SUSTAINALYTICS

THEMATIC RESEARCH

10 FOR 2017:

INVESTMENT THEMES IN A CHANGING WORLD

Doug Morrow & Martin Vezér / January 2017

About Sustainalytics

Sustainalytics is an independent ESG and corporate governance research, ratings and analysis firm supporting investors around the world with the development and implementation of responsible investment strategies. With 13 offices globally, Sustainalytics partners with institutional investors who integrate environmental, social and governance information and assessments into their investment processes. Today, the firm has more than 300 staff members, including 170 analysts with varied multidisciplinary expertise of more than 40 sectors. Through the IRRI survey, investors selected Sustainalytics as the best independent responsible investment research firm for three consecutive years, 2012 through 2014 and in 2015, Sustainalytics was named among the top three firms for both ESG and Corporate Governance research. For more information, visit www.sustainalytics.com.

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Foreword

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2017 – Fundamental trends continue to drive ESG growth and propel industry innovation

As 2017 begins, we see clear signs the field of ESG investing continues to flourish within the global investment community. We see more diversity and advancement in ESG investing approaches, increasing numbers of institutional investors becoming PRI signatories, growing retail investor demand for sustainable investment products, and more Board-level awareness around sustainability risk. From impact portfolios to quantitative modeling and algorithmic investing strategies, investment managers are exploring new frontiers in ESG investing looking for links between ESG, financial performance and/or sustainability impact.

While we have yet to achieve widespread adoption of ESG, I am inspired not only by the tremendous growth of responsible investing, but the innovation taking place within our industry. In fact, ESG investment strategies, broadly defined, now account for USD 8.7tn in assets in the US, up from USD 6.6tn in 2014, while ESG investment strategies in Europe grew by an average of 23% from 2013 to 2015. In Australia, sustainability themed investments grew a staggering 179% from AUD 8bn to 23bn in a single year.

On top of this significant growth is the entry into force of the Paris Agreement last November, and the upcoming launch of the UNEP FI Principles for Positive Impact Finance, which have put climate change and broader sustainability issues on the agenda for a new generation of investors and companies alike. The green bond market, which is forecasted to reach USD 130bn in 2017 up from USD 81bn today, is a notable beneficiary of the market's rising awareness of climate-driven risks and opportunities.

While it remains to be seen whether the recent change in political leadership in the US and expected triggering of Brexit in March could pose shorter-term challenges for a range of ESG issues, we believe they are unlikely to diminish investors' interest in ESG investing over the long term.

As the authors of this report observe, investors are being drawn to ESG in large part because the economy is changing in a way that is fundamentally raising the materiality of ESG factors. Hallmarks of this transition include the remarkable decline in the cost of renewable energy, the increasing connectedness of people and products and related concerns over data security, the growing importance of managing community relationships and the shift of interest in sustainable products from niche to mainstream. Against this backdrop, 10 for 2017 serves as an actionable playbook for investors for the year ahead. From my perspective, there has never been a more exciting time to be in the field of responsible investing.

Michael Jantzi, Chief Executive Officer

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10 for 2017: Investment themes in a changing world

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Key insights

A focus on data security…

- **Barclays** is an emerging leader in **blockchain applications** and is relatively well-positioned to mitigate growing data privacy risks associated with this technology.
- **BMW** is well-prepared to respond to an anticipated increase in regulatory attention over the hacking risk of **autonomous vehicles**.
- **Symantec**, a pureplay cybersecurity firm with excellent ESG capabilities, is an attractive way for investors to play the growing market for cybersecurity services, which is forecasted to reach USD 1tn by 2021.

…burgeoning sustainability markets and trends…

- **PG&E** is a leader among US utilities in upside exposure to **solar**, owning 152 MW of solar capacity and supporting 275,000 customers with private solar arrays.
- **Panasonic** is capitalizing on rising demand for **energy storage** products, with a 40% share of the global lithium-ion EV battery market and a diverse product line-up.
- Pharma companies such as **GSK** that are exploring **value-based pricing** models may be at a market advantage given increasing scrutiny over high drug prices in the US.
- With female representation of 36% on its board and 25% on its executive team, **Accenture** is positively exposed to the benefits of **diverse leadership** teams.
- **Plant-based proteins** are the next big thing in the USD 1tn global health and wellness market and **Danone's** imminent acquisition of WhiteWave favourably positions the company in this industry.

…and the push for improved corporate transparency.

- Tax avoidance results in lost revenues of EUR 50-70bn each year in the EU, and firms like **BBVA** are well-prepared to meet rising **tax reporting standards** in the EU.
- With a CEO-average worker pay ratio of 52:1, **Noble Energy** is among a small group of US companies that is ahead of **pay disclosure rules** that take effect this year.

Portfolio analysis: checking in on our picks from last year

- An equal weighted portfolio based on our *10 for 2016* picks (global companies well-positioned to manage climate-related risks and opportunities) outperformed the MSCI ACWI over the year **by 5.6% on a total return basis**.

Finding value in 2017

Ten investment themes for the year

In this year's contribution to Sustainalytics' *10 for* series we present ten investment themes for investors to consider in 2017. For each theme, we describe the key drivers, identify companies with upside exposure and present a profile of a company that we consider to be particularly well-positioned in the market. We conclude *10 for 2017* by revisiting our picks from last year (*10 for 2016*) and assessing how a concentrated equity strategy using these companies would have performed against the market.

Investment themes

Uncertainty ahead, but fundamental trends prevail

Change and uncertainty are the operative words

The economy faces a period of great change and uncertainty at the onset of 2017. In charting a course for the new year, investors are focused on the implications of looming political change, headlined by the recent inauguration of US President Donald Trump, the expected triggering of Brexit in March, and the possibility of a sea change in government leadership across Europe throughout the year. Investors are also processing the economic effects of rising global geopolitical tensions, diverging interest rates in the US and the EU and rebounding growth in emerging markets.

Fundamental changes occurring beneath the choppy waters of policy

While these stories have rightly captured investors' attention, we concentrate in this report on another set of changes that is occurring beneath the choppy waters of political change and macroeconomic policy. These trends include:

- the increasing cost competitiveness of **renewable energy** (an energy project brought online today is more likely to be powered by wind or solar than fossil fuels)
- the **intensifying impacts of climate change** (including sea-level rise, biodiversity loss and fresh water scarcity)
- the growing materiality of **community engagement** (exemplified by the recent Dakota Access Pipeline controversy)
- rapidly **changing consumer preferences** (of which the sudden explosion in the market for health-focused food products is an emblematic example)
- the possibility of peaking **global gasoline demand** (due in part to the disruptive effects of electric vehicles)
- the **growing connectedness** of people and products due to relentless technological innovation (which has also turned data theft into an economy-wide threat)
- increasing **disclosure requirements** and transparency expectations for public companies (such as tax reporting in Europe, and executive pay reporting in the US).

Deep shifts in economic reasoning

While these trends are certainly not immune to government policy, they are largely being driven by deep shifts in economic reasoning and are unlikely to be arrested by political changes taking place on the surface (a point that we argued in our Brexit Spotlight).[1] These fundamental trends have become imperative considerations for investors, as they are altering the competitive landscape for firms and creating a host of new risks and opportunities for investors.

Taking a closer look

15 industries, ten countries

In *10 for 2017* we scan the economy and search for value creation with these fundamental changes in mind. In addition to our ten profiled companies, we include starting universes for each chapter, listing a total of 48 companies throughout the report. The companies cut across 15 industries and ten countries, covering North America, Europe and Asia, and integrate a balanced mixture of environmental, social and governance factors.

Concerns over data security

A focus on data security and privacy

One of the unifying threads running through these diverse themes is data security. Our chapters on **blockchain** and **autonomous vehicles** discuss the market opportunities linked to these technologies, but also call attention to concerns over data security and privacy. We argue that companies with advanced data privacy and quality management systems are best prepared to manage the downside risks. Our chapter on **cybersecurity** chronicles the recent history of data breaches and analyzes the market for cybersecurity services.

Growing sustainability markets and trends

Growing markets and trends

We also look at burgeoning ESG-related products, including **utility-scale solar,** the surging **energy storage** market and the growing appetite for **plant-based proteins**, as well as trends in **value-based drug pricing** and **workforce diversity**.

Improving corporate transparency

Getting ahead of regulation

While most of our selections are clear upside plays, we also analyze the increasing focus of European regulators on **tax avoidance** and calls for more transparent corporate tax reporting, and discuss how investors can get ahead of new **executive pay disclosure** regulations in the US.

10 for 2017: Investment themes in a changing world

Investment theme	Summary	Company	Industry
Blockchain	Blockchain could help the financial industry reduce clearing and settlement costs, estimated at USD 65-80bn per year, but it also exposes banks to data security risks.	Barclays	Banks
Autonomous vehicles	Autonomous vehicles offer a 15-30% boost in fuel efficiency and may dramatically reduce the number of road accidents, but the regulatory bar is also likely to rise.	BMW	Automobiles
Cybersecurity	With the increasing importance of protecting online data and underlying systems, cumulative global cybersecurity spending is forecasted to reach USD 1tn by 2021.	Symantec	Software & Services
Utility-scale solar	The unsubsidized cost of utility-scale solar in the US has fallen to USD 46-61 per MWh, well below nuclear, coal and most types of gas-fired generation.	PG&E	Utilities
Energy storage	The lithium-ion battery market could be worth USD 250bn by 2040, driven by intensifying demand from utilities, automakers and consumer durables firms.	Panasonic	Consumer Durables
Value-based drug pricing	Equitable drug pricing may help pharma companies respond to rising scrutiny over high drug prices in the US, where Medicare and Medicaid spent USD 457bn on drugs in 2015.	GSK	Pharmaceuticals
Workforce diversity	Companies with superior levels of board and management diversity may financially outperform their peers, with some studies finding 3% per annum in excess return.	Accenture	Software & Services
Plant-based proteins	Plant-based protein products comprise an important segment of the growing health and wellness market, which is projected to reach USD 1tn this year.	Danone	Food Products
Tax avoidance	We expect EU regulators to continue their scrutiny of beneficial tax deals in 2017 as the EU loses between EUR 50-70bn in tax revenues each year due to tax avoidance.	BBVA	Banks
Executive pay ratios	The Dodd-Frank Act requires US issuers to disclose CEO to average worker pay ratios, which reached a high of 383:1 in 2000. Some firms are already disclosing these data.	Noble Energy	Oil & Gas

Source: Sustainalytics

The blockchain conundrum

Banks race to adopt blockchain on their own terms

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Background

We expect 2017 to be a big year for blockchain-related news flow in the global banking sector. While leaders are only just starting to test proofs-of-concept for blockchain applications, the field is rapidly developing. Fully 15% of the 200 banks and financial institutions surveyed by IBM expect to have implemented full-scale, commercial blockchain solutions by 2017 and nearly two thirds expect to have them by 2019.[2] The amount of spending on blockchain research and development by financial institutions is expected to reach USD 400mn by 2019, up from USD 75mn in 2015.[3]

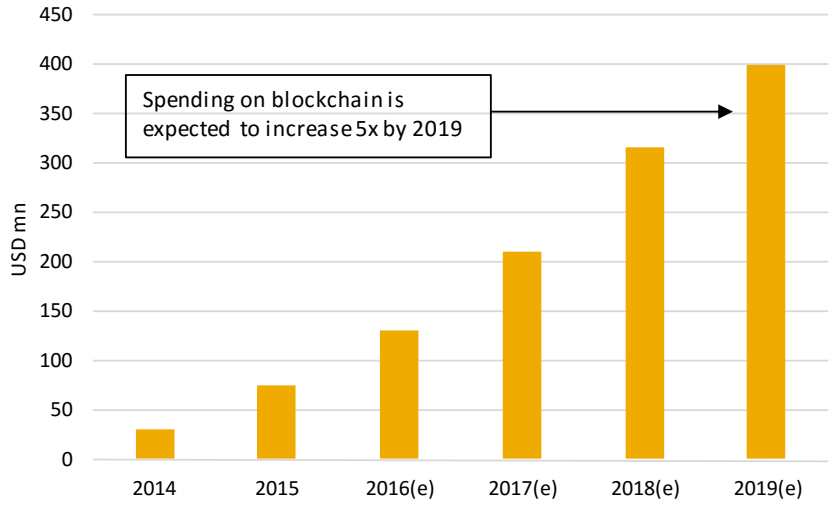
Both push and pull factors are compelling the global banking sector to take an interest in this technology. Blockchain is widely regarded as having the potential to disrupt the industry and banks want to mitigate this encroaching threat to avoid being left behind. They are also highly motivated by the potential for achieving cost reductions and efficiency gains. Blockchain could significantly reduce clearing and settlements costs, pegged at USD 65-80bn per year, by eliminating steps that involve manual processing.[4]

Toward private distributed ledgers and B2B applications

Banking sector efforts are focused in consortiums, collaborating on permissioned distributed ledgers

R3, a consortium of over 70 banks, formed in September 2015 to explore blockchain applications. Most major banks have formed study groups for blockchain applications, with their efforts focused on creating private, permissioned versions of the distributed ledger. Current themes of focus also include trade finance, payments and capital markets. Development is concentrated in B2B applications, although some retail uses (such as customer loyalty programs) are under development. Some banks are creating their own digital and crypto currencies, although the adoption of blockchain technology for other applications is likely to occur before such currencies gain traction.

