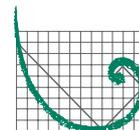


Sustainable Solutions for the Oil and Gas Industry

The world's leading sustainability consultancy

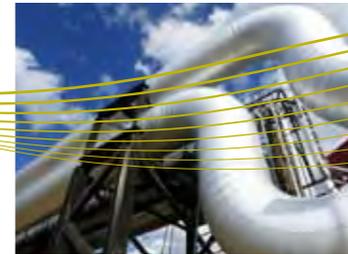
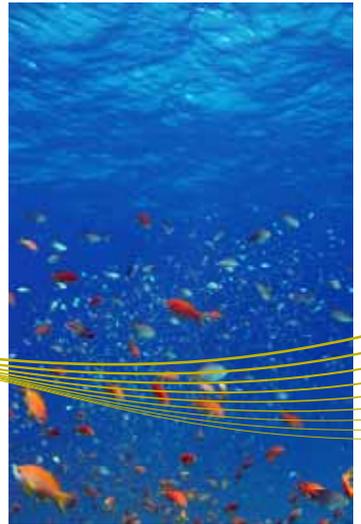


ERM

The oil and gas industry currently faces the greatest environmental, health and safety challenges in its entire history

ERM is a leading global provider of integrated environmental, health, safety, risk and social consulting and sustainability-related services. We support the oil and gas industry across the entire spectrum of operations, delivering innovative solutions and helping clients to understand and manage their business risks. Established since 1971, we have 140 offices in 39 countries and employ over 5000 people.

Our extensive track record and industry knowledge enables us to deliver world class sustainable solutions to the complex challenges of exploration, production, refining and retail of hydrocarbons.



Industry increasingly recognises that a sustained licence to operate requires the management of non-technical risks



ERM's Oil and Gas Services

Sustainable Strategy and Transformation Services

Development and implementation of strategies, programmes and tools for sustainable businesses.

Transaction Services

Supporting successful business mergers and acquisitions.

Impact Assessment and Planning

Achieving project approvals by assessing and managing environmental, social and health impacts, obtaining permits and supporting stakeholder engagement.

Air Quality and Climate Change

Proactively addressing air quality, energy efficiency and carbon management challenges to enhance shareholder value.

Contaminated Site Management

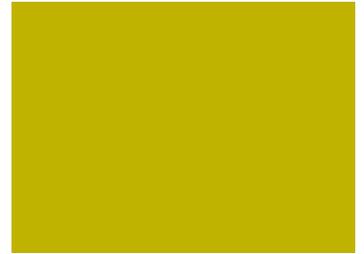
Helping clients better manage their contaminated sites, mitigate liability and realise value.

Performance and Assurance

Helping corporations reach their SHE performance potential.

Risk Management

Quantifying and managing the safety risks associated with hazardous installations and processes with the objective of protecting people, assets and the environment.



What we find...

Sustainability

If employees are not asking themselves on a more or less constant basis 'how could this project or operation be done more sustainably?' then you have probably not managed to embed sustainability into your organisation. The early integration of non-technical risk assessment into business planning and the proportionate management of those risks in project implementation will aid not only a more sustainable approach, but also a more cost-effective one.

Information Management Systems

In our experience companies that have high standards of SHE performance have sophisticated information systems that deliver timely and accurate data. They share information on incidents and accidents across their global operations (and learn

from them) within days of them happening. Shareholders are also demanding more information to reassure them that the companies they are investing in are managing their risks.

Dealing with Contamination and Spills

If the oil industry wants to operate in environmentally sensitive locations then it needs to demonstrate a superb record of preventing contamination and cleaning it up responsibly wherever it occurs on land or at sea. Increasingly clients are adopting sustainable remediation as the most cost-effective way of dealing with contaminated sites.



The Importance of Stakeholder Consultation

Many oil and gas projects get delayed because of adverse reaction from the local community. A 'tick box' approach to community consultation – the lack of a social licence to operate – can do more damage than no consultation at all. In our experience, early, professional and well directed community consultation can achieve huge positive results not just for the initial phases of the project, but if handled correctly, for the duration of the venture. Concerns about the costs and resources required to ensure effective community engagement typically disappear at the first signs of community backlash.

