



Vietnam Market for Oil and Gas Machinery and Services

By U.S. Commercial Service – Vietnam
June 2014

Overview

Unit: USD thousands

	2012	2013	2014 (estimated)	2015 (estimated)
Total Market Size	2,880,000	3,456,000	3,800,000	4,200,000
Total Local Production	1,440,000	1,728	1,900,000	2,100,000
Total Exports	N/A	N/A	N/A	N/A
Total Imports	1,440,000	1,728,000	1,900,000	2,100,000
Imports from the U.S.	425,000	600,000	660,000	720,000

The above statistics are in \$ thousands including equipment and services for the upstream, midstream and downstream segments of the oil and gas industry and are based on U.S. Census Bureau records and unofficial estimates.

Organization

Vietnam has great potential in oil and gas reserves. Oil and gas is one of the top priority sectors for development by the Government of Vietnam since it is viewed as central to national economic growth and energy security. The oil & gas industry is the country's biggest foreign currency earners and a major procurer of imported technology, services and equipment. PetroVietnam (also known as PVN), the national oil and gas group, is a leading state-owned economic group with revenue accounting for 20 percent of the nation's GDP and contributing to 25-30 percent of the state budget.

PVN holds a monopoly in the upstream, mid-stream and downstream areas of the industry. In 2013, PVN and its affiliates produced 16.71 million tons of crude oil and 9.75 billion cubic meters of natural gas, generating a combined \$36 billion in revenue. Out of 16.71 million tons of crude oil produced in 2013, PVN exported about 8.4 million tons with a turn-over of \$7.2 billion, a decrease of 11.9 percent compared to 2012. In 2014, PVN aims to produce 16.83 million tons of crude oil, 9.8 billion cubic meters of gas with total revenue of about \$32 billion.

PVN, in the restructuring scheme, plans to focus on the five crucial areas including petroleum exploration, exploitation and oil refining, gas and electric industries, and high quality petroleum services. PVN has applied state-of-the-art technologies to its projects to

enhance output, increase oil and gas recovery factors, and protect the environment and natural resources.

Industry

Upstream and Midstream



Map 1: Major Tertiary Basins in Vietnam
Source: PVN (<http://www.pvn.vn>)

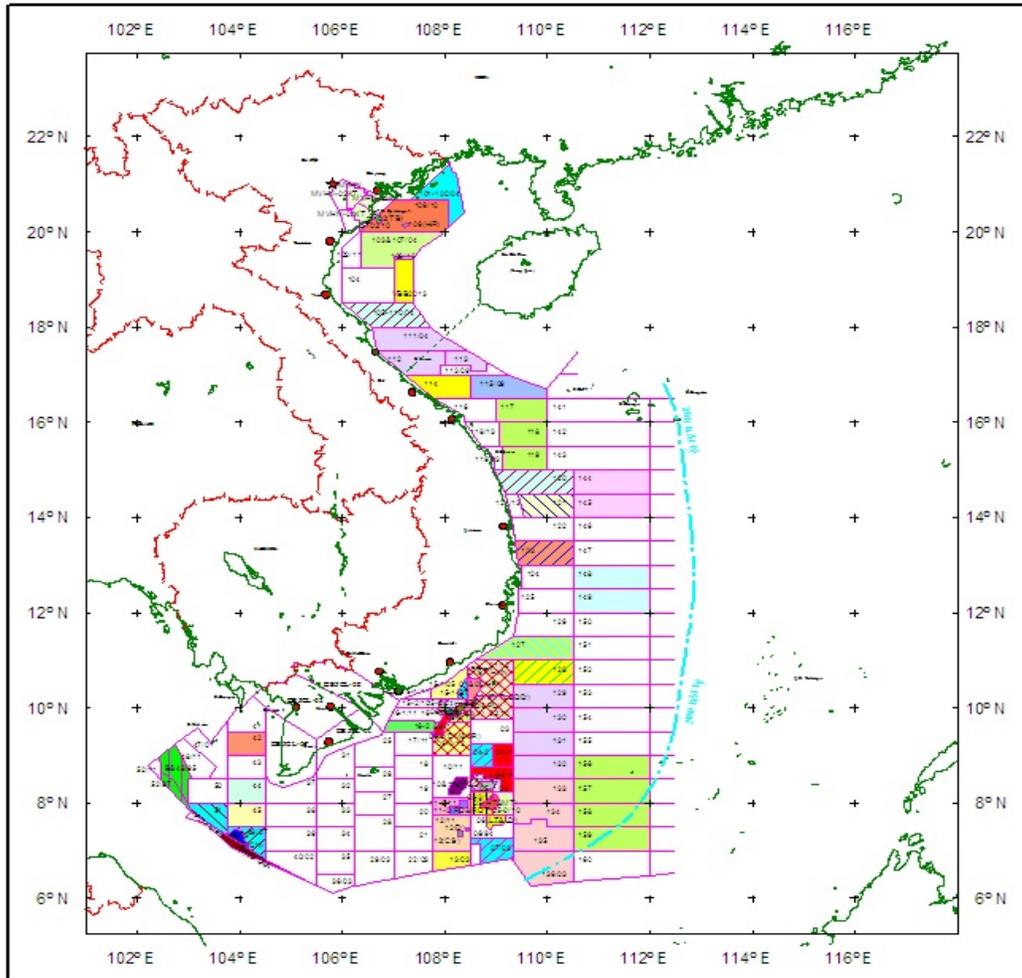
Vietnam's range of activity covers about one million sq km offshore, comprising six major tertiary basins including Song Hong, Phu Khanh, Cuu Long, Nam Con Son, Malay-Tho Chu, and Tu Chinh-Vung May (See Map 1). Of these, the Cuu Long and Nam Con Son basins have shown the most hydrocarbon potential.