Capital markets spending on blockchain technology



Source: Sustainalytics, AITE Group[5]

Data privacy and security risks

Data privacy and security for blockchain applications are a major concern and strategies for addressing it are still in early development

Two main selling points of blockchain are that it is transparent and that once data is embedded, it (theoretically) cannot be altered. These qualities raise concerns from a data privacy perspective, however. Given their apprehensiveness about access to personal data and financial transaction histories, banks are focusing efforts on private, permissioned versions of the distributed ledger. On the data security front, blockchain could potentially offer advantages for tackling issues such as money laundering. However, protocol weaknesses could undermine the integrity of blockchain transactions and expose banks to high profile hacks, thefts, uploads of malware and other security failures. In July 2016, for example, approximately USD 70mn worth of assets were stolen from Bitfinex, a Hong Kong-based bitcoin trading venue.[6] In June 2016, the Decentralised Autonomous Organisation (DAO) collapsed after USD 50mn worth of virtual currency was stolen.[7]

Financial product governance

Product governance will be a significant risk or advantage, depending on how well companies handle this issue

Banks face high regulatory and legal risks associated with financial product governance and these risks are heightened for those leading the development of blockchain applications, especially those without strong product governance programmes in place. Regulations will often lag in providing guidance and protection to stakeholders due to the pace of blockchain development, which creates uncertainty. In this environment, we expect that the most successful banks will not only comply, but also proactively anticipate future regulatory developments. Banks currently have a material edge in the US due to stringent financial regulations that limit and delay the activities of fintech start-ups. While the UK has pioneered the fintech "sandbox" that allows banks to experiment with new financial technologies that do not meet compliance standards, US regulators have no immediate plans for such an open platform.

Banks leading blockchain development and ESG

Some financial institutions leading blockchain development are also better-prepared from an ESG perspective

The table below lists a set of financial institutions that are both early leaders in the development of blockchain applications and have relatively strong policies, programs and control systems to address ESG risks related to data privacy, data security and financial product governance. For this analysis, we developed a Blockchain ESG Preparedness indicator – a composite of four relevant ESG metrics.[8] These results are based on reviewing our proprietary data for nearly 2,000 financial institutions.

Banking sector blockchain development and ESG leaders

Company name	Industry	Country	Market Cap (USD mn)*	Blockchain ESG Preparedness Score (0-100)	ESG Score (0-100)
UBS Group AG	Diversified Financials	Switzerland	60,342	94	74
Citigroup, Inc.	Banks	US	169,359	75	67
Bank of America Corp	Banks	US	223,322	56	73
Societe Generale Group	Banks	France	39,513	56	74
Barclays PLC	Banks	UK	46,562	50	61

* As of 31 December 2016

Source: Sustainalytics

Barclays PLC

Barclays takes a bite out of blockchain

61 — **Overall ESG Score**: Average performer

101 out of 397 — **Relative Position**: 74th percentile

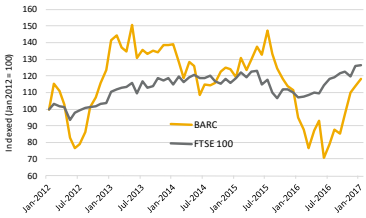
50 — **Key Indicator Score**: Blockchain ESG Preparedness Composite

Country: UK
Industry: Banks
Ticker: BARC (LSE)
MCap (USD mn): 46,562*
** as of 31 December 2016*

Key insights

- **Barclays is an emerging leader in developing blockchain applications**, having conducted an unprecedented trade transaction using the technology, and is active in collaborative efforts trialling various applications.
- While the company has experienced minor data privacy incidents, Barclays is **well-positioned to manage blockchain-related ESG risks**, including those related to data security.

Stock price performance
BARC vs. FTSE 100, 2012–2016



Source: Bloomberg

Overview

Barclays Plc (Barclays) is a global bank that piques our interest as an early leader developing blockchain applications on several fronts. In September 2016, together with start-up partner Wave, Barclays completed the world's first trade transaction using blockchain technology. The transaction took less than four hours to complete, which is remarkable as the established process takes seven to ten business days.

Barclays is advising the DTCC on utilizing blockchain for its trade information warehouse, which manages record keeping and payments for USD 11tn of credit derivatives. The service represents one of the largest mainstream applications of blockchain technology to date. Barclays also participated in a collaborative joint effort led by Axoni to test over-the-counter smart contracts for equity swaps related to automated lifecycle management and synchronisation of single stock, index, and portfolio swaps. It is a member of R3 and recently trialled Corda, an open source blockchain platform. The company tested a private version of Ethereum (a blockchain-based distributed computing platform, featuring smart contract functionality) with eleven other R3 member banks. Also, the company runs the Barclays Accelerator, a 13-week programme that trains fintech entrepreneurs.

Barclays scores well (tied for 7th place) on our Blockchain ESG preparedness indicator. Although Barclays' risk exposure is high – the company has experienced several small cases of theft of customer personal data – we believe it is better prepared to mitigate ESG risks associated with blockchain than many of its peers.

Outlook – rapid blockchain development anticipated

We expect the banking industry to rapidly develop blockchain applications in a bid to minimize disruption by new entrants and to realize related cost/efficiency gains. Barclays is among the early blockchain leaders that we consider to be relatively well prepared to manage the ESG concerns associated with building these applications.

Automakers smarten up

Assessing the benefits and risks of autonomous vehicles

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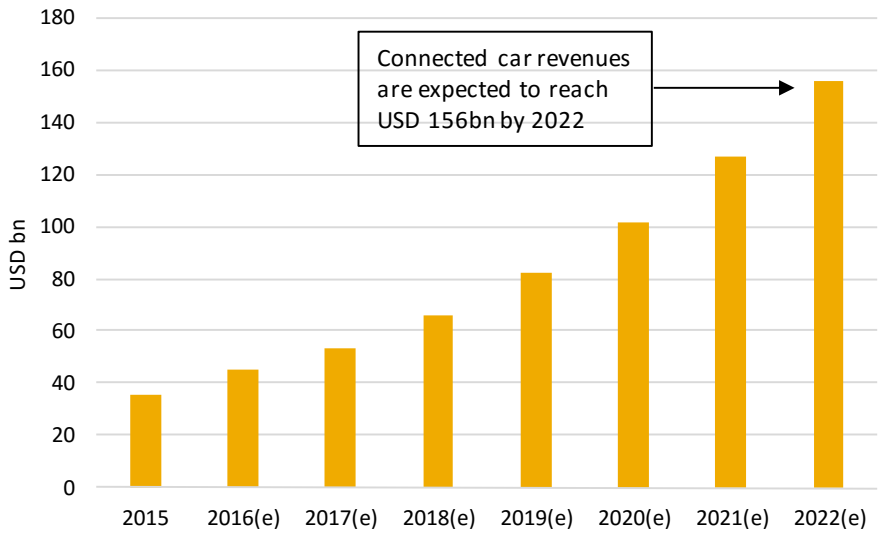
"The auto industry will change more in the next five to ten years than it has in the last 50."[9] This oft-repeated quotation from the Chairman and CEO of General Motors, Mary Barra, captures the general sentiment of the market. Dramatic innovations are catalyzing disruptive change across the auto industry, none more so than the electrification, automation and connectivity of vehicles. The race to develop the first fully autonomous vehicle (AV) is on. The Institute of Electrical and Electronics Engineers estimates that AVs will make up 75% of the global vehicle fleet by 2040.[10] Although such estimates seem overly bullish in our view, we still anticipate a fundamental reshaping of the auto industry in the years to come as auto manufacturers turn to making commercially viable AVs.

Significant growth in the years ahead

This trend entails major opportunities for investors, since such vehicles are typically marketed at higher prices, allowing carmakers to capture higher margins while developing strategic capabilities for long-term competitiveness. PwC's Strategy& forecasts that revenues from connectivity systems (hardware and software) will reach USD 156bn by 2022, up from USD 36bn in 2015.[11]

Estimated revenues from connectivity features



Source: Sustainalytics, PwC[12]

Assessing the benefits of AVs

The economic savings from reduced collisions and fatalities has been estimated at USD 1.2tn

The uptake of AVs and connected vehicles is being driven by a complex set of factors, but among the most important are the widespread social and environmental benefits associated with these technologies. The increased penetration of AVs and connectivity features, such as vehicle to vehicle communication and vehicle to infrastructure communication, is expected to lead to significant improvements in road safety, as 90%

of road accidents are caused by human error.[13] The global economic savings associated with the projected decline in collisions and fatalities has been estimated at USD 1.2tn, although the savings vary significantly by region.[14]

AVs could lead to a 15 – 30% improvement in fuel efficiency

AVs and connected vehicles also offer environmental benefits over conventional mobility options, which (together with electric vehicles) makes them attractive option for policymakers increasingly concerned about climate change. According to some estimates, AVs could deliver a 15 to 30% boost in fuel efficiency due to optimized route selection, reduced idling and congestion and generally efficiency improvements.[15] Of course, it is also possible that the increased penetration of AVs and connected vehicles results in an increase in the absolute number of passenger kilometres travelled, which would offset some of the efficiency gains.

Increased attention from regulators

Hacking and cybersecurity are emerging priorities for auto regulators

We expect the auto industry's transformation to lead to increased attention from regulators. This is simply a result of the industry moving from straightforward hardware manufacturing to producing more sophisticated machines that rely on non-traditional components, including software, and the inherent risks associated with connectivity features. The potential hacking of AVs and connected vehicles, for instance, is likely to become an increasingly important priority for regulators.[16]

Merging foresight and preparedness

The table below shows a sample of auto companies from Sustainalytics' coverage universe that have upside exposure to AVs and a comprehensive quality management system (QMS). These firms represent an attractive combination of foresight and preparedness, as a comprehensive QMS may help auto manufactures mitigate cybersecurity risk and other non-traditional industry concerns. The key initiatives and strategic partnerships that these automakers have established are fundamental steps in the process of rethinking an automaker's identity and business model in an era of smart transport.

Global auto manufacturers with exposure to AVs and connected vehicles

Company name	Market Cap (USD mn)*	S.3.2.1 QMS Certification Score (0-100)	ESG Score (0-100)	Key initiatives
BMW	60,552	100	77	Plans to launch electric and autonomous iNext in 2021. Ended partnership with Baidu, but teamed up with Intel and Mobileye.
Fiat Chrysler Automobiles	13,935	100	74	Established a partnership with Google to test self driving cars, for which FCA will provide 100 hybrid minivans.
Renault-Nissan	26,359	60	75	Developed a partnership with Microsoft and set up an internal startup division. Plans to launch 10 models with autonomous drive by 2020.
SAIC Motor	37,257	60	51	Partnered with Alibaba and launched the RX5, its first "internet car," in 2016. Plans to leverage R&D efforts for more connectivity.
Toyota Motor	192,412	25	62	Invested USD 1bn in artificial intelligence projects and developed a strategic partnership with Uber.

