# THOMSON REUTERS
# TOP 100 GLOBAL ENERGY LEADERS

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THOMSON REUTERS®

*"The unique, holistic approach Thomson Reuters is taking to identify energy leadership makes a lot of sense given today's complex business environment. At Deloitte, we see how energy companies with operational excellence related to financial operations, risk-management strategies, secure and resilient supply chains, workforce health and safety mandates and responsible environmental practices are well positioned for success. Congratulations to the Thomson Reuters 2017 Top 100 Global Energy Leaders."*

Mark Walsh
*National Managing Director*
*US Energy & Resources Industry*
*Deloitte Consulting LLP*

## A LETTER FROM THOMSON REUTERS ENERGY PRACTICE LEAD

# HARNESSING A 360° PERSPECTIVE

There once was a time when you could judge a company's strength by looking at its balance sheet. A quick scan of assets, liabilities and shareholder equity would provide a pretty good sense of where that company stood in the grand scheme of things and where it would likely stay for a long time to come.

That was then. Today, amidst a global onslaught of constant regulatory change, increased supply chain risk, volatile financial markets, rigorous environmental and sustainability mandates, a 24-hour news cycle and a break-neck pace of technological innovation, identifying the global leaders in any industry requires a true 360° view of an incredibly complex business ecosystem.

The fact is, today's business leaders and their organizations can be the victims of rash legislative pens, momentary lapses in compliance, unanticipated legal battles and disruptive technologies. Additionally, climate change is an increasing threat and energy companies will need to play a leading role in reducing emissions.

All sectors of the modern business marketplace are subject to this new normal of financial, operational, regulatory and technological uncertainty, especially energy. Having weathered the historic financial crisis earlier this century when oil plummeted to below $35 a barrel, energy companies are adjusting to a persistently lower priced environment and being under the microscope of investors, regulators and politicians as they seek to manage and grow their businesses.

Compounding the issue is the fact that growth in the sector also comes with exploration and expansion in new or high risk markets and the use of sometimes controversial technology. Energy competition has expanded from its traditional scope to include burgeoning entrants, like LNG and renewables, as well as dormant regional players re-joining the mix.

Asserting leadership—and maintaining it—in this type of environment is a balancing act of epic proportions.

That's why we've created the Thomson Reuters Top 100 Global Energy Leaders as both a recognition of the effort that goes into sustained growth, as well as a means of accurately measuring the component elements that determine leadership in such a complex environment.

Our patent-pending methodology is the first valuation metric of its kind based on a truly holistic view of modern-day business realities including the obvious financial and investor metrics, but also capturing factors such as supply chain risk, pending litigation, innovation and environmental governance.

The companies that rise to the top of this list are the Renaissance Organizations that best succeed across the parameters at the intersection of regulation and commerce. They are the energy industry's decathletes. They embrace the challenge of outsizing business complexity with the acumen and agility to stay one step ahead of constant change.

We salute them.

Emily Lyons
*Managing Director*
*Energy PracticeThomson Reuters*

# REDEFINING GLOBAL LEADERSHIP IN THE ENERGY SECTOR

The French power giant Alstom became the poster child for the new world order of energy sector business challenges in December of 2014 when it pleaded guilty to international bribery and agreed to pay a $772 million criminal fine, the largest fine ever levied at the time under the Foreign Corrupt Practices Act.

According to the case documents, the company paid more than $75 million in bribes through a network of third-party sales consultants to government officials in Egypt, Indonesia, Saudi Arabia, the Bahamas and Taiwan. Today, Alstom's power division is no more. It was acquired by GE, which as part of the deal, had to agree to pay the U.S. Justice Department fines.

The Alstom story is so important because it illustrates just how quickly a major business can be undone by activities that are seemingly beyond the scope of most business evaluation metrics. It shines a light on the very real challenges of aggressive business expansion into high risk markets where the rules of engagement for winning big contracts can sometimes test the limits of increasingly vigilant global law enforcement and regulatory regimes. It also happened at the height of a financial crisis in the energy sector that would continue for two more years.

To succeed in today's energy environment, multinational companies must not only get the basics of running their businesses right—identifying the right markets, investing in the infrastructure required to grow, accurately forecasting supply and demand. They must also manage an interconnected patchwork of legal, regulatory, operational, environmental, supply chain and technological variables that each have the power to make or break the best laid plans for strategic business growth.

Managing those risks, while continuing to make the kind of bold bets that unlock growth and conquer new markets, is the modern day formula for energy sector leadership.

Who's doing that best?

To find out, Thomson Reuters has pioneered a first-of-its-kind evaluation framework that incorporates financial performance metrics, supply chain risk exposures, pending litigation, technological innovation and a track record of environmental governance to capture the real-world performance of today's energy leaders.

Our resulting list of the Thomson Reuters Top 100 Global Energy Leaders, along with snapshots of the top 25 performers across four energy subsectors, showcases the companies around the world that are delivering across a scorecard of critical business success metrics.

Thomson Reuters is uniquely suited to deliver this patent-pending valuation methodology by virtue of our perch at the crossroads of this complex business ecosystem—at the intersection of regulation and commerce. Drawing data, analysis and insights from the financial and risk, legal, tax and accounting and media markets, we've been able to develop a proprietary, objective methodology that evaluates a business' ability to successfully navigate the entire business landscape.

**Managing risks, while continuing to make the kind of bold bets that unlock growth and maintain environmental responsibility, is the modern day formula for energy sector leadership.**

REUTERS/VINCENT KESSLER

REUTERS/JAVIER BARBANCHO



# THE METHODOLOGY BEHIND THE LEADERS

In the field of arts and entertainment, a triple-threat is someone who can sing, dance and act. Hugh Jackman, Jennifer Lopez, Fred Astaire and Ginger Rogers are prime examples. In the energy business, you need to be good at more than three things.

In this report there are eight pillars of energy company performance that capture the current scope of what's needed for success in the current business environment. The list captures a combination of fundamental business metrics, such as revenue growth, operating income, and Return on Invested Capital, along with a comprehensive group of risk metrics, identifying issues such as legal, supply chain and operational risk exposures. It also tracks patent activity as a proxy for technological innovation, news sentiment, and environmental and social factors.

Each of these pillars is evaluated in a statistical model using Bayesian logic to determine the probabilistic relationship between discreet variables and capture all integral parts of an energy company's success quotient.

The Thomson Reuters Top 100 Global Energy Leaders are the decathletes that score the highest.

## FINANCIAL PERFORMANCE

How is the company performing financially?
How profitable is it?

