ENERGY EFFICIENCY: SPARKING THE LOW-CARBON TRANSITION

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Technology innovation and climate change are disrupting long-held ideas of energy and fueling a transition to a low-carbon world. Enabled by emerging technologies and rapidly declining costs, the transition from fossil to net-zero carbon energy is transforming the global energy sector and reshaping the economy. This energy transition is poised to revolutionize the way we source, store and consume energy while providing opportunities for investors to align with, and potentially benefit from, the shift to a net-zero carbon world.

In part two of this six-part series, we expand on the energy transition introduction and explore a foundational aspect of the energy transition: energy efficiency.

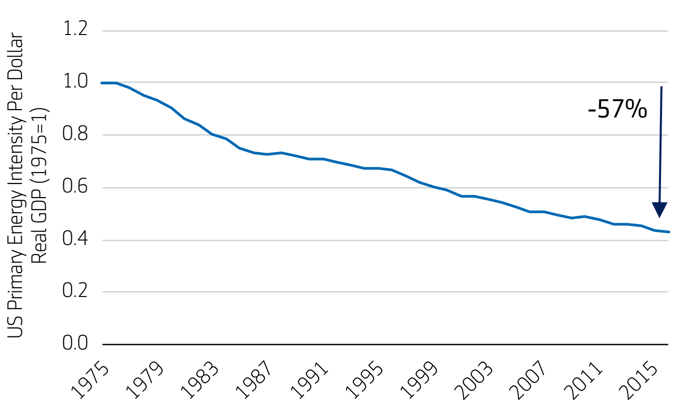
Catalysts for change

Energy efficiency, or the "first fuel" of a sustainable global energy system, is the cheapest and cleanest source of energy. It is applicable to just about every application and every industry: from lighting and heating to industrial processes and transportation. Sometimes called energy productivity, energy efficiency is fundamentally about getting more economic output for each unit of energy consumed. In addition to the obvious savings from using less energy, it also reduces risk through limiting exposure to fluctuating energy prices, presenting consumers and business alike with greater certainty of utility and fuel costs.

Environmental and economic implications

While the environmental benefits of reducing energy inputs are straightforward, many studies have shown that smart reductions in energy consumption can also translate into meaningful economic benefits. For example, recent research from the American Council for an Energy Efficiency Economy (ACEEE) has found that improved energy efficiency measures alone can slash US energy consumption and greenhouse gas emissions by 50% by 2050—all while delivering a cumulative $700 billion in savings.[1] In fact, analysis has shown that improvements in US energy efficiency between 1975 and 2016 have saved 30 times more energy than the amount supplied by the deployment of renewable energy—and that primary energy intensity fell some 57%.[2]

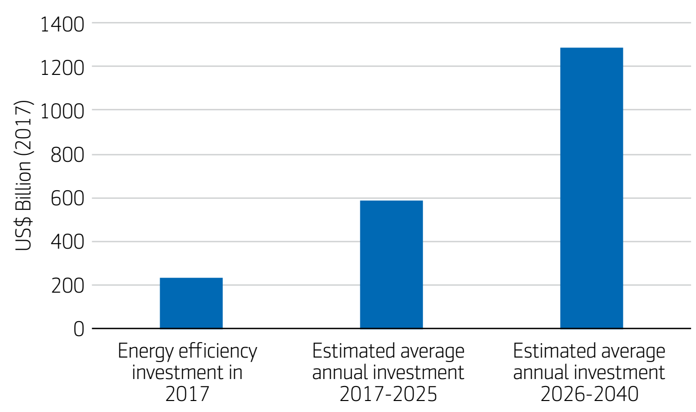
Exhibit 1: Decline in US primary energy intensity given energy efficiency improvements



Source: US Energy Information Administration, Federal Reserve Bank of St. Louis, Aegon AM. Data reflects 1975-2016 from a report dated April 2019.

Perhaps unsurprisingly, there is a massive market for energy efficiency. The International Energy Agency (IEA) estimates that some $236 billion was invested in energy efficiency globally in 2017—a figure that must double to 2025 and then double again to 2040 in order to keep the world on track to achieving the objectives of the Paris Agreement. This investment could be highly cost-effective and bring significant economic benefits: for example, under the IEA's Efficient World Scenario, by 2040 industry could produce nearly twice as much value per unit of energy and transport activity could double while energy demand remained flat.[3]

Exhibit 2: Current & Estimated Annual Global Energy Efficiency Investment



Source: International Energy Agency (IEA). Data as of 2017. Report dated October 2018. Reflects the investment required in alignment with the Efficient World Scenario outlined in the IEA World Energy Outlook.

Industry disruption and investment opportunities

When companies focus on improving energy efficiency, they're often focusing on controlling and lowering costs. Experience in the UK has shown that good energy management alone can result in savings of 5%-25% with payback periods of two years or less.[4] Companies seeking to optimize energy efficiency may also be working to improve the management of their business. When captured by the introduction of an energy management system or via a process of continuous improvement, this can be reflected positively in ESG ratings.[5]

Energy efficiency provides many opportunities to invest. Direct opportunities for investors are available via the purchase of green bonds and other debt from companies wishing to implement energy efficiency projects. For example, some $198 billion in labelled green bond issues through 2019 have been allocated to energy efficiency in buildings and industry.[6] Beyond green bonds, energy service companies (ESCOs) leverage money from government or capital markets to provide a range of energy solutions for other companies including the design, implementation and potential financing of energy savings projects. Meanwhile, technology and equipment providers can expect significant growth opportunities in supplying the demand for new energy efficient equipment and solutions. Investors can also allocate capital to companies with products and services directly supporting energy efficiency projects. For example, numerous opportunities exist to invest in cloud computing operators or suppliers as well as companies producing insulation products to help improve building efficiency.

Despite opportunities, challenges remain

To unlock the billions in investment opportunities, companies and consumers alike need to identify and implement energy saving projects. Common barriers to successfully undertaking energy efficiency projects include:[7]

- Split incentives, where the investment in efficiency does not benefit the investor;
- High upfront costs for new efficient equipment, which can hinder the business case for investment with uncertainty of savings and performance; and
- Behavioral obstacles such as inertia, short-term thinking and fear of rebound effects dampening enthusiasm for projects.

Key themes and investment considerations

While often overlooked in favor of new or more exciting technologies, energy efficiency is expected to play a critical role in the transition to a net-zero carbon energy system. It is an attractive opportunity for companies and investors alike. Investing in companies committed to energy efficiency may provide opportunities to pursue competitive financial returns while generating positive environmental impact. Equity investors may be able to position themselves to capture potential growth in expenditures on energy efficiency equipment and solutions, while fixed income investors can benefit from issuers taking steps to control and reduce their operating costs. Thematic strategies can also provide exposure to companies and securities aligned with energy efficiency projects.

Looking ahead

In the next edition of this series, we will discuss renewables as we continue to explore the opportunities and challenges related to the energy transition.

Energy transition themes

Energy efficiency	Doing the same with less
Renewables	Generating energy without carbon emissions
Storage	Decoupling energy demand from generation
Low-carbon fuels	Using alternatives to common fossil fuels
Carbon capture	Capturing, storing and using carbon

[1]ACEEE Halfway There: Energy Efficiency Can Cut Energy Use and Greenhouse Gas Emissions in Half by 2050 https://aceee.org/research-report/u1907
[2]Lovins, Amory "How big is the energy efficiency resource?" Environmental Research Letters (18 September 2018) https://iopscience.iop.org/article/10.1088/1748-9326/aad965
[3]International Energy Agency Energy Efficiency 2018 https://www.iea.org/reports/energy-efficiency-2018
[4]Carbon Trust Energy Management – A comprehensive guide to controlling energy use (December 2013)
[5]Harvard Law School Forum on Corporate Governance "ESG Reports and Ratings: What They Are, Why They Matter" (27 July 2017) https://corpgov.law.harvard.edu/2017/07/27/esg-reports-and-ratings-what-they-are-why-they-matter/
[6]Climate Bonds Initiative "Green bonds, green finance & taxonomies" [Presentation] (4 February 2020)
[7]European Parliament "Briefing: Understanding energy efficiency" (October 2015) http://www.europarl.europa.eu/RegData/etudes/BRIE/2015/568361/EPRS_BRI(2015)568361_EN.pdf