EVALUATION METHODOLOGY FOR TRANSNATIONAL INFRASTRUCTURE GAS PROJECTS : A CASE STUDY OF PAKISTAN

By

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Abstract

The commercial and industrial sector of Pakistan economy is suffering due to inadequate and inconsistent supply of natural gas. This necessitates the search for alternative sources of gas supply which are developed or being developed outside the country. A number of options i.e central Asian states through Afghanistan, Iran, Gulf states like Qatar etc are available and being considered in this regard. All the available options are different in term of their supply, need of finance, completion period, payback period, revenue generation and risks and uncertainties associated with those options. In this paper an attempt has been made to propose a suitable course of action to meet the rising gas demand while keeping in view the broader geopolitical environment in the region. A mechanism has been proposed to evaluate infrastructure gas projects and economic analysis of the chosen/ best option has also been carried out. The significance of the work will be that it can facilitate the decision makers responsible for the energy planning of the country.

1. Introduction

Pakistan is facing the growing challenge of supplying enough energy to meet rising demand. The country is in a tight market because the local reserves are insufficient to meet growing demands. It is assumed that world oil prices will return to previous high levels after 2012 [1]. So consumers are looking for the comparatively less expensive and environmental friendly natural gas for their energy needs [2].

Pakistan's largest energy source is natural gas, making up 50 percent of Pakistan's energy mix in FY 2004/2005 [3]. The total proven natural gas reserves in Pakistan are estimated to be 28 trillion cubic feet (Tcf) [4]. Estimated proven reserves are not sufficient to meet continuously increasing demand. Pakistan is seeking import options to increase natural gas supply in the country[5]. Keeping in view the above the only option left is to look outside the country. However various factors need to be carefully analyzed before embarking upon such a project so that continuous, uninterrupted and economical gas can be made available to various sectors of Pakistan economy. In this paper an attempt has been made to identify the risks, uncertainties, costs and special legal requirements for a transnational infrastructure gas project with reference to Pakistan keeping in view the broader geopolitical environment of the region.

2. Methodology

First of all a mechanism incorporating the concepts of project finance, financial instruments, financial engineering, risk management and the key factors related to gas field development projects has been developed .The developed mechanism consists of six stages and is shown in Fig. 1.

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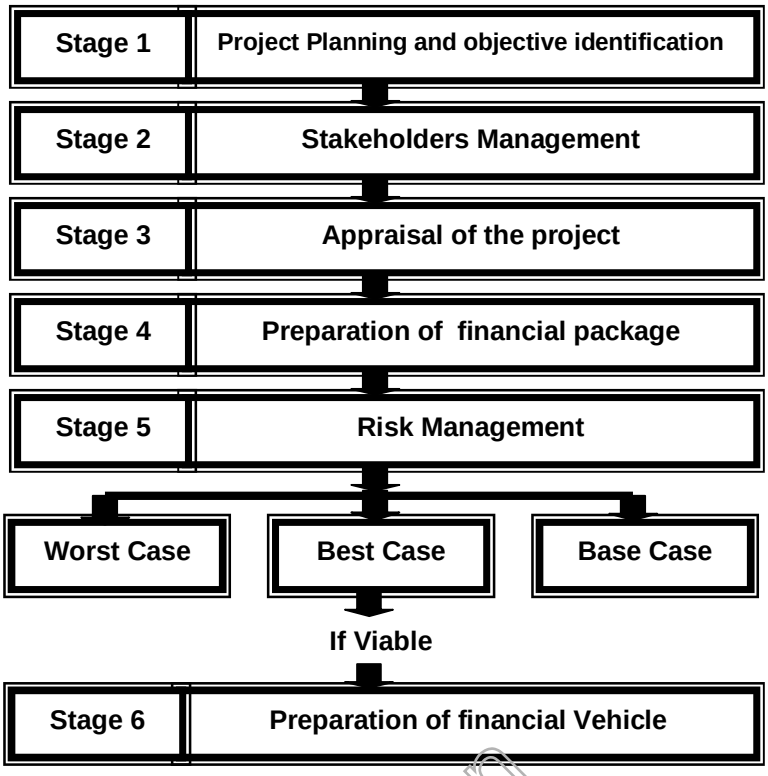

Fig 1: Proposed Mechanism

2.1 Stage One: Project planning and Objective identification

In the first stage the objectives of the project should be clearly identified. A systematic project objective(s) identification process for transnational infrastructure gas project should cover the various aspects as shown in Fig 2 below.