- **Net Assets**: Total assets of the company less its total liabilities
- **Free Cash Flow/Employee**: A measure of financial performance calculated as operating cash flow minus capital expenditures; the cash a company generates after laying out money to maintain or expand its asset base (this number is normalized by the number of employees in the company)
- **Leverage**: The net debt of the company divided by EBITDA
  - Net debt is a company's total debt less cash and short term investments
  - EBITDA is earnings before interest and taxes for the fiscal year plus the same period's depreciation, supplemental, amortization of acquisition costs, supplemental and amortization of intangibles and supplemental
- **Operating Income Margin**: Represents operating income divided by total revenue
- **3-Year Revenue Growth**: 3-year historical revenue growth percentage
- **Return On Invested Capital (ROIC)**: A financial measure quantifying how well a company generates cash flow relative to the capital it has invested in its business; expressed as a percentage and calculated as ROIC = Net Operating Profit – Adjusted Taxes / Invested Capital

## MANAGEMENT & INVESTOR CONFIDENCE

How well run is the company? How much confidence do investors have in it?

- **CAM Sector**: Quantitative equity alpha models that observe market anomalies and human behaviors to provide investment managers with insight in creating market-beating portfolios, distilling volumes of data to a single score for more than 30,000 stocks daily
- **CCR Sector**: The current sector-level percentile rank of a company's one-year default probability distilled down to one final estimate of credit risk at the company level
- **Management Score**: A company's commitment and effectiveness toward following best practice corporate governance principles
- **Shareholders Score**: A company's effectiveness toward equal treatment of shareholders and the use of anti-takeover devices

## LEGAL COMPLIANCE

How much litigation is the organization involved in? Does the company live up to its contracts and regulatory obligations?

- **Average Litigation/Year**: Amount of litigation where the company or subsidiary is a defendant in the areas of environmental, employment, contracts/breaches, torts and negligence
- **Product Responsibility Score**: A company's capacity to produce quality goods and services integrating the customer's health and safety, integrity and data privacy

## INNOVATION

How innovative is the company? How much is it investing in R&D and does it protect its inventions with patent rights that are successfully granted?

- **Average Patent Grants/Year**: The number of granted patents that are issued each year
- **Patent Grant/Application Ratio**: The ratio of granted patents to patent applications
- **R&D Spend**: The amount of money a company is spending on research and development (R&D) annually
- **Envionmental Innovation Score**: A company's capacity to reduce the environmental costs and burdens for its customers and create new market opportunities through environmental technologies and processes or eco-designed products

## ENVIRONMENTAL IMPACT

What is the company's ability to reduce environmental impact? What is the external impact on environmental resources?

- **Emissions Score**: A company's commitment and effectiveness at reducing environmental emission in its production and operational processes
- **Resource Use Score**: A company's performance and capacity to reduce the use of materials, energy or water, and to find more eco-efficient solutions by improving supply chain management

## PEOPLE & SOCIAL RESPONSIBILITY

How well does the company treat its employees? How socially responsible is it? What is its impact on the parties with whom it contracts??

- **Community Score**: A company's commitment to being a good citizen, protecting public health and respecting business ethics
- **CSR Strategy Score**: A company's practices to integrate the economic (financial), social and environmental dimensions into its day-to-day decision making
- **Human Rights Score**: A company's effectiveness toward respecting fundamental human rights conventions
- **Workforce Score**: A company's effectiveness toward job satisfaction, a healthy and safe workplace, maintaining diversity and equal opportunities, and development opportunities for its workforce

## REPUTATION

How well-regarded is the organization by the public? What is the overall news sentiment related to the company?

- **Overall News Sentiment**: The median "postive sentiment" and "negative sentiment" values for each company over the last year; the overall sentiment is calculated as the (positive sentiment) – (negative sentiment)
- **Controversies Score**: A company's exposure to environmental, social and governance controversies and negative events reflected in global media

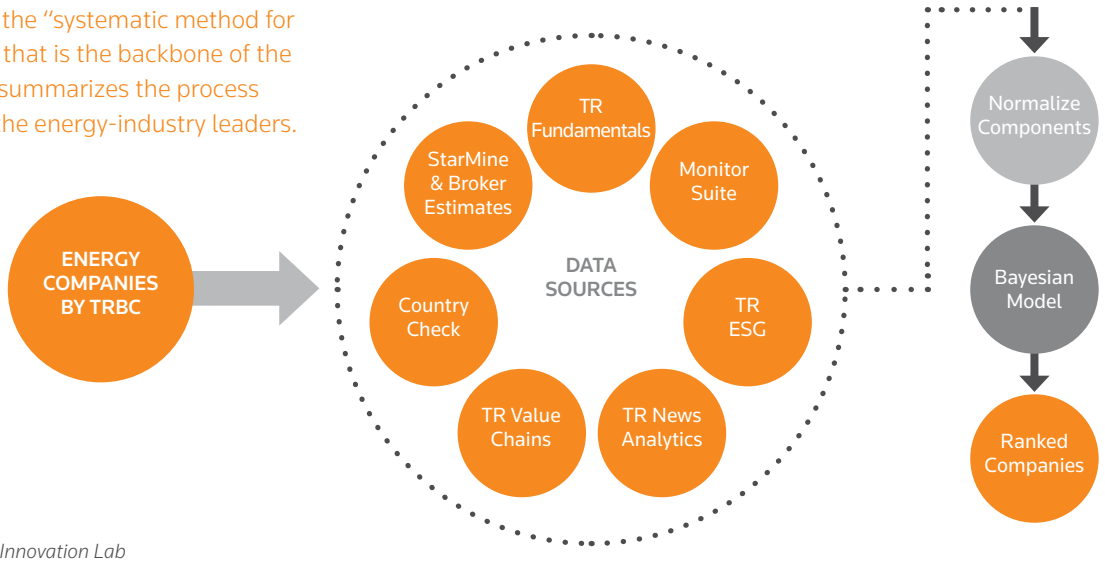
## RISK & RESILIENCE

How operationally stable is the company and is it able to withstand shocks and disruptions? How many customers and suppliers does it have? In what countries is it operating?

- **Geopolitical Risk**: A company's geographical risk exposure as determined by the countries from which the company derives its revenue, and associating each fraction of that revenue with the risk index of that country
- **Number of customers**: Number of customers of the company
- **Number of suppliers**: Number of suppliers of the company
- **Supply chain risk**: The risk associated with a company's supply chain, based on the country's risk indices from which the company's suppliers derive their revenue; it attempts to quantify the risk of a company's suppliers and whether they're deriving their revenue from high-risk or low-risk countries



This diagram shows the "systematic method for ranking companies" that is the backbone of the program and which summarizes the process followed to identify the energy-industry leaders.

