

Take a leadership role in the new, low-carbon economy



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Introduction

The high cost of energy. Recommendations from the scientific community. Governmental regulations. Consumer demand for greener goods and services. All of these forces have converged to create a “perfect storm” that is driving the creation of the new “green” economy. This new era presents an opportunity for the financial services sector to demonstrate true environmental leadership. But in order to do so, organizations need to be fully aware of the challenges, solutions and opportunities present in today’s increasingly regulated business climate.

Having established its environmental affairs policy in 1971, IBM understands the importance of environmental leadership and is uniquely positioned to helping financial organizations develop a long-range plan for achieving energy efficiency—both in the data center and beyond.

This white paper outlines how the financial services sector can take a leadership role in today’s green economy—by generating revenue through green investment, by reducing IT costs and achieving energy efficiency, and by reducing greenhouse gas (GHG) emissions. It also describes how organizations can develop a roadmap to help extend their leadership energy and environment policy to all aspects of the business landscape.



Investments in energy-efficiency deliver guaranteed returns

The Clinton Climate Initiative (part of the Clinton Global Foundation), in conjunction with the C40 Cities Initiative, announced a \$5 billion retrofit initiative for the 15 largest cities in the world in 2007.⁶ This initiative:

- *Doubles the capital pool for municipal building retrofits.⁷*
- *Includes a consortium of five banks: ABN AMRO, Citi, Deutsche Bank, JPMorgan and UBS, which are each lending \$1 billion.*
- *Includes loans guaranteed by municipal governments with paybacks that accelerate as energy prices increase.*

Generate revenue through green investment

A recent study found that more than \$117 billion of capital was invested in all stages of renewable energy in 2007,¹ with \$6 billion invested at the venture stage worldwide.² Cambridge Energy Research Associates reports that the total investment in renewable energy will grow to \$7 trillion by 2030³—that's a compound annual growth rate of 20 percent.⁴ According to the London Accord (an open source research project led by global investment banks, financial research analysts, academics and environmental thought leaders), \$600 billion worth of investment a year is required for the next 25 years to address climate change.⁵

The economic growth created by the global need to lower greenhouse gas emissions will be to the 21st century what the IT boom was to the 1980s and 1990s. This economic movement also provides the financial services sector with an unprecedented opportunity to lead the new green economy by investing in:

- Renewable energy.
- Alternative fuels.
- Low GHG emitting energy projects.
- CO₂ emissions trading.

Investing in a green future

- *Citi will invest \$50 billion over 10 years to address climate change through investments and financing.⁹*
- *Bank of America will invest \$20 billion over 10 years¹⁰ to combat global warming, including low mortgage rates for energy-efficient homes and \$3,000 rebates for employees buying hybrids.*
- *Goldman Sachs has invested more than \$2 billion in renewable energy and energy efficiency projects such as cellulosic ethanol, wind, solar PV and geothermal. Goldman also holds 19% of the holding company of the Chicago Climate Exchange and the European Climate Exchange.¹¹*

Gain market share by demonstrating environmental results and leadership

What does it mean to have a leading role in a new green economy? It starts with having a sound environmental policy in place that demonstrates a companywide commitment to leadership. In today's marketplace, being a renewable-energy advocate is not just good for the environment, it's a prerequisite for doing business. Companies pursuing environmental projects will not partner with organizations that are laggards at addressing climate change. To participate in these new sustainability initiatives and gain market share, financial organizations must demonstrate their commitment to improving energy efficiency and reducing CO₂ emissions within their own operations.

Take the green path to improving performance

A recent Goldman Sachs study found that leaders in environmental, social and governance (ESG) policies outperform their peers on the stock market by 25 percent.⁸ For financial organizations (and their clients alike), a sound environmental policy can help:

- Increase sales.
- Improve customer loyalty.
- Reduce customer churn.
- Build brand equity.
- Have a positive impact on profitability.



IBM has taken a leadership role in cutting its own electricity consumption

As the largest single operator of data centers worldwide, IBM plans to double the computing capacity of its own data centers between 2007 and 2010 without increasing consumption or environmental impact.¹³ As part of this IBM is consolidating and virtualizing 3900 distributed systems onto 33 mainframe servers in both the z Linux® and native IBM System z® environment.

Integrate environmental objectives into business operations

Organizations that are unprepared for climate change will see a significant reduction in their market capitalization, while those who are prepared won't experience negative affects and may see gains in their stock price.¹² As more and more organizations begin to realize how environmental goals can directly affect their bottom line, the more apt they are to spearhead corporate policies that create, expand and extend low-carbon initiatives companywide.



Reduce IT costs by curbing electricity consumption and maximizing efficiency

The state of today's data center efficiency represents a multitude of challenges. By 2011, data center consumption is projected to increase to 100 billion kWh. This equates to 2.5 percent of U.S. electricity consumption and would require 10 new power plants to meet demand at a cost of \$7.4 billion.¹⁴

While there is not a silver bullet for maximizing IT energy efficiency, one thing is certain: financial organizations need to develop a comprehensive plan that helps reduce energy consumption, minimize costs and cut CO₂ emissions across the entire IT landscape. Some tactics include:

- **Tracking energy usage.** The first step in building a comprehensive plan for reducing energy consumption in your data center is to develop a system that tracks usage. Simply put, you can't manage what you can't measure.
- **Upgrading outdated systems.** In a recent study, researchers pointed out that the PC industry could save 40 billion kWh over three years—or more than US\$5 billion—at virtually no cost by simply updating the design of power supply units used in computers.¹⁵
- **Planning for higher energy costs.** Between 2007 and 2011, energy expenses are predicted to increase by 54 percent. And by 2011, lifetime energy costs for powering and cooling servers will equal 71 percent of the server hardware costs.¹⁶ Put another way, power and cooling spending is going to rise more than four times as fast as new hardware spending.¹⁷



Make IT an integral part of energy conservation

Historically, CIOs have been evaluated on measures such as uptime, reliability and security—with energy efficiency falling farther down the list of IT priorities. Today, as the focus of many financial organizations shifts to energy efficiency, so must the role of the CIO. And since data centers consume 10 to 30 times—and in some cases 100 times—more energy per square foot than traditional office space¹⁸, this is a logical place to begin implementing an energy-efficient data center strategy.

By realigning the focus of IT departments—from time-consuming maintenance to strategic planning—financial organizations will be better equipped to implement advanced IT solutions from IBM, such as virtualization, system automation and smart systems. As part of Project Big Green, a \$1 billion investment aimed at dramatically increasing the efficiency of IBM products, IBM has outlined a five-step approach to improving energy efficiency in the data center:¹³

1. **Diagnose.** Evaluate existing facilities: energy assessment, virtual 3-D power management and thermal analytics.
2. **Build.** Plan, implement or update to an energy-efficient data center.
3. **Virtualize.** Enable virtualization of IT infrastructures and special-purpose processors.
4. **Manage.** Seize control with power management software.
5. **Cool.** Exploit liquid cooling solutions—inside and out of the data center.

Virtualization: a case study

Nationwide, a Fortune 100 insurance company, has implemented an IBM virtualization solution that will help save \$15 million over three years by enabling application virtualization on 250 distributed servers and to just six IFLs (Integrated Facility for Linux or Linux virtual machine).¹⁹ Nationwide's virtualization solution has generated significant savings:

- *80% reduction in environmental costs*
- *80 to 95% server utilization*
- *Web hosting costs lowered by 50%*
- *\$15 Million cost savings anticipated over three years*

Realize results through virtualization

Outdated distributed server environments are extremely inefficient—not only in terms of electricity use (and therefore CO₂ emissions), but also in terms of staff time required for ongoing maintenance. By implementing a server virtualization solution from IBM, organizations can reduce the number of servers, resulting in significant cost savings—both in initial capital and in ongoing operating and cooling costs.

