

# Learning from the Korean Green IT Strategy

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Just as information technology (IT) has contributed significantly to economic growth and quality of life, IT has an important role to play in creating a green economy. Our world is in the midst of a period of digital transformation where every sector, from health care to energy and from transportation to education, is being fundamentally altered and improved by IT. This period of digital transformation not only entails significant benefits from increases in productivity and quality, but it has the potential to create significant environmental benefits. Other nations are aggressively pursuing green technology including South Korea, Japan and Denmark. South Korea is poised to become the world leader in green technology, through a wide array of government policies supporting green technology, strong executive leadership and a substantial commitment of public funding for this effort. If the United States expects to similarly reap these green benefits, it should look to the South Korean example as it develops its own national green IT strategy.

Green IT is not just about creating energy-efficient digital equipment, such as low-power processors and networking equipment, although this is an important component, especially as the use of IT proliferates. Green IT is also about the application of IT to create energy-efficient

processes, such as telework and video-conferencing, to replace energy-intensive activities, such as commuting by personal vehicle or air travel. In fact, making IT more energy efficient is only part of the challenge. IT only contributes to approximately 2 percent of greenhouse gas emissions; the vast majority of emissions come from non-IT related sources, almost all of which can realize enhanced productivity and energy efficiency through the intelligent deployment of IT.<sup>1</sup> Thus it is through the broad application of IT that we should expect to see significant energy-savings throughout our economy.

Recognizing these opportunities, many nations have begun to develop a green IT strategy. These national strategies consider the benefits of being both a producer and a consumer of green IT. Thus, national efforts to support more green IT generally seek three major benefits: creating “green-collar” jobs, generating energy savings, and boosting economic productivity.

One source of green jobs will likely come from the further development of green computing. Currently, the United States is well-positioned to harness some of the economic benefits stemming from the green IT policies adopted by other countries. For example, with regards to cloud computing—a trend for companies “go-

ing green”—the United States is home to many of the major players such as IBM, Google, Amazon and Microsoft.<sup>2</sup> Yet the market is always in flux and policies to support continuous development are needed if U.S. companies hope to retain their dominance as premier providers of green solutions.

Nations should also expect green IT to lead in reducing the energy intensity of economic output. Certainly, even in the absence of national-level green IT strategies, the private sector will continue to make progress towards more energy-efficient computing. Much of this will be driven by simple economics—currently, for every dollar spent on hardware, fifty cents must be spent over the lifetime of the product on power and cooling.<sup>3</sup> Yet the speed of development can be accelerated by those nations who spur investment in green IT. Moreover, the major energy-saving benefits of these innovations will primarily be enjoyed by those nations that make use of these new technologies.

Many countries have created initiatives to pursue green IT, especially Asian nations such as South Korea and Japan.<sup>4</sup> South Korea in particular has been active in this area and has developed a comprehensive set of policies designed to transform the nation into a low-carbon economy and society. The Korean strategy addresses how to make the IT sector more energy efficient, how to use IT to transform society and how to pursue “green jobs”. Since early in his term, President Lee Myung-bak has called on his country to follow a “low carbon, green growth” strategy, which until recently lacked many details.<sup>5</sup> However, the Presidential Committee on Green Growth has been actively developing a national plan to make South Korea one of the leading green technology countries in the world. The strategy is by no means any empty promise. In July 2009, the Committee announced a 5-year plan to spend a total of KRW 107 trillion (USD 87.7 billion) in green investment as part of its “Green New Deal” program launched earlier this year. This investment represents an annual financial commitment equal to 2 percent of South Korea’s GDP.<sup>6</sup> The “Green New Deal” included a total of KRW 12 trillion (USD 9.5 billion) to investment in developing green technology over the next four years. