focuses beyond the project lifecycle to strategic business issues. The involvement of the business clients at an early phase was thus important.

Once the business case was sanctioned, the role of alignment of stakeholders was led by the sponsor, the country manager and project managers with support from business leaders. The project team was responsible for implementation of strategic alignment decision agreed between government and the sponsor. These included formulating task groups for the communicating of project objectives and other alignment actions.

The main stakeholders for alignment, as identified by the project team, were the Mozambican government and the local community. It was important that a negotiated “definition of victory” be established with these stakeholders. Government had their own needs such as the sustainable development of a new gas industry such that it provided income, employment, skills development and upstream and downstream opportunities for the country. It was important for the project team to balance these needs with project objectives upfront. The engagement of senior government officials and ministers by the project sponsor and Sasol top management ensured political support for the project.

The local community was keen on benefiting from the utilisation of national natural resources via employment, skills development and training as well as other entrepreneurial opportunities resulting from the establishment of the industry. The independent consultants cautioned that it was necessary for the project team to involve the community and establish their needs such that they could be balanced with project objectives.

The literature review did not emphasise the importance of aligning the community and other external stakeholders other than government. This could probably be attributed to the fact that literature research was based on countries that were more developed than SSA which ranked amongst the lowest categories. The communities of poor countries were seen as having more expectations and needs in terms of employment and income from major project investments.

Others important stakeholders were the various service providers and financiers. It was imperative to get the principal contractors on board early to allow them sufficient time to understand the environment and make contingency plans. The responsibility of aligning subcontractors was left to the principal contractors.

The consultation and knowledge sharing with companies that had previous experience of the Mozambican environment proved beneficial to Sasol. Most of the lessons learnt on government and community involvement and

the general business environment were applied in alignment sessions and used to develop customised models for Sasol's own project.

The results highlight the importance of relationships, negotiation outcomes and teamwork in this phase as critical for success in later phases. Meanwhile the literature review tended to focus more on technical objectives such as scope definition and feasibility studies for success in the implementation phase. The establishment of a local presence during the planning phase is also emphasised as opposed to occasional visits from the home office.

Corruption and other rent seeking activities were not mentioned as an obstacle to alignment. Overall respondents felt that all stakeholders were aligned on project objectives. There was general agreement that the additional effort and time spent on alignment and communication of objectives was beneficial and contributed to project success.

6.3. PROJECT MANAGEMENT EFFICIENCY AND FUNCTIONALITY

The literature review saw project management efficiency as dependant on the efficient management of the traditional measures of cost, schedule and quality. A clear distinction was made however between project management success and project success which was more encompassing and beyond the project lifecycle. Project management efficiency and final product functionality and were thus seen as a critical subset of overall

project success. The literature results also focused the project efficiency effort on the implementation phase which was contrary to the findings of the research results.

Most interview respondents attributed project management efficiency and functionality to proper “front-end loading” in the planning phase. The amount of effort and time spent on the initial phase was believed to have contributed to an efficient implementation phase. The project team spent a lot more time on planning because of the “fear factor” of an unknown environment and allowed for additional contingency to minimise any deviations from plan in the implementation phase. The longer planning phase however may have contributed to schedule urgency as most respondents agreed that the main project driver was schedule than cost and quality.

The research results indicated that the use of an integrated project team including operational personnel contributed to project management efficiency and especially overall functionality. This was not noted as a critical success factor in the literature reviewed even though some authors were advocating for a more participative role of client personnel. The use of known technology instead of new and complex technology also contributed to project functionality.

Major projects implemented in developing countries by companies in the private sector normally constitute the implementation of a growth strategy. It is thus imperative for the investing companies that returns are realised sooner than later. This is more so when the investment is in the perceived high risk environment of developing countries.

The efficiency of the implementation process is thus critical for the rapid return of the capital invested as well as to minimise the risk exposure during the implementation phase. Therefore project management efficiency remains a critical success factor for companies investing in major projects in developing countries.

6.4. THE ROLE OF THE SPONSOR AND PROJECT MANAGEEMNT TEAM

The critical success factors listed in table 2.2 of the literature review did not specifically highlight the role of the sponsor as a critical success factor. However most of the authors list top management support as a critical success factor. The relative seniority of the selected sponsor and their previous experience was seen as contributing factors to success (Helm, 2005). This view was supported by others in that the sponsor must be a senior member of the organisation with top management support. It can thus be concluded that the sponsor represented top management support and the larger the project the more senior and experienced the sponsor appointed.

Almost all the respondents directly involved in the project were aware of the leadership role of the project sponsor and felt that it was a contributing factor to project success. The project managers in particular felt that the sponsor was able to gain support for the project from both top management and senior government officials. The sponsor also facilitated the decision making process and empowered project managers. Contractors and clients felt the role of the sponsor was crucial in resolving conflict and decision making.

Clearly as the definition of project success evolves from tactical factors to more strategic factors, especially for major projects, the active role of the sponsor will become increasingly important. The role of the project manager and team was highlighted as important by most project management literature. The framework proposed by Belassi et al specifically highlights factors related to the project management team as a critical success factor (Belassi, 1992). Others elaborate on the project manager's competence, team capability and more importantly continuity throughout the project lifecycle.

The research results corresponded with the literature reviews on the qualities of the project management team. However the results also emphasised the importance of an integrated project team including client personnel and the matrix organisational structure which provided for a dedicated project team separate from client business units. Success was

also attributed to empowerment and support by top management, which concurs with the literature. The ability to adapt to diverse environments was seen as contributing to project team continuity.

The main contributions of this research was the changing role of the sponsor which demands more active involvement and leadership skills as projects become more strategic in nature. The project team while positioned in a matrix organisation also requires more active involvement of client personnel. This contributes to both project implementation efficiency and functionality.

The above discussion highlighted some key roles that were critical for project success in a developing country. Figure 6.1 below illustrates such a project team. The four key roles are that of the sponsor, country manager, CSI project manager and project director. The role of project director represents a single point of contact for all project matters to the sponsor. The sponsor also has a direct reporting line to top management and senior government officials.

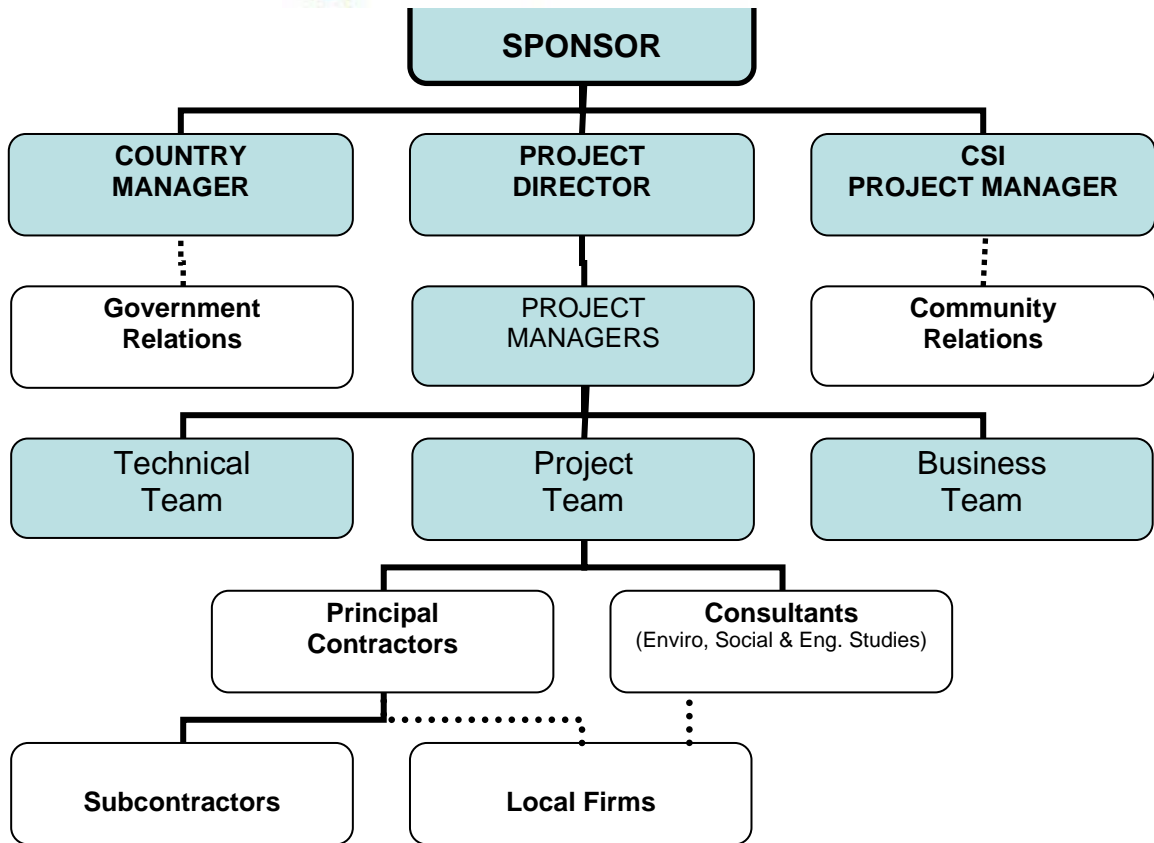


Figure 6.1; Project organogram for major projects in developing countries

The shaded blocks represent employees of the organisation while the others are external stakeholders. Similarly, the dotted lines are proposed relations according to the findings of the research.

6.5. CONTRACTOR'S PERFORMANCE

The role of the principal contractor and other service providers was not highlighted in the literature as a major contributor to project success. It was only the framework resulting from empirical research on major projects that highlighted the contractor's performance as a critical success factor (Morris, 1987) Morris and his co-author highlight the importance of the

contractor's capacity and capability, the appropriateness of the selected contracting strategy to the project type and external environment. The point of entry on the project lifecycle was also given consideration.

The research results clearly indicate that the capacity and capability of the selected principal contractor were important. The contracting strategy agreed upon for the project was dependant on the external environment and the size and type of project. The selected strategy fairly distributed risk between the company and the contractor and allowed entry of the contractor early in the project lifecycle. This was critical as it also gave the contractor time for the required front-end loading work in the unfamiliar territory of a developing country. The additional time was also required for the contractor to establish a local business network and supply chain. This concurs with the propositions of the framework described above.

The above discussion clearly illustrates a shortfall in the literature on the importance of the role of contractors especially for major projects in developing countries. Most companies investing in other countries do not have the resources internally required to execute a major project.

Further, for most major investment projects in developing countries there were no existing business networks as required for the various services along the project lifecycle. Companies thus had to import their business networks from established territories which increased costs.

