UNDERSTANDING
your operational objectives

TACKLING
your complex challenges

DELIVERING
your global success stories
The demand for reliable energy drives the continued search for oil and gas, as well as advancements in the methodology and efficiency of hydrocarbon development and distribution. Fugro’s people, expertise, equipment and technology are geared to these objectives, bringing agility, insight and value to every phase of your operation, wherever it is in the world.

**INTRODUCTION**

Fugro streamlines oil and gas exploration, development, production and decommissioning by providing an integrated package of services founded on critical knowledge and essential operational support.

All our activities are planned and executed with the highest focus and attention on safety. Our local expertise and global resource network deliver specialist disciplines, pioneering technologies and world-class services across each phase of your oil and gas project.

**THE FUGRO GROUP**

In diverse locations and environments, onshore and offshore, Fugro companies acquire and interpret earth and engineering data, provide specialist consultancy support, and assist in the design, construction and maintenance of the world’s infrastructure, buildings and facilities.

Fugro works with you, supporting each stage of your operation, from resource exploration and planning, through field development, to energy production and transportation. Our knowledge and resources are often key to the safe, reliable and responsible operation of facilities.
INTEGRATED OIL AND GAS SERVICES

From the initial feasibility and planning stages of an oil and gas project, through the development of upstream and downstream facilities, to the eventual decommissioning of assets and infrastructure, our integrated services, specialist equipment and support help optimise understanding and minimise associated risks.

LICENCE ROUNDS
Access to integrated, non-exclusive, data-rich, multiclient reports and digital datasets about known hydrocarbon basins; EEZ mapping; and UNCLOS survey support to facilitate economic appraisals.

EXPLORATION
Supporting exploration activities through seabed acquisition, metocean monitoring, drilling support and satellite positioning services.

FIELD DEVELOPMENT
A complete field development package, that includes the definition, acquisition, processing and interpretation of metocean, geophysical and geotechnical data, and design, geoconsulting, and facility installation support.

DEEPWATER FIELD DEVELOPMENT
In-depth assessment, knowledge and understanding of unique geohazard risks that are critical to the safe, economical development of deepwater fields and the design and installation of optimum structures and facilities.

PIPELINES
Data acquisition and interpretation; pipe-soil interactions; pipeline geotechnics, engineering and route planning; trenching and post-lay monitoring – a truly comprehensive appraisal.

CONSTRUCTION AND INSTALLATION
Specialist jack-up rigs, construction support vessels and ROVs, combined with positioning and construction expertise and industry specialists to provide seamless support.

PRODUCTION FACILITIES
Onshore and offshore ground condition analysis, engineering design of support structures, positioning and monitoring for the construction, installation and management of oil and gas facilities including LNG terminals, World-class IRM and engineering solutions supporting enhanced production and extended life-of-field.

DECOMMISSIONING
Production life assessments, decommissioning strategies, and the resources to remove infrastructure and reinstate production sites.
FIELD DEVELOPMENT

The right strategy is fundamental to developing prospects and realising project objectives in safe, economical and timely ways. Fugro provides detailed interpretations of surface and subsurface properties, allowing appropriate field development methodologies and support resources to be determined with confidence.

OUR EXPERTISE

From initial planning, to design and installation, we provide a uniquely integrated suite of services for oil and gas field development projects.

We acquire, process, assimilate and interpret geophysical and geotechnical data to define the properties of sub-bottom strata. Our geoconsultants assess potential geohazards and design risk-managed solutions.

Our environmental specialists assess, mitigate and monitor the impact on natural habitats and our metocean experts monitor weather and oceanographic conditions. Fugro also provides drilling, engineering, installation support and signal positioning.

BENEFITS OF WORKING WITH FUGRO

Fugro understands the complex challenges and business objectives associated with oil and gas field developments. This makes for a smoother integration of operational personnel, accelerated project schedules and significant efficiency gains.

We contribute vital insight, ingenuity, resources and infrastructure to help you conceive and deliver assured integrated economic solutions anywhere in the world.
FIELD DEVELOPMENT SERVICES

Throughout the development of an oil and gas field, we obtain, interpret, model and utilise data that contributes to a clearer understanding of geological, geophysical and environmental conditions. This enables our clients to evaluate strategies and proceed with solutions based on reliable measurements and assessment.

CONCEPT PLANNING
Fugro screens, assesses and models data, evaluating the results and providing scenario simulations.
We manage risk and provide a complete suite of services that inform the economic evaluation of both the field and required development assets.

- Regional hazard screening
- Geoconsulting services
- Metocean studies, forecasts and monitoring
- Environmental surveys and impact assessments
- Petroleum Operations Notices
- Oil pollution emergency planning

DEFINITION AND DESIGN
Fugro’s advice and acquisition of precise data relating to selected concepts, ensures that production facilities and associated infrastructure are appropriate to the conditions of the site.

- Strategies and life-of-field programs
- Gas hydrate investigation and scientific drilling
- Geohazard risk analysis
- Survey design
- Geophysical surveying, processing and evaluation
- Marine mammal monitoring
- Metocean data acquisition, processing and evaluation
- Geotechnical data acquisition, processing and evaluation
- Laboratory testing
- Pipeline route optimisation
- Foundation engineering

CONSTRUCTION AND PROJECT SUPPORT
Fugro provides an extensive range of construction and project support services.