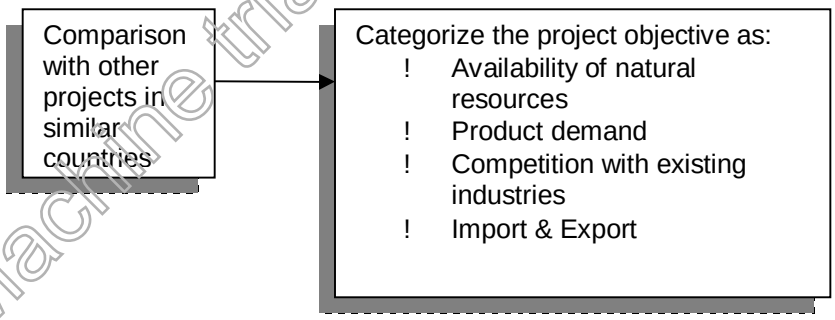

Fig 2: Project objective identification Process

2.2 Stage Two: Stake holders Management

Every project has to deal with the complex project environment occupied by different parties. The projects which do not deal with these parties efficiently face delays and problems in the regulation, appraisal, approval, implementation and commissioning processes. Stakeholder identification and management helps to identify those parties and their probable impacts on the project completion. This stage is significant in the context of transnational nature of gas pipeline project, where various cultures and legal framework is involved.

2.3 Stage Three: Appraisal of the Project

Once the stake holders have been identified and managed, the next step in the procurement of a project is to do the detail appraisal. This stage consists of complete evaluation of the project in terms of economic viability, capital investment and the engineering and design studies. The

length of the route, effect of change in climate conditions; shares in equity; operation, etc should be considered at this stage.

2.4 Stage Four: Preparation of a Financial Package

To finance any infrastructure project there is a need to model the financial package for that particular project. By developing a financial package the impact of different debt, equity and risk on the project can be analyzed and then the financial package on the basis of these assumptions can be finalized. There is a need of careful analysis of cash flows because of its extreme importance to the lenders and stakeholders. This stage begins with some basic assumptions as shown in Fig 3 below.

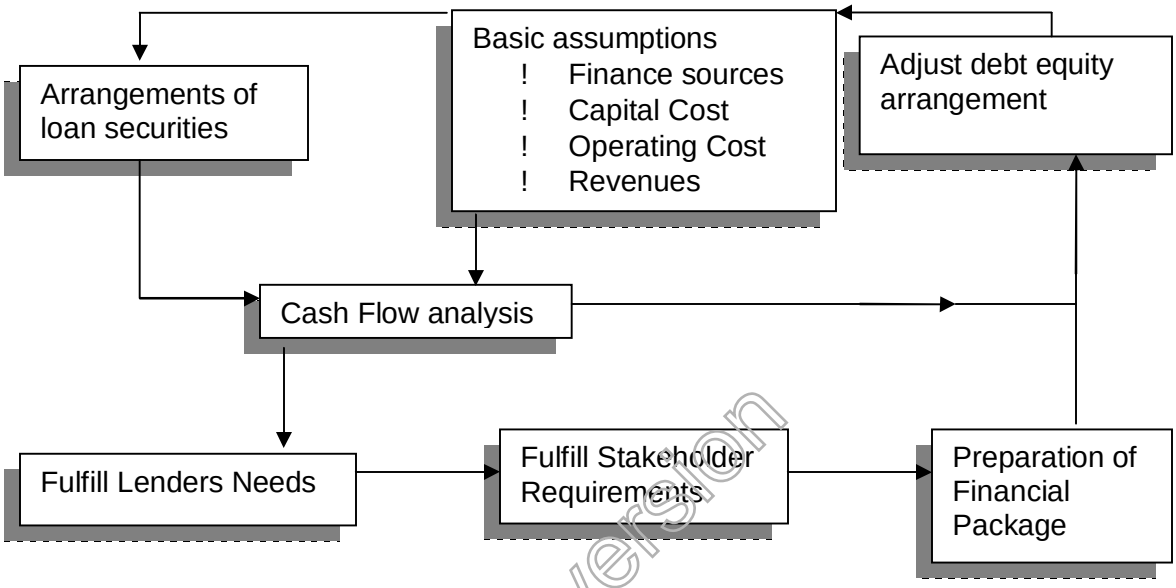

Fig 3: Mechanism for Financial Package

2.5 Stage Five: Risk Management

Once the financial package has been made and finance is allocated the next step is to carry out the risk management process. It consists of three major steps that are as following:

- Risk Identification
- Risk Analysis
- Risk Response

The details are discussed in the next section.

2.6 Stage Six: Financial Vehicle

After the risk management process, the commercial viability of the project is concluded. If the project is commercially viable then the economic parameters like IRR and NPV are analyzed then the financial vehicle to complete the project in an efficient way is prepared.

3 Proposed Transnational Natural Gas Pipeline Projects under consideration in Pakistan

In this section various transnational gas pipeline projects under consideration in Pakistan have been examined in the light of the mechanism developed in previous section. Table 1 shows the details of various projects under consideration.

Table 1: Various Transnational projects

Name/ Project	Length (km)	Capacity (Bcf/d)	Capital Required ($ Billions)
Iran-Pakistan-India (IPI) Pipeline Project [6]	2775	5.4	7.4 as on 2006
Dolphin Project. Qatar-U.A.E-Oman-Pakistan Pipeline Project [7]	1600	1.6	2.7
Turkmenistan-Afghanistan-Pakistan-India (TAPI) Pipeline Project [8], [9]	2000	0.11	2

3.1 Objective Identification & Project Planning

Before identification of the objectives; a conceptual ownership structure has been proposed (Fig 4) so that subsequent analysis could be performed from adequate viewpoint.

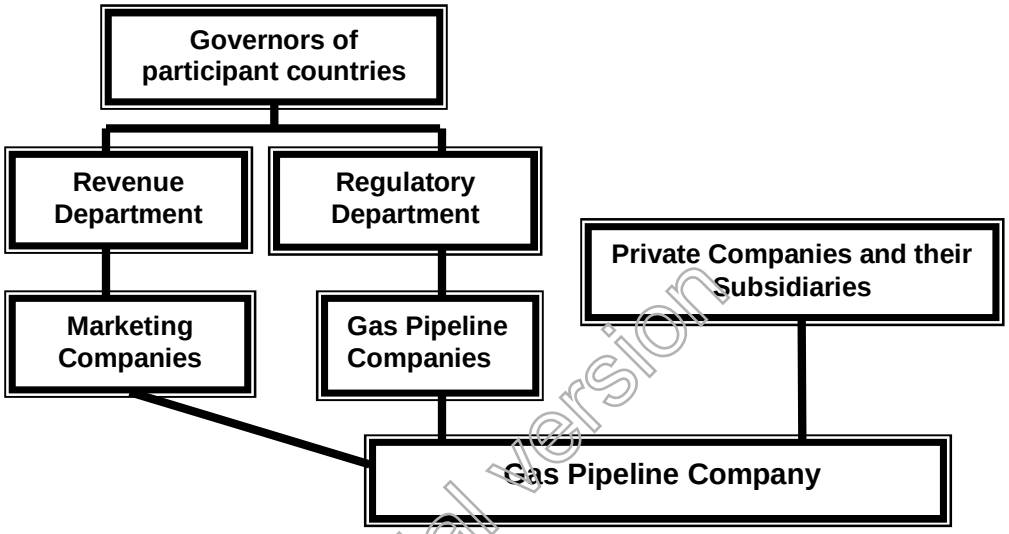

Fig 4: Conceptual Project Ownership Structure

For a transnational infrastructure gas pipeline project, the identification of the objectives(s) should be from participants' viewpoint. From Pakistan's viewpoint; the objective should be to ensure the uninterrupted supply of natural gas according to the demands of various sectors of economy at competitive price. Work breakdown structure is almost similar for all the options and a conceptual project planning highlighting the major activities and associated timing is envisioned as shown in Fig 5 below:

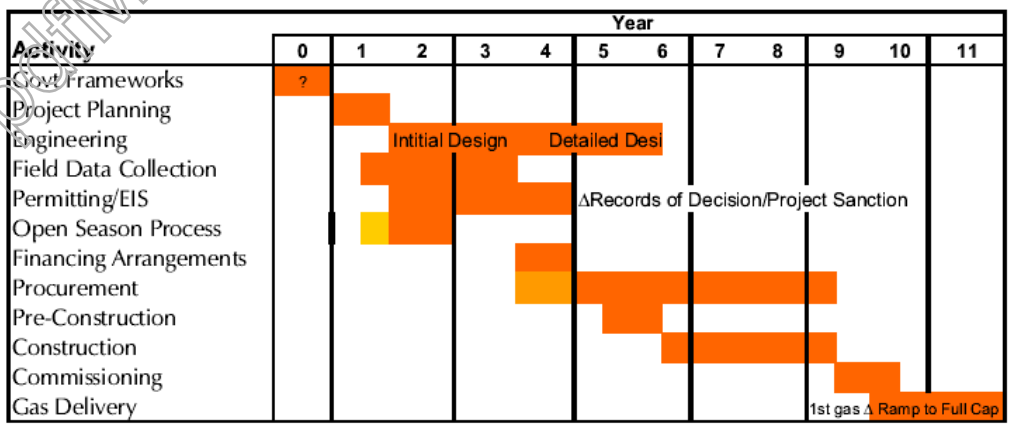

Fig 5: Conceptual Project Planning

3.2 Stakeholders Management

Various internal and external stakeholders and their concerns are shown in Table 2(a) and 2(b) below:

Table 2(a): Stakeholders identified for the project

Internal Stakeholders		External Stakeholder	
Demand Side	**Supply side**	**Private**	**Public**
Governments of Participant countries	Falcon Constructions Public Developments Ltd.	City Council Tax Payers Local Residents	Development Authorities

Table 2(b) Stakeholders Mapping and their Importance

Stakeholders Handling	*Stakeholders*
Minimal Effort	**Council Tax Payers**
Keep Informed	**Local Residents** **Development Authorities**
Keep Satisfied	**Net West Pak** **Public Development**
Key Player	**Regulatory Department**

3.3 Financial Estimate of Projects

The estimates of capital cost and annual cash flows are presented in Table 3 (a & b) below;

Table 3(a): Cost of the Components

Component	Amount ($ billion, 2009)
Gas Treatment Plant	**2.5**
Mainline	**8.5**
Gas transmission pipelines plus NGL plant	**2.0**
Total Cost	**13.0**

Table 3(b): Gas pipeline Model Revenues and Costs over the project life

Revenues	$ Billions	Costs $	Billions
Gas sales	$142	Principal and interest	$7
Tariff income on excess capacity	$2	Operating costs	$3
Corporate income tax	$14	Marketing costs	$1
Local field distributions	$8	Upstream cost allowance	$4
Upstream PILT	$2	Property taxes	$1
Midstream PILT	$3	Maintenance Cost	$3
PILT on distribution lines	$1		
Total	$172	Total	$21

It can be seen that in spite of higher capital cost; there are sufficient cash inflows to make the project a promising option.

3.4 Risk Identification Management

A comprehensive checklist covering various aspects has been developed to identify the risk associated with transnational gas pipeline project. The proposed checklist is shown in Table 4 below

Table 4: Risk Identification Checklist

Source	Risk Area	Uncertainty	Yes, No, Not Known
Project Risks	**Project Brief and Definition**	Clarity in the project objectives and definition	Yes
		Clarity in the project scope	Yes
		Identification of Stakeholders agreement on the project objectives	No
	Project Requirements	Clarity in the project requirement	Yes
		Stability in the project requirement	No
		Confirmation of the availability of all the required specifications	Yes
		Project brief and objectives are acceptable to all the participants	Yes
		Clarity in the user interface requirements	Yes
	Reservoir Performance	Wells are the exploration wells	Yes
		Wells are the development wells	No
		Reserve size is known	Yes
		Gas composition is known	Yes
		Determination of water content and other liquid associated with the gas	Not Known
		Any impurities associated with the gas	No
		Availability of data of reservoir like pressure, temperature, porosity and permeability	Yes
	Procurement Strategy	Procurement strategy is best suitable to handle the risk and to increase the commercial viability	Not known
	Project Management Team Performance	Project management and leadership skills of project manager are sufficient	Yes
		Project management team is a combination of skilled people from all the departments	Yes
		Project team members are devoted to project	Yes
		Project team members are highly experienced	Not known
		Project management team can work together?	Yes
		Communication between members is efficient and effective	No
	Planning and Quality Control	Project planning and schedule is well defined	Yes
		Number of QA/QC inspectors working and their experience is enough	Yes
	Complexity	Complexity of the project is well understood and analyzed	Not known
		Size of project is manageable	No

		Sufficient time is spent to control and integrate the system	Yes
		Project involves proven technology	Yes
		Laboratory tests have been carried out	Yes
		Field tests have been carried out	Yes
		PMT training is sufficient	Yes
		Any risks associated with construction?	Yes
		Problems may encounter during operation and maintenance	Yes
	Purchasing and Importation	Sufficient time has been spent on equipment purchase	Yes
		Problems may occur during purchasing	No
		Relations with purchasers are long term	Yes
		Permits required for import of gas and other goods are obtained	No
	Labour	Skilled manpower is available	Yes
		Religious matters that can affect the labour effectiveness	Yes
		Government regulations required for employing loval people are clear	Yes
		Any restrictions in the use of foreign labour?	No
Political Risk	**Political Stability**	Political stability in the country	No
		Relation between company and government is good	Yes
	Petroleum agreements	The agreement is well defined and well understood between parties	Yes
		Agreement is balanced and provide a reasonable profit for the company and the countries involved in the project	Yes
		Any expectations of unfavorable change in the agreement during the life cycle of the project	Not Known
		Any possibility of unwanted change in tax provisions	No
Law Risks	**Law of the host country**	Project would be progressed according to the law of regional, home country and host country	Yes
	Change in law	Any change in the law is expected during project life cycle	No
Natural Risks	**Ground Condition**	Reservoir soil structure is stable for drilling	Yes
		Any shallow gas expected during drilling	Yes
		Any chances of earthquake?	No
	Weather	Any risk of severe weather affect to construction?	No
		Extreme weather expected during on-shore construction work	Yes
		Any depth of water and surface effect the project	No