Effective Auditing

Many organisations invest substantial resources into their auditing programmes which are used to reassure management that risks are being managed properly. After several years, auditing programmes

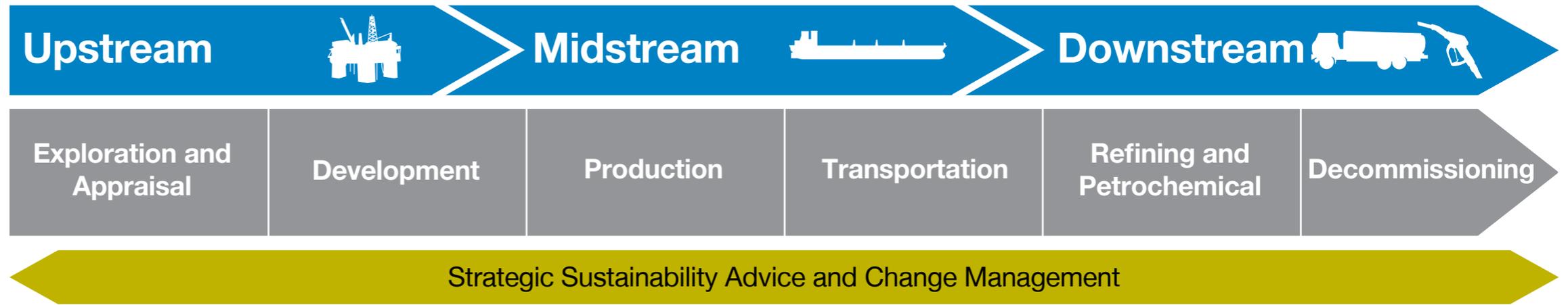


can become stale and the results taken less seriously with findings left unresolved. When this happens, in our experience it is time to start again and return to basics with an effective, authoritative programme that deals with measurable performance improvement.

Risk Management and Safety Culture

Identifying, assessing and managing risk from the start of every project or operation is the key to success. We also find that a strong health and safety culture delivers greater efficiency and productivity. When standards start to be ignored and less attention is paid to working safely, the culture can deteriorate quite rapidly. In our experience maintaining high levels of safety performance is hard work - it needs to be recognised and reinforced in every operation in everything that is done, all the time.

ERM provides services across the entire oil and gas value chain



<p>Transaction Services</p> <ul style="list-style-type: none"> • M&A due diligence • Evaluation of potential liabilities • Quantification and management of risk • SHE due diligence • Project financing (Equator Principle reviews) • Analysis for bankruptcy, reserves, provisioning, Asset Retirement Obligations and financial reporting • Carbon and energy due diligence • Post-merger integration support • Management system, SHE culture, gap analysis and benchmarking • Social, stakeholder and sustainability assessment • Deal negotiation support 	<p>Impact Assessment and Planning</p> <ul style="list-style-type: none"> • Strategic and economic assessments • Environmental planning and environmental impact assessments • Oil Spill Preparedness • Environmental mitigation actions • Social impact assessment and management plans • Environmental management plans • Integrated environmental, social, health impact assessments • Site selection • Best Available Technology (BAT) studies • Best Practicable Environmental Option (BPEO) studies • Biodiversity and ecosystem services and other specialist advice 	<p>Performance Assurance and Operation Risk Management</p> <ul style="list-style-type: none"> • Air quality and noise • Water wastewater and water management • Environmental management information systems (EMIS) • Auditing and verification • Management systems • Compliance auditing • Health and safety • Risk management • Safety culture • SHE cases • SHE management systems • Safety culture transformation • Reliability/Availability analysis • HAZID/HAZOP 	<p>Contaminated Site Management</p> <ul style="list-style-type: none"> • Site investigation and remediation • Strategies for contaminated sites • Construction management services • Decontamination, decommissioning and demolition • Water, wastewater and waste management • Sustainable remediation 	<p>Air Quality and Climate Change</p> <ul style="list-style-type: none"> • Climate change risk, adaptation, mitigation strategy and implementation • Emissions inventories • Air pollution dispersion modelling • Hazardous air pollutant compliance programmes • Water sustainability • Energy auditing • Supply chain management • Reporting, assurance, communication & branding • Stakeholder engagement & local communities • Life cycle assessment (LCA) and life cycle management • Carbon and water footprinting
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Helping organisations manage their impacts on communities and the environment and create value for all stakeholders



Case Studies

Sustainable Operational Excellence, Global

ERM undertook an inquiry into the state of safety and Sustainable Operational Excellence – sustainably safe, reliable and compliant, especially in high hazard operations. The scope was global, targeting operations and corporate centres alike. It revealed deep insights into underlying performance challenges faced at Group, Regional and Asset levels throughout the operations of a global organisation. The insights were used to create and implement a comprehensive 3-year organisational transformation plan and were described by the client as “deepest dive we ever done into operational effectiveness, leadership and culture”.

Contractor Safety Programme, Caspian Region

The client had a significant number of contractor companies working in design and construction phases to complete on and offshore production and processing facilities. ERM worked with 300 supervisors to enhance their capabilities to ensure that their teams work safely. We assessed their competencies, provided mentoring support and recommendations on how to build supervisor competencies.



Waste Management and Best Practicable Environmental Option (BPEO), Algeria

ERM reviewed the current arrangements for the management, storage, treatment and disposal of wastes arising from two large oil fields. We developed a waste inventory and undertook a review of treatment options, followed by a BPEO assessment. A Waste Management Action Plan was prepared with detailed recommendations for the management of priority hazardous wastes.

