Energy Efficiency and Renewable Energy: Harnessing the Power of the Consumer
Background and Methodology

Bloomberg Businessweek Research Services (BBWRS) launched a research program in September and October 2010 to determine the attitudes and opinions of energy industry executives and stakeholders with regard to the generation, distribution, and usage of global energy resources. The research program was designed to understand the future of the energy market and to evaluate the opportunities and barriers that exist in adopting new energy technologies.

This white paper, “Energy Efficiency and Renewable Energy: Harnessing the Power of the Consumer,” reviews a portion of the research and provides analysis and insights on the topic of energy efficiency and the future of renewable energy. It is part of a series of white papers for C-level executives intended to facilitate sharing of the most important insights from the research. The research program is an online survey of senior executives at leading large and mid-size companies who are deeply involved in the energy industry. These industry stakeholders include: energy producers (renewable/non-renewable), distributors, end users, consultants, and government/NGO officials working in energy policy. Overall, a total of 486 energy industry stakeholders across the globe were surveyed in this research program.

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To learn more about this research program, please visit: www.abb.com/betterworld
Introduction

It’s obvious: the cheapest and cleanest watt of energy is the one that never needs to be produced. The next best thing is utilizing that watt more efficiently and delivering it more effectively. And if energy must be made, the most logical way to do so is to generate it renewably by using naturally occurring resources. Perhaps that is why energy efficiency and renewable energy are attracting attention from the biggest names in the industrial, financial, and energy communities.

Industry, government, and the consumer are all involved in a transformation of the energy system toward one that is cleaner and more efficient. According to energy industry stakeholders, it is the consumer that anchors that change. Due to this outsize influence, experts are calling for government to incentivize the consumer in order to reduce demand and increase the uptake of renewable energy technologies.

In an era of rising energy prices and increased concerns about the environment, many thought leaders agree that energy efficiency is made up of three critical parts: demand reduction, efficient use, and effective management. Those same thought leaders see opportunities in solar, wind, and other renewable energy technologies shaping a new industry that is not only a market-maker, but also a problem-solver, providing cleaner environmental and geopolitical options for consumers and policy makers alike.

A Watt Saved and a Watt Renewed

Energy efficiency represents an underutilized global energy resource—a resource that is capable of reducing the need for more costly production-side expansion in electricity generation. It can also create stronger economies, greener communities, and a healthier environment. Public and residential buildings, for instance, present energy-saving opportunities as a result of their sheer demand footprint. According to the U.S. Green Building Council, in America alone, buildings represent roughly one-third of all energy consumption and are the single largest contributor of greenhouse gases.1 Globally, experts from industries that include energy, construction, architecture, and others, see an unprecedented energy efficiency opportunity in improving the performance of buildings.

The world’s electricity is generated by a diverse menu of fuels and technologies, and over time the portfolio has included everything from wood and whale oil to nuclear plants and wind turbines. Reducing demand for energy means addressing the consumer end of the spectrum, and global consumers are beginning to embrace the idea of becoming more efficient users of energy. At the same time, a growing number of companies are bringing products and services to market, from high-efficiency LED light bulbs and building materials to home and commercial energy audits and upgrades. The market space for energy efficiency is rapidly expanding.

That’s because it is estimated that the world will need to produce far more energy in 2030 than it does today. According to the International Energy Agency (IEA), world energy demand may expand by 36% between 2008 and 2030—an average rate of increase of 1.2% per year.2 In the meantime, many in businesses and governments are calling for the system to be put on a low-carbon diet as the formerly fringe environmental and geopolitical issues gain mainstream status. In America, with power accounting for 40% of CO₂ emissions,3 the U.S. faces challenges in producing electricity cleanly.

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In fact, fully 78% of energy stakeholders indicate that limiting CO₂ emissions is their biggest challenge over the next 10 years (see Chart 1 for more details). This sentiment corresponds with IEA findings that technological progress and efficiency gains are needed to achieve emissions reductions.

Meanwhile, the energy industry has made significant technological advances. Renewable energy sources have gained in stature in the past 10 years. Recent history has in fact created new expectations among industry watchers regarding what the future energy production landscape may look like. Twenty years from now, energy production will continue to be dominated by coal, gas, oil, and nuclear power. According to energy industry stakeholders, however, only 62% of the world’s energy production will come from those four sources—a significant decrease from 2009, when the number was a dominating 88% (see Chart 2 for more details).

The Importance of Reducing Consumption

Some call it “demand-side management”; others, “end-user management” or “consumption reduction”. Whatever the term, experts agree on the importance of involving the consumer—whether an industrial user of energy or an individual person—in the process of increasing energy efficiency. This will most likely be accomplished by way of government policies that communicate the right market signals.

In fact, a strong majority of energy industry stakeholders (63%) say that reducing consumption of electricity among end-users is the most effective means of using electricity more efficiently. In addition, more than half (54%) of these energy industry stakeholders indicate that the best opportunities for efficiency improvements along the energy supply chain are with energy consumers (Consumers 38%, Industry 16%). (See Chart 3 for details.)
Trends in the energy efficiency space include: demand-side management programs run by companies that improve the energy efficiency profile of existing structures; the construction of new buildings with near-zero or low-energy consumption; and smart infrastructure, such as intelligent meters installed into electricity systems that give users the ability to analyze and control electricity consumption in residential and commercial buildings.

Despite the progress being made, there is still an energy efficiency gap. Due to barriers in the energy market—namely, the cheap price of energy—a great deal of potential is going unrealized. Energy industry experts—31% of those surveyed—point to the relatively low price of energy as being the single largest barrier facing improved energy efficiency. (See Chart 4 for details.)

A lack of incentives was cited as the second largest barrier to energy efficiency in the marketplace. In addition, the high cost of new investment in the space was cited as a stumbling block, as well as the fragmentation of the stakeholder community and an ongoing lack of adequate standards. The International Energy Agency rightly suggests that “no single policy is sufficient to overcome the problems. Instead, governments must design well-targeted policy packages to address [complex] problems in their specific national contexts, and within the particular constraints of a given sector.”

**Moving Forward**

The transition toward a more efficient and renewable-based energy future is progressing because of the inherent benefits recognized by industry and policy thought leaders around the globe. Government’s ability to catalyze the consumer is seen as a critical success factor.

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factor in the process. As the results of this recent survey show, industry stakeholders want to ensure that government is a partner in realizing those advantages through the power of the consumer.

The future is pointing toward an energy system where renewable energy will reinvent the way the world meets its energy needs. The International Energy Agency predicts that $5.7 trillion will be invested in renewable energy by 2030. And while energy efficiency may come from either a decrease in demand or an increase in productivity, spurring the renewable energy market definitely hinges on creating market incentives that drive the adoption of renewable energy technologies. Energy industry experts overwhelmingly view public policy as the way to effect this change.

Additionally, energy industry stakeholders eagerly anticipate the oncoming smart grid transformation. Smart—or smarter—grid management will be required in order to meet the challenges of the world’s energy future. Smart grid technology is one of the most favored energy initiatives among those surveyed, and is considered among energy industry stakeholders as being crucial to the future of electricity supply, a market area to be highlighted in a future whitepaper. The grid of the tomorrow will most likely include the application of intelligent metering, automated and intelligent network control devices or strategies, and ways to manage inter-connection with variable output generation.

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