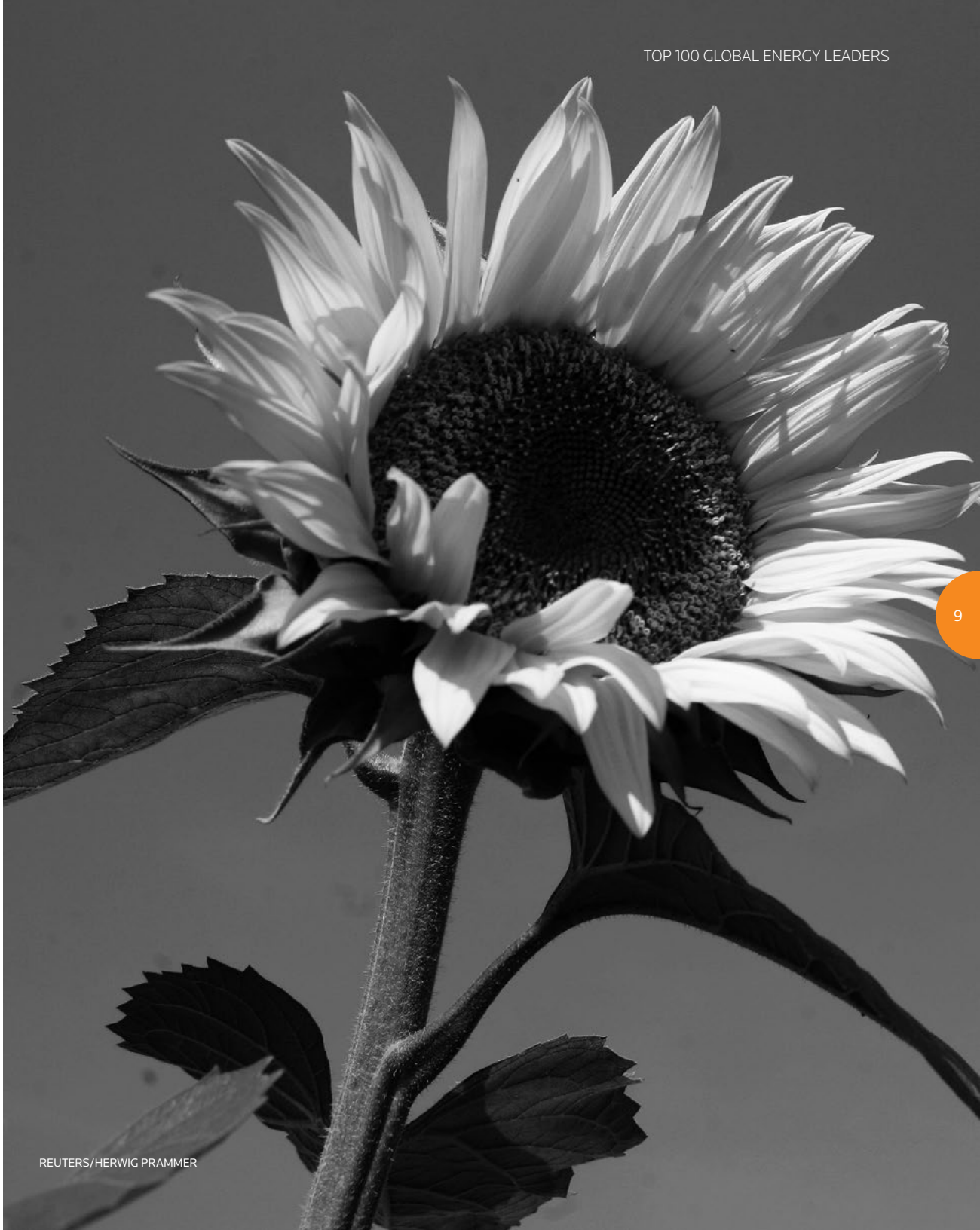



*Source: Thomson Reuters Innovation Lab*
*TRBC = Thomson Reuters Business Classification Codes*

*"Energy leadership today, and energy leadership in the decade ahead, will look distinctly different. The latest environmental reports show that we, as a planet, are falling further behind as a global economy in meeting the climate change goals set forth at COP21. It is critically important that all organizations, in energy and every other sector, understand the risks to the global economy if there is not a systemic change in emissions.*

*There are some companies that have implemented strategic approaches to sustainability and are making significant strides in emission reductions, while also maintaining or improving their financial returns. The two are not mutually exclusive. In fact, our research indicates that companies that embrace sustainability are not only contributing to greenhouse-gas-emission goals, but are also creating the infrastructure for near and long-term economic growth. I invite you to review our latest report,* Global 250 Greenhouse Gas Emitters: A New Business Logic, *to better understand how Sustainability strategies can add value to your organizations as well as to the environment."*

Tim Nixon
*Head of Sustainability Thought Leadership, Thomson Reuters*



REUTERS/HERWIG PRAMMER

# MAKING THE LIST

In today's complex business environment, success and leadership require much more than just financial performance. Not only does an organization need to generate enough revenue to demonstrate its strength, it also needs to instill a sense of confidence in its investors, protect itself against supply chain and supplier risk, contend with the persistent threat of litigation, continue to innovate, maintain a positive image in the marketplace, and embody the core values associated with environmental, social and governance responsiblity.

It is this unique combination of factors that determines 21st century leadership. Just as a holistic investment strategy evaluates a portfolio based on the relationship between its various components, the formula for leadership in today's marketplace requires a holistic view of the entire organization.

That is why we've developed this proprietary, new Top 100 Global Energy Leaders methodology, to evaluate corporate performance against the multitude of real-world variables that confront businesses of this scale.

## GETTING TO THE TOP 100

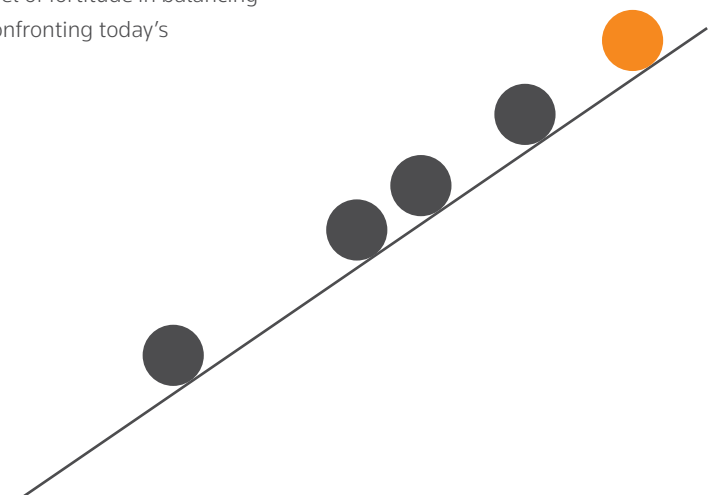
The total universe of energy companies evaluated in the Top 100 Global Energy Leaders program comprises organizations with U.S. $500 million in annual revenues operating in the Oil & Gas, Oil & Gas Related Equipment and Services, Multiline Utilities, Renewable Energy, and Uranium subsectors.

The top 100 overall performers represent those companies from these subsectors with the highest overall scores across our scorecard of eight pillars as explained on pages 7 and 8. Much like athletes in a decathlon, who must perform consistently across a wide variety of events, the companies selected for the top 100 list exemplify leadership given the holistic approach that addresses the business challenges of the modern world. They are the performers who attain the highest cumulative score across all of the events, being the best at some but not necessarily all.

In addition to the top 100 overall performers, we also selected the top 25 performers from the industry subsectors of Oil & Gas, Oil & Gas Related Equipment and Services, Multiline Utilities and Renewable Energy.

