

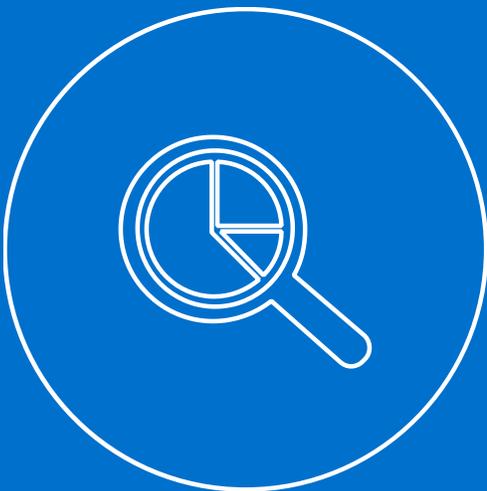
**NexantThinking™**

**Special Reports**

**Strategic Assessment: Future of the  
Iranian Petrochemical Industry**

Brochure

January 2016



# NexantThinking™

## Special Reports

### Strategic Assessment: Future of the Iranian Petrochemical Industry

Brochure  
January 2016



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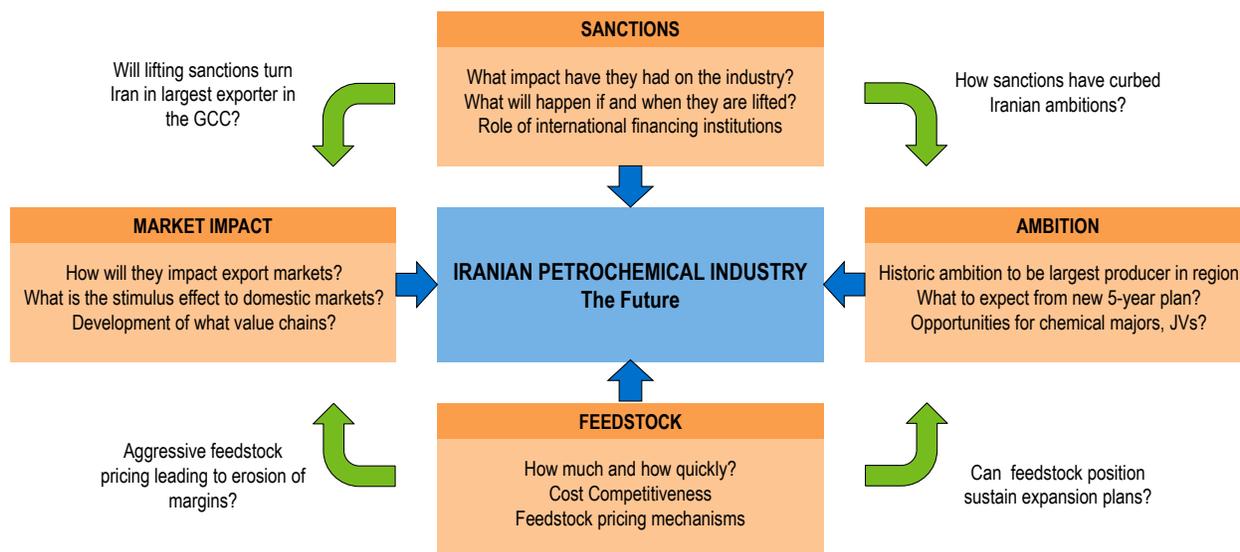
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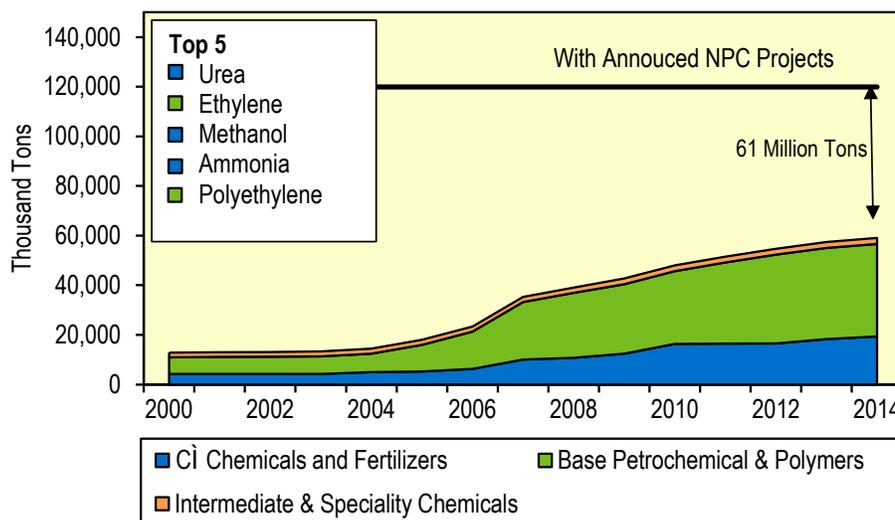
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Iran is on the verge of regaining access to global markets and potentially global investment. What will be the implications of this momentum change, for the region, for Asia and for the development of the domestic industry? With a long held strong desire to be a major player in the petrochemical industry, only sanctions have hampered this plan – what will be the likely development of the industry if these are removed?