Safety Risks	**Safety Regulations**	The project is according to all safety regulations of host country and regional safety regulations	Yes
		Safety policy and rules have been put in place	Yes
		Health and safety training has been given to all employees?	Yes
		Safety apparatus and first aid kit is provided for the employees	Yes
Environmental RisIs	**Social Environment**	Effect of project on the population	Not known
		Is the support of people and media to the project	No
	Green Risk	The project progress will impact the life of animals and plantations in location of project	No
		Project can effect the population to water, air and soil	No
		EIA is carried out during appraisal process and economic evaluation of project	Yes
	Regulation	Project activities like design, construction and operation is according to regulation of host country	Yes
		Regulatory bodies are ready to provide the permits for project	Yes
Commercial Risks	**Market**	Market for the gas is available in the host country	Yes
		Future demand is stable	Yes
		Any other competitors are present in market	Yes
		Other fuels in competition with gas	Yes
		Infrastructure pipeline project connects the producers and consumers	Yes
		Inflation rate is stable	No
		Share market is stable	No
	Commercial Business Practices	Project is commercially acceptable	Yes
		Business practices in the host countries are established	Yes
		Any business restrictions from government	No
		Any differences between method of business in home and host countries	No
	Project funding	Funding for the project is satisfactory	Yes
		Relationship between customers and host government are in good conditions	Yes
		Currency of revenue is exchangeable	Yes
	Price	The International gas price is stable	No
		The alternative fuel prices, particularly crude oil is stable	No
		The local gas pricing policies are well established	No
	Economic	The economic circumstances of host country and regional countries stable	Yes
		The exchange rate of currencies is stable	No

After identification, the severity of risks is analyzed by employing probability impact table method to quantify the qualitative risks and their impact on various aspects of the project as shown in Table 5 below:

Table 5: Probability Impact Table

Risks	**Cause**	**Probability (1=low, 5=high)**	**Impact (1=low, 5=high)**	**Priority (Low, Medium, High, Very High)**
Political Risks	Instability in the government policy	4	4	High
Legal Risks	Disputes Among project parties	5	5	Very high
Environmental Risks	Effect of surroundings	3	2	Low
Exploration Risks	Lack of geological data	5	5	Very high
Reservoir Quality Risks	Instability in the reservoir pressure	3	4	medium
Design Risks	Incompetent design	3	2	Low
Technical Feasibility Risks	Implementing new technology without verification	3	4	medium
Site Conditions Risks	Careless analysis of site selection	3	2	Low
Construction risk	Accidents during construction	3	4	medium
Weather Risks	Natural disaster	3	4	medium
Supply Risk	Non availability of resources	3	2	Low
Operation and Maintenance	Complex maintenance and poor management	4	4	high
Price Risk	Variation in gas prices in market	5	5	Very high

The following actions shown in Table 6 are suggested to mitigate the risks which have already been identified.

Table 6: Proposed Mitigation Actions

Source	Risk Area	Uncertainity	Yes, No, Not Known	Mitigating Action
Project Risks	Project Brief and Definition	Identification of Stakeholders agreement on the project objectives	No	Meetings with the stakeholders to align their objectives
	Project Requirements	Stability in the project requirement	No	Find out the probability of changes in demands
	Reservoir Performance	Determination of water content and other liquid associated with the gas	Not Known	Do the Drilling Stem Tests(DST)
	Procurement Strategy	Procurement strategy is best suitable to handle the risk and to increase the commercial viability	Not known	Analyze the procurement strategy. Analyze the result of risk analysis and carry out the mitigated actions to the procurement strategy
	Project Management Team Performance	Project team members are highly experienced	Not known	Checkout the experience of team members in relevant technology and field
		Communication between members is efficient and effective	No	Arrange workshops and group discussions
	Complexity	Complexity of the project is well understood and analyzed	Not known	The facilities of the gas project are having potential problem. Recruit a specialist consultant to deal facilities and control system
		Training given to PMT is sufficient	No	Make training package for the PMT members
		Risks associated with construction	Yes	Ensure construction companies have sufficient experience
		Problems may encounter during operation and maintenance	Yes	Analyze design capacities of vessels and pipeline against the designed fluid volumes
		Religious matters that can affect the labour effectiveness	Yes	Consider prayer timings in the construction schedule

