
Company Brochure

THE COMPANY

Petroleum Development Consultants was formed in 1988 and is based in London with its excellent international connections providing an ideal base for its international operations. The company's activities concentrate on the oil and gas industry but also extend to considerations involving electricity generation. Our clients include the World Bank, the European Commission, the European Bank for Reconstruction and Development as well as many oil companies such as BP, British Gas and Shell. We have also worked for a number of state oil companies and large and small international oil companies.

KEY AREAS OF EXPERTISE

We have nine areas of core expertise, which reflect what we do and the experience of our staff and associates. We adopt a flexible approach to projects and are happy to co-operate with other consulting companies if this provides a better service to our clients. We list below our key areas of expertise.

Our **unique selling point** when comparing ourselves to our competitors is that we have the ability to provide a service across the oil and gas value chain Upstream and Downstream, from exploration, appraisal, development and production of an asset. Using geoscientists, reservoir engineers and process engineers we are able to link the subsurface to the surface linking the reservoir to the facility and using our downstream experts to the market.

- **Integrated Subsurface Studies**
- **Unconventional Resources**
- **Gas Market Development**
- **Reserves Certification**
- **Field Development Planning**
- **Project Management**
- **Exploration & Production Strategy**
- **Market Analysis**
- **Regulation & Liberalisation**
- **Due Diligence**
- **Expert Witness**
- **Negotiations**

Integrated Subsurface Studies

Utilising our geoscientists, reservoir engineers we can offer either an integrated solution to subsurface studies or when taken into its constituent part a G&G or reservoir engineering project.

Examples of our work are as follows:

- **Argentina** – Regional study of the Neuquén Basin to identify leads and prospects on an onshore block held by Repsol YPF
- **UK** – Reservoir simulation model of Triassic reservoir for an offshore oil field
- **Ivory Coast** – Peer review of clients reservoir model
- **Nigeria** – Asset evaluation of offshore gas field reviewing geological models, reservoir models, GIIP volumes
- **Papua New Guinea** – Asset evaluation of onshore gas field reviewing geological models, reservoir models, GIIP volumes
- **UK** – GAPS model of offshore gas field prior to tie back to production platform
- **Iran** – Reservoir model for the development of the BB heavy oil field

Unconventional Resources

PDC is rapidly building up its experience within the unconventional resources domain, examples of projects completed are as follows:

- **Colombia** – Formulating model contract and regulatory regime for the exploration and production of unconventional resources within the country. PDC carried looked at conceptual development scenarios for shale gas field to evaluate impact of high volume of drilling and fracing on the economics of the fields
- **Europe** – Field development planning for tight gas field later leading to EPC of the gas processing facilities
- **Poland** – Field development study and economic evaluation of the Siekierki gas field.
- **Europe** – Commerciality and development study of tight gas field with focus on evaluating well flow rate after fracing

Gas Market Development

PDC has worked extensively in the development of gas industries.

- **Kenya** – Advising National Oil Company of Kenya on improvement of E & P policy and particularly addition of specific gas terms

- **Tanzania** – PDC carried out a prefeasibility study for a pipeline to run along the coast of the country to monetise potential new discoveries and link them to market
- **Nigeria** - PDC reviewed LNG pricing trends for LNG sales contracts from Nigerian LNG for a group of banks financing this project.
- **Ireland** – Developed model of gas transportation pricing to support field development and working for Commission for Energy Regulation on distribution pricing
- **Vietnam** - PDC supported PetroVietnam with their negotiations with BP on the Nam Con Son gas field which lead to a \$2 billion investment in the country.
- **Israel** – Assisting the Natural Gas Authority on the development of the gas transportation and distribution industry
- **Ireland** – Supported the negotiation of a gas contract for offshore gas field with RWE Energy
- **Kenya** – PDC successfully completed a project for the Ministry of Energy which involved a LPG supply/demand for the East Africa region. PDC also provided a preliminary design for the necessary LPG import infrastructure.

Reserves Certification

PDC assists organisation both private and public to assist in reserves based lending or to satisfy regulatory obligations, examples of which:

- **Ivory Coast** – Competent persons report for a 1 billion barrel oil field offshore Ivory coast as part of a reserves based lending project
- **Mozambique** – Reserves report for two onshore gas fields as part of a reserves based lending project which raised US\$100 million
- **Tanzania** – As part of a project to commercialise gas reserves in the country PDC calculated resource figures for the commerciality of an onshore pipeline The clients were RAK Gas Tanzania and Tanzania Petroleum Development Corporation (TPDC)
- **Kenya** – As part of a project to improve E&P terms in the country PDC calculated the resource figures of undiscovered prospects

Field Development Planning

Examples of our work in this area are as follows:

- **Abu Dhabi** – Carrying out a project for ADMA-OPCO developing field plans for two large offshore oil fields in production for thirty years. Field development plans to cover the next 35 years of production.
- **Romania** – Managing design procurement of three onshore gas fields including production facilities, flowlines, compression and export pipeline.