To date, about 100 hydrocarbon-bearing prospects have been found in almost 50 fields, with estimated reserves of approximately 643 million tons of crude oil and 680 billion cubic meters (bcm) of natural gas (23 trillion cubic feet -Tcf). Among the 50 fields with oil and gas discoveries, there are 30 commercial fields. In 2013, five new oil and gas discoveries were found and nine fields were put into exploitation (See Map 2). The year 2013 marked Vietnam's exploitation of the 310 millionth ton of oil and the 90 billionth cubic meter of gas.

PetroVietnam has signed about 80 oil and gas exploration and production contracts with foreign companies in the form of Product Share Contracts (PSC), Business Cooperation Contracts (BCC), Joint Ventures (JV) and Joint Operation Companies (JOC).

In the medium term, oil production is expected to decline gradually due to the deteriorating performance of existing oil fields while other new discoveries will not offset this loss in production. PVN has been expanding exploration to boost reserves, including in foreign countries.

PETROLEUM ACTIVITIES IN CONTINENTAL SHELF OF VIETNAM



Cuu Long Basin

- 01.802 (HN) PCOSB
- 01.97&02.97 Lam Son JOC
- 01.110&02.110 FVEP POC
- 09-1 Vietsopectro
- 09-2 (CNV) Hoan Vu JOC
- 09-2.09 FVEP POC
- 09-2.10 FVEP POC
- 09-3 (DM-NR) VRJ JOC
- 09-3.12 VSP
- 15-1 (ST) Cuu Long JOC
- 15-1.05 FVEP POC
- 15-2 (RD) JVPC
- 15-2.01 (HSD) Thang Long JOC
- 16-1 (TGT) Hoang Long JOC
- 16-2 FVEP POC

Phu Quoc Basin

- 42 FVEP

Nam Con Son Basin

- 04-1 Vietsopectro
- 04-2 Pearl Oil Tephrite
- 04-3 Vietsopectro
- 05-1a (DH) FVEP POC
- 05-1b&05-1c Idemitsu
- 05-2&05-3 (HT&MT) Bin Dong POC
- 05-2.10 Talisman
- 05-3.11 TNK Vietnam
- 06-1 (LT & LD) TNK Vietnam
- 07.03 Premier Oil
- 10&11-1 (GC) Con Son JOC
- 11-2 (RD & RDT) KNOC
- 11-2.11 Murphy Oil
- 12W (CS & D) Premier Oil
- 12.11 VSP
- 13.03 Santos
- 129-132 Vietgazprom

Song Hong Basin

- 101&100.04 FVEP
- 102 (TB), 106 (HR) PCVL
- 102.110&106.10 FVEP
- 103&107.04 FVEP POC
- 105&110.04 ENI
- 111.04,112,113 Vietgazprom
- 114 ENI
- 115.09 Kris Energy
- 117, 118, 119 ExxonMobil
- 120 ENI
- 121 Origin Energy
- MVHN.12KS Mitra Energy

Tu Chinh-Vung May Basin

- 133&134 Talisman
- 135&136.03 Talisman
- 156-159 ExxonMobil

VBB-2013 (expanding)
Joint Exploration Agreement

Phu Khanh Basin

- 123 Santos
- 127 Mitra Energy VNPK
- 128 ONGC Videsh
- 144&145 Murphy Oil
- 148&149 FVEP

