



# Commodity & Energy Risk Management





# Introduction

Organisations exposed to energy, metal, and agricultural commodity raw materials are increasingly challenged by competitive economies, volatile markets, and onerous regulatory and accounting obligations. While many businesses are prepared to take action, rapid change requires additional emphasis on risk strategy, analytics, reporting, systems, and governance.

As global commodity markets experience sustained volatility, organisations have aggressively sought methods to identify and respond to market risks, credit risks, and operational risks.

At the same time, organisations are developing strategies and innovative solutions to integrate disparate systems, increase automation, improve reporting, enhance analytical capabilities, and reduce costs.

Whether your most pressing issue involves hedging strategies; governance; supply chain issues; data management; or accounting, tax, and regulatory issues, KPMG is ready to help you cut through the complexity.

# Service Offering Overview

KPMG's Commodity and Energy Risk Management (CERM) service is designed to help corporate and public sector CFOs, treasurers, controllers, risk managers, commercial and business development managers, and tax directors achieve tactical and strategic goals.

The CERM service applies to companies of all sizes and complexities. In particular, organisations with significant commodity market and credit risk, operational and modelling challenges, and integration or cost-reduction initiatives will find the CERM service a good fit.

Each service represented below is based on KPMG's CERM methodology and industry accepted practices. KPMG recognises that each company is unique, and as such, each service is tailored to address distinct client size, complexity, development stage, and business objectives.

While each service may be delivered as a stand-alone initiative, combined activities accelerate organisations towards improved risk integration and coordination.



# Hedging & Risk Strategy



Organisations today are increasingly exposed to volatile commodities and increasing stakeholder demands for earnings stability and growth. Effective commodity risk management requires an understanding of the underlying risk, alternative hedge strategies, instruments and marketplaces, as well as the use of effective and comprehensive valuation and risk reporting tools.

KPMG can assist to address the risk management requirements needed to successfully address commodity risk exposures. Specifically, KPMG assists clients to identify, measure, control, and report risks associated with physical and financial energy, metals, and agricultural markets.

KPMG Service	Activities
<b>Risk Identification and Measurement</b>	<ul style="list-style-type: none"> <li>Identify and measure commodity exposures across business lines and/or commodities based on defined qualitative and quantitative metrics</li> <li>Identify, aggregate, and summarise existing commodity contracts, explicit and implied financial risks (e.g. optionality), credit exposures, and operational exposures</li> <li>Identify and model commodity financial exposures using industry applied "at-risk" indicators (e.g. Value-at-Risk (Var), Conditional Value-at-Risk (CVaR), Cash-flow-at-Risk (CFaR))</li> <li>Define risk measurement data and systems requirements</li> <li>Measure the impact of stressed market prices on realised and unrealised profit and loss</li> </ul>
<b>Risk Strategy and Tolerance</b>	<ul style="list-style-type: none"> <li>Assist to define management's financial and operational risk tolerance(s) based on internal metrics, peer practices, and external expectations and hedge objectives</li> <li>Identify and evaluate methods to protect against commodity price risks including the following risk mitigation strategies: <ul style="list-style-type: none"> <li>Derivative based hedging (exchange traded; Over-the-counter (OTC) bilateral, cleared)</li> <li>Physical procurement/sales management</li> </ul> </li> <li>Assist to define key hedge strategy components, including: <ul style="list-style-type: none"> <li>Hedge instruments, volumes, timing, frequency, duration, entry and exit points</li> </ul> </li> <li>Perform peer and competitor benchmark analysis to assess client positioning against industry participants</li> </ul>
<b>Risk Aggregation and Reporting</b>	<ul style="list-style-type: none"> <li>Define internal and external commodity risk reporting requirements</li> <li>Define and develop integrated risk reports</li> <li>Identify and develop alternative risk reporting formats and templates/dashboards</li> <li>Identify data and infrastructure requirements supporting the preferred risk monitoring and reporting framework</li> </ul>
<b>Governance and Compliance</b>	<ul style="list-style-type: none"> <li>Design and document policies and procedures governing commodity risk management</li> <li>Design and document a governance framework consistent with regulatory standards and industry practices</li> </ul>

# Model Development, Validation, & Remediation

KPMG Service	Activities
<b>Model Development</b>	<ul style="list-style-type: none"> <li>Assist model design and development for risk measurement (e.g., value-at-risk, cash flow-at-risk, earnings-at-risk, credit value-at-risk)</li> <li>Assist mark to market and capital allocation model design and development – valuation models for commodity and energy products, instruments, and contracts</li> </ul>
<b>Model Risk and Control</b>	<ul style="list-style-type: none"> <li>Identify inventory and rank key financial, risk, and decision support models</li> <li>Review and improve model policy documentation (purpose, applicability, development, ownership, access, and oversight)</li> <li>Assess key risk sources associated with each model</li> </ul>
<b>Model Functionality</b>	<ul style="list-style-type: none"> <li>Assess model calibration standards</li> <li>Assess model limitations (i.e., restrictions and conditions)</li> </ul>
<b>Model Integrity and Validation</b>	<ul style="list-style-type: none"> <li>Review, validate, and design model parameters including: <ul style="list-style-type: none"> <li>Model input (e.g., forward price curves, volatility assumptions, correlation matrices)</li> <li>Model processing and analytics (e.g., model algorithms)</li> <li>Model output (e.g., variance results)</li> <li>Model governance (e.g., risk policy, limits)</li> <li>Model controls (e.g., model management)</li> <li>Model reporting</li> </ul> </li> <li>Review assumption applicability and robustness</li> <li>Identify and design data linkages and controls</li> </ul>
<b>Model Comparison</b>	<ul style="list-style-type: none"> <li>Compare and assess alternative models (e.g., third-party vs. internally developed models)</li> <li>Compare and assess alternative data sources</li> </ul>
<b>Model Testing</b>	<ul style="list-style-type: none"> <li>Estimate implementation risk through value testing (extreme values, limiting cases, code review)</li> <li>Observe errors attributable to all error sources (back testing)</li> </ul>



Models have become an increasingly important tool in evaluating, analysing, and reporting key business information. Whether intended for risk management, financial accounting, or business decision making, the increased use and complexity of these models have led to increased model risk. Management has a vested interest to confirm the assumptions, theories and data used by models, as well as the processing, output and reporting. Leading companies seek external assistance to address these concerns for both existing and contemplated models.

# Operations



Organisations are challenged to evaluate alternative strategies for operational improvements due to a variety of economic pressures.

KPMG can offer assistance with many supply chain related issues and help your management team to reduce cost, add value and minimise risk.

KPMG Service	Activities
<b>Supply Chain and Operations Strategy</b>	<ul style="list-style-type: none"> <li>Assist clients to assess their operations and supply chain performance, as well as to develop improvement strategies, transition plans and the supporting financial business case for change</li> <li>Assist clients to improve working capital management and reduce their level of inventory investment while improving customer service</li> <li>Assess strategic benefits of outsourcing elements of supply chain operations, such as service centre, logistics, and contract manufacturing</li> <li>Benchmark operations to industry and leading practices</li> </ul>
<b>Sourcing and Procurement Enhancements</b>	<ul style="list-style-type: none"> <li>Assist management to define procurement strategies considering risk, security, and supply diversification</li> <li>Identify and evaluate opportunities to consolidate vendors, suppliers, and contracts in an effort to help minimise costs and improve performance</li> <li>Assist clients to improve performance and effectiveness of direct and indirect sourcing and procurement processes</li> <li>Assess strategic supply acquisition to help minimise logistics cost and increase operational flexibility and price awareness</li> </ul>
<b>Inventory Management</b>	<ul style="list-style-type: none"> <li>Assist to evaluate client effectiveness and efficiency in managing inventory input and output</li> <li>Assist to develop strategies to reduce inventory investment and improve cash flow</li> <li>Provide recommendations for performance measurements/metrics at the business unit, function and individual levels</li> <li>Provide visibility and linkage between operational inventory performance and financial statement profit/loss results</li> </ul>
<b>Tax-Efficient Supply Chain Management</b>	<ul style="list-style-type: none"> <li>Assist clients to evaluate and align distribution networks and manufacturing footprint taking into account impact of higher energy costs, customs, and financial considerations</li> <li>Assist to align global and regional business strategies across operations taking into account tax, duties, customs, risk exposure, and financial considerations</li> </ul>

# Operations

KPMG Service	Activities
<b>Operations Risk and Control</b>	<ul style="list-style-type: none"><li>• Define operational risk strategies supporting critical processes and systems to be consistent with corporate objectives and risk tolerances</li><li>• Establish operational risk indicators to measure and evaluate operational performance (e.g. employee, process, systems, and operational capital efficiency indicators)</li><li>• Quantify operating risks to better understand and mitigate operations exposure</li><li>• Track benefits and/or consistency of new or existing procurement/supply chain operations</li><li>• Benchmark procurement practices and processes to industry practices – review and identify improvement areas within:<ul style="list-style-type: none"><li>– Internal process efficiencies</li><li>– Forecasting and reporting cycles</li></ul></li><li>• Evaluate existing policies and guidelines and enhance to meet high sourcing and procurement objectives</li><li>• Recommend metric, score cards and operating reports to track performance and compliance</li></ul>

# Tax



Tax requirements associated with commodity activities are complex, unique to specific national jurisdictions, and susceptible to change. Without sufficient up-front consideration for and deep knowledge of relevant tax considerations, a routine or seemingly advantageous transaction can create significant financial risk and compliance costs.

Given the significant exposure and the onerous operational requirements associated with issue or transactional analysis, leading organisations are turning to external support with deep geographic resources and specialisation.

KPMG Service	Activities
<b>Tax Planning and Analysis</b>	<ul style="list-style-type: none"> <li>Analyse the tax implications of commodity and derivatives strategies</li> <li>Review international transactions for opportunities to reduce tax liabilities</li> <li>Assess existing or proposed cash management and funding strategies for negative tax implications and recommend improvements, as applicable</li> <li>Review proposed transaction for anticipated tax risks, treatment and financial impact (GAAP/IFRS)</li> </ul>
<b>Tax Implementation</b>	<ul style="list-style-type: none"> <li>Identify local and international tax guidance, rulings or treatment</li> <li>Identify programmes, policies, or tools to implement management defined tax strategies</li> </ul>
<b>Ruling and Opinion Support</b>	<ul style="list-style-type: none"> <li>Submit tax position and analysis on behalf of the company to solicit a local ruling</li> <li>Provide a tax opinion based on KPMG's analysis</li> </ul>
<b>Tax Analysis and Research</b>	<ul style="list-style-type: none"> <li>Research and report global tax law updates and significant rulings that affect commodity businesses</li> <li>Analyse potential tax impact and remediation strategies considering new or evolving tax legislation</li> </ul>
<b>Tax Incentives Advisory</b>	<ul style="list-style-type: none"> <li>Review the business plan and activities and advise the incentive(s) best suited for the company to consider.</li> <li>Propose refinement of the company's business plan to enhance the likelihood of a successful incentive application.</li> <li>Assist the company in incentive application and negotiation strategy formulation.</li> <li>Assist the company to put in place appropriate internal controls and procedures to monitor the progress in implementing their proposed business plan and complying with the terms and conditions of the incentive award(s).</li> </ul>

