

Sustainable Solutions for the Power Industry



The greatest challenge facing the power sector is to diversify and increase supply capacity to meet the needs of the 21st century.



Global trends and challenges in the power sector

The world's economies, whether emerging or developed, depend on the availability of reliable low cost power. The power sector is navigating a series of changing market forces such as the competition between low cost gas and renewable sources of energy.

There are two main challenges facing the power industry:

- Providing electricity to the population of the world's emerging economies while modernizing the transmission and distribution system in the world's developed economies
- Ensuring the reliable delivery of energy in a world wanting to move to renewable and storable forms of energy while leveraging distributed generation technology and resources

These challenges are compounded by the ambition to de-carbonize power generation while remaining cost-effective and mitigating climate impacts.

We help our clients address these demands in a number of ways, including:

- Support with entering new markets by assisting our clients manage their portfolio risk
- Supporting development of the capital projects portfolio
- Addressing EHS performance improvement issues such as the implementation of global audit programs, including the development of leading edge behavioral-based safety programs
- Creating and implementing strategies and tactics to sustainably retire assets and to support the redevelopment of brownfield sites for renewed economic development

ERM helps clients across their investment lifecycle



Entering New Markets

ERM understands that every M&A agreement presents a unique set of environmental, health and safety, and sustainability risks and liabilities which require rapid and rigorous quantification as part of the transaction process. For over 25 years, we have been providing critical, time-sensitive advice on environmental risks to assist companies execute their most important transactions. ERM's M&A transaction services provide unrivaled global capabilities and in-depth understanding across the financial, commercial, and industrial sectors.

Some of our key transaction services include the following:

- EHS due diligence for acquisitions, divestitures, mergers, joint ventures, and capital raising
- EHS due diligence for project finance including Equator Principle reviews
- Analysis for bankruptcy, reserves, provisioning, asset retirement obligations, and financial reporting
- Carbon and energy due diligence
- Post-merger integration support
- Management systems, EHS culture, gap analysis, and benchmarking
- Incorporating social, stakeholder, and sustainability elements into due diligence



Delivering Capital Projects

ERM provides a wide range of services to assist our power clients with the planning, permitting, construction, start-up, and operation of new capital projects. These services include the following:



Definition. Assist in developing projects:

- Stakeholder mapping and issues identification
- Site/route selection
- Project planning
- Sustainable master planning
- Permitting feasibility studies and risk assessments
- Permitting strategies and plans
- Design and construction support to avoid and mitigate impacts

Assessment. Identify impacts and mitigations:

- Licensing and permitting
- ESHIA/ESIA/EIA/EIS/EA
- Government/regulatory reviews and approvals
- Lender approvals
- Development of management plans and systems
- ESMP development and implementation

Construction and operation. Assist with project implementation:

- Management planning and ESMP implementation
- Construction oversight
- Monitoring and evaluation
- Stakeholder engagement
- Compliance and assurance

Our GIS and data management services provide support throughout the project lifecycle.



Improving Operational EHS Performance

The needs to meet EHS and related compliance requirements are significant and involve a very broad range of decisions and actions by our clients. Information systems, strategies, and plans are specifically needed and we provide a wide range of services in this area.

- Policy, strategy, governance, and standards: Assisting in meaningful and effective sustainability policy and strategies for improving EHS, social, and business outcomes, and developing clear technical, management, and operational standards.
- Health and safety at work, environment and social aspects and impacts, and compliance obligations: Providing clarity and deep understanding of potential risks and opportunities, current and likely future compliance obligations, and occupational health and safety, environment, and social aspects. Whole business and site risk profiling, benchmarking, legal register, horizon scanning, and impact analysis.
- Product portfolios. Addressing the opportunities and costs associated with intense interest in the environmental impacts of products and the increasingly complex regulatory requirements that apply to them. Life cycle assessment and management, design for environment, REACH and WEEE, other product regulatory regimes and take-back requirements, and design and execution of supply chain assessment programs.
- Management systems and processes for robust EHS performance. Enhancing and streamlining established management systems and core processes to ensure these support the achievement of improved HSE and social outcomes and core business objectives.
- Knowledge and skills to address the challenge. Assessing competency needs and using high impact training techniques to provide leaders, EHS functional staff, and the front line with the required knowledge and skills to successfully address these challenges.
- Information management. Developing and implementing data management solutions, working with the world's leading software providers to support real time needs for data and information to support decision-making and growing external reporting needs as well as supporting improving operational efficiency and reliability
- Audit and assurance for risk reduction. Evaluating, designing, and delivering assurance programs that are fit for purpose at each level and function. Audit program development, auditor training, compliance auditing, performance focused auditing for behavioral change, third-party certification and verification of GHG, reports, and management systems.
- Sustainability reporting. Addressing the increasing need for transparency and rigor in communications with an increasing array of external stakeholders who have an interest in EHS and social performance.