The research results also highlighted poor performance of the subcontracting companies. This was attributed to late entry points in the project lifecycle and the weak private sector of developing countries. The latter meant local partners lacked capacity and most services and supplies were had to be imported.

The role of contracting companies, contracting strategies and their performance is thus critical for the success of major projects. Companies investing in major projects were able to negotiate better commercial terms which compensated for the constraints of the business environment of developing countries. It was critical that the benefits of these incentives include all contractors and service providers in the project value chain.

6.6. THE ROLE OF GOVERNMENT AND POLITICS

The literature review contextualised the role of government by profiling the business environment of developing countries. Most of the literature generally indicated that the private sector in SSA was underdeveloped and fragmented. The research content analysis confirmed that the SSA environment was characterised by a weak private sector with a difficult business environment (World Bank).

However most of the countries in the region were moving towards increasing political stability and market reforms. Generally the business environment was improving. Government historically dominated the

business environment and political considerations had an impact on most major investments.

One author specifically linked the role of government to project success either as sponsor, policy maker or regulator (Morris, 1987). Government contributed to project success by providing an enabling environment through political and macro-economic stability, regulatory frameworks and policy incentives or directly as an investor.

The interview results indicated that the Mozambican government was committed to political stability and economic growth and viewed the project as an important contributor to that objective. The government was also keen to ensure that the gas industry was developed in a sustainable manner with the appropriate regulation.

The major incentives provided by the Mozambican government were the tax benefits for material and equipment procured externally for the project. This incentive was extended to all service providers involved in the project and significantly reduced costs. It was necessary however that the incentive be extended to local suppliers as well as they would otherwise be disadvantaged. The agreement on a temporary customs facility to facilitate material imports and minimise logistical bottlenecks was a case in point. There was generally a positive attitude geared towards project success and economic growth.

However government involvement also had a negative impact because of inefficient bureaucratic systems and lack of capacity and skilled personnel in the civil service. This was compounded by corrupt officials. This had a negative impact on project implementation by delaying the schedule and increasing costs.

Government generally lacked the capacity and skills to develop and implement the appropriate policies and reforms. They compensated by allocated available resources to facilitate decision making and approvals by actively participating in project meetings. This was also seen as compensating for the bureaucratic systems and lack of capacity.

The above clearly indicates that government can play a positive role in the implementation of major projects. However the involvement of government was necessitated by the economic conditions of the country. The lack of a strong private sector that could meaningfully engage in major investments by both local and foreign parties was a limiting factor.

Lastly, the positive relationship between the governments of Mozambique and South Africa also contributed to project success. Both governments saw benefit in success of the project and viewed it as contributing towards regional integration and economic development. The signing of a bilateral trade on natural gas was proof of their commitment to the above.

6.7. INSTITUTIONAL CAPACITY

The lack of developed market institutions was highlighted as a constraint in most developing countries. Khanna and his co-authors for instance identified the absence of specialised intermediaries, regulatory systems and contract enforcing mechanisms as obstacles to doing business in developing countries (Khanna, 2005). Similarly others also noted poor governance and regulatory systems as obstacles to normal business operations. These were also highlighted as contributors to a corrupt business environment.

The research results confirmed the above literature findings in Mozambique. The regulatory framework for environmental and social impact studies had to be developed first before the actual studies could be completed. This was attributed to the historical past of the country. Mozambique was a young democracy that had recently emerged from a devastating civil war. This had held back economic development and investment in people.

The government had a high dependency on donor funding and lacked capacity to implement policy directives. However as discussed above, the government was committed to economic growth and to the success of the project in particular and was actively involved in facilitating its implementation.

Interview respondents generally felt that the above mentioned constraints had an impact on project schedule and costs. A lot more time was utilised in the planning phase to establish business networks, agree contracts and recruit skills. The lack of a developed education and training system meant there were a limited number of skilled personnel in the general population and expatriate skills were imported for the project.

The principal contractor for instance had to identify all potential service providers and audit their systems for capability to execute project contracts. Standard material supplies were imported and maintained as inventory which increased costs and was a potential threat to the project schedule. Similarly the establishment of the regulatory framework for the production, transmission and distribution of gas was developed during the feasibility phase.

The above discussion indicates that the business environment of developing countries has some constraints that impact both costs and efficiency of business operations. However these constraints impact all businesses in general and are not limited to projects. Major projects, because of the large investment into the economy, have the leverage to negotiate incentives that significantly reduce the cost of doing business. Companies must however allocate resources and additional time in the early phases of projects.

6.8. PHYSICAL INFRASTRUCTURE

The role of physical infrastructure, similar to the discussion above, is to create an enabling business environment. According to the literature good infrastructure is synonymous with economic development and similarly underdeveloped infrastructure may constrain economic growth (Badiru, 1993). It was thus expected that the least developing countries would have underdeveloped infrastructure.

Infrastructure development was seen as part of the role of government in creating an enabling environment. However government lacked the funding for infrastructure development and depended on donor funding. Government also lacked the capacity to implement infrastructure projects once funding was available and the governance systems to prevent corruption and mismanagement of funds.

The SNGP case study was located in a remote part of Mozambique that was not easily accessible. There were no connecting railway lines, tarred roads, and electricity and telephone lines. The project feasibility studies therefore included the provision of access roads, sewage treatment facilities and construction crew villages.