* As of 31 December 2016

Source: Sustainalytics

BMW Group

BMW is at the forefront of smart mobility

77 — **Overall ESG Score**: Leader

2 out of 47 — **Relative Position**: 98th percentile

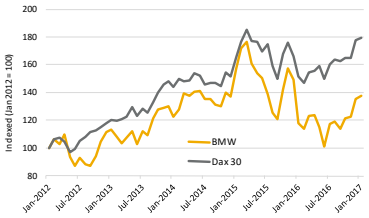
100 — **Key Indicator Score**: S.3.2.1 QMS Certifications

Country: Germany
Industry: Automobiles
Ticker: BMW (DB)
MCap (USD mn): 60,552*
** as of 31 December 2016*

Key insights

- BMW is a **premium automaker** with a **strong QMS** and a pioneer of smart mobility and connected cars.
- The company's **i division** focuses on the integration of electrification, connectivity and automation for the **evolution of transport**.
- BMW has joined forces with Intel and Mobileye to develop a **fully autonomous vehicle, iNEXT, by 2021**, and set up a USD 530mn start-up venture capital fund.

Stock price performance
BMW vs. Dax 30, 2012–2016



Source: Bloomberg

Overview

The Munich-based premium automaker has reached record high vehicle sales in recent years, although is set to lose the first place in the luxury segment to Daimler's Mercedes this year. In 2016, BMW celebrated its 100th birthday and presented its VISION NEXT 100, which identifies electric vehicles, digital connectivity, autonomous driving and mobility services as strategic investment areas under its i division. The company has built a strong reputation on quality and exhibits a robust QMS certified to international best practice standards. BMW is a pioneer of smart mobility: its DriveNow car-sharing joint venture with Sixt SE, established in 2011, is used by 580,000 customers worldwide; more than 95% of new vehicles carry embedded 3G connectivity; and its Connected Drive, a suite of technologies and digital services for advanced driver assistance, is available in 45 markets.

Outlook – the smart and sustainable mobility ecosystem

German engineering continues to shape auto industry dynamics, but the newest players come from Silicon Valley, the hot spot of technological innovation with companies like Tesla, Uber, Zoox and Google. In July 2016 BMW announced an alliance with Intel and Mobileye to bring to market a fully autonomous car by 2021, the iNEXT. Intel and Mobileye have also partnered with auto-parts manufacturer Delphi Automotive to accelerate self-driving technology development. In 2017, BMW will reportedly unveil a redesign of its i3 and launch the seventh-generation 5-Series, featuring all the latest connectivity and driver assist systems. BMW has also expanded its venture capital arm iVentures, an independent USD 530mn fund that should facilitate access to technology and bolster the group's ties with start-ups. Being part of such an ecosystem is key for BMW to stay ahead of innovation and advance smart and sustainable mobility, and we see the company prepared to harvest the fruits of its efforts in the coming years.

The art of digital defence

Opportunities in a cyber-insecure economy

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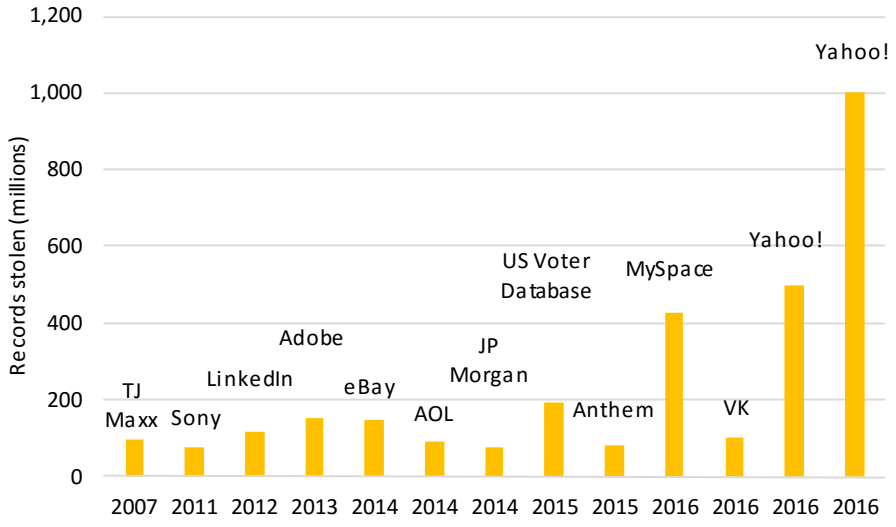
We expect 2017 to be another difficult year on the cyberattack and data breach front, particularly for large companies that have not implemented leading-edge digital safeguards. Yet the growing importance of protecting data assets and underlying systems also presents a growth opportunity for companies offering cybersecurity management services. The value of global cybersecurity spending is forecasted to reach USD 1tn on a cumulative basis by 2021.[17] In addition, the costs of cybercrime, including lost revenue for companies caught up in cyberattacks, are expected to reach USD 6tn by 2021, up from USD 400bn in 2015, according to Cybersecurity Ventures.[18]

Recent years have seen numerous high-profile data breaches

The rising financial losses from cyberattacks are in a large part a result of the exponential growth in internet-connected systems that are responsible for large amounts of sensitive data being produced, processed and stored online. This trend is expected to continue, particularly as companies focus on Internet of Things products and data analytics. Cyberattacks are now part of the cost of doing business and a risk that organizations will likely need to manage proactively. The importance of implementing pre-emptive cybersecurity measures to address the exceptional rise in cyberattacks is illustrated by unprecedented data breaches at Yahoo!, LinkedIn, Sony, Adobe, Target, SWIFT and other firms noted in the figure below.

Avalanche of data breaches revealed



Source: Sustainalytics, Statistia[19]

The drivers and implications of cyberattacks

Although the growth in data storage and migration to cloud-based systems has been a catalyst for organizational efficiency, it has also made systems and networks increasingly vulnerable to exploitation by malicious entities. A 2016 survey conducted

The growth of data and the nature of storage will continue to make cybersecurity a priority

by the Black Hat Conference, the seminal annual gathering of Information Technology security professionals, revealed that 72% of respondents anticipate that their organizations would have to deal with a major data breach in the next year.[20] Yahoo! revealed in 2016 that two separate breaches in 2013 and 2014 compromised approximately 1.5 billion user accounts, and the September 2016 short selling of St. Jude Medical by Muddy Waters due to cybersecurity deficiencies, reflect the reality that cybersecurity is an embedded business risk.[21] While a growing number of companies identify cybersecurity as a risk and provide relevant public disclosures, it is often unclear how many firms plan to manage this risk.[22] Considering these factors, we expect to see more investors and other stakeholders demanding greater transparency around cybersecurity risk management and mitigation.

Growth in cybersecurity spending

A significant majority of IT Security professionals anticipate dealing with a major data breach in the next year.

A study by IBM and the Ponemon Institute in 2016 found that two-thirds of IT Security capacity is dedicated to reactive measures as opposed to proactive management. The IBM Ponemon study also found that the average consolidated cost of a breach was USD 4mn.[23] Given the rate at which companies are targeted, these costs could result in substantial financial impacts. The increasing sophistication of cyberattacks will demand advanced measures, beyond reactive approaches, to protect data, systems, and networks. Overall, these factors are driving changes with cybersecurity related costs expected to account for a growing share of the overall IT spend according market research estimates.

Opportunities for investors

Technology companies with comprehensive cybersecurity offerings are well positioned to take advantage of this opportunity

To gauge the upside exposure of technology companies' ability to capitalize on the cybersecurity economy, we filtered more than 100 software and technology companies using Sustainalytics' Data Privacy Policy indicator, which measures the extent to which companies process and secure customer data. This indicator can serve as a signal of a company's data protection capabilities, as one of the criteria it assesses is a company's commitment to implementing leading data security safeguards. The table below presents a starting universe of companies that investors looking to develop a cybersecurity investment thesis can explore.

Companies offering cybersecurity services and products

Company name	Industry	Country	Market Cap (USD mn)*	S.3.1.3 Data Privacy Policy Score (0-100)	ESG Score (0-100)
Atos	Software & Services	France	11,050	100	80
Symantec	Software & Services	US	14,893	75	77
Oracle	Software & Services	US	157,735	75	70
SAP SE	Software & Services	Germany	107,297	75	78
Accenture	Software & Services	Ireland	76,243	50	61

* As of 31 December 2016

Source: Sustainalytics

Symantec

The cybersecurity pureplay in the age of big data

77 — **Overall ESG Score**: Outperformer

10 out of 201 — **Relative Position**: 96th percentile

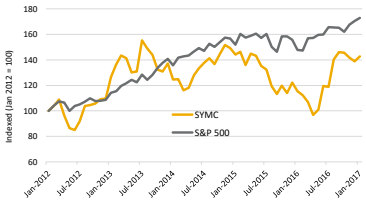
75 — **Key Indicator Score**: S.3.1.3 Data Privacy Policy

Country: US
Industry: Software & Services
Ticker: SYMC (NASDAQ)
MCap (USD mn): 14,893*
** as of 31 December 2016*

Key insights

- Symantec became a pureplay cybersecurity company after selling off non-related parts of its business in 2015 and acquiring **Blue Coat Systems in 2016**.
- Between 2013 and 2015 **cybercrime costs quadrupled**, and various market studies suggest the cost of data breaches will run into the **trillions by 2021**, increasing to almost **four times the estimated cost of breaches in 2015**.
- Given this context, **Symantec is well-positioned** to capitalize on the projected increase in spending to manage cybersecurity risks.

Stock price performance
SYMC vs. S&P 500, 2012–2016



Source: Bloomberg

Overview

Based in Mountain View, California, Symantec was founded in 1982 with a focus on providing system security as the personal computer revolution gained momentum. In recent times the company has struggled to keep pace with market shifts and was slow to move from a licence-based model to a subscription model. Starting in 2015, Symantec began positioning itself as a cybersecurity company by spinning off non-related assets. Its forward-looking strategy is to deliver an integrated security analytics platform that provides advanced data analytics and visibility into real-time threats for enterprises. It operates nine global security response centers to provide clients with 24/7 support.

In 2016, Symantec acquired Blue Coat Systems for USD 4.65bn, bolstering its cloud and enterprise focused cybersecurity offerings and moving the company towards its goal of becoming the largest pureplay cybersecurity firm in the industry. Given its streamlined business strategy, Symantec is in a strong position to provide integrated solutions to clients. Its institutional experience with providing system security to large enterprises offers prospective clients confidence in its capabilities to manage diverse systems and cyber threats. Symantec's newly enhanced product portfolio and commitment to implement leading data security safeguards signal that the company is competitively positioned to leverage its experience and resources to address the growing needs for cybersecurity.

Outlook – seizing the market

We expect that the increasing cost and threat of cyberattacks coupled with rising volumes of data being stored in networked infrastructure will provide Symantec with ample opportunity to enhance its cybersecurity portfolio and play a key role in this growing market.

US utilities warm to solar

Installed capacity of solar PV continues to escalate

Background

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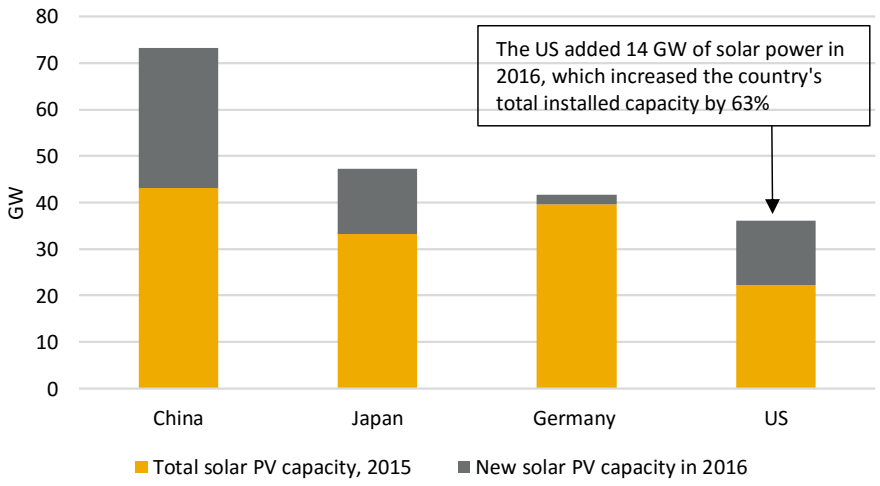
We expect 2017 to be another year of major growth in the solar photovoltaic (PV) energy production market. From 2005 to 2016, the global installed capacity of solar PV surged from about 5 to 300 gigawatts (GW), an increase of nearly 6,000%.[24] As illustrated by the chart below, China, Japan, Germany and the US are the world's four largest solar markets, accounting for 64% of total global installed capacity. While China and Germany (and, to a lesser extent, Japan) are relatively mature solar markets, much of the expected future growth is likely to take place in the US. In 2016, the US added over 14 GW of solar power, a 63% increase from the country's total installed capacity as of the end of 2015. Breaking its previous records for quarterly capacity growth in the second half of the year,[25] the US is on track to overtake Germany in 2017 as the world's third largest solar market.