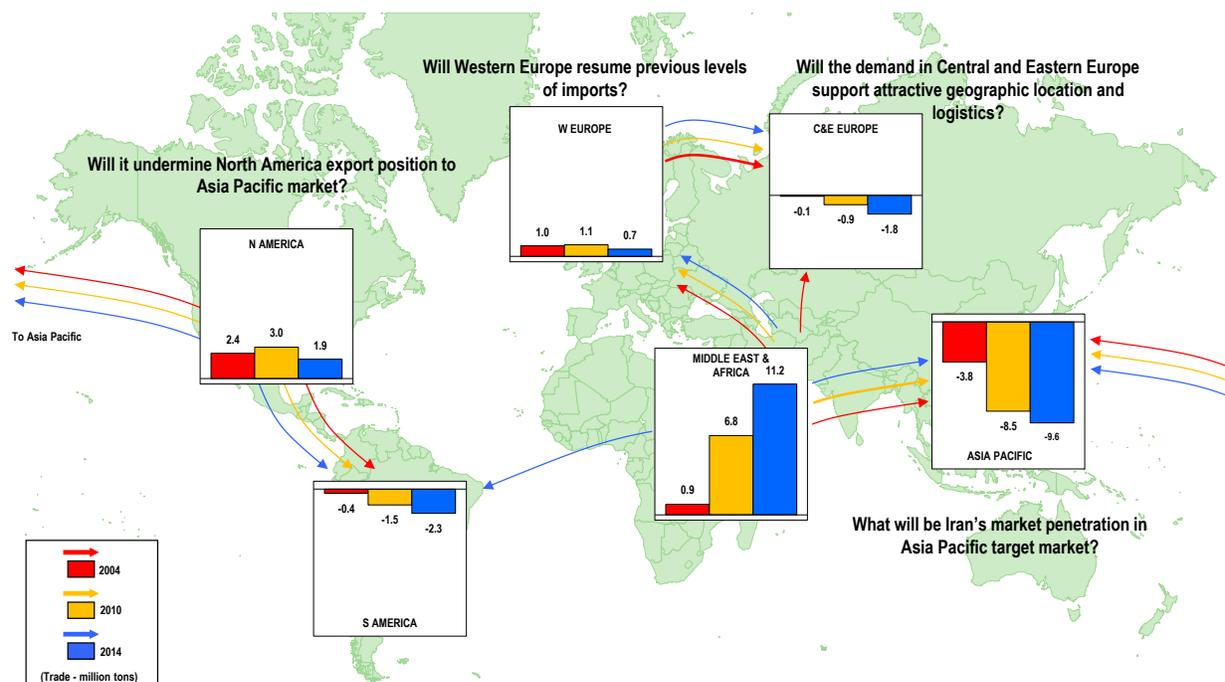
With proven oil reserves of about 157 thousand million barrels (4th world ranking) and natural gas of 1201.4 trillion cubic feet (2nd world ranking), Iran’s petrochemical industry is supported by diverse and abundant feedstock reserves. Although there is some uncertainty associated with methane and ethane pricing mechanisms, it is fair to assume that feed price will be advantaged and close to other key regional players. The estimated petrochemical capacity installed in Iran is illustrated in Figure 1.1.

**Figure 1.1** Estimated Petrochemical Capacity Installed in Iran (2014)



Overall, the potential imminent agreement between Iran and the international community represents some opportunities and challenges for petrochemical producers. The large reserve of oil and gas sets Iran in a very favorable feedstock position to supply the global markets and to become a key regional export hub for petrochemicals. With access to the Arab Gulf and competitive feedstock economics, Iran's petrochemical industry aims to attain a reasonable market penetration in major import regions (e.g., China). This could represent an erosion of margins, the realignment of certain product prices between different geographic regions (e.g., methanol) and or the reevaluation of some new projects in the Arab Gulf. It should be noted that currently an important hurdle to export operations from Iran to Europe is the prohibition to the provision of insurance to Iranian entities (e.g., cargo ships). Historic polyolefins net trade is illustrated in Figure 1.2.

**Figure 1.2 Historic Polyolefins Net Trade**



Nevertheless, the opening of Iran's markets also represents an opportunity for the major chemical producers who are better integrated downstream and with access to world class technologies. Iran is a key consuming economy with a young and large population and it is expected, after the stabilization of the Iranian rial, to consume significant volumes of imported products. Furthermore, the privileged feedstock position and the geographical proximity to main importing regions are important incentives to attract foreign investment by major chemical companies. This would allow Iran to localize specialized process technologies, expand downstream industries and revitalize its petrochemical industry.

## 2.1 OBJECTIVE

The objective of this study is to provide a strategic assessment of the key elements of change expected in the petrochemical industry from the renewed acceptance and likely easing of sanctions in Iran. Before sanctions took hold and curtailed the development of the largely export oriented industry, Iran had ambitious plans to develop a world scale petrochemical industry. When this development stalled other Middle Eastern players took advantage of the opportunity. However, a re-emergence of petrochemical momentum in Iran would undoubtedly have implications for the rest of the Middle East industry and how it develops. Nexant looks at the current state of the industry in Iran and evaluates how it develops, assessing the real opportunities for investors and how this will impact the global markets.

The analysis provides subscribers with the key insights necessary to make informed decisions regarding the future opportunities in Iran.

## 2.2 SCOPE

This report analyzes:

- What is the impact of sanctions on the petrochemical industry?
- Assess current status of petrochemical assets and what would it take to complete these projects?
- Iran has the historic ambition to be the largest petrochemical producer in the Arab Gulf region, what to expect from the new sixth 5-year plan?
- With a largely export driven program, Iran is likely to have a major impact on the rest of the world, not only in terms of trade but also in terms of investment priorities. How will this play out?
- What is the most realistic assessment of how the industry will develop over the next decade?
- What is driving demand, (i.e., current and forecast growth) in the country?
- The cost competitiveness of these facilities will be key – how are they likely to compete? What is the most likely scenario for development?
- What will happen to domestic demand in the short to medium term? How will the domestic economy grow in this new era?
- What will be the impact on current and proposed GCC petrochemical projects, in terms of export market sales?
- What are the likely feedstock pricing mechanisms?
- How much feedstock is readily available and how quickly will natural gas infrastructure develop?
- What will be the role of international financing institutions?

## 2.3 REPORT PRICE

This prospectus describes Nexant's multi-client study "Strategic Assessment of the Future of the Iranian Petrochemical Industry", the scope of the proposed report, the methodology to be used, and Nexant's qualifications to perform such a study.

The study was completed in the fourth quarter of 2015.

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The study is managed and conducted by Nexant's Energy and Chemicals Advisory staff with extensive industry experience in petrochemicals, as well as, direct experience in the Middle East industry and specifically with experience in the pre-sanctions Iran industry.

Commercial information and forecasts are developed using Nexant's in-house databases including its award winning Nexant Global Industry Simulator tools, augmented by a program of regional fieldwork. Discussions are held with key industry and government officials in different regions to provide a thorough understanding of the dynamics of the current and future industry in the various countries.

Nexant's London, Bahrain, and Bangkok offices are heavily involved in this exercise. The insights are supplemented by experience gained from previous single and multi-subscriber studies carried out by Nexant's Energy and Chemicals Advisory division. The approach covers:

- A series of interviews with:
  - Ministries and government agencies
  - Local chemical companies (including personnel in marketing, technology, planning and manufacturing)
  - Feedstock producers and suppliers
  - Importers, distributors, traders and end-users
  - Engineering contractors and technology licensors
  - Industry and regional associations.
- Review of extensive in-house and published information on the GCC/Middle East and relevant global petrochemical industries. Nexant leverages on its widely popular and recognized globally Process Evaluation and Research Planning (PERP) program, PolyOlefins Planning Service (POPS) and Strategic Business Analysis (SBA) on methanol, ammonia and urea markets and technologies.
- Preliminary views on industry dynamics, macro-economic and country-related issues.
- Carrying out multi-faceted analysis to arrive at preliminary conclusions.
- Further fieldwork in the region is completed as necessary to supplement the analysis and clarify specific issues. Given the global nature of these businesses, all analysis are supported by professionals from Nexant's network of global offices.
- Nexant considers the lessons learned from other developing regions to test the initial findings and to further refine conclusions regarding the future likely direction of the industry.

#### 4.1 SCHEDULE

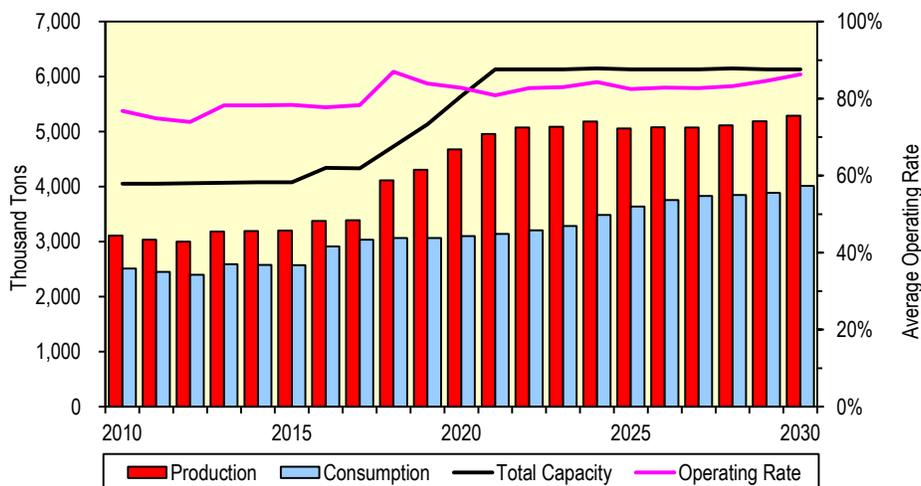
This study was completed in the end of fourth quarter of 2015.