Contingency measures taken to compensate the lack of infrastructure included the use of satellite phones, back-up electricity generators and electronic document control systems. This concurs with the literature

review in that foreign firms must develop adaptable strategies in developing countries to remain competitive. Political support for the project also allowed companies to implement innovative methods to eliminate bottle necks such as the use of a company funded temporary customs post for material imports.

The lack of infrastructure and the inability of government to resolve the situation are expected in most developing countries. Thus companies seeking to invest in these environments must account for the necessary resources and budget to counter for the resultant inefficiencies. Importantly, innovative and adaptable strategies can be developed to ensure that projects are implemented according to plan in spite of these constraints. The cost of doing business in these environments may be higher than in developed countries but developing nations also provide higher returns (Khanna, 2005).

The SNGP project was implemented according to schedule and within budget which proves that with the correct planning and innovation major projects can be efficiently implemented in these conditions.

6.9. COMMUNITY AND STAKEHOLDER INVOLVMENT

The listing of community involvement only started featuring in recent literature as researchers began making a link between the external environment and project success. Previously literature focused on the tactical factors or efficiency measures of project management. However as the thinking progressed towards critical success factor lists and frameworks a few authors listed community involvement as contributing to project success.

Belassi and Tukul for instance list it as one of the factors related to the external environment but conclude that it still ranks lower than factors related to the project and organisation (Belassi, 2002). Similarly the framework proposed by Morris and his co-author highlights the need for monitoring and controlling community considerations (Morris, 1987). They advise that all stakeholders must be involved from the planning phase and project objectives clearly communicated.

The latter explanation concurs with the research results where the project team consulted and communicated with community stakeholders at all levels. Community leaders for instance were involved in developing the protocol for labour recruitment and dismissal, compensation of land claims and prioritising of social investment initiatives.

The main issues related to community involvement in the literature were related to environmental impact concerns and the use of public funds for private sector projects. Meanwhile, in a developing country such as Mozambique, funding is either private or donor driven due the economic constraints. Of greater concern to these communities are the allocation and prioritising of social investment spending and employment opportunities.

Thus the concerns of the community are influenced by the level of economic development and prosperity of the host country. An important lesson unique to the SNGP project was the appointment of a corporate social investment (CSI) project manager with a separate budget. Most project managers and contractor's felt that this was beneficial as it separated normal project activities from the CSI program.

The country manager also played an important role in establishing a company presence and building relationships with community leaders. Similarly the consultant appointed for the environmental and social impact studies was instrumental in the early identification of critical social issues. The early involvement of the community secured their support for the project and was seen as critical to project success.

6.10. A CRITICAL SUCCESS FACTOR FRAMEWROK FOR MAJOR PROJECTS

The results presented above highlighted various critical success factors that contributed to project success. The factors can be related to factors internal to the organisation and factors in the external environment. There were also internal and external factors that had a direct impact on the project and there were factors that were inherent to the organisation and external business environment. Figure 6.2 below consolidated the above results into a critical success factor framework illustrating the inter-relations between the factors as well as their impact on the project lifecycle and eventual success.