# Accounting

KPMG Service	Activities
<b>Accounting Implementation</b>	<ul style="list-style-type: none"> <li>Assist management to develop processes for the application of new or revised accounting pronouncements</li> <li>Assist management to perform an impact analysis and evaluate alternative implementation activities, as applicable</li> <li>Assist management to identify business and functional requirements, perform current state gap analysis, and prioritise implementation recommendations</li> </ul>
<b>Hedge Accounting and Technology Support</b>	<ul style="list-style-type: none"> <li>Review and summarise existing derivative positions</li> <li>Categorise derivatives as explicit or embedded options in accordance with SFAS 133 and IAS39 guidance</li> <li>Identify alternative methods applied by industry participants to calculate and evaluate hedge effectiveness (e.g. dollar offset, regression, etc.)</li> <li>Establish models and related assumptions to calculate hedge effectiveness</li> <li>Establish models to calculate proxy transactions as appropriate</li> <li>Support derivative accounting system selection and business and functional requirements definition</li> <li>Identify and design documentation templates commensurate with SFAS133 standards</li> <li>Identify and design templates and user guidance supporting required analysis</li> <li>Analyse and implement organisation requirements for hedge accounting (processes, organisation, IT, market data)</li> <li>Prepare and review IAS 39 hedge accounting documentation</li> <li>Support derivative accounting system selection and business and functional requirements definition</li> </ul>
<b>Domestic GAAP and International Accounting (IFRS)</b>	<ul style="list-style-type: none"> <li>Provide technical support to companies with specialised financial reporting requirements</li> <li>Present the latest domestic GAAP and IFRS/international accounting developments and standards to company management and audit committees</li> <li>Develop and present industry-specific research and analysis of accounting and reporting practices and trends</li> </ul>
<b>SFAS 157</b>	<ul style="list-style-type: none"> <li>Review fair value measurement methodology and application</li> </ul>
<b>Documentation</b>	<ul style="list-style-type: none"> <li>Identify and recommend documentation requirements commensurate with domestic and international accounting guidance</li> <li>Assist management to document commodity and derivative accounting procedures, assumptions, critical data, and user/department accountabilities</li> </ul>



Commodity businesses are typically familiar with and active users of derivative and complex financial products. While derivatives serve a major and increasing role in commodity risk management practices, new and evolving regulations require strict adherence to local and international accounting standards. Considering these risks and growing external scrutiny, leading companies seek assistance with accounting research and guidance, local and international accounting support, or accounting documentation and governance.

# Governance, Roles, & Policies



Risk management operations change as markets evolve and business strategies adapt. As a result, policies, processes, systems and organisational structures become outdated or outgrown. Whether your organisation is interested in maintaining consistency with internal policies or keeping pace with industry practice, KPMG can provide tailored and wide-ranging support addressing many aspects of your commodity risk management operations.

KPMG Service	Activities
<b>Infrastructure and Governance</b>	<ul style="list-style-type: none"> <li>Recommend infrastructure requirements supporting a wide-ranging commodity risk management framework</li> <li>Assist to design and implement policies, organisational structure and roles and responsibilities within the Risk Management operations</li> <li>Recommend risk oversight committee structure and mandate, operational roles and responsibilities and controls supporting prudent risk management and Board/Audit Committee oversight requirements</li> </ul>
<b>Industry Benchmarking</b>	<ul style="list-style-type: none"> <li>Survey industry participants to help determine metrics and priorities around infrastructure, governance and compensation structures</li> <li>Survey industry participants to help determine industry practice with respect to resource levels (front-, middle-, back-office, operations), systems, committees and committee composition, transaction volumes and types, performance and cost metrics and roles and responsibilities</li> </ul>
<b>Enterprise Risk Management (ERM)</b>	<ul style="list-style-type: none"> <li>Assess existing and emerging risks that may threaten business objectives and design a road map associated with closing key gaps and associated benefits</li> <li>Assign and document risk governance organisational structure and responsibilities</li> <li>Assist management to establish risk appetite and tolerance levels</li> <li>Prepare an ERM policy framework</li> <li>Design a training and communication plan to help improve ERM awareness and accountability throughout the organisation</li> <li>Assess risk management activities and identify potential improvements</li> <li>Identify strategic and business risks that are both auditable and non-auditable and then implement a monitoring programme to monitor the risks</li> <li>Measure key strategic risks through customised model development</li> <li>Develop integrated dashboards and business intelligence</li> </ul>