## 4.2 TYPICAL DELIVERABLES

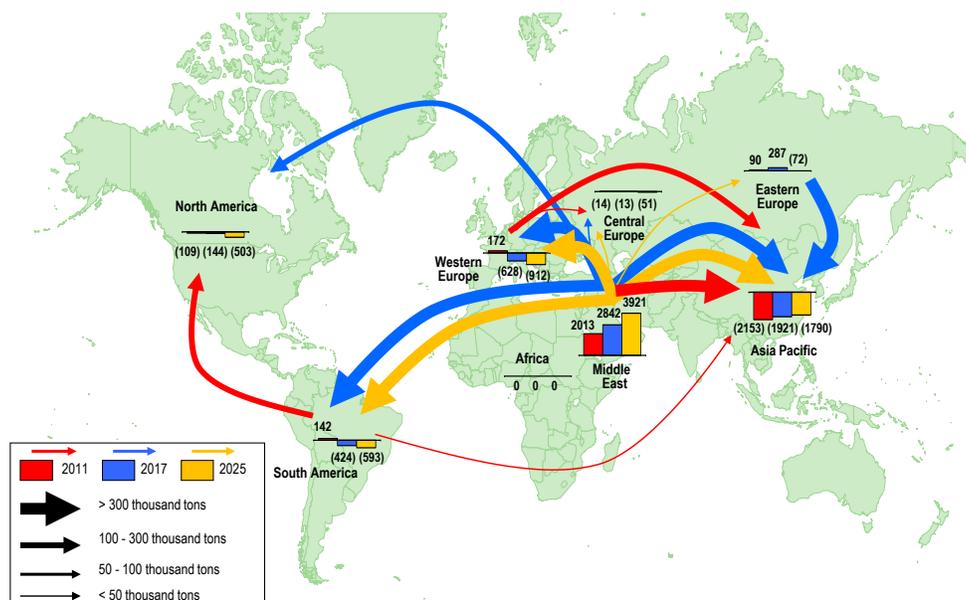
### 4.2.1 Supply, Demand, and Trade

Supply, demand, and trade for all products are provided for the regions under study. Commentary on the trade considerations are included in the section. Particular attention is given to reviewing the status of announced projects by NPC. Examples of typical outputs from supply, demand, and trade analyses are shown in Figure 4.1. An illustrative look at global trade flows is shown in Figure 4.2.

**Figure 4.1 Supply/Demand Trade Balance - Illustrative**  
(Illustrative)



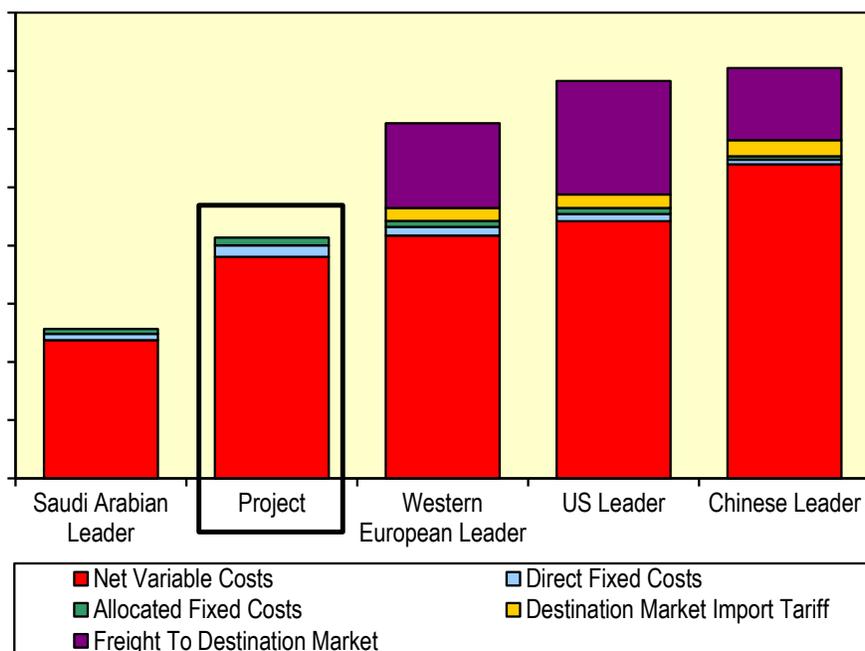
**Figure 4.2 Global Trade Flows**  
(Illustrative)