- **Kenya** – Preliminary design of LPG import facilities including terminal/jetty, pipeline, storage facilities and bottling plants.
- **Argentina** – Prepared re-development plan for RepsolYPF for the Lunlunta-Carrizal field in production since 1950 concentrating on workovers and infill vertical and horizontal wells
- **Argentina** – Preparing re-development plan for RepsolYPF for the Pedras Negras oil field
- **Iran** – BB heavy oil development reservoir engineering for ONGC

Project Management

PDC's project management team has extensive experience in the supervision and coordination of multidiscipline engineering design, procurement and construction management teams and works closely with the clients to determine appropriate solutions.

Examples of our work include:

- **Romania** – Project managed the construction of the gas processing facilities of the Bilca gas field

Exploration & Production

Examples of our work in this area are as follows:

- **Kenya** – Advising National Oil Company of Kenya on improvement of E & P policy and particularly addition of specific gas terms
- **Australia** – Advising Government of Australia on tax issues regarding tax issues of offshore production
- **Oman** – Evaluation of potential of oil and gas acreage for large UK independent oil company

Market Analysis

We carry out a wide variety of market analysis covering in detail the oil and gas industries.

Examples of our work in Gas Markets are as follows:

- **Romania** – Leading development of three gas fields in northern Romania and carrying out gas sales negotiations
- **Ireland** – Supported the development of the Seven Heads gas field. Work included analysis of potential customers and evaluation of transportation pricing issues
- **Poland** – Evaluated the market for an onshore gas field and provided analysis of gas transportation systems and pricing. Prepared economic evaluations
- **Ukraine** – Carried out work on gas reform for Government/World Bank. Evaluated market development of gas reserves, Crimea for EU and EBRD. Gas market studies for JKX and other oil companies in Ukraine
- **Lebanon** – Evaluated potential gas and LNG supply options as part of Hydrocarbon Energy Strategy for Government/World Bank
- **Egypt** – Prepared study on the gas market for US independent oil company
- **Romania** – Evaluation of gas distribution companies being privatised

Examples of our work in Oil Markets are as follows:

- **Russia** – A number of studies have been carried out including a market study of potential oil and oil production exports through Tallin, Estonia on behalf of the purchaser of Estonia Rail. Study of oil and oil product exports from the Caspian through Poti Port, Georgia on behalf of the EBRD
- **Uganda** – Analysis of oil product market as part of a project on Downstream Regulation for Ministry of Energy/World Bank.
- **Lebanon** – Evaluated potential for rehabilitating two refineries or developing a new refinery as part of Hydrocarbon Energy Strategy for Government/World Bank
- **Croatia** – Evaluated oil and oil product storage requirements for IEA and EU
- **Ukraine**– Advised government on uses for the Odessa-Brody crude oil pipeline
- **Kenya** – Prepared LPG demand model for Ministry of Energy and completing preliminary design of required infrastructure

Regulation and Liberalisation

PDC has been at the forefront of developments in regulation and liberalisation for more than ten years. Examples of our work on Gas Regulation are as follows:

- **UK** – Acted as technical advisor to the Office of Gas and Electricity Markets (Ofgem) as part of the Price Regulation 2002-7 of Transco the monopoly gas transmission and distribution operator
- **UK** – Technical advisor to the Ofgem on gas transportation and distribution under long-term framework contract

- **UK** – Technical advisor to Northern Ireland Office for Electricity and Gas Regulation (OFREG) carrying out analysis of Phoenix Gas
- **Croatia** – Led project developing gas tariffs covering transportation, distribution and storage
- **Ireland** – Developed model of gas transportation pricing to support field development and working for Commission for Energy Regulation on distribution pricing
- **Pakistan** – Carried out evaluation of gas transmission and distribution capital expenditure and benchmarking for Office of Gas and Oil Regulation
- **Russia** – Assisting Ministry of Energy to develop scenarios for gas liberalisation on behalf of EU Delegation, Moscow
- **MEDA** – Mediterranean countries for EU led downstream gas reform workshops
- **Israel** – Assisting the Natural Gas Authority on the development of the gas transportation and distribution industry

Examples of our work on Oil Regulation are as follows:

- **Uganda** – Development of downstream quality and price model for Ministry of Energy/World Bank
- **Tanzania** - PDC carried out a project for Energy & Water Utilities Authority (EWURA) to provide assistance in implementing a bulk procurement system for gasoline, diesel and kerosene
- **MEDA** – Mediterranean countries for EU led downstream oil product and refinery reform workshops
- **EU** – Conducting study on European refinery air pollution and compliance with environmental regulation

Due Diligence

Examples of our work:

- **Russia** – Advising European Bank for Reconstruction and Development on providing funding for a gas processing facility in Siberia
- **Romania** – Advising Gazprom on acquisition of gas distribution company
- **Kyrgyzstan** – Advising European Bank for Reconstruction and Development on possible investment to fuel stations group
- **UK** – Advising major Australian financial company on oil storage facility acquisition
- **Mongolia** – Advising European Bank for Reconstruction and Development on possible investment to fuel stations group
- **Nigeria** – Technical consultant, privatisation of LPG bases for Bureau of Public Enterprise

- **Nigeria** – Technical consultant, privatisation of National Gas Company for Bureau of Public Enterprise

Expert Witness

PDC has provided expert witness services at a number of international courts including the Arbitration Courts in Stockholm, Copenhagen, Singapore and London.

Negotiations

PDC has led a number of successful negotiations on behalf of clients including:

- **Vietnam** – Acted as advisor to PetroVietnam in the negotiation of gas contracts with BP to develop the offshore Nam Con Son gas fields leading to total investment of \$2.5 billion
- **Ireland** – Supported the negotiation of a gas contract for offshore gas field with RWE Energy
- **Georgia** – Assisted in tariff negotiations for Baku – Georgia gas pipeline
- **Kyrgyzstan** – Led negotiations to sell 50% of the Kyrgyzstan Petroleum Company covering refinery, petrol stations and production acreage

SOFWARE USED WITHIN PDC

PDC uses the latest industry standard software:

3-D Field Geological Modelling:

- Petrel Schlumberger

Full Field Reservoir Simulation:

- Petrel RE/Eclipse Schlumberger
- IMEX CMG

Well Test Analysis:

- Interpret Paradigm
- Saphir KAPPA Engineering
- PanSystem Weatherford

Log Analysis:

- Interactive Petrophysics Schlumberger

Production Data Management & Analysis (Decline Analysis and Economics):

- OFM Schlumberger

Integrated Production Modelling (Reservoir, Well and Surface Network):

- IPM (MBAL, PROSPER AND GAP) & PVTP Petroleum Experts
- FORGAS/Wellflo/Pipeflo NEOTEC

Cost Estimation

- Questor IHSenergy

KEY STAFF AND ASSOCIATES

David Aron	David is the Managing Director of Petroleum Development Consultants with more than 25 years experience of the oil & gas industry. David is both a petroleum engineer and chartered chemical engineer; he was Chairman of the London Section of Society of Petroleum Engineers (2000-1) and published numerous papers on the oil & gas industry. A Fellow of the Institute of Petroleum and Institution of Chemical Engineers and a Member of Institution of Gas Engineers. He also works as an Expert Witness. He previously worked for Marathon Oil, Tricentrol and Bechtel.
John Bowers	John is a gas transmission and distribution engineer previously with British Gas and Bord Gais with wide international experience.
Malcolm Brierley	Malcolm Brierley is a geologist with more than 30 years international experience. He is a Fellow of the Geological Society and a Member of the Petroleum Exploration Society of Great Britain. He previously worked for Maxus Energy, Halliburton and Ikoda.
Chris Brown	Chris is a chemical engineer previously with Wood Mackenzie, Chem Systems and Esso who is also a refinery specialist.
Malcolm Groom	Malcolm is a qualified solicitor who has specialised in energy law for over 30 years. Since 2003, Malcolm has been practising as an independent international legal adviser specialising in oil, gas and liquefied natural gas (LNG).
Tim Howell	Tim is a geologist with a BSc Hons in Geology from the University of Wales, specialising in petroleum geology and geophysics.
Rita Jolly	Rita is a petroleum economist previously with BHP Petroleum.
Matthew Margot	Matthew is a chemical engineer with an MEng from Imperial College London.
Iyayi Osayi	Iyayi is a chemical engineer with an MSc (Eng) in Chemical Process Engineering from University College London (UCL), a BEng (Honours) in Chemical Engineering from University College London (UCL) and a BSc in Chemistry from the University of Port Harcourt, Nigeria.
Ismail Patel	Ismail is a geologist who worked previously with Geoservices and Deloitte Petroleum Services. He has an MSc in Petroleum Geoscience from Oxford Brookes University.
Mohamad Sirawan	Sirawan is a petroleum engineer who has graduated from Imperial College London. He has worked on a variety of projects in the Middle East and in the UK.

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