Deploy advanced automation software

It's not uncommon for financial organizations to leave workstations on 24 hours a day in order to perform after-hours maintenance. By implementing high-performance management software, systems can automatically shut down once maintenance is performed, enabling organizations to dramatically reduce consumption and CO₂ emissions.



***Voluntary goals of companies
regulation in the financial
services sector***

- ***HSBC's four-step carbon management plan is simple and straightforward: measure the company's carbon footprint, reduce energy consumption, buy green electricity and offset remaining CO₂ emissions.²⁰***
- ***Swiss Re has committed to a more aggressive CO₂ emissions target of 30% per employee by 2013, doubling its previous 15% target.²¹***
- ***Bank of America Tower in Manhattan is the first skyscraper to attain a LEED Platinum certification. The building uses 50% less energy than a conventional building, generates 70% of its energy needs onsite and reduces city water use by almost 10 million gallons a year.²²***

Anticipate and comply with mandates for CO₂ emissions reduction

When financial organizations are crafting their own environmental policies, compliance with national mandates is an absolute must. It is also important to recognize the impact that compliance has on the global market as a whole. With this greater knowledge of the regulatory environment, financial organizations will become more adept at finding answers to ongoing industry challenges.

Should financial organizations cease to finance projects that have high greenhouse gas emissions—and therefore higher economic and regulatory risk? As regulations spread around the world, how will this affect current and future investment decisions? How do the environmental policies of your own financial organization measure up to the expectations of partners, competitors and clients? These are all questions that every financial organization must face. But in order to find answers, organizations must have a clear understanding of the current challenges, risks and opportunities. The following sections provide a brief snapshot of some of today's environmental mandates, both government-imposed and voluntary.

***Voluntary goals of companies
regulation in the financial
services sector***

- ***Citigroup, the largest U.S. bank, will decrease its greenhouse gas emissions from 13,000 properties by 10% by 2011.***²⁶
- ***Deutsche Bank is cutting energy use and CO₂ emissions in its Frankfurt headquarters by 50% by upgrading water, lighting and air-conditioning systems.***²⁷
- ***Industrial & Commercial Bank of China cut power consumption by 15% and water consumption by more than 40% between 1999 and 2006.***²⁸

Regulations are a driving force

It's no surprise that regulation has rapidly emerged as a driver for CO₂ emission reductions. In addition to the Kyoto Protocol which imposes legally binding requirements to ratifying countries, national, state, regional and municipal governments around the world have passed regulations to reduce greenhouse gas emissions. Following are a few examples:

- Several U.S. states have passed cap and trade systems: California signed AB32 in 2006²³ and seven northeastern states signed the Northeast Regional Greenhouse Gas Initiative in 2005 with additional states having joined since then.
- The British government developed the Carbon Reduction Commitment (CRC) to help cut the CO₂ emissions by 60 percent below 1990 levels by 2050. This mandatory UK cap and trade system will apply to large organizations and starts January 2010.²⁴
- The European Union Emissions Trading Scheme (EU ETS) is the largest multinational emissions trading scheme worldwide, which covers more than 11,500 energy-intensive facilities in Europe and represents half of the continent's CO₂ emissions.

Spur growth through “green” government policy

Government policies driving efficiency are a catalyst for growth—in revenue and job creation both in the public and private sector. For example, building retrofit strategies in Europe aimed at reducing energy consumption by 20 percent have the potential to create up to one million new jobs, especially in the building labor sector.²⁵ A landmark report, *Renewable Energy and Energy Efficiency: Economic*



Drivers of for the 21st Century, also projected that by 2030 millions of new jobs could be created in the U.S. alone in the renewable-energy and energy-efficiency fields, generating \$4.5 trillion in revenue.²⁹