By expanding our analysis deeper into each subsector, we spotlight smaller companies which, while they may not have the scale of many of the energy giants that dominate the top 100 universe overall, do represent a highly sophisticated approach to managing complexity. This phenomenon is most pronounced in the Renewables subsector, which is made up of smaller and younger companies than those in the Oil & Gas sector, yet are the rising stars in their respective areas and demonstrate a remarkable level of fortitude in balancing oftentimes conflicting demands confronting today's energy businesses.

Without further ado, we present the lists, the Thomson Reuters 2017 Top 100 Global Energy Leaders and the Thomson Reuters Top 25 Oil & Gas, Oil & Gas Related Equipment and Services, Multiline Utilities and Renewable Energy Sector Honorees.



# INTRODUCING THE
# THOMSON REUTERS 2017 TOP 100 ENERGY LEADERS

| Organization | Industry | Country |
|---|---|---|
| Acea SpA | Multiline Utilities | Italy |
| Aker Solutions ASA | Oil & Gas Related Equipment and Services | Norway |
| Amec Foster Wheeler PLC | Oil & Gas Related Equipment and Services | United Kingdom |
| Anadarko Petroleum Corp | Oil & Gas | United States of America |
| Avangrid Inc | Multiline Utilities | United States of America |
| Bharat Petroleum Corporation Ltd | Oil & Gas | India |
| BP PLC | Oil & Gas | United Kingdom |
| Cairn India Ltd | Oil & Gas | India |
| Cameco Corp | Uranium | Canada |
| Canadian Natural Resources Ltd | Oil & Gas | Canada |
| Chevron Corp | Oil & Gas | United States of America |
| China Petroleum & Chemical Corp | Oil & Gas | China |
| CMS Energy Corp | Multiline Utilities | United States of America |
| CNOOC Ltd | Oil & Gas | China |
| ConocoPhillips | Oil & Gas | United States of America |
| DCC PLC | Oil & Gas | Ireland; Republic of |
| E.ON SE | Multiline Utilities | Germany |
| Ecopetrol SA | Oil & Gas | Colombia |
| Electricite de France SA | Multiline Utilities | France |
| Enagas SA | Oil & Gas Related Equipment and Services | Spain |
| Enbridge Inc | Oil & Gas Related Equipment and Services | Canada |
| Encana Corp | Oil & Gas | Canada |
| Engie SA | Multiline Utilities | France |
| Eni SpA | Oil & Gas | Italy |
| Exxon Mobil Corp | Oil & Gas | United States of America |
| Fairmount Santrol Holdings Inc | Oil & Gas Related Equipment and Services | United States of America |
| First Solar Inc | Renewable Energy | United States of America |
| Formosa Petrochemical Corp | Oil & Gas | Taiwan |
| Galp Energia SGPS SA | Oil & Gas | Portugal |
| Gazprom PAO | Oil & Gas | Russia |
| Global Pvq SE i l | Renewable Energy | Germany |
| Grupa Lotos SA | Oil & Gas | Poland |
| Halliburton Co | Oil & Gas Related Equipment and Services | United States of America |



# THOMSON REUTERS 2017 TOP 100 ENERGY LEADERS

| Organization | Industry | Country |
|---|---|---|
| Hellenic Petroleum SA | Oil & Gas | Greece |
| Hera SpA | Multiline Utilities | Italy |
| Hess Corp | Oil & Gas | United States of America |
| Hindustan Petroleum Corp Ltd | Oil & Gas | India |
| Idemitsu Kosan Co Ltd | Oil & Gas | Japan |
| Indian Oil Corpn Ltd | Oil & Gas | India |
| Inpex Corp | Oil & Gas | Japan |
| IRPC PCL | Oil & Gas | Thailand |
| JXTG Holdings Inc | Oil & Gas | Japan |
| Mangalore Refinery and Petrochemicals Ltd | Oil & Gas | India |
| Marathon Oil Corp | Oil & Gas | United States of America |
| Marathon Petroleum Corp | Oil & Gas | United States of America |
| MOL Plc | Oil & Gas | Hungary |
| Motor Oil Hellas Corinth Refineries SA | Oil & Gas | Greece |
| National Grid PLC | Multiline Utilities | United Kingdom |
| Neste Oyj | Oil & Gas | Finland |
| NiSource Inc | Multiline Utilities | United States of America |
| NK Lukoil PAO | Oil & Gas | Russia |
| Occidental Petroleum Corp | Oil & Gas | United States of America |
| Oil and Natural Gas Corporation Ltd | Oil & Gas | India |
| Oil Refineries Ltd | Oil & Gas | Israel |
| OMV AG | Oil & Gas | Austria |
| Ørsted | Multiline Utilities | Denmark |
| Pennon Group PLC | Multiline Utilities | United Kingdom |
| PetroChina Co Ltd | Oil & Gas | China |
| Petrofac Ltd | Oil & Gas Related Equipment and Services | Jersey |
| Petronas Dagangan Bhd | Oil & Gas | Malaysia |
| Phillips 66 | Oil & Gas | United States of America |
| Polski Koncern Naftowy Orlen SA (PKN) | Oil & Gas | Poland |
| PTT Exploration and Production PCL | Oil & Gas | Thailand |
| PTT PCL | Oil & Gas | Thailand |
| Reliance Industries Ltd | Oil & Gas | India |
| Repsol SA | Oil & Gas | Spain |
| Rosneft | Oil & Gas | Russia |

| Organization | Industry | Country |
|---|---|---|
| Royal Dutch Shell PLC | Oil & Gas | Netherlands |
| Rubis SCA | Oil & Gas | France |
| RWE AG | Multiline Utilities | Germany |
| Saipem SpA | Oil & Gas Related Equipment and Services | Italy |
| Santos Ltd | Oil & Gas | Australia |
| Saras SpA | Oil & Gas | Italy |
| Sasol Ltd | Oil & Gas | South Africa |
| Saudi Basic Industries Corporation SJSC | Oil & Gas | Saudi Arabia |
| Schlumberger NV | Oil & Gas Related Equipment and Services | United States of America |
| Scorpio Tankers Inc | Oil & Gas Related Equipment and Services | Monaco |
| Sempra Energy | Multiline Utilities | United States of America |
| Showa Shell Sekiyu KK | Oil & Gas | Japan |
| Siemens Gamesa Renewable Energy SA | Renewable Energy | Spain |
| SK Innovation Co Ltd | Oil & Gas | Korea; Republic (S. Korea) |
| Snam SpA | Oil & Gas Related Equipment and Services | Italy |
| S-Oil Corp | Oil & Gas | Korea; Republic (S. Korea) |
| Statoil ASA | Oil & Gas | Norway |
| Suncor Energy Inc | Oil & Gas | Canada |
| SunPower Corp | Renewable Energy | United States of America |
| Tecnicas Reunidas SA | Oil & Gas Related Equipment and Services | Spain |
| Tenaris SA | Oil & Gas Related Equipment and Services | Luxembourg |
| Tesoro Corp | Oil & Gas | United States of America |
| Thai Oil PCL | Oil & Gas | Thailand |
| Total SA | Oil & Gas | France |
| TransCanada Corp | Oil & Gas Related Equipment and Services | Canada |
| Tullow Oil PLC | Oil & Gas | United Kingdom |
| Turkiye Petrol Rafinerileri AS | Oil & Gas | Turkey |
| ULTRAPAR PARTICIPACOES SA | Oil & Gas | Brazil |
| Vallourec SA | Oil & Gas Related Equipment and Services | France |
| Vestas Wind Systems A/S | Renewable Energy | Denmark |
| Weatherford International PLC | Oil & Gas Related Equipment and Services | Switzerland |
| Woodside Petroleum Ltd | Oil & Gas | Australia |
| WorleyParsons Ltd | Oil & Gas Related Equipment and Services | Australia |

# THE FOUR SUB-SECTOR LISTS

## OIL & GAS

| ORGANIZATION | COUNTRY |
|---|---|
| Bharat Petroleum Corporation Ltd | India |
| BP PLC | United Kingdom |
| Chevron Corp | United States of America |
| ConocoPhillips | United States of America |
| Eni SpA | Italy |
| Exxon Mobil Corp | United States of America |
| Gazprom PAO | Russia |
| Hess Corp | United States of America |
| Indian Oil Corpn Ltd | India |
| Inpex Corp | Japan |
| MOL Plc | Hungary |
| NK Lukoil PAO | Russia |
| PetroChina | China |
| Polski Koncern Naftowy Orlen SA | Poland |
| PTT PCL | Thailand |
| Reliance Industries | India |
| Repsol SA | Spain |
| Royal Dutch Shell PLC | Netherlands |
| Saudi Basic Industries Corporation SJSC | Saudi Arabia |
| SK Innovation Co Ltd | Korea; Republic (S. Korea) |
| S-Oil Corp | Korea; Republic (S. Korea) |
| Statoil ASA | Norway |
| Suncor Energy | Canada |
| Thai Oil PCL | Thailand |
| Total SA | France |

## OIL & GAS RELATED EQUIPMENT AND SERVICES

| ORGANIZATION | COUNTRY |
|---|---|
| Akastor ASA | Norway |
| Aker Solutions ASA | Norway |
| Amec Foster Wheeler PLC | United Kingdom |
| Boart Longyear Ltd | United States of America |
| CGG SA | France |
| China Oilfield Services Ltd | China |
| Enagas SA | Spain |
| Enbridge Inc | Canada |
| Fairmount Santrol Holdings Inc | United States of America |
| Halliburton Co | United States of America |
| John Wood Group PLC | United Kingdom |
| National Oilwell Varco Inc | United States of America |
| Petrofac Ltd | Jersey |
| Petroleum Geo Services ASA | Norway |
| Saipem SpA | Italy |
| SBM Offshore NV | Netherlands |
| Schlumberger NV | United States of America |
| Scorpio Tankers Inc | Monaco |
| Snam SpA | Italy |
| Tecnicas Reunidas SA | Spain |
| Tenaris SA | Luxembourg |
| TransCanada Corp | Canada |
| Vallourec SA | France |
| Weatherford International PLC | Ireland; Republic of |
| WorleyParsons Ltd | Australia |

## MULTILINE UTILITIES

| ORGANIZATION | COUNTRY |
|---|---|
| Acea SpA | Italy |
| Ameren Corp | United States of America |
| Avangrid Inc | United States of America |
| Avista Corp | United States of America |
| Centrica PLC | United Kingdom |
| CMS Energy Corp | United States of America |
| Dong Energy A/S | Denmark |
| E.ON SE | Germany |
| Electricite de France SA | France |
| Energijos skirstymo operatorius AB | Lithuania |
| Engie SA | France |
| EVN AG | Austria |
| Hera SpA | Italy |
| Iren SpA | Italy |
| MDU Resources Group Inc | United States of America |
| Mvv Energie AG | Germany |
| National Grid PLC | United Kingdom |
| NiSource Inc | United States of America |
| Pennon Group PLC | United Kingdom |
| PPL Corp | United States of America |
| RWE AG | Germany |
| Sempra Energy | United States of America |
| Shenergy Co Ltd | China |
| Tianjin Development Holdings Ltd | Hong Kong |
| YTL Power | Malaysia |

## RENEWABLE ENERGY

| ORGANIZATION | COUNTRY |
|---|---|
| Canadian Solar Inc | Canada |
| CropEnergies AG | Germany |
| First Solar Inc | United States of America |
| GCL-Poly Energy Holdings Ltd | Hong Kong |
| Global Pvq SE i I | Germany |
| Green Plains Inc | United States of America |
| Guodian Technology & Environment Group Corp Ltd | China |
| Hanergy Thin Film Power Group Ltd | Hong Kong |
| Inox Wind Ltd | India |
| Jiangsu Akcome Science & Technology Co Ltd | China |
| Motech Industries Inc | Taiwan |
| Pacific Ethanol Inc | United States of America |
| Renewable Energy Group Inc | United States of America |
| Risen Energy Co Ltd | China |
| Shanghai Aerospace Automobile Electromechanical Co Ltd | China |
| Siemens Gamesa Renewable Energy SA | Spain |
| SolarWorld AG | Germany |
| SunEdison Inc | United States of America |
| Sungrow Power Supply Co Ltd | China |
| SunPower Corp | United States of America |
| Suzlon Energy Ltd | India |
| TPI Composites Inc | United States of America |
| Verbio Vereinigte Bioenergie AG | Germany |
| Vestas Wind Systems A/S | Denmark |
| Xiangtan Electric Manufacturing Co Ltd | China |

# WHAT IT TAKES TO BE THE BEST

One fact that's impossible to ignore when looking at the Thomson Reuters Top 100 Global Energy Leaders is that it's good to have resources. Many of the companies on the list are among the largest organizations on the planet, let alone in the energy sector.

This size and scale give them tremendous advantage when it comes to the financial metrics in the methodology. They also make it much more likely for them to create a solid infrastructure with regard to the people and social factors.

But size alone is not the magic bullet for success. Interestingly, the largest companies in the analysis also had a higher likelihood of litigation, negative press and exposure to geopolitical risks given their footprint in the marketplace.

Ultimately, what the Top 100 Global Energy Leaders is proving is that it is possible to balance the financial demands of an incredibly challenging marketplace with the regulatory, risk, legal, social and environmental needs of a fragile world that increasingly finds itself at the intersection of regulation and commerce. And, that those organizations that succeed across these parameters are today's industry leaders.

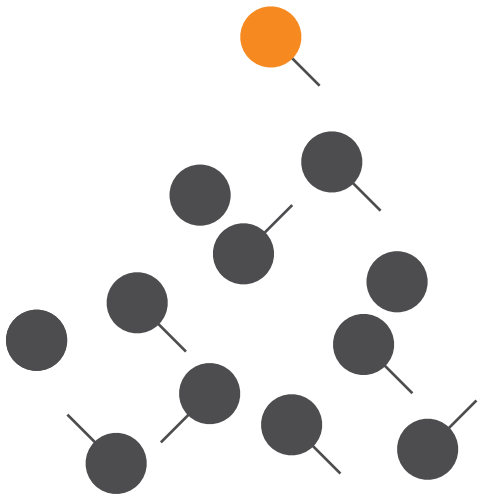
## KEY DIFFERENTIATORS

What does it take to be the best of the best? The methodology favors companies that perform consistently across a number of metrics, the decathletes, as opposed to more volatile companies that may have outsized financial results at the expense of outsized risk. There are a few key areas where the Top 100 Global Energy Leaders stand out from the pack—the areas of leadership they share in common.