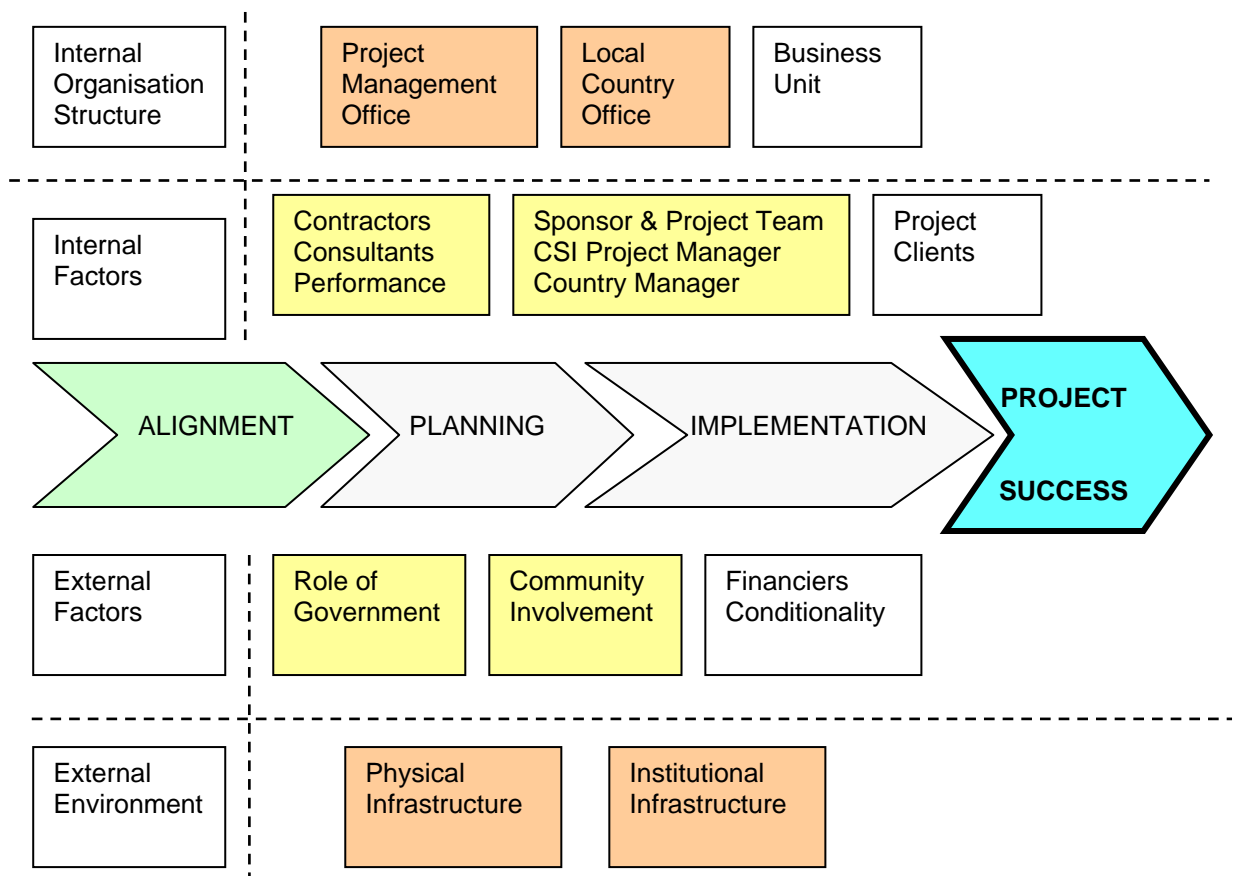


Figure 6.2: A critical success factor framework for a major project in a developing country.

The framework in figure 6.2 above indicates that the internal factors that directly affect project success are the project team, including the sponsor, country manager and project managers, and the team of contractors and consultants. The latter essentially form part of the project team once they have been appointed and contracts signed, thus their inclusion under internal factors. Similarly, the results emphasised the integrated team including representation from the business clients and operational personnel. These internal factors are critical to the success of a major project in a developing country.

The above factors must however be supported by the following conditions in the internal environment; a supporting organisational structure with a project office dedicated to execution of projects and separated from operational activities but with committed and involved business units. The establishment of a local office in the host country was also indicated as critical to project success.

Figure 6.2 also shows external factors of which the role of government and community involvement are highlighted as critical to project success. The research results did not emphasise the role of financiers however literature and the independent consultants highlighted that for less commercially attractive projects their role was critical.

The results also indicated that the lack of institutional capacity and developed physical infrastructure had a negative impact not only on major projects but on the general business environment. This affected all stakeholders including small and big business as well as the needs of the local community. Government was seen as responsible for the leading role in the improvement of the business environment with participation and support from affected stakeholders.

Lastly, the above framework illustrates the need for alignment on project objectives of all project stakeholders at the initial stages of the project lifecycle. The importance of spending additional effort and time on alignment and the subsequent planning phase were seen as critical to ensuring an efficient project implementation phase and a successful project in the end.

CHAPTER 7: CONCLUSION AND RECOMMENDATIONS

7.1. PROJECT OBJECTIVES AND ALIGNMENT

The literature and research results both confirmed that the alignment of all stakeholders on project objectives was imperative for project success. It was also emphasised that all effort, including the use of various communication tools, was necessary to ensure that objectives were communicated to all stakeholders.

Meanwhile the focus of the literature on alignment was on business and technical project specifications and goals; the focus of alignment on the research case study was more on negotiating a successful project outcome with government and the affected communities. The latter's focus was more on establishing and building relationships to ensure support for the project.

The alignment process required more time than envisaged due to the lack of capacity and skills in the government sector and affected communities of a developing country. The size and strategic importance of the project also contributed to the protracted alignment process. The consultation of other parties that had previous experience of the environment contributed to the development of an appropriate approach for alignment.

The sponsor played an active leadership role in the alignment process of external stakeholders while project managers implemented the agreed

objectives. The active involvement of the sponsor indicated top management support for the project and its strategic importance. This contributed to similar support from senior government officials and community leaders. This is consistent with literature findings that the project must have top management support from the early phases.

The establishment of a country office and appointment of a country manager contributed to establishing and building of relationships with both the government and community leaders. This aspect of the research findings was not evident in the literature review. Lastly, an inclusive and transparent consultation process reduced the potential for rent-seeking initiatives and corruption. It was however possible that these may still occur in later phases.

Overall the research and literature review concurred that the alignment of all stakeholders is critical to project success. The conclusion is that companies investing in major projects in developing countries have to prioritise the alignment process by appointing the appropriate leadership, planning and providing resources to facilitate the process.

7.2. PROJECT MANAGEMENT EFFICIENCY AND FUNCTIONALITY

The key learning point on this proposition was that the tactical measurement of project management efficiency factors was no longer sufficient as an overall measure of success. The traditional efficiency measures of cost, schedule and quality were identified as tactical factors that form a subset of project success. Project success was comprised of a variety of strategic factors some of them pertaining to the external environment.

It was however important to understand which one of the three project management efficiency factors was the main project driver. Thus if the project was schedule driven it was important to communicate this to all stakeholders during alignment. The SNGP project similar to future GTL and CTL projects have an attractive economic basis; however the project schedule shall be the main driver. The relative complexity of the applicable technology also had a bearing on implementation efficiency.

While most literature tended to focus on the implementation phase of the project lifecycle for project efficiency control, the research indicated that the planning phase was more critical. Research results indicated that for major projects in developing countries it was important to spend additional time and effort on the planning phase. This ensured a relatively efficient project implementation.

This was attributed to the fact that developing countries lacked the institutional capacity and infrastructure that are normally taken for granted in economically advanced countries. The lack of infrastructure presented both a schedule and cost risk to major projects.