Estimated installed solar PV capacity by country



Source: Sustainalytics[26]

The drivers of solar growth

Market conditions encourage solar power

Solar power has become an attractive means of generating electricity for several reasons. Most importantly, the rapidly declining cost of solar panels, coupled with improved panel efficiency, have pushed unsubsidized utility-scale solar power to the brink of cost competitiveness with conventional power generation. According to the most recent (2016) Lazard cost of energy study, the unsubsidized cost of utility-scale solar in the US ranges from USD 46 to 61 per megawatt hour (MWh), well below nuclear, coal and most types of gas-fired generation.[27] While the declining cost of solar panels is leading to a record supply glut and posing financial difficulties for PV manufacturers, it is welcomed by utilities, project developers and other PV consumers.

US policy incentives

The US Congress extended the ITC in December 2015

While unsubsidized utility-scale solar power in the US has achieved cost competitiveness with fossil generation, policy incentives also need to be considered even though their long term (and possibly their short term) future is uncertain. Taking current subsidies into account, the cost of utility-scale thin-film solar drops to USD 36 – 44 per MWh.[28] A particularly important support mechanism is the solar investment tax credit (ITC), which offers individuals and companies a 30% credit of the value of a PV system to count against their income tax. In December 2015, Congress extended and modified the ITC, which was previously set to expire at the end of 2016. Commercial and utility developers can now claim the 30% credit through 2019.[29]

Solar job growth

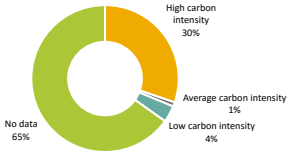
Although President Trump has indicated that he will scale back environmental policies, it is unlikely that the ITC will be repealed, as it has received broad support from a Republican Congress and is associated with significant job growth (the solar industry is responsible for one of every 80 new jobs in the US since 2009).[30] However, even if the ITC were repealed, we think it would have modest effects on the mid to long term price competitiveness of utility-scale solar.

Utilities account for more solar power than residential applications

An important distinction should be drawn between rooftop and utility-scale solar. While the rooftop market is benefitting from many of the same forces that are propelling the utility-scale segment, its long-term future is clouded by the prospect of utilities raising barriers to customer-owned solar.[31] Utilities that are both building their own solar capacity and developing new products and services based on renewables access and grid management are best positioned to compete in the solar market. In 2016, 70% of the 14 GW of new solar capacity added in the US came from utility-scale projects.[32]

Opportunities for US investors

Carbon intensity of US utilities



Source: Sustainalytics

To gauge the upside exposure of US utilities to solar power, we filtered a set of more than 100 US public utilities using Sustainalytics' Energy Mix indicator, which measures the carbon intensity of a utility's energy mix. As shown in the chart to the left, only four US utilities (4%) have what we consider to be a low carbon energy mix. These four companies, shown in the table below, provide an initial starting universe for investors looking to develop a solar investment thesis within the US utilities industry.

US utilities with a low carbon energy mix and upside exposure to solar

Company name	Market Cap (USD mn)*	E.3.1.17 Energy Mix Score (0-100)	ESG Score (0-100)	Solar PV Capacity (MW)
PG & E Corp.	30,729	100	73	152
Exelon Corporation	32,711	100	70	260
Ormat Technologies	2,661	100	63	13
Etrion Corporation	60	100	53	139

* As of 31 December 2016

Source: Sustainalytics

Pacific Gas & Electric (PG&E) Company

PG&E offers customers several ways of accessing solar energy

73 — **Overall ESG Score**: Outperformer

39 out of 250 — **Relative Position**: 85th percentile

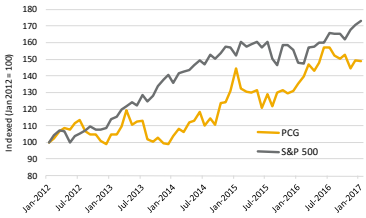
100 — **Key Indicator Score**: E.3.1.17 Energy Mix

Country: United States
Industry: Utilities
Ticker: PCG (NYSE)
MCap (USD mn): 30,729*
** as of 31 December 2016*

Key insights

- PG&E provides access to solar energy **through its own solar assets**, contracts with **third-party developers** and **grid-linked residential installations**.
- The company owns 13 solar PV facilities in California with a **combined capacity of 152 MW** and supports 275,000 customers with private solar arrays.
- PG&E is committed to **expanding its renewables programmes** in line with California legislation to achieve 33% renewable energy by the end of 2020.

Stock price performance
PCG vs. S&P 500, 2012–2016



Source: Bloomberg

Overview

Based in San Francisco, California, PG&E is one of the largest combined natural gas and electric utilities in the US, employing over 20,000 people, and delivering energy to about 16 million people in Northern and Central California. PG&E offers consumers several ways of accessing a diverse set renewable energy sources, including hydroelectric, geothermal, wind, biopower, and solar. In accordance with the California Renewable Portfolio Standards (RPS), PG&E aims to achieve 33% renewable energy in 2020, and 50% renewable energy in 2030. The company also set a target to achieve an average of 23% renewables over the 2014-2016 period.

An important part of PG&E's renewables initiative is its solar PV programme, which distributes energy through company-owned solar facilities, contracts with third-party providers, and grid-linked residential installations. PG&E reports that it has established over 200,000 rooftop solar connections, adds about 6,000 new solar customers a month, and supports 275,000 customers with private solar arrays.[33] PG&E provides a range of solar services, including its Solar Choice programme, which offers customers 100% solar electricity, without their having to install on-site solar panels, by purchasing solar energy on their behalf. It announced that all its operations service centers (nearly 100 facilities) will be 100% powered by solar energy through Solar Choice, and that it will continue to invest in improving the electric grid to integrate more renewable energy.[34] PG&E owns 13 facilities in California with a combined PV capacity of 152 MW.[35]

Outlook – moving ahead on solar

We expect that the growing cost competitiveness of solar power, coupled with rising consumer demand for renewable energy and the effect of policy, including the California RPS and the federal ITC incentive, will motivate PG&E to further increase its solar PV capacity going forward.

The energy storage charge

Lithium-ion batteries and the renewable surge

Background

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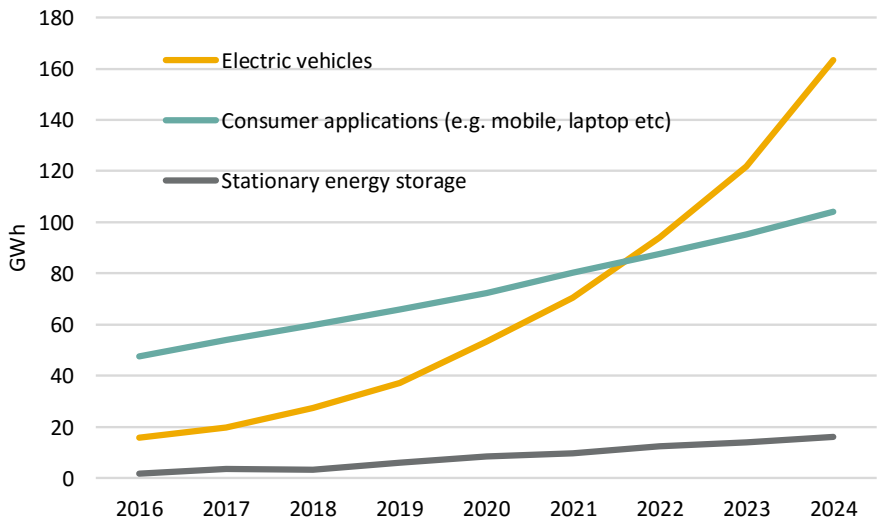
We expect 2017 to be another year of significant growth in the electronic energy storage market, and the lithium-ion battery market in particular. The applications of lithium-ion batteries include portable electronics, which only require dozens of watt-hours, electric vehicles, which require dozens of kilowatt hours, and energy grids, which require dozens of megawatt-hours.[36] Globally, about 1 gigawatt (GW) of batteries are currently operating on the grid. By 2040, the gird is expected to store and deploy nearly 760 GW hours (GWh), resulting in a battery market that could be worth upwards of USD 250bn.[37] Japan is currently leading the world in GWh of storage, and will likely remain the world leader for the next several years.[38] As shown in the figure below, demand for lithium-ion energy storage capacity is expected to grow substantially, driven by consumer applications, electric vehicles, and stationary storage systems.

Projected global lithium-ion battery annual demand by market segment, 2015-2024



Source: Sustainalytics, Bloomberg New Energy Finance, Avicien[39]

The drivers of energy storage growth

The electric vehicle revolution will further drive down the cost of lithium-ion batteries

The battery market is largely driven by consumer products such as computers and mobile phones, but with increasing demand for hybrid and electric vehicles, the automobile industry is driving up the scale of battery production and bringing costs down.[40] The price of lithium-ion batteries has declined from about USD 1,000/kWh in 2008 to USD 300/kWh today.[41] Recent projections suggest they will go down to USD 120/kWh by 2030.[42] By 2040, an estimated 35% of all light vehicles sold will be electric, amounting to 90 times the number of electric vehicles sold in 2015.[43]

Lithium-ion batteries can smooth energy flow variations and improve grid stability

The renewable energy boom is an additional driver of the energy storage market. While wind and solar power are increasingly important energy sources, locally their reliability is intermittent, depending on prevailing weather conditions. Energy storage technologies address this issue by smoothing variations in the flow of energy and improving the efficiency and stability of energy networks.[44] Currently, only about 1% of the energy consumed globally can be stored, and most (98%) of this capacity is pumped-storage hydroelectricity, which lacks the versatility and efficiency of electrochemical energy storage technologies.[45] By improving the efficiency of renewables, batteries may help reduce dependencies on fossil fuel and centralized power plants. Utilities are investing in lithium-ion batteries to address load management. Companies and households are buying them to store and deploy decentralized sources of energy, which can lower electricity costs and improve autonomy in energy consumption. In some cases, such initiatives may also help companies achieve corporate environmental goals.

Environmental and social concerns

Investors should also be mindful of downside environmental and social risk

While we are bullish about the energy storage market, investors should also be aware of the social and environmental impacts associated with lithium-ion battery production. As we discussed in two Sustainalytics reports last year,[46] these pertain to the large amount of energy and toxic chemicals used in the manufacturing of these batteries and the weak environmental regulations and enforcement in countries with high concentrations of lithium, which poses supply chain challenges. Notwithstanding these concerns, we expect lithium-ion batteries to maintain a lead in the electronic energy storage market.

Opportunities for investors

Our top five energy storage plays

Using Sustainalytics' Sustainable Products and Services indicator, we filtered 30 companies with exposure to the lithium-ion battery market to create a starting universe of our top five firms. These companies are based in a variety of different industries, including chemicals, automobiles and consumer durables. Below we offer investors a shortlist of firms around which an investment thesis based on energy storage can be constructed.

Companies with upside exposure to the energy storage market

Company name	Industry	Country	Market Cap (USD mn)*	E.3.1.1 Sustainable Products & Services Score (0-100)	ESG Score (0-100)
BASF SE	Chemicals	Germany	85,548	100	71
Panasonic	Consusmer Durables	Japan	25,016	100	67
Intertek	Commercial Services	UK	6,935	100	62
BYD	Automobiles	China	17,800	100	60
Tesla	Automobiles	US	34,423	100	56

* As of 31 December 2016 **Source**: Sustainalytics

Panasonic Corporation

Lithium-ion battery-market experience and exposure

67 — **Overall ESG Score**: Average Performer

13 out of 46 — **Relative Position**: 73rd percentile

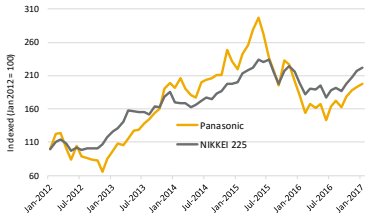
100 — **Key Indicator Score**: E.3.1.1 Sustainable Products and Services

Country: Japan
Industry: Consumer Durables
Ticker: 6752 (TYO/TSE)
MCap (USD mn): 25,016*
** as of 31 December 2016*

Key insights

- Panasonic **produces lithium-ion batteries** for consumer products, electric and hybrid vehicles, as well as home, community, industry and utilities applications.
- The company produces **complementary electronic systems for renewable energy generation**, including those that use photovoltaic solar panels.
- Having **partnered with Tesla on major renewable energy and battery projects**, Panasonic holds a 40% share of the electronic vehicle battery market.