Managing Retired Assets

Whether the need is decommissioning a single facility or fleet, ERM understands the complexities and project risks involved in retiring assets. From initial planning and asset characterization through scope development, contracting and execution, culminating with potential asset divestiture and redevelopment, there are many critical steps involved to ensure that a decommissioning and redevelopment project provides the highest value to the owner in a safe and technically compliant manner.

ERM can assist your organization as a trusted advisor in this area and can provide the following services:

- Risk characterization – including development of an environmental, health and safety compliance matrix, permit review and identification of hazardous materials/wastes that require special handling
- Project planning – including reserve cost estimates, comprehensive scope definition, and task sequencing
- Asset valuation – including equipment and recyclable building materials
- Project management/execution – as the owner's engineer or turnkey project dependent on owner's acceptable risk profile
- Asset monetization/purchase of qualifying properties, including acceptance of associated environmental liability. ERM and our asset liquidation and brownfield redevelopment team members share a specific interest in repurposing retired power generation sites for sustainable long-term use.

The global power sector faces a number of new and significant challenges driven by a variety of business, regulatory, environmental, social, and political changes and requirements. Successful industry responses to these challenges will be required in order to effectively compete in the new global power market. Successfully responding to these challenges will also require creative and effective solutions. ERM applies our knowledge and experience to provide a broad range of effective and sustainable solutions to the power sector across the investment lifecycle, ranging from assisting clients in entering new markets, delivering capital projects, improving EHS operational performance, and managing retired assets.

Contact information:

Scott S. Moorhouse
Global Managing Partner,
Power Sector
scott.moorhouse@erm.com

Francesco Belfiore
Milan, Italy
francesco.belfiore@erm.com

Bob Carpenter
Houston, TX
bob.carpenter@erm.com

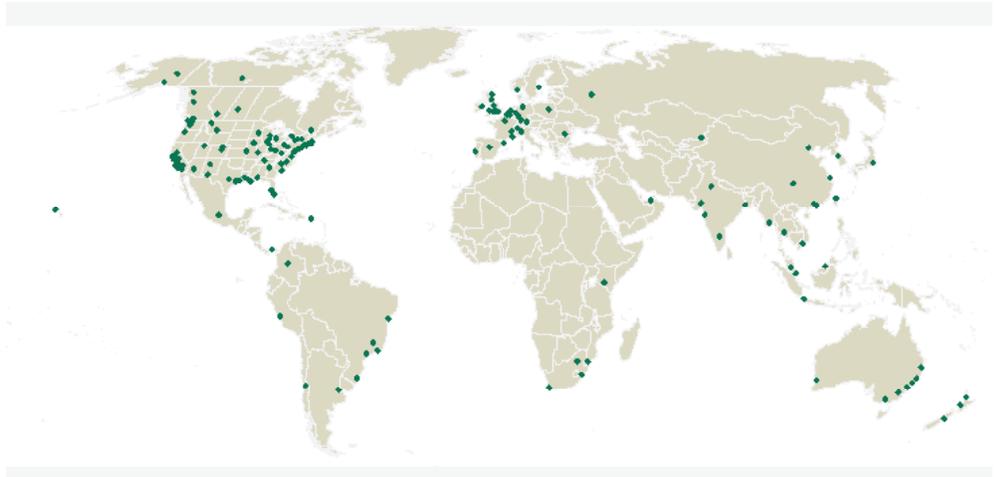
Chris Herralá
Walnut Creek, CA
chris.herrala@erm.com

Robert Keating
Annapolis, MD
robert.keating@erm.com

Sean Purdie
Hong Kong
sean.purdie@erm.com

Doni Murphy
Chicago, IL
doni.murphy@erm.com

Paola Romero
Mexico City, Mexico
paola.romero@erm.com



About ERM

ERM is a leading global provider of environmental, health, safety, risk, social, and sustainability related consulting services. We have more than 160 offices in over 40 countries and territories employing more than 5,000 people who work on projects around the world. ERM is committed to providing a consistent, professional, and high quality service to create value for our clients. Over the past three years we have worked for more than 50 per cent of the Global Fortune 500 delivering innovative solutions for business and select government clients helping them understand and manage the sustainability challenges that the world is increasingly facing.

For over 40 years we have been working with clients around the world and in diverse industry sectors to help them understand and manage their environmental, health, safety, risk, and social impacts. The key sectors we serve include oil and gas, mining, power, manufacturing, chemical, and pharmaceutical. All face critical sustainability challenges and our clients in these and many other areas rely on our ability to assist them to operate more sustainably which has a positive impact on our planet.