In the People & Social Responsibility category, for example, which is measured by tracking each company's commitment to maintaining a healthy and safe workplace, cultivating diversity and equal opportunities, and the capacity to exclude child, forced or compulsory labor from its workforce, it's clear that companies in the top 100 performed significantly better in the Workforce and Human Rights scores than peer group companies that did not make the list—30 percent better in fact.

Likewise, the Top 100 Global Energy Leaders outperform their peers across half of the Risk & Resilience parameters, including the concentration of risk exposure within supplier networks and in customer bases. Meaning, those with the largest, most geographically diverse supplier and customer networks are also much less susceptible to disruption from external influencers. They are better insulated from regional turmoil and have alternatives to ensure continuity in their manufacturing and sales operations. This type of operational risk exposure for the Top 100 was 20 percent less than it was for peer-group companies not on the leader's list.

The top companies in the study also showed stronger performance related to the Resource Use Score, which capture a company's capacity to reduce the use of natural resources, such as water, in the energy production process. In fact, they were 26 percent better than those not on the list.



## HEADWINDS FOR THE TOP 100

While the Top 100 Global Energy Leaders methodology favors companies that perform best across the largest number of criteria at the intersection of regulation and commerce, there are some specific areas where the top companies in the study under-performed their peers. Specifically, they perform worse in the category of Perception:  25 percent more poorly when it comes to their Controversy Scores and 20 percent worse in Overall News Sentiment. They also tend to be involved with a higher number of active legal cases.

Additionally, climate change represents a unique and growing risk for the top 100. For those able to decarbonize, their business model opportunity will grow. Increased compliance with reporting requirements will differentiate those that remain in the top 100, as seen in the case study featuring Total S.A. on page 21.

Ironically, many of the same attributes that help these companies succeed operationally—factors such as outsized earnings growth, large numbers of customers, large numbers of suppliers, successful investments, and active R&D, among others—also expose them to a larger-than-average- share of public scrutiny and controversy. The fact that the Top 100 can outshine their rivals despite sometimes being a lightning rod for controversy speaks to the strength they demonstrate in other facets of the study.



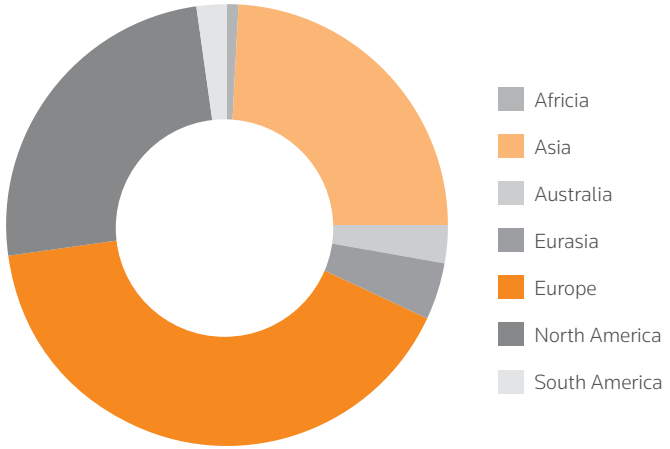
## GEOGRAPHIC DISTRIBUTION

On a geographic basis, the Top 100 Global Energy Leaders are primarily located in Europe (41), North America (26), and Asia (25). Europe's 41 energy leaders come from 19 different European nations, with Italy contributing the most at six, followed by five each from France and the United Kingdom. Three percent hail from Australia, while South America and Eurasia each contribute 2 companies to the list and one company is based in Africa, as shown in Figure 1.

## SECTOR PERFORMANCE

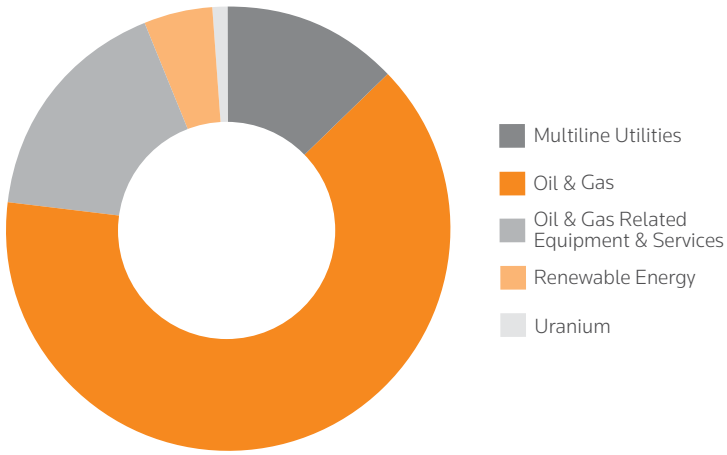
At the sector level, a majority (63) of the Top 100 Global Energy Leaders hail from the Oil & Gas field, reflecting the maturity of that area. Oil & Gas Related Equipment and Services ranks second, with 18 companies on the list, followed by Multiline Utilities (13), Renewable Energy (5), and Uranium (1), as shown in Figure 2.

**Figure 1: Geographic Breakout of the Top 100 by Continent**




*Source: Thomson Reuters Data & Analysis*

**Figure 2: Sector Representation of the Top 100**




*Source: Thomson Reuters Data & Analysis*

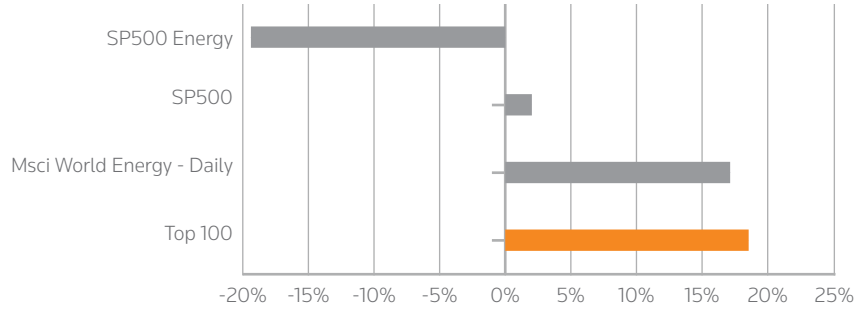
## OUTPERFORMANCE METRICS

The Thomson Reuters Top 100 Global Energy Leaders outperform a number of major world indices on several fronts. This appears to be due to efficiency in their business operations as well as them being more resilient to stock prices changes despite the low-priced oil environment.