Malay-Tho Chu Basin

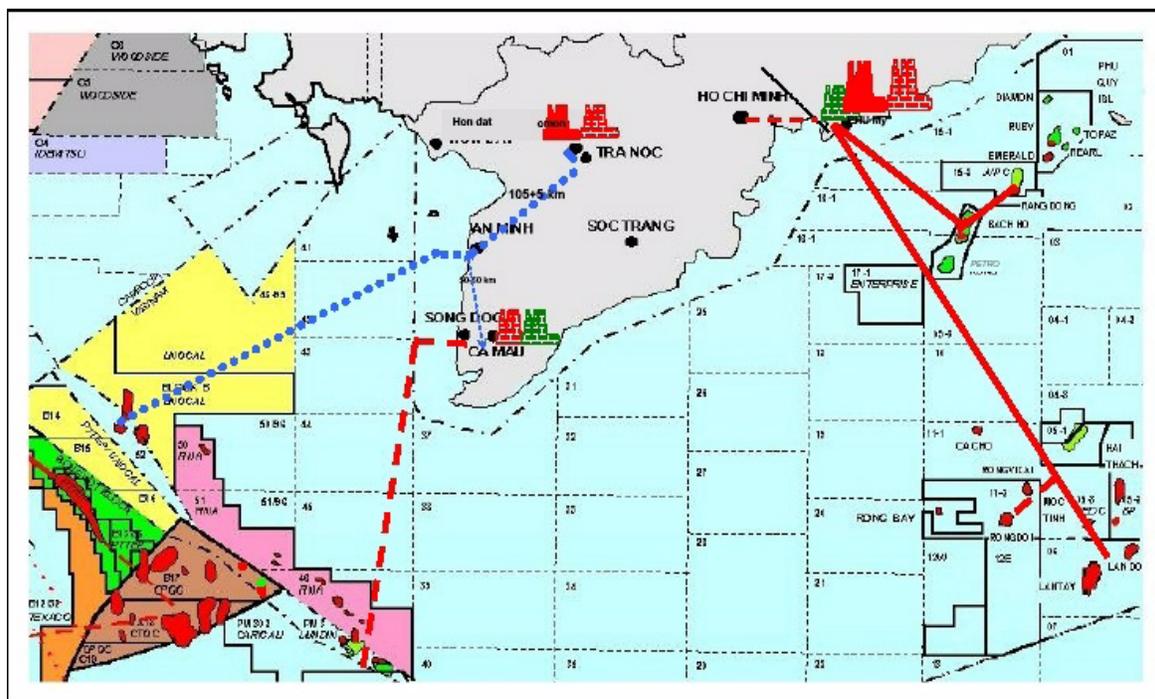
- 45 Mitra Energy VNMH
- 46 (CN) Talisman Vietnam
- 46.13 FVEP
- 46.07 Mitra Energy
- B & 48.95 Chevron Vietnam
- 51 Mitra Energy
- 52.97 Chevron Vietnam
- FMS CAA Talisman

PETROVIETNAM - April, 2014

Map 2: Oil and Gas Exploration and Exploitation Operations in Vietnam

Source: PVN (<http://www.pvn.vn>)

Gas production, however, is expected to rise significantly since several gas fields will be put in production in the near future. At present, about 85 percent of the natural gas produced in Vietnam is used for power generation, 10 percent for fertilizer and the remaining five percent for industries and households. Gas is transported via a network of gas pipelines from offshore gas fields to onshore processing facilities and power complexes (See Map 3.)



Map 3: Gas Pipelines (in red lines) and Projects (in blue lines) in Vietnam

Source: PVN (<http://www.pvn.vn>)

Along with three gas pipelines, Bach Ho, Nam Con Son and Ca Mau, PVN is building the fourth pipeline from the Gulf of Thai to O Mon in Can Tho Province, as well as the second Nam Con Son pipeline from the West Ocean and the Nam Con Son basin.

In 2011, PV Gas, Chevron Vietnam (U.S.), Mitsui Oil Exploration Company (MOECO) (Japan) and PTT Exploration and Production Public Company Limited (PTTEP) (Thailand) signed a Business Cooperation Contract (BCC) for the Block B Gas Pipeline Project. The Project, when completed, will transport natural gas from Block B&48/95 and Block 52/97, off the Southwest coast of Vietnam, with a capacity of 18.3 million cubic meters per day (equivalent to 6.4 billion cubic meters per year) to power plants at the O Mon Power Complex of Can Tho City (total capacity of 3,000 MW). This pipeline will also supply power plants and fertilizer plants in southernmost province of Ca Mau Province. However, the project has been delayed for years as Chevron and PVN have been unable to agree on the feed-in-tariff price.