		Government regulations required for employing loval people are clear	Yes	Analyze the regulatory procedures
Political Risk	Political Stability	Political stability in the country	No	Negotiations should be done to improve company and government relations
		Relation between company and government is good	Yes	Carefully analyze and review the contractual arrangements and changes in government regulations
	Petroleum agreements	Any expectations of unfavorable change in the agreement during the life cycle of the project	Not Known	Review other petroleum agreements
Natural Risks	Ground Condition	Any shallow gas expected during drilling	Yes	Drilling should be carried out with safety precautions
	Weather	Extreme weather expected during on-shore construction work	Yes	Analyze the worst case scenario when calculating safety factors for equipment and construction activities
Environ-mental Risks	Social Environment	Effect of project on the population	Not known	Team must be allocated to investigate the impact on local population
Commer-cial Risks	Market	Any other competitors are present in market	Yes	Carefully analyze and monitor the impact of other producers on supply. Analyze the plant design so that construction and perating costs can be minimized to remain competitive
		Other fuels in competition with gas	Yes	Analyze substitute fuels costs and availability in the market. Design of plant should be optimized to stay competitive with other fuels
		Inflation rate is stable	No	Analyze the effect of inflation rate variation

		Share market is stable	No	Assess the impact of share markets variation and prepare a plan to reduce risk
	Price	The International gas price is stable	No	Examine the international gas price
		The alternative fuel prices, particularly crude oil is stable	No	Examine the alternative fuel prices and assess their effect on gas price
		The local gas pricing policies are well established	No	Examine and evaluate the strategy
	Economic	The exchange rate of currencies is stable	No	Evaluate the effect of local currency variation

Selection Criteria among Available Options

Selection Criteria	IPI Pipeline Project	Central Asia / TAPI Pipeline Project	Qatar- Pakistan Pipeline Project
Project Identification	□	□	□
Stakeholder Management	×	×	×
Project Appraisal	□	□	×
Source of Funding	□	×	×
Risks Associated	□	□	□
Risks can be mitigated	□	×	×

Turkemenistan-Afghanistan-Pakistan-Iran (TAPI) pipeline could not meet the needs of Pakistan and Dolphin project is at its inception stage, therefore, for the purpose of economic analysis, IPI project has been chosen.

4 Case Study : Economic Analysis of the Selected Option

The aim of the gas pipeline is to provide the gas to the main consumer in Pakistan which is basically the state owned company called Sui Northern Gas Company (SNGP) and to the power plant in Karachi. This pipeline also provides the gas to one power plant in Delhi India. The data and the names used in this case study are hypothetical ones. For economic analysis; three

cases have been developed i.e. base; best and worst. The economic analysis has been carried out by considering the physical components of the project; as shown in Table 7 below

Table 7: Physical Components considered for Economic Analysis

Component	Description
Gas Treatment Plant	Location: Iran South pole Purpose: To remove CO_2, H_2S & other impurities
Mainline	Diameter = 48-52inch; Pressure = 2500 psi Feature: Buried pipe with compressing station along the length to maintain pressure. Location: Iran along Pakistan Highway
Gas Transmission Pipelines	Will receive gas from different fields like Tehran; Esfashan, Bandare emam, and Kerman Unit fields
N.G.L Plant	Purpose: To diversify the products range

4.1 Financial Modeling and Cash flow Analysis

The project involves building a large-diameter, large-volume natural gas pipeline and related facilities with a design capacity to transport over 5.4 (Bcf/d) of gas from Iran to Pakistan and Indian markets. Cumulative cash flows and the financial modeling of the base, best (after risk mitigation) and the worst case (before risk mitigation) is described in Table 8:

Table 8: Financial Modeling and Cash flow analysis

Case	Financial Model	Construction Cost ($ Billions) 2009	Operation & Maintenance cost per year from year 3 ($ Billions) 2009	Cost of Finances ($ Billions) 2009	Estimation of revenues ($ Billions) 2009
Base	Equity 10% Debt 90%	13	0.14	4.5 for 7 years	172
Best	Equity 0% Debt 100%	10	0.1	5 for 7 years	172
Worst	Equity 20% Debt 80%	13	0.2	5.5 for 7 years	

The cash flow patterns for three cases are shown in Fig 6(a, b and c)