### COMPARISONS

The energy leaders perform better than the S&P 500, S&P 500 Energy and MSCI World Energy – Daily Indices in year-over-year gross profit by 16.52 percent, 37.93 percent and 1.41 percent, respectively, as shown in Figure 4.

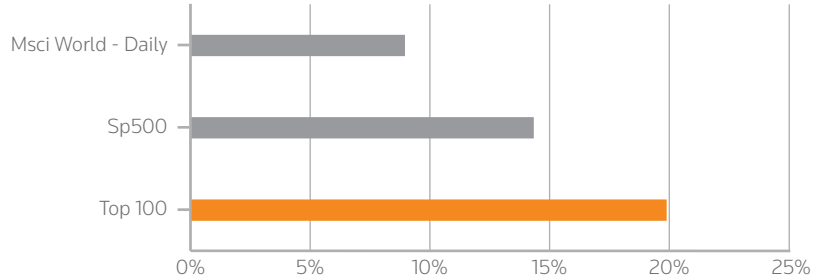
**Figure 4: Gross Profit Year-over-Year Percent Change (2016 vs. 2015)**




*Source: Thomson Reuters Deals Intelligence Data & Analysis*

They also outperform the MSCI World-Daily and S&P 500 indices in annual stock-price change by 5.55 percent and 10.93 percent, respectively, as shown in Figure 5. In addition, the Top 100 leaders also had less change in their stock prices changes than other energy indices, making them less susceptible to volatile market movements.

**Figure 5: Year-over-Year Stock Price Change (2016 vs. 2015)**



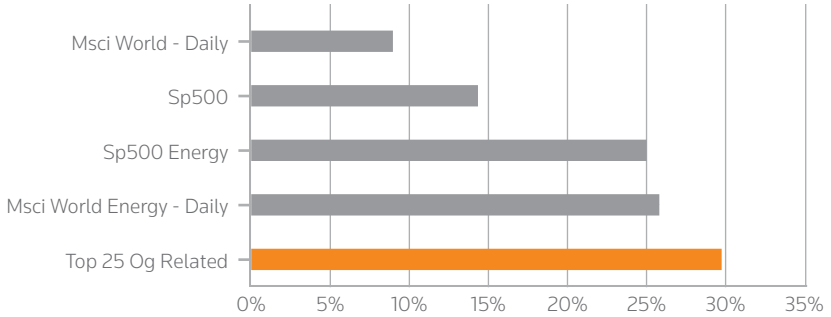

*Source: Thomson Reuters Deals Intelligence Data & Analysis*



## SUBSECTOR ANALYSIS

There are outperformance measures in the subsectors as well. For instance, the Oil & Gas Related Equipment and Services group outperformed all major indices in year-over-year stock price change, as shown in Figure 6, with the most significant change being against the MSCI World-Daily with a more than 20 percent difference.

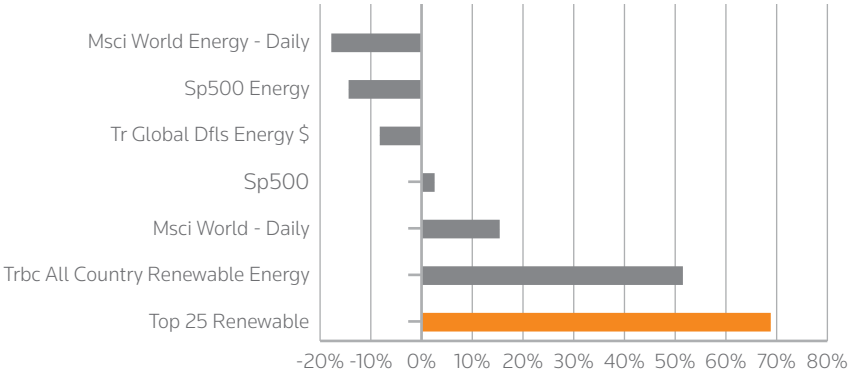
**Figure 6: Year-over-Year Oil & Gas Related Equipment Services Stock Price Percent Change (2016 vs. 2015)**




*Source: Thomson Reuters Deals Intelligence Data & Analysis*

The Renewables subsector is the one with the greatest investment in R&D, as shown in Figure 7, as well as employee growth and year-over-year revenue change.

**Figure 7: Year-over-Year Renewable Energy R&D Investment Percent Change (2016 vs. 2015)**




*Source: Thomson Reuters Deals Intelligence Data & Analysis*

These outperformance measures help validate the methodology and approach Thomson Reuters has taken to assess energy leadership. While the immediate intention is not to create an investment index, it is of value to see how the Top 100 Global Energy Leaders compare to these other indices.

# THE ENERGY ELITE — A CASE STUDY

Thomson Reuters works daily with corporate executives, government officials and the scientific community to build awareness for the importance of sustainability in today's business environment and the growing benefits of building sustainability into business models.

While Environmental Impact is one of the eight pillars of the Top 100 Global Energy Leaders methodology, the companies on the list demonstrate varying levels of success related to it and sustainability.

To highlight climate and sustainability leadership for carbon-intensive businesses, Thomson Reuters has a separate initiative, its annual Greenhouse Gas (GHG) Global 250 report, showcasing the growing business case for integrating sustainability into the organization. It identifies companies across the spectrum of carbon reduction and which demonstrate leadership on sustainability and the environment. These include some of the companies on the Top 100 Global Energy Leaders list as well as some of the largest and most carbon-intensive organizations globally. One such example is Total Group, which is profiled here in an excerpt from the Thomson Reuters GHG Global 250 report.

### THE BACKGROUND

Non-state actors, especially in the private sector, will play a critical role in addressing climate change and reducing GHG emissions as we proceed through the coming decades. Indeed, the 250 companies[1] referenced in the Global 250 report, along with their value chains, account for approximately one third of global annual emissions.[2] For years, management in many large organizations has recognized the future constraints that climate change could pose on their business operations and outlook. While many have deferred making a strategic shift toward a low-carbon future, others have recognized a new business logic: the historic opportunity for innovation that drives sustainable growth and competitive advantage.

The good news is that some companies in the Global 250, such as Total, Ingersoll Rand, Toyota, Iberdrola and Xcel Energy, are diversifying and decarbonizing their business models. Their plans, started over a decade ago, have produced positive business results and provide a pathway to a profitable low-carbon future that stretches to 2050 and beyond. Looking at the Global 250, evidence is accumulating that companies that demonstrate leadership toward a decarbonized economy gain strategic advantages.

## CASE STUDY OF TOTAL GROUP [3]

France's Total S.A. (Total)[4] is the fourth largest publicly held oil and gas company in the world. The firm is responsible for GHG emissions that place it on the list of major emitters. Yet, Total is also widely recognized as a leader among major fossil fuel companies for its vision of a new clean energy future and its progress on adapting a large, complex business for that future.

Understanding the complex process of strategy-driven business transformation requires a framework to connect actions to outcomes over the long-term. The model presented in the GHG Global 250 was adapted from previous work (Lubin & Esty, The Sustainability Imperative, HBR, 2010) to assess a firm's progress in transitioning along a "climate impact management maturity curve." Total's climate-related efforts can be traced back 20 years or more, with its initial recognition of the challenges that climate change poses for a major energy company and the need to address them.