PVN has mapped out a five-year plan from 2011-2015 with a combined revenue estimated at \$144.8 billion, producing a total of 90 million tons of crude oil and 51 billion cubic meters of natural gas. Vietnam's domestic demand for crude oil in the future is expected to increase,

especially as the country expands refinery capacity. The demand for natural gas is expected to continue to rise by 12.1 percent per year during the period 2011 – 2020, reaching 24.8 bcm in 2020. Southern provinces are expected to show above average growth due to new gas-fired power plants, fertilizer factories as well as industrial and commercial households. The completion of the gas industry infrastructure in the South and the formation of the infrastructure for the gas industry in the North and Central regions will ensure sufficient gas supply to the industries and public consumption. PVN's objective is to produce 17-21 billion cubic meters of gas a year by 2015, 22-29 billion cubic meters of gas and 3-4 million tons of LPG by 2025.

Downstream

PVN plans to expand the refinery and petrochemicals capacities and build supporting storage and supply systems. In the coming years, PVN will make more investment in expanding of the Dung Quat Refinery and construct Nghi Son and Long Son refineries and petrochemical complexes to bring up the total refining capacity to 16-17 million tons per year by 2015 and 30 million tons per year by 2025.

PVN started construction of its first oil refinery in 2005 at a cost of US\$3 billion with a capacity of 6.5 million tons per year in Dung Quat, Quang Ngai Province (Central Vietnam). PVN owns 100 percent of this refinery with French Technip as the EPC contractor using UOP technology. In 2013, the country's first refiner Dung Quat refinery produced 6.5 million tons of gasoline, liquefied petroleum gas, kerosene, diesel, jet fuel, fuel oil and polypropylene (PP). At present, Dung Quat Refinery supplies approximately 30 percent of the total country's petroleum demand. PVN plans to raise the capacity of Dung Quat Refinery from 6.5 million tons to 10 million tons at a projected cost of about \$3 billion. In order to execute its expansion plan, PVN has signed a framework agreement with the Russian Gazprom Neft for the expansion program.

A joint-venture (JV) amongst Kuwait Petroleum International (KPI, 35.1%), Japanese refiner Idemitsu Kosan Co. (35.1%) and Mitsui Chemicals (4.7%), and PVN (25.1%) was established in April 2008 to build an oil refinery and petrochemical complex in Nghi Son, Thanh Hoa Province in northern Vietnam. The EPC contract was signed in January 2013 and the construction started in October 2013. EPC Contractor is the consortium of JGC Corporation (Japan), Chiyoda Corporation (Japan), GS Engineering & Construction Corporation (Korea), SK Engineering & Construction CO., Ltd (Korea), Technip France (France) and Technip Geoproduction (M) Sdn.Bhd (Malaysia). The \$9 billion Nghi Son Refinery and Petrochemical complex will be able to process 10 million tons of crude oil per year when it is commercialized in quarter 3 of 2017. Its main products are liquefied petroleum gas (32 thousand tons/year), gasoline RON 92 (1,131 tons/year) and RON 95 (1,131 tons/year), diesel (2,161 tons/year), kerosene (1,441 tons/year), jet fuel (580 thousand tons/year), polypropylene (238 thousand tons/year), para-xylene (670 thousand tons/year), benzene (238 thousand tons/year) and solid sulfur (244 thousand tons/year).

Vung Ro Petroleum, a JV between Technostar Management Ltd (UK) & Telloi Group (Russia) will build Vung Ro refinery (in Phu Yen Province) - a \$3.18 billion oil refinery capable to refine eight million tons of crude oil per year. The investor has signed a technology copyrights

- Oil & gas equipment, accessories, chemical, services for the upstream, midstream and downstream segments
- Offshore enhanced oil recovery
- Deep-water development

Opportunities

Under its WTO commitments, the Vietnamese government has opened its oil and gas sector to foreign companies, which it hopes will bring in capital, expertise and technology to help achieve the country's major industry goals. According to Vietnam's Oil and Gas "Master Plan Toward 2015 and Vision to 2025", the industry will require an investment of US\$203 billion to achieve the goals set forth by the government for the 2006-2025 period. PVN is working to promote key projects below:

New offshore oil & gas exploration and production projects:

Song Hong Basin – Blocks 102/10 & 106/10

Song Hong Basin – Blocks 108/04 & 116

Song Hong Basin – Block 104

Phu Khanh Basin – Blocks 148 & 149

Onshore Mekong Delta – Blocks DBSCL-01, 02, 03 & 04

Nam Con Son Basin – Blocks 06/94, 22/03

Nam Con Son Basin - Blocks 19, 20

Nam Con Son Basin Blocks 28,29

Nam Con Son Basin - Block 05-2/10

Nam Con Son Basin - Block 10 & 11-1

Malay – Tho Chu – Phu Quoc Basin - Blocks 31, 32, 33, 34, 35, 36/03, 37, 38, 41, 43, 44, 47/01