Detailed planning and understanding of the business environment was imperative for efficient implementation. Relationships with key stakeholders were necessary to implement contingency measures and innovative ways to ensure project success. However these relationships required time to establish and nurture.

The conclusion was that major projects can be implemented efficiently in developing countries with sufficient planning, involvement of all stakeholders and adaptable strategies to compensate for external inefficiencies. The SNGP was such an example; implemented on schedule, within budget and according to specified functionality measures.

7.3. THE SPONSOR AND THE PROJECT MANAGEMENT TEAM

The role of the project sponsor was critical to project success. As illustrated on figure 6.1, the sponsor was responsible for the overall leadership of a major project. The research and literature confirmed that appointed sponsors were increasingly actively involved in the execution of major projects.

The sponsor appointed for a major project in a developing country must be a senior employee with top management support and the ability to build and nature relationships at senior levels of government. The sponsor must also empower the project team responsible for the implementation activities.

Competence and previous experience were rated highly as necessary qualities of the project manager by both the literature and research. The ability to adapt to different environments, lead diverse teams and take decisions in an uncertain environment were also seen as important attributes of the project manager.

The involvement of operations personnel representing client interests came out strongly from the research as a contributing factor to project functionality. An integrated team including client representatives reduced commissioning and hand-over problems and ensured functionality of the installed final product or service.

The involvement of client personnel also facilitated decision making in the project team. This should also contribute to widening the focus of project managers to strategic business objectives that impact project success rather than focusing on efficiency measures only.

It was also recommended that the organisational structure must still provide a separate project management team and not make the project an operational responsibility. This was clearly illustrated on the proposed framework in figure 6.2.

The roles of the country manager and CSI project manager were also emphasised by the research results. Figure 6.1 illustrated their role in the project team. This was a new contribution from the research results and both roles seem critical for major projects in developing countries. These roles may not be as critical for smaller projects.

Overall, an integrated project team, led by an active sponsor who is supported by experienced project managers is likely to succeed. The team must have top management support and be committed throughout the project lifecycle for continuity.

7.4. CONTRACTOR'S PERFORMANCE

The role and performance of the principal contractor's appointed for a major project in a developing country was emphasised by the research results more than literature. Developing countries, especially poor countries like Mozambique are not likely to have local contractors with the capacity and capability to execute the scope of a major, complex project. The principal contractor's are thus also foreign to the business environment and it is critical that the contracting strategy adopted balances risk fairly between the client and the contractor.

The contracting strategy must also allow for early entry of the selected contractor into the project lifecycle affording them time for alignment, feasibility studies and establishment of local business networks. Contractor's with previous experience and developed systems for developing country environments were more likely to succeed. Contractor's concluded that the establishment of a contractor's own local office was more likely to improve their performance. However this proposal had to be economically feasible.

Local governments' encouraged foreign contractor's to partner with local contractors wherever possible. This requirement was challenging in that local contractor's had neither the capability nor capacity to participate in a manner beneficial to both parties.

This challenge was overcome by packaging some of the project scope into smaller contracts that could be executed by local contractors. Local partners were also very keen to upgrade their skills to higher standard by further training and involvement in bigger contracts. Local contractor's contributed knowledge of the local business environment such as interpretation of the regulatory framework, standards and legislation. This was particularly useful where the official language was not English.

It was also important that negotiated incentives for the major project also benefit both local and foreign contractors and service providers. Overall the performance of the principal contractor was critical to project success. Their participation in such major projects not only contributed to project success but the growth of the local private sector by skills transfer and training.

7.5. THE ROLE OF GOVERNMENT

The major role of government was in providing a stable and enabling business environment. This may include the development of pro-investment policies, the appropriate regulatory framework and infrastructure for all businesses to thrive; local and foreign. However in poor countries with a weak private sector government involvement in major investments as a shareholder and sponsor was inevitable.

The case study project illustrated that government involvement can have a positive impact. The Mozambican government was very committed to economic growth and saw the success of the project as a vehicle towards achieving that objective. Government played a facilitating role during project implementation and compensated for the lack of institutional capacity and physical infrastructure. The cooperation of the governments of the two countries was also beneficial to the successful implementation of the project.

However government involvement may also have a negative impact due to the bureaucracy, lack of skilled capacity, bad governance systems and corruption. This has a negative impact on project schedule and cost. Positive government involvement was thus a critical success factor for project success.

7.6. INSTITUTIONAL CAPACITY CHALLENGES

The lack of developed institutions in developed countries was highlighted as a major constraint to implementing major projects in developing countries. However the case study project showed that these constraints may be overcome. The research showed that meanwhile the lack of an enabling business environment and a weak private sector in developing countries impacted project schedule and costs, the impact was not major.

The main conclusions were that proper stakeholder alignment and planning was critical to compensating for these market inefficiencies. Investing companies had to provide additional resources, both financial and human, to make up for the lack of governance systems, industry standards and business networks.

Additional time must also be factored into project plans to compensate for the protracted negotiations with government officials and bureaucratic systems. Investing companies were able to leverage their investments to negotiate market incentives that reduced the cost of doing business in developing countries.

Major projects such as the SNGP were beneficial to a developing country as government and the private sector gained valuable experience and developed capacity to improve institutional structures. Improvement of institutional infrastructure benefited both local private sector and foreign

investors. It was most beneficial for small businesses that did not have the leverage to negotiate large incentives with government.