Investigation and Remediation of a Former Oil Refinery Site, UK

ERM undertook extensive site investigations, quantitative risk assessments, regulatory liaison, remedial action plan development and implementation of remedial works (including asbestos removal) on this 400ha site. The strategy focused on turning an environmental liability with its perceived industrial blight into a saleable property suitable for a major redevelopment, preventing the site's designation as contaminated land. Successful remediation led to the sale of the land to a third party.

Development of a Greenhouse Gas Inventory and Electronic Tool, Caspian Region

ERM's client is the operator of one of the biggest oil and gas fields in the world. ERM undertook the preparation of a GHG emissions inventory in accordance with best practice methodologies and reporting guidelines and developed an electronic calculation and tracking tool to help monitor GHG performance.



Environmental, Social and Health Impact Assessment (ESHIA), Russian Arctic

ERM undertook an ESHIA to international lender standards to enable this high profile offshore gas condensate field development to secure project financing. This involved a comprehensive social baseline survey, a Health Impact Assessment and an ecosystem services approach to assessing biodiversity impacts. We developed a Stakeholder Engagement Plan which established the basis for the client's ongoing consultation programme, as well as a detailed Best Available Techniques (BAT) assessment of technology employed on the offshore production station.

Energy Efficiency Audits and Carbon Footprint, Europe

The brief was to focus on immediate energy efficiency improvements which would simultaneously support a prioritised programme of capital investment in large plant upgrades to deliver further improvements. ERM undertook an audit of two upstream field clusters, identifying a 7.5% saving which required no investment or low investment and reducing lifting costs by approximately 2.6%. A compelling business case for the programme was developed, which provided detailed cash-flow calculations and demonstrated that the investments would be entirely funded from savings within the financial year. A carbon footprint was also developed, along with a programme of work to extend the audit process across all onshore operations.

Implementation of an Operations Safety Case, West Africa

ERM helped to implement an Operations Safety Case for a Floating Production, Storage and Offloading (FPSO) vessel used to develop several subsea wells and two production loops offshore Western Africa. The scope included design of formal safety assessment studies; creating an electronic safety case for operations; development of performance standards for safety-critical systems and procedures with clear linkage to the maintenance management system; development of bow-tie diagrams for major accident events and; development of SHE support for operations preparedness.

Vendor Environmental Due Diligence Assessment (EDDA) of a Refinery Site, Europe

The objective of the EDDA, which included Occupational Health & Safety as well as Process Safety auditing, was to identify areas of potential environmental concern including potential soil and groundwater impacts, environmental compliance issues, process safety and potential asset retirement obligations. The results were used to address potential liability issues and associated cost estimates during the negotiation process of the planned acquisition and provide a data basis for management of environmental issues in the post acquisition integration phase.

Unconventional Gas Environmental and Social Constraints Screening Assessment and Regulatory/Permitting Support, Eastern Europe

ERM was engaged by three oil and gas companies to undertake a Constraints Screening Assessment for exploratory drilling, development and production activities associated with a portfolio of shale gas concessions. The project also included compilation of the SHE regulatory boundary conditions in the specific countries, clarification of the permitting requirements and Environmental and Social Impact Assessments. Documents were prepared for submission to the regulatory authorities to apply for variations to the concession licences, to allow seismic work within Natura 2000 areas.

Quantifying Value Erosion due to Sustainability and Fixing the Problem

ERM assessed the business impact of 'sustainability' issues (environmental performance, community relations, regulatory relations etc) on the global upstream portfolio of an oil and gas major. We worked closely with the finance function, asset managers and leadership team to quantify the impact in terms of net present value erosion, in particular through schedule delays. We identified multi-billion dollar value erosion and helped the business leaders understand that 30% of these losses could have been avoided if underlying sustainability performance was addressed early on in the project development lifecycle. ERM is now helping this client to drive a major change programme to fully integrate sustainability thinking as a business value driver.



Working alongside major oil and gas companies in the harshest conditions to deliver sustainable solutions



Why ERM?

- Strong client focus
- Global coverage, local knowledge
- Highly motivated and qualified
- Helping clients maximise opportunities to grow and diversify businesses
- Full range of SHE services
- Multi-disciplinary teams
- Delivering solutions at project and corporate level
- Wide range of in-house technical expertise and resources
- A proven track record
- Cost-effective solutions
- Consistent quality



Maximo Hernandez

Global
maximo.hernandez@erm.com
+1 281 600 1149

Ian Loveday

Europe, Middle East and Africa
ian.loveday@erm.com
+44 20 3206 5292

Mark Watson

Asia Pacific
mark.watson@erm.com
+61 8 9321 5200

Trey Shaffer

Americas
trey.shaffer@erm.com
+1 281 600 1016

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