- Well design optimisation, formation integrity testing and drilling
- Subsea template and infrastructure installations
- Flowline pulling and connections
- Xmas tree running
- Pilot hole drilling, top hole drilling and installation
- Pipeline route surveys, lay monitoring and as-laid profile analyses
- ROV intervention and inspection
- Environmental inspection and monitoring
- Metocean measuring and monitoring
- Weather forecasting
- Offshore positioning
- Data management
- Pile installation monitoring and load testing
Planning, constructing, installing and maintaining onshore and offshore pipelines involves several specialist disciplines. Fugro acquires and processes the necessary data to guide each step of the process, including the logistical and political constraints that may exist. We turn acquired data into meaningful analyses for designers, construction companies and maintenance experts.

**OUR EXPERTISE**

Fugro is an integrated source of engineering advice, advanced data acquisition and multidisciplinary expertise, ideally suited to supporting the pipeline industry.

Our capability to analyse satellite imagery and perform aerial, land and marine surveys using the latest measurement and mapping technology, assists initial site and route selection. Our geological assessments and soil investigations confirm route suitability, facilitate engineering design and aid the selection of construction techniques. Our offshore services support the installation, burial and monitoring of pipelines. Our environmental specialists assess and mitigate the impact on natural habitats and our metocean experts monitor weather and oceanographic conditions.

**BENEFITS OF WORKING WITH FUGRO**

From the tropics to the Arctic, both onshore and offshore, Fugro delivers a comprehensive pipeline service portfolio comprising multiple integrated disciplines, coordinated and managed by a single project team.

From concept definition, routing and environmental permitting, through FEED and construction, to operations and maintenance, our quality data, geoconsultancy and management provide support across the entire lifespan of a project.
Fugro helps you to confidently design, position, install and maintain your pipeline infrastructure. Both onshore and offshore, we apply experience and understanding, innovation and technical competence in order to recognise and overcome the challenges associated with bringing oil and gas from production assets to end-users.

**CONCEPT DEFINITION**

Fugro provides initial desktop studies, feasibility work, initial permitting and comprehensive pipeline route assessments for onshore and offshore pipelines.

- Environmental Impact Assessment
- Petroleum Operations Notices
- Oil pollution emergency planning
- Geographical Information Systems (GIS) and data management
- Photogrammetry and remote sensing
- Airborne LiDAR mapping topography and bathymetry
- Pipeline planning and routing
- Geohazard surveys and risk assessments to assist pipeline routeing
- Digital modelling, data interpretation and integration

**DESIGN AND CONSTRUCTION**

Fugro provides advanced data gathering, processing and interpretation; risk assessments and design expertise that, together, help in the development of construction solutions and techniques.

- Survey permit requirements and drawings
- Hydrographic, topographic and AUV survey
- Subsea pipelay and installation support
- Geophysical surveys
- Geotechnical data acquisition
- In situ pipe-soil interaction evaluation
- Pipeline alignment design surveys
- Offshore pipeline burial assessment
- Pipe-soil interaction and trenching assessments
- Construction site survey and measurement
- Precise signal positioning
- Metocean services
- ROV pipe-tracking and data processing
- Environmental inspection and monitoring

**OPERATION AND MAINTENANCE**

Fugro provides monitoring and pipeline inspection surveys designed to ensure the stability, integrity and safe operation of infrastructure. We also maintain an up-to-date GIS asset database to facilitate project communications.

- Regulatory services
- Pipeline inspection surveys
- Remedial pipeline burial/re-burial capability
- Geohazard monitoring using remote sensing and in situ techniques
- Depth of cover analysis using LiDAR and Geopig
- Subsea IRM
- Ground motion trends
- Data management and visualisation
PRODUCTION FACILITIES

Sustaining oil and gas production levels and limiting downtime involves a rigorous process of inspection, repair and maintenance, with safety and environmental issues at the forefront of operations. Across the entire life of field, Fugro delivers data and support services that optimise and enhance production efficiency whilst minimising the potential for adverse events.

OUR EXPERTISE
Fugro builds on the knowledge gained at the field development phase of an oil and gas project to provide ongoing support throughout the operational life of facilities.

We also provide essential data and consultancy advice for downstream infrastructure and onshore facilities.

BENEFITS OF WORKING WITH FUGRO
We understand the logistical, safety, environmental and economic factors that influence the production and export of oil and gas.

We know how to tackle the complex challenges associated with optimising performance and ensuring the integrity of facilities. We are committed to delivering quality data and advice across all upstream and downstream activities, integrating and consolidating knowledge to help you achieve economic and operational success.
PRODUCTION FACILITIES

Fugro carries out the vital surveys, assessments, inspections and technical assistance that informs the establishment of production and processing facilities, as well as their safe and reliable operation over the long term.

PRODUCTION
Fugro provides support through positioning, monitoring and IRM services across the entire production phase.