7.7. PHYSICAL INFRASTRUCTURE CHALLENGES

The logistical constraints in the business environment were highlighted by both the literature review and research results as the most challenging obstacle to the implementation of a major project. This was attributed to the large volumes of material and labour that must be imported and transported to project sites. The lack of infrastructure sometimes resulted in additional project scope and increased costs. Other constraints were related to telecommunications, power generation and other utilities.

The project team according to the case study were able to overcome these challenges and deliver the project on schedule and within budget. The main conclusion was that with proper front-end loading and planning efficient project implementation became possible. The project team implemented contingency plans and systems for all phases of the project and design took into consideration all external environment limitations. However it was important that these were budgeted for upfront according to feasibility study cost estimates.

The political support of government and commitment of the community were also critical in implementing plans to overcome these obstacles. While infrastructure development was a government responsibility, the

project was able to develop the infrastructure of affected communities as a corporate social investment responsibility. This further entrenched good relations with both government and the community.

7.8. COMMUNITY INVOLVEMENT

The community engagement model developed for the case study project was successful in securing the goodwill and support of the community towards the implementation of the project. The literature and research results concurred that community involvement were critical for project success. Below are a few recommendations and lessons learnt.

The early appointment of a country manager and establishment of a local office was the first step in building relationships with the community. Time spent on alignment during the planning phase was beneficial in managing expectations.

The role of the environmental and social study consultant was critical on setting the basis for the corporate social investment initiatives. The results of the study were beneficial in identifying community needs and concerns.

The appointment of a CSI project manager with a separate budget from the main project and accountability to both the company and community leaders was critical. This also separated CSI initiatives from normal project

activities and minimised potential impact on project implementation efficiency.

The involvement of local community leaders and the general community in conducting a needs analysis and prioritising CSI projects ensured there were no white elephants. It was beneficial to agree on consistent protocols for labour, land use and dispute and conflict resolution.

The investing company must budget for public relations capacity to handle project communications. Various communication media must be used to ensure all important information and decisions is accessible to all stakeholders.

The main concern with major projects was that they provide temporary employment to a large workforce during implementation but employ significantly less people once the project is commissioned and handed over to operations. This causes potential for labour conflict and must be communicated upfront and managed well.

The advantages were that skills gained during the implementation period could be applied to other sectors of the economy. The income earned could also be used to kick-start other entrepreneurial initiatives.

Lastly, as part of project planning it must be decided upfront how CSI initiatives are funded and managed once the project is handed over to operations. Of particular importance is the training and development of the local workforce to eventually replace expatriate operations personnel. The development of a local supplier base to support operations is also critical.

7.9. RECOMMENDATIONS

The following recommendations are drawn from the research findings;

- ✓ **Alignment on project objectives;** budget for additional time and resources for proper alignment of all stakeholders in the early phases of the project. Alignment must focus on business and technical objectives as well as relationship building. In developing countries ensure that government and local community leaders are on board.

- ✓ **Project Efficiency and Functionality;** spend sufficient time on front-end loading/planning phase of the project lifecycle. Proper alignment and good front-end loading will contribute to a more efficient implementation phase. Include operations personnel in the early phases and this will also contribute to an easier commissioning and hand-over phase as well as overall functionality of the completed plant or product.

- ✓ **The sponsor and project team;** appoint the right sponsor for the right project. In major projects the role of the sponsor requires increasing involvement and leadership. The sponsor must be able to establish and maintain external and internal relationships at senior levels. The project team must be experienced and empowered and remain committed throughout the lifecycle of the project.

- ✓ **Contractors and Consultants;** the environmental impact assessment is the biggest hurdle a major project must go through. Ensure an experienced contractor with local knowledge and partners is appointed early. The results of the social impact study also form a good basis for the corporate social investment program. The principal contractor must be appointed early and with a contracting strategy suitable to the size, and complexity of the project environment and a fair distribution of risk with the client company.

- ✓ **The Government;** in most developing countries the role of government is still evolving from owner and sponsor to regulator. Government will most probably be keenly involved and it is necessary to develop an effective engagement model for managing the project. The sponsor, assisted by the country manager plays a leading role in establishing and maintaining government relationships. The organisation must also harness positive relations with its home government as well.

- ✓ **Institutional Capacity;** most developing countries lack the institutional capacity of developed countries and this may impact project success. Companies must plan and budget for resources to compensate for these gaps. Favourable incentives negotiated for the major project with government must include all stakeholders, foreign and local, on the project value chain.

- ✓ **Physical Infrastructure;** while this remains the role of government companies must develop innovative systems and methods to compensate for the lack of infrastructure. The consultation of other parties with previous experience of that environment was beneficial to the project.

- ✓ **Community Involvement;** involvement of the local community was critical to project success. A transparent consultation process including all stakeholders in prioritising the needs of the community was key to success. A project manager responsible for implementing this program must be appointed and allocated a separate budget. It must be decided upfront how the program will be continued once the project is completed and handed over to operations.

7.9.1. FURTHER STUDY

- Further research is recommended on factors inherent to the SSA business environment as most current literature focuses on the emerging market economies which are more developed than most countries in the SSA region.
- Further study is recommended on the development of critical success factors frameworks for major projects. In-depth research is required on the various factors identified as critical such as the role of the sponsor and leadership styles appropriate for major projects in developing countries.