Nam Con Son 2 Gas Pipelines: The Nam Con Son-2 gas pipeline project includes a 334 km offshore pipeline and 30 km onshore pipeline connecting gas fields in the Nam Con Son Basin, offshore southern Vietnam, with an onshore gas processing plant in the southern province of Ba Ria - Vung Tau. The gas plant will take 20 million cubic meters of natural gas per day from Hai Thach - Moc Tinh and Thien Ung – Dai Hung fields in the Nam Con Son basin to process condensate and liquefied petroleum gas (LPG). The pipeline is also planned to transport imported gas from other ASEAN countries to response to demand in the Southeast area of Vietnam. The EPC contract was signed between PVN and Vietsovetro (VSP) in May 2014. This \$1.3 billion project is expected to be operational in 2015.

Long Son oil refinery and petrochemical complex: This oil refinery and petrochemical complex in Ba Ria-Vung Tau Province needs an investment capital of \$8 billion and will be able to refine 10 million tons of crude oil per year. A consortium was set up in 2008. After many changes, it now comprises of PVN, Vinachem, Thailand-based SCG and Qatar Petroleum. Long Son oil refinery complex has a designed capacity of 1.4 million tons of olefins with a flexible grinding technology using ethane, propane and naphtha as input materials. It includes many other auxiliary components like a port, a wharf, warehouses and a power plant. Partners in the consortium are expected to secure capital for the \$4.5-billion project by the end of next year.

Four hundred hectares of cleared land area was handed to project owner in August 2013. The expected time of commercial operation would be after 2020.

Van Phong Oil Refinery: After six year having investment policy, this project has restarted the call for investment. The oil refinery in Khanh Hoa Province is developed with the investment of \$8 million to refine 10 million tons of crude oil per year.

Nhon Hoi Oil Refinery: The \$27.5 billion project based in the Nhon Hoi Economic Zone of Binh Dinh Province is invested by Thai state-owned oil & gas company PTT Public Company Limited to refine 30 million tons of crude oil per year. PTT has picked U.S. firm McKinsey Company as the consultant for project strategy management while Switzerland's Foster Wheeler is the consultant for technology and design. IHS Company is the consultant for trade, input crude oil sources and final products. Construction is expected to last five years and the project will be launched into operation in 2020.

Thi Vai LNG receiving and re-gasification terminal: This facility will be built in Cai Mep Industrial Zone, Ba Ria-Vung Tau province using utilities of LPG storage project and Jetty of Thi Vai Port with the capacity of one million mtpa. This project developer is working on the Front End Engineering Design (FEED) and additional geological survey for FEED. The investment capital is of approximately US\$246 million and the project is expected to come into operation in late 2017. PV Gas is working on the project's feasibility study. PetroVietnam offered foreign investors to buy up to a 49 percent stake in the Thi Vai LNG terminal.

Son My LNG receiving and re-gasification terminal: This facility will be built in Binh Thuan province. The project is expected to be completed in three phases. In the first phase, PV Gas will build a 1.8 million mt/year terminal by 2018 and start receiving gas in 2019 or 2020. The terminal capacity can be doubled to 3.6 million mt/year by 2020. In the second phase, the project capacity would be raised to 6 million mt/year by 2023 and to 9.6 million mt/year by 2026-2030 in the third phase. The total investment for the project is estimated to be more than \$1.3 billion. PV Gas is offering foreign investors up to a 49 percent stake in its second LNG terminal.

Trade Events

Oil and Gas Vietnam (OGAV) 2014

www.oilgasvietnam.com

Ho Chi Minh City, Vietnam, 22-24 October 2014

Organizer: Fireworks Vietnam Co., Ltd

Email: viet@asiafireworks.com

Tel: (+84-8) 3911-7400 | Fax: (+84-8) 3911-7401

Resources

Ministry on Industry and Trade (MoIT)

<http://www.moit.gov.vn>

Vietnam Oil and Gas Group - PVN

<http://www.pvn.vn>

Contacts:

For more information about the Vietnamese oil and gas industry, please contact:

Ngo Thuc Anh, Commercial Specialist
U.S. Embassy in Hanoi
E-mail: Ngo.Anh@trade.gov

Mr. My Tran, Commercial Specialist
U.S. Consulate General in Ho Chi Minh City
Email: My.Tran@trade.gov