Stock price performance
Panasonic vs. NIKKEI 225, 2012–2016



Source: Bloomberg

Overview

Based in Oaza Kadoma, Japan, Panasonic employs more than 250,000 people, working with its subsidiaries to develop, produce, sell and service a variety of electronic products, including lithium-ion batteries and a wide range of devices that use them. The company maintains a major share of the global lithium-ion energy storage market by offering batteries for small and large scale applications. At the lower-end spectrum of battery power and capacity requirements, it produces batteries for consumer devices such as mobile phones, tablets, electric bicycles and scooters. Moving toward higher-end requirements, it manufactures batteries for electric and hybrid automobiles as well as residential, industrial and utilities applications.[47] With a 40% share of the lithium-ion market for electric vehicles, it is among the top battery producers servicing an area of the economy that is taking off.[48]

Complementing its line of lithium-ion batteries, Panasonic is involved in the production of devices that rely on this technology. Beyond the production of conventional consumer electronics and batteries, the company is well-entrenched in the broader renewables market, producing batteries and photovoltaic modules for use in its Smart Energy Storage Systems, which can capture and store renewable energy. Panasonic offers these systems on small, medium and large scales, tapping into demand for residential, community, industrial and utility energy storage.[49] Panasonic has partnered with Tesla on several ventures, including large scale PV production for SolarCity[50] and lithium-ion batteries for Tesla electronic vehicles.[51]

Outlook – the future of energy storage

Panasonic leverages its experience as a major electronics and battery producer to ride the wave of demand for green energy products and electrochemical energy storage. The company is well-positioned to make gains in these markets, and its collaborations with Tesla signal its commitment to lithium-ion battery production.

Drug pricing under scrutiny

Rising concern creates opportunity for value-based pricing

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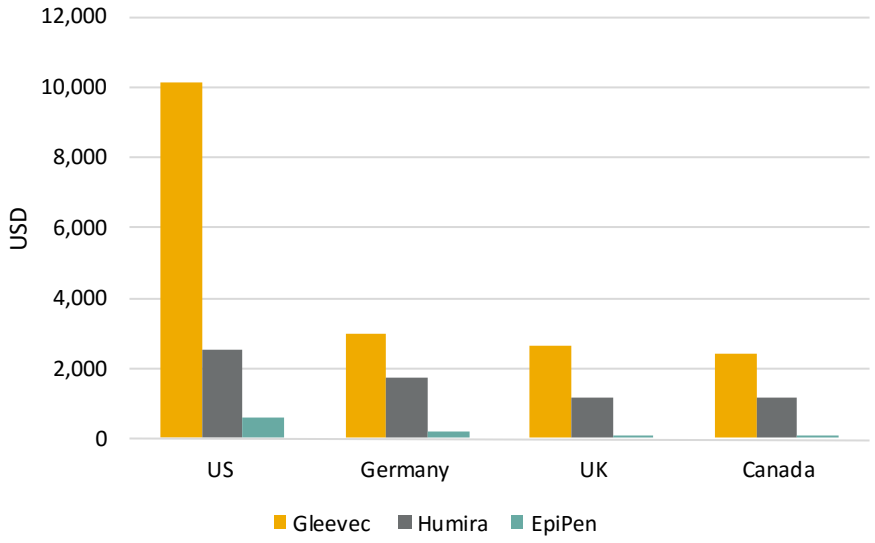
Background

We expect 2017 to be a difficult year for pharmaceutical companies that are relying on significant increases in US drug prices as a major revenue source. Recent years have shown that, far from adding value for shareholders, aggressive drug pricing can generate regulatory intervention, public backlash, market and brand risk and even bankruptcy. For many, the practice of aggressive drug pricing is linked with Turing Pharmaceuticals, which drew widespread public condemnation in September 2015 when it raised the price of its antiparasitic drug Daraprim overnight by 5,000%.[52] Since then, several other pharmaceutical companies, including Valeant and Mylan, have faced lawsuits and governmental investigations over high drug prices or price increases. Notably, Valeant faced bankruptcy after regulatory investigations revealed the company's reliance on a strategy built around product acquisition and follow-up price increases.[53]

We see opportunity for companies using alternative drug pricing models

While the traditional industry business model hinges on pharma companies recouping research and development costs through profits before drugs fall off patent (typically after 20 years), steep increases in drug prices can have counter-productive effects. Indeed, we see a significant upside for pharmaceutical companies that are exploring alternative pricing models, including tiered pricing and value-based pricing. While tiered pricing has been applied in many markets for some time, the first examples of value-based pricing, which sets drug costs based in part on the response rate of patients, have emerged in the last few years. Companies such as Sanofi, Regeneron, Novartis, Amgen, GSK and Merck Co. are early innovators on this front.[54]

Comparing drug prices across selected countries



Source: Sustainalytics[55]

The drivers of public and regulatory scrutiny

Drug prices in the US are among the highest in the world

One of the main drivers of growing public and regulatory scrutiny of drug pricing in the US is that the country's prescription drug prices, which are already among the highest in the world, are putting the US healthcare system under financial strain. The chart on p. 23 illustrates the situation: while Gleevec, a cancer drug manufactured by Novartis, retails for more than USD 10,000 in the US, it sells for less than USD 3,000 in Germany, the UK and Canada.[56] High drug prices in the US are partly due to the US regulatory pricing regime, in which the state systems, Medicare and Medicaid, have little power to negotiate with pharma companies. Medicare and Medicaid are estimated to have spent USD 457bn on prescription drugs in 2015, up from 367bn (24%) in 2012.[57]

Risks of price hiking

States are free to follow the lead of Vermont

In addition to the risk of public backlash, aggressive drug pricing can run afoul of regulatory trends. For instance, Vermont has introduced regulation for pricing transparency.[58] The National Academy for State Health Policy recently released a set of policy recommendations to reduce drug spending and increase the scope of regulatory oversight.[59] In December 2016, President Trump asserted that he would advocate for lower drug prices,[60] but whether or how he will do this remains unclear. Individual states, however, could follow the lead of Vermont by moving forward with pricing transparency.[61] Value-based pricing provides several advantages. Depending on how a pricing model is applied, it may insulate companies from mounting regulatory and public scrutiny on high drug prices, and reward innovative and effective treatments.

Strategies for investors

The table below shows pharma companies that have developed (or are exploring the use of) value-based pricing models. In addition to a company's Sustainalytics Equitable Pricing Score, investors may want to consider in the security selection process a company's overall ESG score (as a proxy for overall management quality) and percentage of company revenues from the US.

Pharma companies using value-based pricing

Company name	Country	Market Cap (USD mn)*	% of US Revenues (FY2015)	S.4.2.6 Equitable Pricing Score (0-100)	ESG Score (0-100)
Novartis	Switzerland	191,378	37	66	73
GSK	UK	94,680	34	66	71
Merck & Co	US	162,313	56	66	69
Sanofi	France	104,697	35	66	68
Amgen	US	108,769	79	0	56

* As of 31 December 2016 **Source**: Sustainalytics

GlaxoSmithKline plc

GlaxoSmithKline leads by developing innovative pricing models and long-term vision

71 — **Overall ESG Score**: Outperformer

11 out of 157 — **Relative Position**: 94th percentile

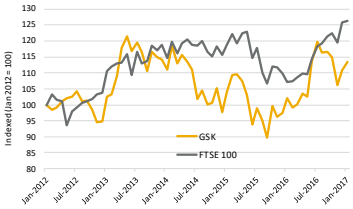
66 — **Key Indicator Score**: S.4.2.6 Equitable Pricing

Country: UK
Industry: Pharmaceuticals
Ticker: GSK (LSE)
MCap (USD mn): 94,680*
** as of 31 December 2016*

Key insights

- GSK recently published a **value based pricing policy paper** and has refocused its strategy to account for **long term sustainable pricing models.**
- GSK offers a **price back guarantee** for Strimvelis, a one-time gene therapy treatment that is among the most expensive therapies in the world.
- The company's patient assistance programme in the US **covers 27 products**, including GSK's top selling drug Seretide/Advair.

Stock price performance
GSK vs. FTSE 100, 2012–2016



Source: Bloomberg

Overview

Headquartered in the UK, GlaxoSmithKline plc (GSK) develops and commercializes pharmaceuticals, vaccines and consumer healthcare products. The company operates through five segments: Global Pharmaceuticals, HIV, Pharmaceuticals R&D, Vaccines, and Consumer Healthcare. Its main market is the US, where it generated 34% of its revenues in FY2015. In March 2017, Emma Walmsley, currently leading GSK's consumer healthcare business, will become the firm's new CEO and she is likely to continue many of GSK's current drug pricing strategies.

GSK responds to concerns over drug pricing with different strategies, including value based pricing, extensive access to medicine programmes and patient assistant programmes. In 2015, GSK divested from its high-margin oncology segment and strengthened its vaccine and consumer healthcare segments as it considers the current volume based pricing model unsustainable in the long term.[62] The company has published a policy position in support of value based pricing models[63] and, according to MIT technology review, will offer a new gene therapy, called Strimvelis, in Europe with a money back guarantee.[64] GSK also offers patient assistance programme for uninsured and Medicare patients in the US for 27 products,[65] including its top selling drug Seretide/Advair. Emblematic of the company's position as a leader in providing access to health care, GSK has ranked number one in the access to medicine index since 2008.[66]

Outlook – an example for US pricing

We expect GSK to maintain a leadership position in developing new pricing models and we believe the company is relatively well-prepared to respond to potential regulatory changes concerning drug pricing in the US. The company exemplifies best practices in the industry by focusing on a long-term vision regarding drug pricing.

The upside of diversity

Research points to a diversity premium

Background

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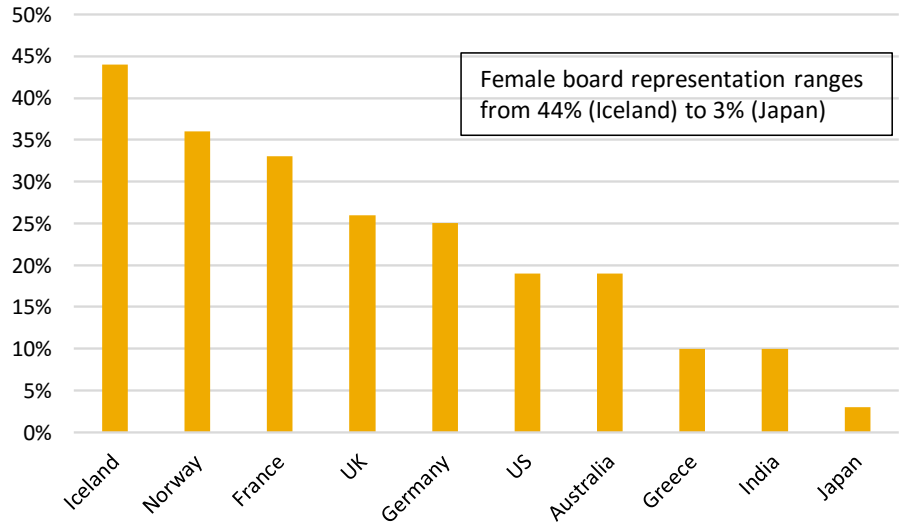
Diversity is in some ways a perennial ESG theme, but we expect an upswing in investor attention to the issue in 2017. The recent appointment of Emma Walmsley as CEO of GlaxoSmithKline – one of only 14 female CEOs running S&P Euro 350 companies – together with new research on the financial value of gender-diverse leadership teams has refocused investor attention on gender diversity.[67] This year is also notable as the deadline to comply with France's gender quota, which requires 40% female representation on the boards of large companies.[68] France is among a group of nine countries that have introduced a gender quota for the boards of listed companies.[69] The measures implemented by Israel (1999), Norway (2006), Spain (2007), Iceland (2010), Belgium, France and Italy (2011), India (2014), and Germany (2016) vary substantially in their ambition and success, but we expect a growing number of countries to follow suit with legislated quotas or formal but voluntary targets. The EU Commission has tabled several proposals for an EU directive to impose a mandatory quota system for female non-executive directors.[70]