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APPENDICES

Appendix A: Interview Questionnaire

Appendix B: Interview Candidate Profiles

APPENDIX A: INTERVIEW QUESTIONNAIRE

Below are some of the typical questions asked around each proposition, however most of the time respondents were allowed to discuss freely their experience on the various propositions.

Discuss Project Objectives and Goal Alignment

How were the various stakeholders aligned on the goals and objectives of the project?

Project Management Efficiency

What were the main obstacles to achieving desired performance on the following criteria?

- Schedule
- Cost
- Quality

Project Functionality

Did the project meet all the Clients requests?

What were the main issues regarding project functionality and hand-over in Mozambique?

The Role of the Project Sponsor and PMT

Is the role of the sponsor different for major projects in other countries and how?

How did the Sponsor contribute to the overall success of the project?

Did the Sasol/Sastech organisation structure contribute to success?

How could the performance of the PMT be improved for major projects in other developing countries?

Contractor's / Service Provider's Commercial Performance

Was the correct contracting strategy selected for a major project in Mozambique?

What were the main obstacles to the Contractor's performance and how could they be improved?

The role of Government; Owner's home country

What was the role of the RSA government?

Did the government contribute or hinder project success?

The role of Government of the host country

What was the role of the ROM government?

Did the government contribute or hinder project success

Institutional Infrastructure

Were there any constraints on the project due institutional capacity limitations in Mozambique and what was their impact?

How did the project team compensate for these limitations?

Physical Infrastructure

Were there any constraints on the project due physical infrastructure limitations in Mozambique and what was their impact?

How did the project team compensate for these limitations?

Community Involvement and Stakeholder Engagement

Were the members of the community sufficiently involved?

Did their involvement have an impact on project implementation and how was this rectified?

Were there any other lessons learned?



	Interview Candidates	Company	Role
1	Hans Naude	Sasol Gas	MD Sasol Gas-Client
2	Elmore Marshal	Sasol Ltd	Sponsor
3	Dr Daan de Villiers	Sastech PM	Project Manager -SNGP / Iran
4	Beno van Waveren	Sastech PM	Project Manager; SNGP -CPF
5	Dr Chris van der Berg	Sastech PM	Project Manager SNGP
6	Michael Senning	Foster Wheeler	Project Manager - CPF
7	Ian Grobler	VGI	MD
8	Mark Wood	MW Consultants	MD
9	Paul Runge	African Project Access	MD
10	Neuma Grobbelaar	SAIIA	Senior Research Analyst

1. **Hans Naude** was the Managing Director of Sasol Gas. He was the main project client representing the business unit that was responsible for distributing natural gas to other Sasol clients and external clients. The main objective of business was to expand the gas value chain. His focus was thus on the wider business objectives to ensure that the overall venture was successful.
2. **Elmore Marshal** was the Project Sponsor responsible for the delivery of the project as per board promise to the mandating committee. He was the single-point of responsibility for the delivery of the whole project. The project management teams of the various legs of the project reported directly to him. He is currently the Project Director of Sasol's project in Iran.
3. **Dr van der Berg** was previously a project manager for the customer distribution network module of the SNGP. He also compiled the award winning final project report submitted to Project Management South Africa (PMSA). He is currently the Portfolio Manager – Project Governance and Systems.

4. **Beno van Wave** responsible for project management activities required to complete the Central Processing Facility (CPF) in Temane, Mozambique. He managed the contract with the Principal Contractor (Foster Wheeler) who was appointed for the design and construction of the CPF. He is currently the Project Director for Sasol's China CTL Ventures.
5. **Dr Daan de Villiers** was the project manager responsible for the customer network distribution portion of the SNGP. After the SNGP he went on to head Sasol's project in Iran. He is currently a Project Portfolio Manager with various project managers reporting to him.
6. **Mark Wood** is the Managing Director of a specialist environmental management consultancy. They were responsible for coordinating the environmental, economic and social impact assessments of the SNGP on the Mozambican environment and community. As a relatively small business and service provider they brought a different perspective to that of Sasol's experience on the critical success factors for major projects in Mozambique.
7. **Ian Grobler** is the Managing Director of VGI Inc, an engineering consulting firm specialising in pipeline design and construction project management. They were the principal contracting company awarded the contract for converting the customer distribution network from using hydrogen rich gas previously supplied by Sasol, to natural gas from Mozambique. More importantly after the completion of the SNGP they were awarded additional work by the Mozambican state gas distribution company ENH to install a new pipeline connecting the urban industrial sites close to Maputo, to the main natural gas pipeline from Temane. The company has also completed similar work in Tanzania and Nigeria.
8. **Neuma Grobbelaar** is a deputy director at SAIIA and heads the Business in Africa Research Project. She compiled a report based on interviews with South African companies that have business operations in Mozambique based on their experience of that country's business environment. She also had

experience gained in Africa. The interview notes below focused on her experience of the Mozambican business environment especially in relation to the SNGP.

9. **Paul Runge** is the Managing Director of Africa project Access a specialised project consultancy focusing on major projects in the SSA region. His company focuses on assisting South African and other MNC's wishing to invest in major projects on the continent, focusing on the oil and gas and mining sectors. His company also has expertise on the workings of donor funding agencies.

10. **Mike Senning** was the Contractor's senior project manager responsible for the Central processing Facility (CPF) in Temane, Mozambique. His company, Foster Wheeler was appointed as the principal contractor's on an engineering, procurement and construction management (EPCm) contract responsible for subcontractor construction management of the CPF.