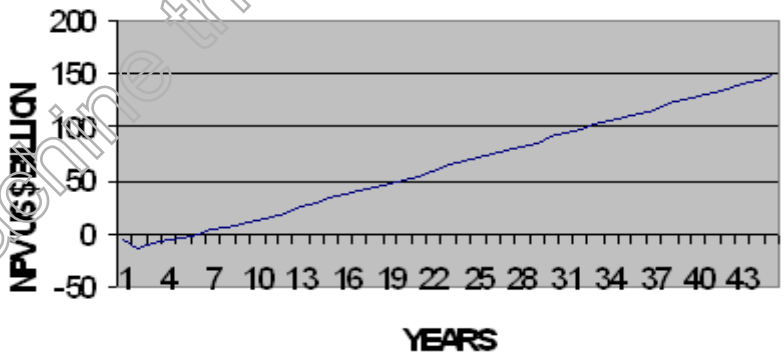

Fig 6 (a) Cash Flow for Base Case

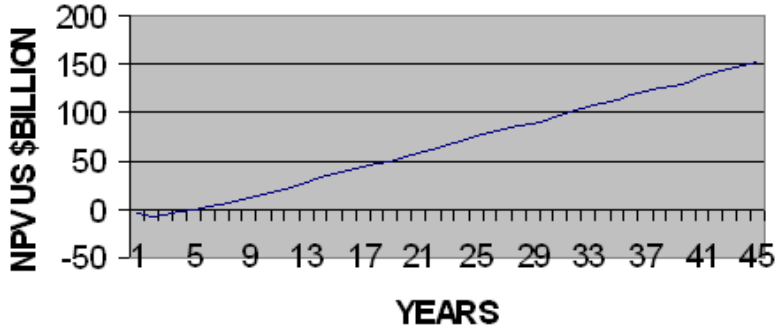

Fig 6 (b) Cash Flow for Best Case

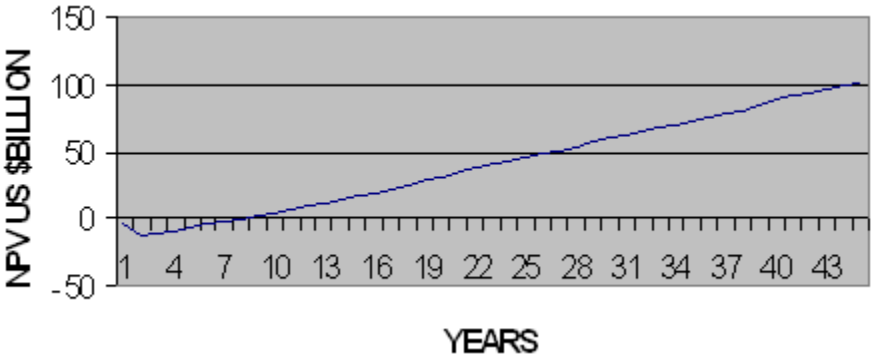

Fig 6 (c) Cash Flow for Worst Case

4.1.1 Base Case

For base case the following data has been assumed

Construction cost = $ 13 Billions

Operation and Maintenance Cost (Operation and Maintenance Cost includes O+M of compressors, chillers, GTP, NGL plant, mainline, and gas transmission pipelines)
O+M = $6 Billions for 43 years starting from year 3

Cost of Finances
Debt = $ 4.5 Billions at IRR 24% for 7 Years

Projected Revenues

Revenues	**$ Billions(2009)**
Gas sales	$142
Tariff income on excess capacity	$2
Corporate income tax	$14
Upstream PILT	$2
Midstream PILT	$3
PILT on distribution lines	$1
Local Pars field Iran distributions	$8
Total	$172

Calculations for Discount rate

NPV = $-C_1(P/F,i\%,1)-C_2(P/F,i\%,2)+(R-O)(P/A,i\%,43)(P/F,i\%,2)-$
$(COF)(P/A,i\%,7)(P/F,i\%,2)-(E)(P/A,i\%,8)(P/F,i\%,2)$

where
C1 = Construction Cost in year1
C2 = Construction Cost in year 2
R = Revenues
O = Operations and Maintenance Cost
COF = Cost of Finance
E = Equity

NPV at 15 i%
NPV = -5(0.8696)-8(0.7561)+(4-0.14)(6.64)(0.7561)-(0.64)(4.1604)(0.7561)-
(0.0625)(4.4873)(0.7561)
=6.75

NPV at 25%
NPV = -5(0.8)-8(0.64)+(4-0.14)(3.99)(0.64)-(0.64)(3.1611)(0.64)-
(0.0625)(3.3289)(0.64)
= -0.691