- 4D seismic data acquisition, processing and interpretation
- Surface and subsea positioning
- Stand alone navigation
- Positioning, navigation and berthing aid systems
- Vessel performance monitoring
- Online structural integrity monitoring
- Subsea inspection, repair and maintenance
- Well abandonment support and decommissioning strategies
- Environmental Impact Assessment
- Petroleum Operations Notices
- Oil pollution emergency planning
- Oil spill forensics analysis
- Produced water analysis
- Site-specific weather forecasting
- Real-time metocean monitoring
- Infrastructure recovery
- Post-abandonment surveys and site inspections

FACILITIES
Fugro specialists aid the safe design, construction, operation and maintenance of onshore and nearshore terminals, refineries and petrochemical plants, as well as pipeline networks and other facilities for the distribution of natural gas and petroleum products.

- Airborne surveys
- Geohazard risk assessments
- Geophysical and geotechnical data acquisition and interpretation
- Marine mammal monitoring
- Foundation and geotechnical engineering
- Metocean design criteria and measurement studies
- Pipeline planning, infrastructure design and routing
- Laser scanning for dimensional design surveys
- Construction support services
- Environmental Impact Assessment
- Petroleum Operations Notices
- Oil pollution emergency planning
- Hull loadings and fatigue measurements
- Structural monitoring and remote sensing
- Through-life inspection and surveys

LNG/LPG
Fugro conducts onshore and offshore surveys to determine the soil and hydrographic conditions at proposed LNG/LPG facilities. We gather and analyse vital data and make recommendations that guide the design and construction of land and marine facilities.

- Bathymetric and geophysical surveys and services
- Marine mammal monitoring
- Geotechnical sampling and analysis
- Geotechnical engineering services
- Real-time metocean monitoring
- Environmental Impact Assessment
- Petroleum Operations Notices
- Oil pollution emergency planning
- LNG tank foundation design, settlement analysis and soil improvements
- Vessel positioning
- Structural monitoring
At the end of a field’s production life, Fugro has an important role to play in the removal and disposal of assets and infrastructure. Our survey, analysis, monitoring and consultancy services provide insight and guidance, whilst our vessels, equipment and technicians support the entire decommissioning process.

**OUR EXPERTISE**

From cessation of production and abandonment strategies, to the removal of infrastructure, site restoration and long-term monitoring, our experience, expertise and resources combine to help optimise all phases of decommissioning.

With a global fleet of observation and workclass ROVs, dedicated vessels, diver support and environmental experts, we have the logistical resources as well as the planning and project management expertise to deliver project-wide support.

**BENEFITS OF WORKING WITH FUGRO**

Fugro works closely with clients and draws on extensive international experience to identify and advise on tenders and implementation planning for each decommissioning project.

We provide integrated project management, marine survey, subsea inspection, intervention, well abandonment, metocean and positioning services utilising state-of-the-art technology and dedicated, highly trained personnel. All Fugro projects are planned and executed with an uncompromising focus on safety, efficiency and reliability.
FIELD DECOMMISSIONING SERVICES

We offer a multi-disciplinary set of integrated offshore services for the safe and efficient decommissioning, abandonment and removal of oil and gas infrastructure from the surface to the seabed. Thereafter, you can use our services to help restore and provide long-term monitoring and reporting of decommissioned production sites.

PREPARATORY INVESTIGATIONS
We provide detailed assessments of existing site characteristics and anticipate the impact of proposed activities, combining acquired data with known operating envelopes to plan and execute abandonment activities safely and cost-effectively.

- Desk studies, field environmental surveys, site investigations and impact assessments
- Environmental surveys and assessments
- In-house analysis of sediments by chemical and biological laboratories
- Initial scoping, cuttings pile mapping and characterisation
- Preparatory works for consent and regulatory approval
- Geohazard assessments and geotechnical consultancy for subsea and seabed infrastructure
- Engineering simulation and planning tools
- Tow-route criteria, heavy-lift planning and site-specific weather forecasts

DECOMMISSIONING AND REMOVAL
With our own fleet of vessels, specialist equipment, trained personnel and industry-leading technologies we are equipped to tackle the most challenging and environmentally-sensitive activities.

- Advanced technology to guide and monitor decommissioning activities
- Installation and dive support vessels for IRM activities, pre-clearance support and for cutting and removing subsea production infrastructure
- Visualisation and mapping tools to prepare cut plans and to track cutting, removal, transit and storage operations in real time offshore
- Work-class and observation ROVs with dedicated vessels and crews
- Real-time measurement and monitoring of oceanographic and meteorological parameters
- Monitoring of structural behaviour during towing and lifting
- Monitoring of fixed structures during abandonment phases
- Detailed field reports to track resources and monitor operations as they happen

CONTINUING LIABILITY
We engage in the ongoing monitoring of decommissioned production sites for regulatory compliance and integrity assessment.

- Integrity management – periodic inspection, maintenance and stabilisation operations of all remaining subsea and seabed infrastructure
- Survey vessels and crews for ongoing geotechnical and geophysical surveys, as required
- Post-decommissioning environmental surveys and monitoring