1 Thomson Reuters and CDP have collaborated on this report to bring together the latest data from companies that do report emissions and the latest estimates for those which do not or incompletely report emissions. The finance sector was excluded, as there are insufficient estimates on its Scope 3 emissions.

2 This is measured against total anthropogenic emissions, including land use of approximately 52 Gigatons CO2e. This number includes direct, indirect and value chain emissions (scopes 1, 2 and 3) adjusted for a double counting of 60%.

3 Note this is an abridged version of case study as it appears in the full Global 250 report.

4 Of the examples of emerging leadership in this report, Total Group represents an underlying thesis that even the most carbon intensive firms have the opportunity for transformative business model change.

**Stage 1: Initial Engagement** – In 2006, Total was one of the first major fossil fuel companies to publicly acknowledge the importance of climate change as a global risk. Its initial efforts focused on implementing cost-effective approaches to significantly reduce flaring gas emissions.

**Stage 2: Systematic Management** – By 2008, Total led other major oil companies in systematic reporting of GHG and climate-related performance metrics, including product use, and included initial target setting for improvements in the company's operational footprint.

**Stage 3: Transforming the Core** – In 2009, Total launched EcoSolutions, its low-carbon products and services portfolio. With a series of investments, including SunPower (solar), Saft (battery design), Stem (energy optimization) and BHC Energy (operational energy efficiency), Total committed to shifting its revenue base toward sustainable energy solutions.

**Approaching Stage 4: Creating Competitive Differentiation** – In 2014, under the leadership of Patrick Pouyanne, Total's Chairman and CEO, the company fully articulated its strategy to differentiate itself from other oil companies. Going forward, Total is building its future business on three strategic pillars:

1. Reducing the carbon intensity of its fossil fuel product mix;
2. Investing judiciously in carbon capture, utilization and storage technologies; and
3. Expanding its business base in "renewables," which includes production, storage and the distribution of clean energy and biofuels.

In 2015, Total exited the coal business. Total's 2016 reorganization now has a strong focus on renewables and low-carbon energy solutions, setting policy support and goals aligned with the IPCC'[5]s 2°C s target.

If Total is to realize the full potential of its competitive advantage in the energy sector, it will need to continue to demonstrate viable decarbonization pathways consistent with the 2-degree boundary. This will require continued rapid growth of its EcoSolutions portfolio revenues and leadership among the oil companies as they address the potential challenge of stranded assets, oil reserves that could go unutilized, or be "stranded" due to the evolving strategic climate landscape.

## Reduced GHG Impacts

Total has reduced emissions over the last three years well ahead of IPCC guidance, with an approximate 20 percent aggregate decline (or roughly 130 million tonnes) in total GHG emissions across all scopes.[6] And while emissions declined, Total's carbon intensity saw a 9.2 percent average annual rate of decline in GHG / BOE (greenhouse gas emissions/barrel of oil equivalent), between 2013 and 2016, or a cumulative decline of 27.5 percent from the baseline year of 2013.[7] Both aggregate emissions and the GHG intensity of its footprint are falling significantly.

## Financial Outcomes: Reduced *Cost of Capital*

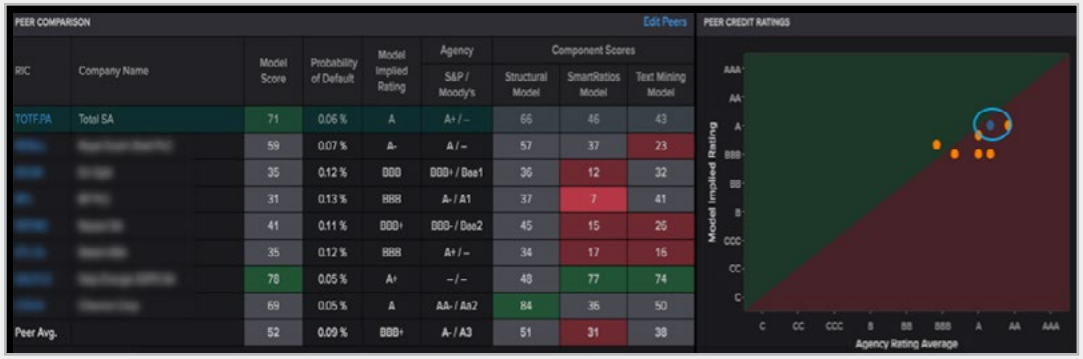
Figure 3 provides evidence that Total's strategy, along with its ability to execute it, is already generating value for the firm. The Thomson Reuters Eikon platform displays Total's peer-leading credit rating, represented by the blue dot in the peer-scatterplot. This is a significant advantage in the capital-intensive energy sector. As Total continues to extend its climate impact with more renewable and low-carbon solutions, the increasing value of its transformed green product portfolio is likely to significantly outpace the potential declining value of its traditional high-carbon products.

View the full GHG Global 250 Report, A New Business Logic, for answers to questions about how a changing climate disrupts markets and ecosystems, including:

1. How are emissions for the GHG Global 250 trending over the past three years?
2. Is there evidence that decarbonization creates a drag on financial performance, or a premium?
3. Given the long-term transformation challenge confronting these emitters, how can we assess a company's progress and define leadership?
4. How are policy and investor leadership evolving in a post-carbon economy?

*This section contributed to by David Lubin, Constellation Research and Technology, and Timothy Nixon, Thomson Reuters.*

**Figure 3: Total's Credit Rating (2017)**




*Source: Starmine, Thomson Reuters Eikon*

5 http://www.ipcc.ch/
6 According to Total completed CDP Climate Change information request submissions.
7 http://www.annualreports.com/HostedData/AnnualReportArchive/t/NYSE_TOT_2015.pdf

# A CONDUIT TO ENERGY LEADERSHIP

## ABOUT THE ENERGY PRACTICE GROUP

Thomson Reuters is the world's leading source of news and information for professional markets. Our customers rely on us to deliver the intelligence, technology and expertise they need to find trusted answers. Our business has operated in more than 100 countries for more than 100 years.

The Thomson Reuters Energy Practice Group comprises business experts from finance, risk, tax and legal with deep energy domain knowledge. We provide corporate oil, gas, power, utility, renewable and alternative-energy companies with the insight, tools and analytics necessary to excel in their business operations.

Our collective knowledge acquired over decades gives us a unique understanding of the marketplace, what business success means and how to obtain it. Coupled with the trusted insight of our Reuters news organization, we have an unparalleled view of industry issues, the evolving landscape and how you can stay ahead of the curve.

You, our customers, are the heart of our business. We're committed to understanding your organization and operational needs, then strategizing to deliver proven, trusted solutions.

Each and every day we bring you our expertise, passion and commitment to success, so you can have yours.

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# THE INNOVATION LAB TEAM

Members of the Thomson Reuters Boston Innovation Lab, in conjunction with the Energy Practice Group, worked to develop an objective methodology to assess energy-industry leadership.

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