### 4.2.2 Delivered Cost Competitiveness

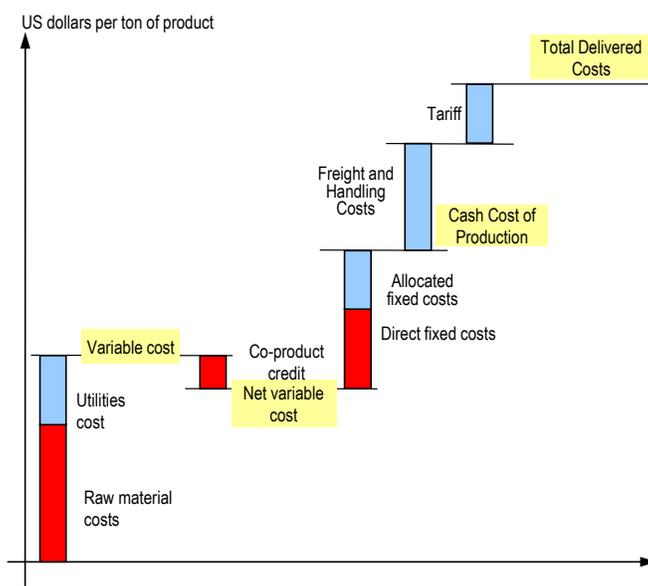
Nexant provides an analysis comparing the delivered cash cost from the proposed plants at reference destinations (on 2020 basis). A typical deliverable is shown in Figure 4.3.

**Figure 4.3 Delivered Cost Competitiveness to Destination Market**  
(Illustrative)



Nexant uses a standard pro-forma to calculate delivered costs. As Figure 4.4 indicates, the variable cost of production includes the costs of raw materials – feedstocks plus catalysts and chemicals – and utilities at cash cost or purchase cost, with a credit for co-products.

**Figure 4.4 Cost of Production Breakdown**



### 5.1 NEXANT ENERGY AND CHEMICALS ADVISORY

For over 40 years, Nexant's consulting professionals have helped clients by providing strategic advisory, technical and operations consulting services, and most importantly, privileged insights. The company has completed thousands of client assignments in more than 100 countries. Our clientele ranges from major oil and chemical companies, governments, and financial institutions to regulator and development agencies and law firms.

We are unique in our comprehensive focus on the entire energy, oil, gas and chemical sector. Staffed by over 150 seasoned industry experts, we understand the challenges facing senior management in the industries we serve. Our global consulting team brings together our collective technical, commercial and financial skills, who work closely and confidentially with our clients to address real world issues and identify opportunities that add value to their businesses. Our staff includes engineers, chemists, bio chemists, MBA's and seasoned business leaders from the sectors we serve.

Nexant provides a range of targeted consulting services from the initial assessment of corporate and business unit strategies to the development of actionable strategies, to advisory support in project finance and due diligence for mergers and acquisitions – all backed by deep knowledge of downstream oil & gas, petrochemicals, plastics, specialty chemicals and Clean Tech markets and products.

Significantly, Nexant has proprietary technology and commercial analysis, NexantThinking™ market data, which includes market dynamics and pricing forecasts, capacity developments and production cost economics.