# Regulatory

KPMG Service	Activities
<b>Regulatory Compliance and Strategy</b>	<ul style="list-style-type: none"> <li>Review regulatory and political climate, analyse regulatory issues, and develop alternative policy positions and regulatory case strategies</li> <li>Evaluate compliance with rules established by regulatory bodies, assist in preparation of compliance documentation and reports</li> <li>Research alternative policy positions</li> <li>Regulatory issues analysis</li> <li>General rate case support and testimony <ul style="list-style-type: none"> <li>Support in management of interrogatories and data responses</li> <li>Loan staff to support preparation of testimony and other filing requirements</li> <li>Investigation of special issues (prudence of new investments, economic analyses)</li> <li>Regulatory support of new energy procurement processes</li> </ul> </li> <li>Rate design and testimony including customer segment analysis, class cost of service and tariff design</li> <li>Catalogue and prioritise universe of relevant compliance requirements</li> </ul>
<b>Cost Recovery/ Prudence Readiness</b>	<ul style="list-style-type: none"> <li>Evaluate fuel and power market supply planning, contracting, purchase and disposition performance in light of regulatory requirements and relevant market conditions</li> <li>Review fuel and purchased power cost adjustment filings to identify gaps/issues</li> <li>Benchmark fuel and power costs versus relevant market peers</li> <li>Assess adequacy of fuel procurement documentation in light of potential prudence challenges by regulators</li> </ul>



Laws and regulations are set up for institutions to protect consumers and investors. Government agencies examine organisations periodically to help ensure they comply with the regulations. Failure to comply may result in fines and reputation damages. Leading companies often enlist external assistance to address regulatory strategy and help manage compliance risk.

KPMG can help organisations assess compliance, evaluate processes and controls and implement enhanced practices – helping to facilitate a positive relationship with regulators.

# Credit & Collections



In recent years, credit defaults and credit-related losses have increased, from the combined forces of rapid industry evolution, sustained economic challenges, volatile foreign exchange and commodity markets and increased competitive participation from traditionally passive parties. Executives and risk managers recognise the need for improved credit risk strategy, measurement and reporting.

KPMG can assist company leadership to develop or improve strategies and controls to help mitigate trading and marketing credit losses.

KPMG Service	Activities
<b>Credit Risk Identification and Measurement</b>	<ul style="list-style-type: none"> <li>Identify and measure key credit exposure based on defined qualitative and quantitative metrics, including:               <ul style="list-style-type: none"> <li>Current</li> <li>Potential</li> <li>Concentration</li> <li>Settlement</li> </ul> </li> <li>Identify methods to assess and quantify counterparty, customer and vendor credit exposures</li> <li>Develop a methodology to evaluate and assign internal credit ratings to unrated customers and counterparties</li> <li>Assist management to develop credit downgrade triggers and the related impact to borrowing costs, collateral requirements, or market liquidity</li> </ul>
<b>Credit Risk Strategy</b>	<ul style="list-style-type: none"> <li>Design credit limit allocation and measurement guidelines to align with corporate risk tolerances</li> <li>Develop credit “risk-based” pricing methodology</li> <li>Identify and evaluate alternative credit risk mitigation methods applied by industry practices (e.g. contract terms, collateral guidance, credit derivatives)</li> </ul>
<b>Credit Reporting and Performance</b>	<ul style="list-style-type: none"> <li>Review and develop KPIs (e.g. Risk-adjusted return on capital (RAROC))</li> <li>Develop management reporting packages</li> <li>Assist to automate or select reporting tools</li> </ul>
<b>Collections</b>	<ul style="list-style-type: none"> <li>Develop strategies and methodologies to help improve overall collection performance</li> <li>Introduce technology methodologies to help minimise collection expense</li> <li>Evaluate outsourcing opportunities to potentially balance capacity or obtain capability</li> </ul>