Female board representation ranges from 44% in Iceland to 3% in Japan

The chart below shows average female board representation among large listed companies across selected countries. European countries with gender quotas have the highest proportion of female directors, with Iceland (44%), Norway (36%) and France (33%) leading the pack. The US, which is among the few OECD countries that have neither mandatory or voluntary gender targets, has average female board representation of 19%, a proportion that has not changed significantly over the past decade.[71] Japan, which, like the US, has neither a gender quota or voluntary targets, trails with an average of 3% female representation.[72]

Female board representation among large publicly traded companies



Source: Sustainalytics, OECD,[73] Catalyst[74]

The advantages of diverse leadership teams

Investors are likely to be drawn by evidence of outperformance

While we expect debate around gender quotas and voluntary targets to continue advancing in 2017, we think investor interest in the diversity theme will be primarily motivated by the prospect of market outperformance. While it may seem intuitive that a diverse board or management team would have an advantage in managing a similarly diverse talent pool, a number of recent reports have shown a clear link between board diversity and improved business performance. A 2016 Credit Suisse study found that companies where women made up at least 15% of senior managers had more than 50% higher profitability than those where female representation was less than 10%.[75] The study also explored diversity as an investable theme and found that a portfolio of companies with advanced gender strategies delivered a compound excess return per annum of 3.5% over the past decade.[76]

Attracting skilled employees

Companies with diverse executive teams have also been found to be better able to attract and retain highly skilled employees and improve customer relationships, potentially leading to increased returns.[77]

Broadening the conversation

Based in part on continued evidence that gender diverse companies may deliver superior risk-adjusted returns, we anticipate a broadened exploration of diversity to include ethnicity, geographic familiarity, cultural understanding, functional capability and thinking style in the years to come. There is already evidence that more ethnically diverse companies outperform less ethnically diverse companies,[78] and future research may reveal that other forms of diversity are also linked to improved financial returns.

Opportunities for investors

A focus on diverse boards, executive teams and overall ESG performance

To identify companies that offer investors upside exposure to the benefits of a diverse leadership structure, we screened our coverage universe using Sustainalytics' corporate governance (CG) Board Diversity indicator, which scores companies on a 0-100 scale based on female representation on the board of directors. We supplemented this information with data on the gender diversity of companies' executive teams and overall ESG scores. The table below includes a sample of companies that perform favourably on all three measures.

Sample of companies with gender-diverse boards and executive teams

Company name	Industry	Market Cap (USD mn)*	CG 2.9 Board Diversity Score (0-100)	ESG Score (0-100)	Female representation on executive team
Accenture	Software & Services	76,243	90	75	25%
AB Volvo	Machinery	24,966	90	70	16%
AXA	Insurance	61,301	80	87	20%
Dexus Property Group	Real Estate	6,720	70	84	22%
HP Inc.	Technology Hardware	25,309	70	77	21%

* As of 31 December 2016 **Source**: Sustainalytics

Accenture

Positioned to benefit from a gender-diverse board and management team

75 — **Overall ESG Score**: Outperformer

11 out of 196 — **Relative Position**: 95th percentile

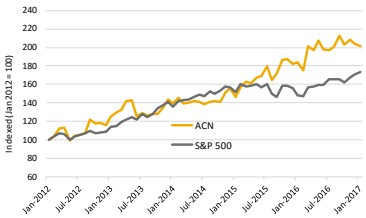
90 — **Key Indicator Score**: CG 2.9 Board Diversity

Country: Ireland
Industry: Software & Services
Ticker: ACN (NYSE)
MCap (USD mn): 76,243
** as of 31 December 2016*

Key insights

- Accenture is **among the most gender-diverse companies** in Sustainalytics' coverage universe, with 5 female directors on its 14 member board (36%) and 25% female representation on its executive team.
- Accenture **voluntarily discloses a detailed breakdown** of ethnic and gender representation across all employment levels.
- The company ranked **15th out of 1,800 global** companies on diversity management

Stock price performance
ACN vs. S&P 500, 2012–2016



Source: Bloomberg

Overview

Accenture is a global professional services company, providing a variety of services and solutions in strategy, consulting, digitalization, technology and operations. With approximately 384,000 employees, Accenture offers its services to clients spread across more than 120 countries. The company's 14 member board of directors includes five female directors (36%), while women represent 25% of the company's executive team. Accenture exhibits a relatively high degree of gender diversity in its leadership structure and, with a score of 75, also offers investors strong overall ESG performance.

Accenture has made a significant commitment to bolstering diversity throughout its operations. The company has an anti-discrimination policy and diversity programme, and offers a variety of training programmes to educate its employees on diversity and inclusion. The company's approach goes beyond gender equality, addressing people with disabilities, different sexual orientations and different ethnic origins. Being led by a female Group Chief Executive in North America, the company was among the first in its peer set to provide a detailed breakdown of the gender and ethnic representation of its US workforce across all levels of employment.[79] Accenture has been repeatedly recognised for its strong diversity performance. In 2016, the company ranked 15th in the DiversityInc Top 50 List, which assessed more than 1,800 companies on different areas of diversity management.

Outlook – the big winners of diversity

Diversity across all organizational levels may help companies extract financial value and boost shareholder returns. With growing attention from media, academia and the general public around diversity management in 2017, we expect companies with a diverse leadership structure, such as Accenture, to enjoy a competitive advantage.

The rise of plant-based proteins

Plant-based proteins are going mainstream

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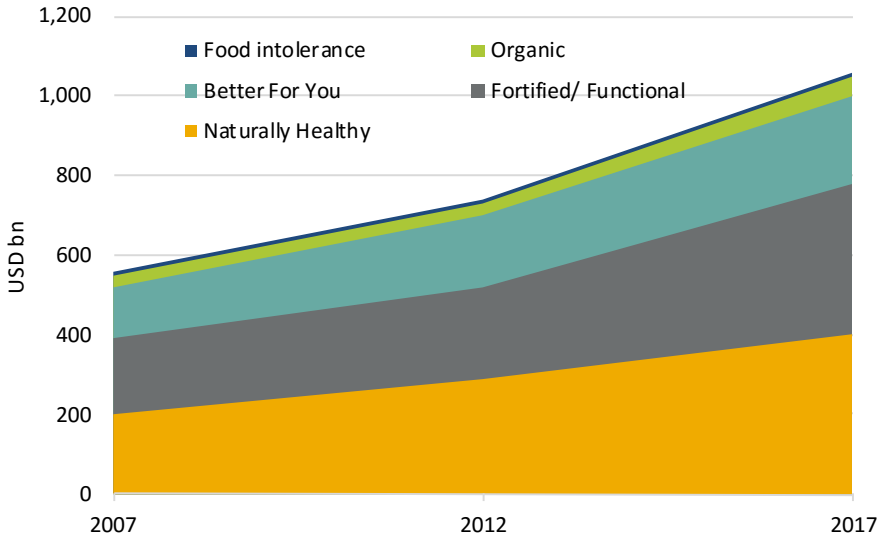
Background

The global health and wellness market is expected to hit a record high of USD 1tn in 2017, according to data from Euromonitor.[80] Surging demand for organic, natural, functional, and other health-focused food products have transformed a niche industry into one of the most strategic battlegrounds for global food producers. While healthy foods and beverages are commonly associated with developed countries, which accounted for 60% of global market share in 2014,[81] demand for these products is growing quickly across emerging economies in Asia-Pacific and Latin America. Symbolizing this shift, China was dubbed the world's most health-conscious country by Boston Consulting Group in 2015.[82] We expect plant-based proteins to comprise a growing segment of the healthy food and beverages market in the coming years.

Early projection of growth in health and wellness market 2007-2017



Source: Sustainalytics, Euromonitor[83]

The drivers of plant-based proteins

Consumers demand sustainable products

Consumer demand for sustainable products has reached a tipping point. Research conducted by consumer insights firm Nielsen identifies company/brand trust (62%), the health and wellness benefits of a product (59%) and whether the product is made from fresh, natural or organic ingredients (57%) among the key purchasing drivers for consumers.[84] Strong growth in the market for organic products and demand for healthy foods have thus far been the most significant manifestation of changing consumer attitudes in the food and beverage industry. However, as consumers' understanding of how buying decisions impact society, the environment and their own health evolves, we anticipate a demand shift from animal-based products towards plant-based proteins, including quinoa, lentils, beans, peas, nuts and seeds.

Consumer interest in more sustainable products

Plant-based proteins, a logical extension

According to the Forum for the Future, the key arguments for increasing the consumption of plant-based proteins include the World Health Organization's 2015 classification of certain processed meats as a class 1 carcinogen, the rise of antibiotic resistance, livestock's environmental intensity and animal welfare concerns.[85] Euromonitor estimates that sales of non-dairy alternatives to milk, such as soy, almond or coconut milk, grew by more than 100% between 2009 to 2015, reaching USD 21bn.[86] Furthermore, Farm Animal Investment Risk & Return, an investor initiative, and Share Action, a UK charity engaging institutional investors on ESG, expect the market for meat substitutes to grow by 8.4% per annum over the next five years.[87] Public policy may accelerate the transition, as China, which accounts for a significant proportion of growth in demand for animal proteins, introduced new dietary guidelines in 2016 as part of a plan to reduce its population's meat consumption by 50% by 2030.[88]

Plant-based foods provide the dual advantage of meeting growing demand while mitigating ESG risk

As the trend towards more sustainable consumption habits builds momentum, companies already developing their portfolios of alternatives to animal products are well placed to capture a portion of this quickly growing market. In addition to the clear opportunity angle this trend presents to global food and beverage companies, an increasing focus on plant-based proteins will also serve to lower companies' exposure to ESG risks. Key supply chain risks relate to disruptions as a result of water scarcity, given the high relative water intensity of raising animals; disease, the risk of which is increased by antibiotic resistance and the rise of factory farming; and climate change regulations, which could result in increasing costs associated with livestock production.

Opportunities for food investors

In order to gauge the upside exposure of US and European food companies to consumer preferences for sustainable products, we filtered a set of over 100 public packaged foods and meats companies using a composite of indicators related to organic products, supply chain sustainability initiatives and product health initiatives, providing a starting universe for investors looking to develop a sustainable food products thesis within the US and European packaged foods and meats industry.

Global food companies with exposure to plant-based proteins

Company name	Industry	Country	Market Cap (USD mn)*	Sustainable Products Composite Score (0-100)	ESG Score (0-100)
Danone	Food Products	France	41,645	70	75
Nestle S.A.	Food Products	Switzerland	223,499	70	73
Campbell Soup Co.	Food Products	US	18,567	68	76
Kellogg Company	Food Products	US	25,865	70	70
Hormel Foods Corp.	Food Products	US	18,408	38	64

* As of 31 December 2016

Source: Sustainalytics

Danone SA

Danone is positioning itself to lead global food companies in plant-based proteins

75 — **Overall ESG Score**: Outperformer

11 out of 211 — **Relative Position**: 95th percentile

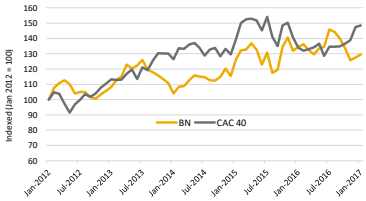
70 — **Key Indicator Score**: Sustainable Products Composite

Country: France
Industry: Food Products
Ticker: BN (ENXTPA)
MCap (USD mn): 41,645
** as of 31 December 2016*

Key insights

- Danone's historical focus on health and wellness provides a strong and trusted platform for growth into plant based proteins.
- The company agreed to acquire WhiteWave Foods in 2016, **a global leader in organic foods and plant-based dairy alternatives.**
- The acquisition **will double the size of Danone's sales in the US**, adding a line of fast growing product categories, including natural, organic and dairy-free.[89]

Stock price performance
BN vs. CAC 40, 2012–2016



Source: Bloomberg

Overview

Based in Paris, France, Danone is one of the largest global food companies in the world. With significant market presence in France, the US, China, Russia, Brazil, Indonesia and Mexico, the company provides consumers around the world with a range of products spanning its Fresh Dairy, Waters, Early Life Nutrition and Medical Nutrition business segments. The company's growth strategy focuses on encouraging healthier eating, resource stewardship and human capital development. Danone is building a brand premised on products that are good for people and the planet.

