ACKNOWLEDGMENT

The researcher wishes to express deep appreciation and gratitude to the following experts for their support and valuable comments throughout the preparation of the study:

H.E Eng. Sameh Fahmy, Minister of Petroleum

Shamel Hamdy, First Undersecretary, Ministry of Petroleum

Ehab M. Eissa, Country Chairman, Caltex Egypt

Farid Toulan, Managing Director, Egypt Gas and Oil Services Company (EGOSCO)

Hisham Mekawi, Chairman, BP Egypt

Khaled Abu Bakr, Vice-Chairman & Managing Director, Gas and Energy Co. (Genco-Group)

Michael Barron, Policy & Corporate Affairs Manager, BG-Egypt

Nigel Goddard, Gas Operations & Projects Performance Unit Leader, BP Egypt

Paul Rea, Chairman & Fuels Marketing Manager, North East Africa Cluster, ExxonMobil Egypt

Rodney Eichler, General Manager, Apache Egypt

Thomas Thomason, Vice President & Country Executive, InterGen

Waleed M. Abukishk, Commercial Manager, Shell Egypt

The American Chamber Of Commerce In Egypt would like to thank Dr. Naglaa El-Ahwany, Professor of Economics, Faculty of Economics and Political Science, Cairo University, for her valuable review of this study.
Executive Summary

The Petroleum industry is one of the most dynamic and flourishing industries in the Egyptian economy. Petroleum production is by far the largest single industrial activity in Egypt, representing 8 percent of GDP. The industry covers 95 percent of Egypt’s primary energy requirements, and accounted for 30 percent of the country’s total export revenues in 2002.

This study intends to give an overview of the latest developments in the petroleum industry, comprised of the oil, gas, and petrochemical sectors. Emphasis is placed on the future outlook of the industry, including where untapped business opportunities and potential investments are. Special attention is paid to the prospects of natural gas exports and future petrochemicals expansion. The study also explores the challenges the industry may face, and makes recommendations for future development.

The first part of the study examines the global petroleum industry. It focuses on the international production and consumption patterns for oil and natural gas, while pointing out the location of global reserves. It also highlights future growth in the international petrochemicals market.

The second part focuses on the oil sector. Egypt is currently a net oil exporter. With increasing domestic demand and maturing oil fields in the Gulf of Suez, there are fears that by 2005-2010, it will become a net importer of oil. The Egyptian government is attempting to counter this by encouraging increased exploration, and enhanced oil recovery.

Due to major recent natural gas discoveries and their importance to Egypt’s economic growth, the study provides a comprehensive survey of the natural gas sector. A revised estimate of proven natural gas reserves was released in June 2003, which put the figure at 60 trillion cubic feet (Tcf), based on several new discoveries. Probable reserves are believed to be around 120 Tcf.

In light of the country’s newly discovered gas reserves, Egypt aims to join the ranks of major global petrochemicals producers. This section presents the government’s expansion plans and private sector involvement in the petrochemicals sector. Egypt already constitutes one of the largest markets for lubricants in Africa, and is the second most important refining center in the continent.

The study highlights development plans in transportation and growth in the petroleum equipment market. Conversely, it explores the challenges facing the industry such as pricing and subsidies, and environmental concerns. It concludes with a summary on the future outlook and recommendations for the industry, noting the significant economic growth that will accrue to Egypt once the industry’s strategic goals are fulfilled.
# Table of Contents

List of Figures ........................................... v
List of Tables ............................................... vi
List of Maps ................................................ vi
Acronyms ..................................................... vii

**PART I. GLOBAL OUTLOOK**

1. Oil: International Market .............................. 1
   1.1 Production ........................................ 1
   1.2 Consumption .................................... 2
   1.3 Reserves ......................................... 3

2. Natural Gas: International Market ...................... 4
   2.1 Production ........................................ 4
   2.2 Consumption .................................... 4
   2.3 Reserves ......................................... 5

3. Petrochemicals: International Market .................. 6

**PART II. INTRODUCTION TO THE PETROLEUM INDUSTRY IN EGYPT** ............... 8

1. Economic Importance .................................. 8

2. Industry Structure .................................... 9

3. Concession Agreements ................................. 10
   3.1 Approval Procedures ............................ 10
   3.2 Modifications .................................. 11

**PART III. THE OIL SECTOR IN EGYPT** ........................................ 12

1. Production ............................................ 12
   1.1 Refining ......................................... 13
   1.2 Transportation ................................ 14
   Suez Canal & Sumed Pipeline ...................... 14

2. Exploration ............................................ 15
   2.1 Private Sector Investment & Opportunities .... 18
   2.2 Technology Developments ...................... 18