# Risk Reporting & Management Information Systems

KPMG Service	Activities
<b>Risk Reporting</b>	<ul style="list-style-type: none"> <li>Assess report output data vs. original business requirement</li> <li>Assess and define communication clarity, robustness and timeliness and risk report dissemination and understanding</li> <li>Identify or develop alternative risk reporting formats, templates and dashboards ("Business Intelligence")</li> <li>Identify data and infrastructure requirements supporting the preferred risk monitoring and reporting framework</li> <li>Assist to automate or select reporting tools</li> </ul>
<b>Systems/ Applications</b>	<p><b>Assessment</b></p> <ul style="list-style-type: none"> <li>Assess the capability of the existing risk applications and tools to support functional business requirements and align with industry practices</li> <li>Conduct detailed analysis of transaction flow from front-to back-office systems</li> <li>Assess processes and controls within risk applications and reporting systems</li> <li>Assess adequacy of the current system to support new or existing reporting requirements</li> </ul> <p><b>Evaluation, Selection, and Implementation</b></p> <ul style="list-style-type: none"> <li>Analyse compatibility and interface of existent IT system and system architecture and planned system implementations</li> <li>Identify minimum business and functional requirements, establish vendor RFP and facilitate vendor demonstrations</li> <li>Assist management to identify and select commodity risk management systems, analytics or modelling assumptions</li> <li>Provide project management support during front-, middle-, and back-office system implementation</li> </ul>



The right business information strategy can help organisations operate more efficiently, optimise costs, seize growth opportunities, manage risk and deliver value to the bottom line. This can be accomplished through better alignment of processes, tools and reporting with enterprise business objectives and strategies.

KPMG helps organisations increase the effectiveness and value of their business information initiatives to improve performance and risk management. We bring a particular strength in helping clients enhance data management, reporting, and IT systems.

# Internal Audit



When organisations require internal audit assistance, KPMG is able to supplement or assume responsibility for an organisation's internal audit function or select activities. We deploy dedicated internal audit professionals with appropriate subject matter and industry knowledge and operational experience to lead or assist corporate teams.

KPMG Service	Activities
<b>Internal Audit Strategic Sourcing</b>	<ul style="list-style-type: none"> <li>Internal Audit Strategic Sourcing</li> <li>Recommend an internal audit programme to continuously monitor commodity and derivative accounting activity and consistency with internal policies</li> <li>Identify, review, and test auditable business and strategic risks</li> <li>Conduct in-depth, focused and specified reviews of a specific process or business area</li> <li>Assess alignment with policy and controls framework</li> </ul>
<b>Contract Compliance</b>	<ul style="list-style-type: none"> <li>Review contracts and receivables to help ensure companies are invoicing/collecting customer revenue in accordance with contract terms</li> <li>Review contracts and payments to help ensure companies are not being overcharged by or overpaying vendors</li> </ul>

# Forensics & Investigations

KPMG Service	Activities
<b>Anti-Money Laundering (AML) Compliance Services</b>	<ul style="list-style-type: none"> <li>Identify and assess money laundering risks applicable to a particular institution, business line, product offering, customer base or geography</li> <li>Assess, test and assist to develop automated transaction monitoring systems</li> <li>Assess compliance with the Bank Secrecy Act (BSA), the AML provisions of the US PATRIOT Act and the sanctions programmes administered by the Office of Foreign Assets Control (OFAC)</li> <li>FCPA programme assessment, implementation, monitoring and training</li> <li>Assist or validate regulatory compliance remediation efforts</li> </ul>
<b>Financial Reporting and Securities Investigations</b>	<ul style="list-style-type: none"> <li>Assist to determine whether fraud, accounting irregularities or improprieties have affected financial reporting integrity</li> <li>Make recommendations to address questionable accounting and disclosures and how similar issues may be avoided in the future</li> <li>Provide information to help determine whether restatement of financials or added disclosures are necessary</li> </ul>
<b>Fraud Risk Management</b>	<ul style="list-style-type: none"> <li>Assess current state of fraud risk management against legal and regulatory frameworks and industry practices</li> <li>Design enhancements to controls and responsibilities to help prevent, detect, and respond to incidents of fraud or misconduct</li> </ul>



Many organisations encounter challenges to develop, implement and maintain a risk-based strategy that will protect against the risks associated with money laundering and other financial crimes.

Whether assisting to proactively improve AML or Fraud Risk Management or reactively respond to a regulatory order, KPMG is able to provide services taking into account the unique circumstances of participants in global commodity markets.

# Contact us

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