Danone has developed a reputation as a reliable provider of good-for-you products, subjecting all new products to a rigorous nutrient profiling system and renovating existing products to enhance their nutritional value. The company also has programmes to source key ingredients sustainably, mitigating supply chain environmental and social impacts. As a result, Danone has established a reputable platform for marketing healthy and sustainable products. The company has signalled its intent to leverage this platform in a play for the plant-based proteins market, entering an agreement to acquire Denver-based WhiteWave Foods, a pioneer in plant-based proteins that holds over 40% of the US market for dairy alternatives.[90] The July 2016 deal, which is in the final stages of regulatory approval, is the largest yet in the natural and organic foods industry, at USD 12.5bn.[91]

Outlook – lining up for success

We believe that Danone's strong reputation for offering healthy products and advancing sustainable business practices positions the company well to capitalize on a consumer trend that broadly emphasizes sustainability, and is specifically driving demand for healthy and natural foods. The pending acquisition of WhiteWave, an established player in the plant-based proteins market, will enable Danone to make a strong play for market share in this emerging niche, establishing itself as a first mover.

Tackling tax avoidance in the EU

Time to open the books

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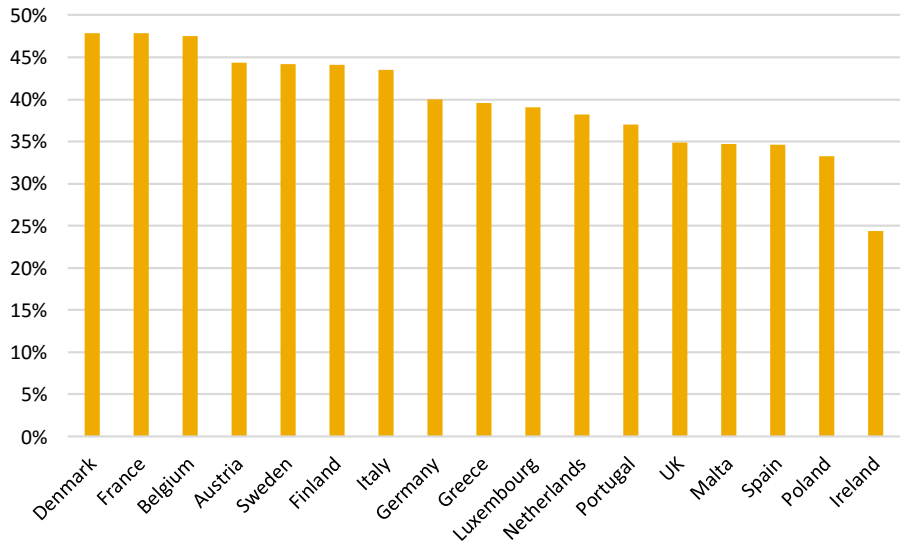
Background

In 2017, we expect EU regulators to continue increasing their scrutiny on beneficial tax deals granted by governments to multinational companies, and we anticipate more stringent tax reporting requirements for both EU and non-EU companies. Over the past two years, the European Commission has scrutinized numerous generous tax deals handed out by governments to multinational companies. In August 2016, the Commission concluded that Apple had received illegal tax benefits from Ireland and ordered the company to pay back EUR 13bn in taxes.[92]

Although it is doubtful that Ireland can be forced by the EU to reclaim taxes from Apple, the Commission's ruling, as well as previous rulings against Fiat and Starbucks to recover EUR 20-30mn each in tax payments to Luxembourg and the Netherlands respectively, demonstrate that multinational companies will have difficulties to further benefit from advantageous tax treatment within the EU. In fact, the Commission tabled a proposal in April 2016 that would require multinationals with a permanent presence in the EU to publicly report on the profits earned and taxes paid by country.[93]

Tax revenue by country as a percentage of GDP, 2015



Source: Sustainalytics, Eurostat[94]

Responding to public demand

Despite the relatively large contribution of tax revenues to the financial accounts of EU member states, the EU loses between EUR 50-70bn in tax revenues each year due to tax avoidance on corporate income tax. Tax avoidance schemes used by multinational companies are, therefore, imposing a significant financial burden that is ultimately experienced by the global general public. The table above shows that the total tax revenue of Ireland, Poland and Spain, for instance, falls well below the average of 39%,

putting a higher burden on individual taxpayers and simultaneously stimulating the race to the bottom on corporate taxes in the EU. With an estimated 88% of EU citizens supporting more stringent measures against tax havens and tax avoidance, the commission is responding to strong public backing and support.[95]

Regulatory changes in the EU

The EU Commission proposal is in line with the overall regulatory environment

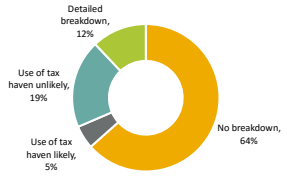
The proposal is in line with a series of other developments that were triggered when Organisation for Economic Cooperation and Development (OECD) and G20 countries published a guidance document on how to implement country-by-country (CbC) reporting as part of the OECD's Base Erosion and Profit Shifting (BEPS) Action Plan 13 presented in October 2015.[96] The Commission's proposal is built on the OECD guidance document and is one of the most far-reaching steps in the wake of scandals such as the LuxLeaks in 2014 and the Panama Papers in 2016.[97]

Targeting EU companies with annual turnover in excess of EUR 750 m

Under the new proposal, EU companies with a turnover of EUR 750mn or more, as well as subsidiaries and branches of comparable size of non-EU companies will have to publicly report tax and other financial data by country and make the information publicly available for five years.[98] The recent rulings against Fiat, Starbucks and Apple have been received as powerful measures, using anti-competition rules to break up the coalition between multinational companies searching for tax optimization opportunities and national governments trying to attract these firms at the expense of others. The European Commission has around 1,000 companies on their radar and is already investigating tax deals awarded to Amazon and McDonald's by Luxembourg.[99]

Opportunities for companies transparently reporting

Tax disclosure by European companes



Source: Sustainalytics

Given the current regulatory environment in Europe, companies already transparently reporting taxes paid by country are best positioned to respond to expected tax disclosure requirements. Sustainalytics' Tax Disclosure indicator applies to over 700 European companies and assesses whether companies publicly disclose a detailed breakdown of the amount of taxes paid per country. According to Sustainalytics' research, only 12% of these companies provide a detailed overview of taxes paid by country. The table below includes a sample of these companies across five industries.

European companies with transparent tax reporting

Company name	Industry	Country	Market Cap (USD mn)*	G.1.4 Tax Disclosure (0-100)	ESG Score (0-100)
Telefonica Deutschland	Telecom Services	Germany	12,769	100	79
Rio Tinto	Diversified Metals	UK	71,944	100	71
BBVA	Banks	Spain	44,422	100	70
Lafarge	Construction Materials	France	31,951	100	70
A.P. Moller - Maersk	Transportation	Denmark	32,364	100	69

* As of 31 December 2016

Source: Sustainalytics

Banco Bilbao Vizcaya Argentaria, S.A.

Proactive tax transparency since 2011

70 — **Overall ESG Score**: Outperformer

44 out of 380 — **Relative Position**: 88th percentile

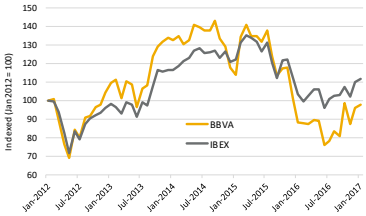
100 — **Key Indicator Score**: G.1.4 Tax Disclosure

Country: Spain
Industry: Banks
Ticker: BBVA (BME)
MCap (USD mn): 44,422
** as of 31 December 2016*

Key insights

- **BBVA voluntarily discloses all tax payments** in countries in which it has a significant presence, a practice that it has followed since 2011.
- The company is not involved in any significant taxation or accounting controversies and **exceeds reporting requirements** with its annual Total Tax Contribution report and its Code of Good Tax Practices.
- The company placed **second out of 16** publicly traded Spanish companies in a 2016 ranking of corporate and tax transparency.

Stock price performance
BBVA vs. IBEX 35, 2012–2016



Source: Bloomberg

Overview

Banco Bilbao Vizcaya Argentaria, S.A (BBVA) is a global banking group active in retail, wholesale and private banking as well as asset management. The company provides financial services in 35 countries to over 66 million customers with a focus on Spain, Latin America, the US and Turkey. Although European credit institutions have had to disclose corporate taxes paid by countries since 2014, BBVA exceeds these requirements by voluntarily disclosing its wider tax contribution as part of its annual reporting function.

BBVA has developed a policy on tax reporting and fiscal strategy and has transparently reported tax payments since 2011 through an annual Total Tax Contribution report. The report discloses BBVA's contribution by type of taxes paid in all countries and jurisdictions in which it has a significant financial presence. The company's commitment to tax transparency has also been recognized by Fundación Compromiso y Transparencia, a Spanish initiative to improve good corporate governance and transparent reporting in business. In 2016, the company placed second in the organization's annual transparency ranking of the Ibex 35 stock exchange index. While BBVA was one of about 500 banks implicated in May 2016 in the Panama Papers controversy, its exposure was not particularly notable and the company has been winding down its presence in tax havens since 2004.[100]

Outlook – one step ahead

We see growing determination on the part of the European Commission to reveal dubious tax agreements and expect tax reporting requirements for multinationals in the EU to further increase going forward. BBVA was among the early leaders in proactively disclosing and explaining its tax profile. We consider companies already disclosing their CbC tax payments to be better prepared to manage the expected regulatory environment in the EU and the increasing demands of transparency.

Revealing the pay gap

Required US disclosures of CEO to median-worker pay ratio

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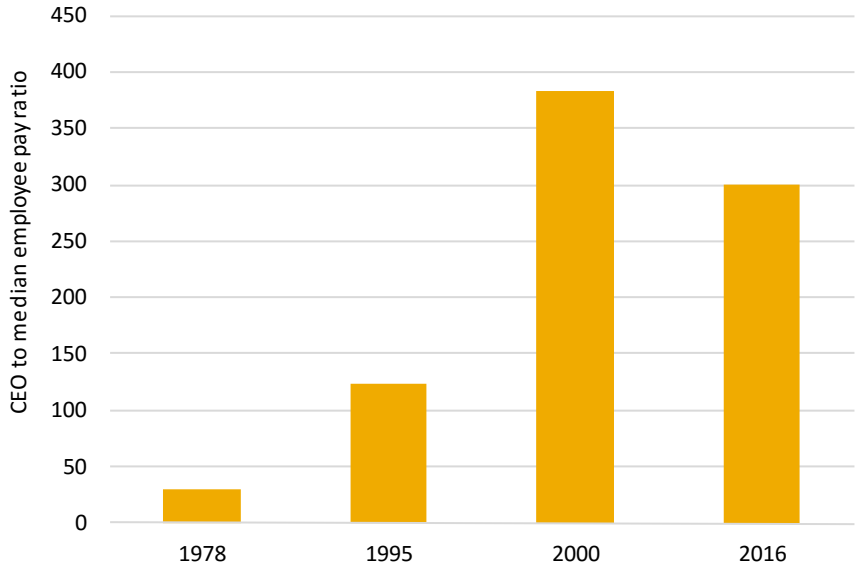
Background

The 2010 Dodd-Frank Act brought several new governance provisions into practice that have given stakeholders deeper insight into companies' compensation practices in the US. In connection with mandatory provisions for shareholder voting on executive compensation packages, the Dodd-Frank Act mandates that companies disclose in their annual proxy statements the ratio of the total compensation of Chief Executive Officers (CEOs) and that of the median worker within the same company.[101]