3. Consumption ........................................... 19

4. Exports .................................................. 19

**PART IV. THE NATURAL GAS SECTOR IN EGYPT** .................................. 21

1. Production ............................................ 21

2. Exploration ............................................ 21
   Private Sector Investment & Opportunities ........ 22

3. Consumption ........................................... 25
<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>World Oil Production by Region (2002)</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>Refiner Acquisition Cost of Imported Crude Oil (1996-2002)</td>
<td>2</td>
</tr>
<tr>
<td>4</td>
<td>World Natural Gas Consumption (1970-2025)</td>
<td>4</td>
</tr>
<tr>
<td>5</td>
<td>World Natural Gas Resources by Region as of January 1, 2003</td>
<td>5</td>
</tr>
<tr>
<td>6</td>
<td>Expected Regional Petrochemical Consumption (2000-2007)</td>
<td>6</td>
</tr>
<tr>
<td>7</td>
<td>Petroleum Investments in Egypt (2000/01-2001/02)</td>
<td>8</td>
</tr>
<tr>
<td>8</td>
<td>Structure of Petroleum Industry in Egypt</td>
<td>9</td>
</tr>
<tr>
<td>9</td>
<td>Oil Production and Consumption in Egypt (2000-2005)</td>
<td>12</td>
</tr>
<tr>
<td>10</td>
<td>Proven Oil Reserves in Egypt (2000-2005)</td>
<td>12</td>
</tr>
<tr>
<td>11</td>
<td>Stages of Mature Oil Fields</td>
<td>15</td>
</tr>
<tr>
<td>12</td>
<td>Egypt’s Oil Exports</td>
<td>20</td>
</tr>
<tr>
<td>13</td>
<td>Values of Oil Exports in Egypt-U.S. Trade</td>
<td>20</td>
</tr>
<tr>
<td>14</td>
<td>Proven Natural Gas Reserves in Egypt</td>
<td>21</td>
</tr>
<tr>
<td>15</td>
<td>Geographic Distribution of Natural Gas Reserves in Egypt</td>
<td>22</td>
</tr>
<tr>
<td>16</td>
<td>Local Natural Gas Consumption by Sector</td>
<td>25</td>
</tr>
<tr>
<td>17</td>
<td>Vehicles Utilizing Compressed Natural Gas (CNG)</td>
<td>29</td>
</tr>
<tr>
<td>18</td>
<td>ECHEM Partnerships &amp; Future Projects</td>
<td>35</td>
</tr>
<tr>
<td>19</td>
<td>Proposed Gas Pricing Formula</td>
<td>42</td>
</tr>
</tbody>
</table>
**List of Tables**

Table 1: Global Natural Gas Reserves ........................................... 6
Table 2: Production Sharing Agreement (PSA) Modifications ................. 11
Table 3: Capacity of Egypt’s Nine Refineries .................................. 13
Table 4: Private Sector Natural Gas Distribution Companies .................. 26
Table 5: Electricity Generation and Utilization in Egypt ...................... 27
Table 6: EEHC Future Combined Cycle Projects ............................... 28
Table 7: Compressed Natural Gas (CNG) Emission Reductions .............. 29
Table 8: Egypt’s Priority Petrochemical Projects .............................. 37
Table 9: Petroleum Equipment Market in Egypt ............................... 40

**List of Maps**

Map 1: EGPC 2003 Bid Round .................................................. 17
Map 2: EGAS 2003 Bid Round ................................................... 23
Map 3: Locations of Future Petrochemical Plants ........................... 36
ACRONYMS

COMPANIES / ORGANIZATIONS

ECHEM = Egyptian Holding Company for Petrochemicals

EEHC = Egyptian Electricity Holding Company

EGAS = Egyptian Natural Gas Holding Company

EGPC = Egyptian General Petroleum Corporation

GASCO = Egyptian Natural Gas Company

OECD = Organization for Economic Cooperation and Development

OPEC = Organization of Petroleum Exporting Countries

SCA = Suez Canal Authority

SVDC = South Valley Development Company (Ganoube El Wadi)

INDUSTRY TERMS

BOOT = Build, Own, Operate, and Transfer

CNG = Compressed Natural Gas

ELNG = Egyptian Liquefied Natural Gas

LNG = Liquefied Natural Gas

MoU = Memorandum of Understanding

NEMED = Northeast Mediterranean

PSA = Production Sharing Agreement

SPA = Sale and Purchase Agreement

WDDM = West Delta Deep Marine

MEASUREMENTS

bcf/d = billion cubic feet per day

b/d = barrel per day

Btu = British Thermal Units

cf = cubic feet

GW = gigawatts

kwh = kilowatt per hour

mcf/d = million cubic feet per day

Mmscf/d = million standard cubic feet per day

mt/y = metric tons per year

MW = megawatts

Tcf = Trillion cubic feet

t/d = tons per day

t/y = tons per year