Our purpose is to deliver subject matter expertise that gives a clearer perspective and to provide visionary thinking which allows our customers to be insightful and ahead of the competition

This can only be achieved through an unrivalled combination of:

- **Industry Knowledge** - our consultants all have extensive industry experience, and are engaged fulltime on identifying and addressing the challenges facing the Alternative Fuels, Petroleum/Gas and Chemical industry.
- **In-house Data** - we have an unrivalled database on the industry its technology and market dynamics, and employ teams of researchers to continually update this resource. Our NexantThinking™ products which can be accessed by subscribers, contains the core of this knowledge base covering the commodity chemicals and polymers plus a range of intermediates and specialties.
- **Proven and Tested Methodologies** - we have developed a range of methodologies to cover different types of assignments, such as feasibility studies, project finance support, privatizations, due diligence studies for acquisitions and financings, market and technology reviews. All of these have been tailored and continuously improved to suit the needs of the industry.
- **Technical Competence** - we continuously track the technical improvements in the industry and frequently review new process improvements for clients. Our NexantThinking™ Process Evaluation/Research Planning (PERP) product encapsulates some of this work and is available to subscribers. A core strength is our capability to provide independent support to the key issue of process technology selection.
- **Global Presence** - our permanent offices in London, Frankfurt, Bahrain, New York, Houston, Singapore, Bangkok, Kuala Lumpur and Shanghai will provide comprehensive coverage. In addition, we have long-term relationships with representatives or registered branch offices in most

major locations, including Beijing, Seoul and Tokyo. Nexant professionals have extensive experience in emerging markets such as the former Soviet Union and China, and our team of industry experts can work fluently in over ten languages.

- **Strategic Consulting** - we have been on the leading edge of many of the strategic initiatives in the industry, including major investments, acquisitions, consolidations, restructuring, and privatizations.
- **Thought Leadership** – We pride ourselves on identifying key issues at their formative stages and exploring options for the industry to capture any associated potential benefits.
- **Coverage** - across all relevant sectors. Our team can provide clients with a complete and holistic view of the sector and its place in the overall economy covering the entire hydrocarbon value chain.

**We are recognized for our quality and industry thought leadership:**

- Nexant is often quoted in the alternative fuels, petroleum/gas and chemical press on its views on markets and developments and team members are regularly called on to give expert papers at major conferences.
- Our team of experienced vice presidents is responsible for the quality of our work in their individual areas of expertise. They are expected to provide inputs to and supervise every assignment we undertake.

## 5.2 STUDIES IN IRAN

Before the international sanctions, Nexant has undertaken an extensive range of projects for petrochemical complexes with Iranian authorities. A short list of key examples is listed below:

**Feasibility Study of an Olefins Complex:** Nexant provided a market analysis for the main polyethylene grades, including pricing projections and supply/demand and net trade for main target regions. Nexant has also reviewed potential technology licensors and competitive advantages.

**GTL Market Opportunities:** Market evaluation of a potential gas to liquids plant in Iran. The market study provided essential inputs for the economic evaluation. The study objectives were the GTL supply potential, naphtha/diesel pricing projections and identify the major markets/customers.

**Evaluation of the Feedstocks and Petrochemical Industries in the GCC and Iran:** Nexant provided an historical and forecast review of feedstock (methane, ethane, propane, butane and condensate) and petrochemical availability in the GCC and Iran, as well as an overview of the refinery industry in the region. Crude oil production has also been reviewed, as well as the availability of feedstocks and intermediates from a regional chemical major.

**Prefeasibility Study of a Polyolefins Complex:** A major licensor and Industrial Projects Management of Iran commissioned Nexant to conduct a preliminary feasibility study of a potential gas-based petrochemical project. The project targeted production of ethylene and different grades of polyethylene.

**Business planning for NPC:** Nexant provided a business evaluation of the petrochemical industry in Iran. The study identified key sources of competitive advantage, country-related opportunities and challenges, as well as, a market analysis of a variety of petrochemicals.

**Prefeasibility study of a Vinyls project:** An Iranian petrochemical company and major technology licensor were considering a VCM/PVC project in Bandar Imam. Nexant provided a comprehensive market analysis, technology review, economic evaluation and project implementation milestones.

**Lenders Market Consultant of a S-PVC project:** A top tier commercial bank engaged Nexant as the independent market lenders advisor for a suspension PVC project in Iran.

For more information and to place an order, contact as follows:

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