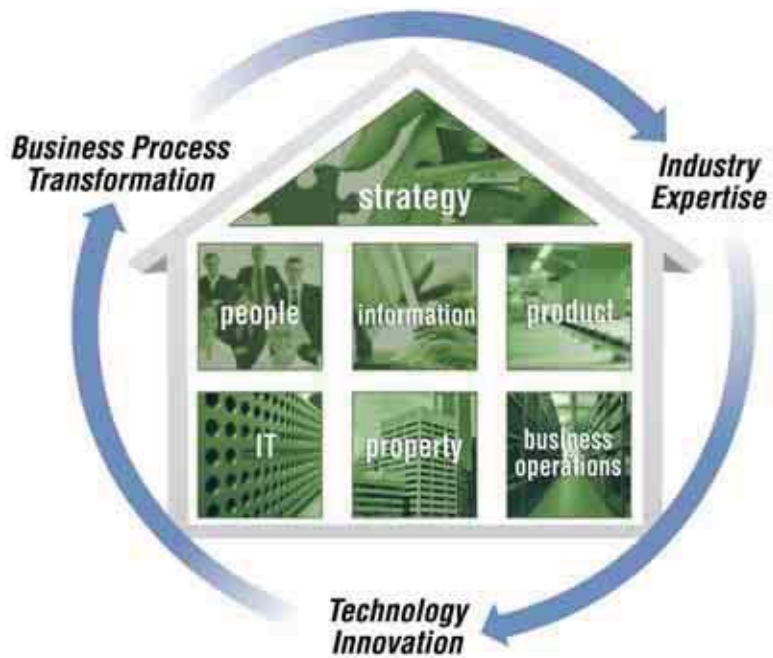
A new age of self-regulation

As many forward-thinking organizations have already realized, it is the financial sector's responsibility to become vocal advocates for alternative CO₂ emissions-cutting ventures. In fact, a number of organizations have already led the charge, including:

- **Carbon Disclosure Project (CDP).** The world's largest investor coalition,³⁰ CDP represents 385 institutional investors³¹ with \$57 trillion of combined assets under management. CDP works with the 3,000 largest corporations worldwide that voluntarily disclose their greenhouse gas emissions.³² In 2008, CDP and IBM collaborated on a study, *Making Advances in Carbon Management*, highlighting the best practices from the low-carbon leaders.³³
- **The Carbon Principles.** Launched in February 2008, the Carbon Principles provide a roadmap for banks and U.S. power producers to reduce regulatory and financial risk associated with greenhouse gas emissions.³⁴
- **The London Accord.** This collaborative think tank takes a proactive approach for financial service organizations in London to address climate change.
- **Equator Principles.** As of April 2008, 60 financial institutions have adopted these principles, which define the de facto standard for assessing major international development projects.³⁵

Develop a roadmap for greenhouse gas emissions management

Once a financial organization has committed to reducing its carbon footprint, it is essential to take the next step: to integrate a GHG emissions reduction strategy across all aspects of business. While this white paper has addressed the environmental challenges pertaining to the financial services sector and the data center in particular, IBM also understands that all aspects of your corporate structure need to be engaged.





Take a holistic approach

The diagram shown here provides an integrated, holistic strategy to GHG emissions reduction:

- **People.** In order to truly drive change, it is essential to obtain involvement from employees throughout the organization and to provide the tools that support the overall low-carbon policy.
- **Information.** Without accurate data, there is no way to track, measure and demonstrate reductions in GHG emissions.
- **Product and services.** An organization must also develop products and services that meet the demands of today's increasingly green-savvy consumers.
- **Technology.** IT can be both a source of energy consumption and a conduit for driving efficiency through visualization and energy conservation, within IT and throughout the organization.
- **Property.** Since over 40 percent of U.S. greenhouse gas emissions are attributed to buildings,³⁶ it is important to have a property strategy that addresses a reduction in energy use.
- **Business Operations.** Organizations will need to re-evaluate and revamp every aspect of day-to-day activities, to help increase efficiency and reduce carbon emissions.

Conclusion

As financial organizations evolve their environmental strategy in order to meet the ever-changing challenges of today's economy, IBM will continue providing IT leadership. A long-standing advocate of environmental initiatives, IBM is committed to transforming data centers using innovative and efficient products and services.



For more information

To learn more about how your organization can take a leadership role in today's green economy, please contact your IBM representative or IBM Business Partner, or visit ibm.com/green/fss

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