Pressure from US corporations and lobbying entities, such as the US Chamber of Commerce, delayed the initial rule-making until 2013, passing the proposed rule along party lines at the Democrat-controlled board of commissioners at the Securities and Exchange Commission (SEC).[102] After an extended comment period lasting almost two years, the final rule was adopted in August 2015. Despite President Trump's assertion that he would dismantle the Dodd-Frank law, it has received broad public support. During the comment period for the legislation, over 99% of the 287,400 letters received by the SEC were in support the proposed rule.[103] Starting with the fiscal year beginning on or after 1 January 2017, all issuers in the US will be required to disclosure this ratio.[104]

CEO to median worker pay ratio among US companies



Source: Sustainalytics, Economic Policy Institute[105]

Inflation-adjusted CEO compensation is up nearly 1,000% from 1978

These disclosures will likely further embed the notion of pay inequality in the public's consciousness. As shown above, the ratio of CEO to median employee pay among large US companies has increased dramatically over the past thirty years, from 30:1 in 1978 to 383:1 at the height of the dot com bubble in 2000.[106] The increases in compensation disparity between CEOs and the average employee reflects a pronounced divergence

in compensation practices for senior executives and frontline workers. After adjusting for inflation, the average CEO compensation increased 997% from 1978 to 2014, compared to 11% percent for average worker salaries.[107]

Legislation reflects broader cultural changes

Public scrutiny over income disparity

Increased cultural awareness of rising income inequalities in developed countries has fueled public scrutiny over executive compensation for several years. In the aftermath of the financial crisis of 2007-2008, the Occupy movement began the process of focusing global attention on inequality in the US, culminating in pay-ratio provision in the Dodd-Frank Act. Recent academic publications, such as Thomas Piketty's *Capital in the 21st Century*, have also highlighted the recent increases income inequality.[108]

Investor perspectives

Potential for institutional investors to incorporate pay-ratio into their governance decisions

Other studies suggest that high CEO pay can have detrimental impacts on a company's short- and medium-term performance, with executives often making value-destroying decisions when total compensation is tied to extremely high pay-outs.[109] Investors are also scrutinizing the internal pay equity between the executive team and rank and file employees in their governance decision-making. A recent study by Crawford, Nelson and Rountree found a convex relationship between shareholder dissent on a company's say on pay policy and the company's pay ratio, as banks with higher CEO-average employee ratios receive greater dissent on proposals to approve their executive compensation programs independent of other potentially compromising compensation practices or company performance.[110]

International expansion

Pushes for similar changes outside the US

Calls for mandatory pay ratio disclosures are picking up steam outside the US market. In July 2016, UK Prime Minister Theresa May stated that her government would push for a pay equity disclosure metric for UK companies along the lines of the SEC rule.[111] Interest in similar measures is sprouting in the Canadian[112] and Australia[113] markets as well, as stakeholders and media are focusing in on the pay gap.

Evaluating pay equity

The table below shows the CEO to median pay ratio at the four US companies that have voluntarily disclosed this information in advance of the onset of the SEC rule. These companies are part of industries that face high demand for skilled labour, which results in higher average employee wages relative to economy as a whole.[114]

CEO-median pay ratio among early disclosers in the US

Company name	Industry	Country	Market Cap (USD mn)*	Pay Ratio	CG score (0-100)	ESG Score (0-100)
Noble Energy	Oil & Gas Producers	US	16,354	52:1	48	66
Adams Resources & Energy	Refiners & Pipelines	US	167	7:1	N/A	53
Novagold Resources	Precious Metals	US	1,459	14:1	55	52
Northwestern Corp	Utilities	US	2,748	19:1	N/A	49

* as of December 31, 2016 **Source**: Sustainalytics

Noble Energy, Inc.

One of the first voluntary disclosers of a CEO-median pay ratio

48 — **CG Score**: Average Performer

49 out of 177 — **Relative Position**: 42nd percentile (US)

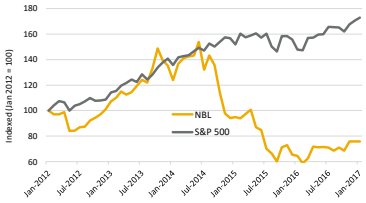
52:1 — **Key Indicator**: CEO to median pay ratio

Country: US
Industry: Oil & Gas Producers
Ticker: NBL (NYSE)
MCap (USD mn): 16,354*
** as of 31 December 2016*

Key insights

- In 2015 Noble Energy disclosed a **CEO to median employee pay ratio of 52:1**, with median employee remuneration totalling USD 139,440.
- In 2015, the CEO's remuneration was USD 7,253,154, **more than 2.5 times that of the next highest paid executive officer**, who received USD 3,104,862.

Stock price performance
NBL vs. S&P 500, 2012–2016



Source: Bloomberg

Overview

Noble Energy is an independent energy company, engaging in petroleum and natural gas exploration and production. The company's governance practices in general reflect broad openness to shareholder rights, recently incorporating proxy access. Less positively, we note the presence on the board of a majority of long-tenured directors, and the large size of the nomination committee. Noble Energy has voluntarily disclosed the pay ratio of the CEO to median employee since its 2014 filing with the SEC, when the CEO-median pay ratio was 85:1. In 2015, the company disclosed a ratio of 47:1. After changing its methodology to address developments in SEC standards, its disclosed ratio for 2016 was 52:1.

In terms of overall compensation practices, for 2015, 75% of the company's equity awards to executives did not apply performance criteria, and 40% of the company's annual incentive was determined on a discretionary basis. With variable remuneration representing 77.5% of the CEO's total compensation opportunity, the fluctuation in the pay-ratio over the previous several years reflects oscillations in the CEO's variable awards over that same timeframe. In 2015, Noble applied the methodology previously suggested by the SEC, as opposed to previous years, when the company calculated the ratio using its own methodology.

Outlook – capturing ratios

Given the increasing importance of companies' internal pay equity within a broader cultural context, actors in the corporate governance space appear to be incorporating this information into their decision-making. The momentum that this aspect of executive compensation has been receiving over the previous several years suggests that this issue will receive growing scrutiny within the ESG and CG communities. Starting in 2017, Sustainalytics' Corporate Governance team will incorporate this information into its corporate governance reports for the US and many Western European countries.

Update on 10 for 2016

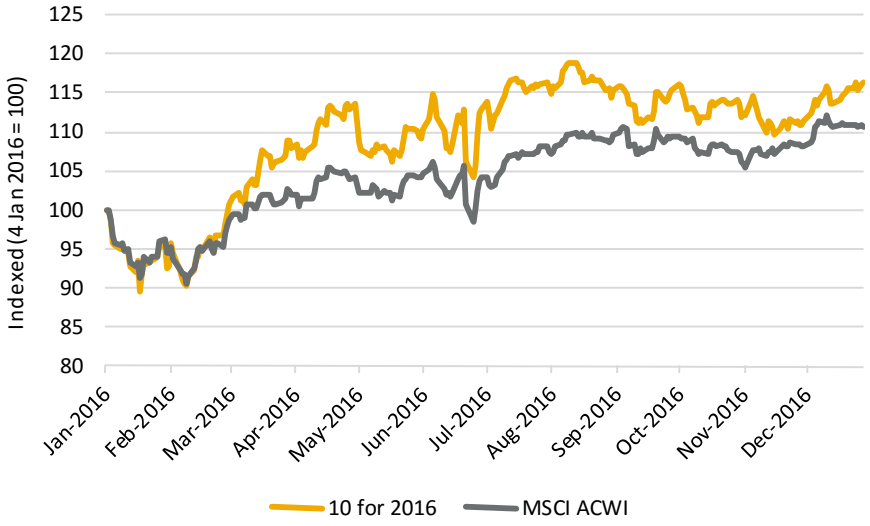
Taking a look at our picks from last year

Last year, our report *10 for 2016 The Paris Agreement: Triumph of the Optimists* concentrated on ten companies and investment themes related to climate change, providing a timely analysis of markets that could be affected by the Paris Agreement. On 4 November 2016, the Paris Agreement entered into force after the required conditions – that at least 55 United Nations Framework Convention on Climate Change (UNFCCC) Parties accounting for at least 55% of global emissions have ratified the treaty – were satisfied.[115] Today, 126 of the 197 Parties to the Convention have ratified the Agreement, including the most significant GHG emitters, China and the US, which are responsible for about 25% and 13% of global emissions, respectively.[116]

The *10 for 2016* outperformed the global equity market

Although Sustainalytics' expertise is in ESG risk and opportunity analysis, it is instructive to look at how an investment strategy based on the *10 for 2016* would have performed against the market. While we believe that the value-add of ESG integration is best measured by looking at the longer-term performance of an investment, an equal weighted portfolio based on our *10 for 2016* picks (global companies well-positioned to manage climate-related risks and opportunities) would have outperformed the MSCI ACWI by 5.6% on a total return basis in calendar year 2016.

Total returns of *10 for 2016* and MSCI ACWI



Source: Sustainalytics, Bloomberg, Capital IQ

An overview of the *10 for 2016* climate change mitigation portfolio

As shown in the table on p. 39, two of the *10 for 2016* picks gave a major boost to our portfolio, namely, Borregaard and Origin Energy, which provided total returns of 76% and 34%, respectively. The overall ESG scores for all ten of the *10 for 2016* companies show negligible variance over the year; the median change was less than one percentage point. While many factors influence the total returns of an investment, our analysis shows that a portfolio strategy based around climate change-related risks and opportunities can deliver market outperformance.

Complementing the positive financial performance of the *10 for 2016* portfolio, we are also pleased to highlight news about each of these companies with respect to their climate change mitigation initiatives. We find two of these companies, Borregaard and Tesla, have especially robust financial and climate change mitigation strategies, placing them in a strong position for 2017.

An update on *10 for 2016*

Company name	Total return*	ESG Score, 2016	ESG Score, 2017	Direction of change in ESG Score	Relevant highlights from 2016
Tesla	-4%	57	56	↘	In July 2016, Tesla's Gigafactory 1 and, in December began the production of 2,170 cells for qualification. In the first half of 2017, it will begin producing cells for its Powerwall 2, Powerpack 2 and Model 3 electric vehicle.
Borregaard	76%	62	65	↗	In December 2016, Borregaard and Rayonier Advanced Materials announced that the two firms have secured necessary permits for a USD 135mn construction project representing a capacity of 100,000 tonnes of lignin.
LG Chem	-24%	65	66	↗	In October 2016, LG Chem announced it will construct a USD 1.3bn electric vehicle battery plant near in Poland, which will be the first large-scale automotive lithium-ion battery plant in Europe.
Kellogg	3%	71	69	↘	In July 2016, Kellogg joined SUSTAIN, a group of agricultural retailers in the US Midwest that offers assistance on water, soil and carbon emission management to farmers who grow crops on about 45mn acres.
L'Oréal	15%	79	77	↘	In October 2016, the CDP recognized L'Oréal as a global leader for its climate strategy and related transparency policies. The firm aims to reduce its emissions to 60% of its 2005 levels by 2020.
General Electric	3%	66	70	↗	In October 2016, GE announced that it plans to invest USD 1.65bn to acquire LM Wind Power, a Danish manufacturer of wind turbine rotor blades, strengthening the renewable energy arm of the company.
Allianz	1%	83	85	↗	In August 2016, Allianz announced it would screen USD 200bn of investments based on ESG criteria. By March 2016, the company had already sold coal-related equities amounting to USD 235mn.
Origin Energy	34%	68	66	↘	In May 2016, Origin Energy signed a deal to buy all the electricity and renewable energy certificates produced by the new 100 MW Clare solar park in Queensland, Australia.
Cisco	14%	76	79	↗	In March 2016, the US Environment Protection Agency gave Cisco the Supply Chain Climate Leadership Award, recognizing its efforts to engage with 130 key suppliers and partners to set emission reduction targets.
RWE	9%	72	69	↘	In October 2016, Innogy, the renewables arm of RWE, became the largest initial public offering in Germany since 2000, valued at USD 22bn, more than twice the market capitalization of RWE.

* from 1 January 2016 to 31 December 2016. **Source:** Sustainalytics

Conclusion

We believe the ten investment theses outlined in this report can help investors find value in 2017 and respond to many of the fundamental changes that are occurring across the economy. While the year begins with a new period of political change and uncertainty, Sustainalytics' counsel to investors is that they stand to benefit by increasing their awareness of the fundamental pivot towards sustainability in the financial markets and by maintaining confidence in the material benefits of ESG integration.

Endnotes

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