Discount Rate

$$\frac{25\% - 15\%}{-0.691 - 6.75} = \frac{i\% - 15\%}{0 - 6.75}$$

i% = 24%

The discount rate is 24%

4.1.2 Best Case
For best case following assumptions are made

Construction Cost (The gas pipeline would be constructed within 2 years with all equipment ready in operation)
Construction cost = $ 10 Billions

Operation and Maintenance Cost (Operation and Maintenance Cost includes O+M of compressors, chillers, GTP, NGL plant, mainline, and gas transmission pipelines).
O+M = $4.3 Billions for 43 years starting from year 3

Cost of Finances
Debt = $ 5 Billions at IR 29% for 7 Years

Revenues

Revenues	**$ Billions(2009)**
Gas sales	$142
Tariff income on excess capacity	$2
Corporate income tax	$14
Upstream PILT	$2
Midstream PILT	$3
PILT on distribution lines	$1
Local Pars field Iran distributions	$8
Total	$172

Calculations for Discount rate
NPV = $-C_1(P/F,i\%,1)-C_2(P/F,i\%,2)+(R-O)(P/A,i\%,43)(P/F,i\%,2)-$
$(COF)(P/A,i\%,7)(P/F,i\%,2)$
where
C1 = Construction Cost in year1
C2 = Construction Cost in year 2
R = Revenues
O = Operations and Maintenance Cost
COF = Cost of Finance

NPV at 15 i%
NPV = -4(0.8696)-6(0.7561)+(4-0.1)(6.64)(0.7561)-(0.714)(4.1604)(0.7561)
= 13.4
NPV at 30%
NPV = -4(0.78)-6(0.61)+(4-0.1)(2.99)(0.61)-(0.714)(0.61)(2.8)
= -0.88

Discount Rate

$$\frac{30\% - 15\%}{-0.88 - 13.4} = \frac{i\% - 15\%}{0 - 13.4}$$

$$i\% = 29\%$$

The discount rate is 29%

4.1.3 Worst Case

For worst case following assumptions have been made

Construction Risks (delays in supply of material, Inflation rate)
Construction cost = $13 Billions

Operation and Maintenance Risks (Cost overruns due to repair of compressors, pipeline failure, Maintenance of GTP and NGL plant, Inflation rates)
O+M = $8.6 Billions

Financial Risks (Interest rates increases, Dividends payments increases as project performs well)
Cost of Finance = $5.5 Billions for 7 years

Revenues (Reduction in revenues is due to GTP failure, Less sales)
R = $ 129 Billions

Calculations for Discount rate

NPV = $-C_1(P/F,i\%,1)-C_2(P/F,i\%,2)+(R-O)(P/A,i\%,43)(P/F,i\%,2)-$
$(COF)(P/A,i\%,7)(P/F,i\%,2)-(E)(P/A,i\%,8)(P/F,i\%,2)$

where
C1 = Construction Cost in year1
C2 = Construction Cost in year 2
R = Revenues
O = Operations and Maintenance Cost
COF = Cost of Finance
E = Equity

NPV at 15 i%
NPV = -5(0.8696)-8(0.7561)+(3-0.2)(6.64)(0.7561)-(0.628)(4.1604)(0.7561)-
(0.1375)(4.4873)(0.7561)
= 1.2187

NPV at 25%
NPV = -5(0.8)-8(0.64)+(3-0.2)(3.99)(0.64)-(0.628)(3.1611)(0.64)-
(0.1375)(3.3289)(0.64)
= -3.532

Discount Rate

$$\frac{25\% - 15\%}{-3.532 - 1.2187} = \frac{i\% - 15\%}{0 - 1.2187}$$

$$i\% = 17\%$$

The discount rate is 17%

Cash Flow Analysis

Economic parameters	Base Case	Best Case	Worst Case
NPV (US $ billion)	148	152	102
IRR (%)	24	29	17
PAYBACK(years)	7	6	9

The economic parameters of the project show that the NPV of the best case after risk mitigation is acceptable. The IRR=29% of the project is greater then the MARR (Minimum Acceptable Rate of Return=20%). So the project is commercially viable.

Conclusion and Recommendations

The mechanism has been developed for the evaluation of transnational infrastructure gas pipeline projects. The risks have been identified for the proposed project and mitigation measures have been suggested. The developed mechanism has been applied to a hypothetical case study on three options i.e base, best & worst for a MARR 20 %. The calculated IRR= 29% is satisfactory indicating that the project is worth undertaking. The significance of the work is that it could facilitate the energy planners of the Pakistan in the prevailing regional scenario.

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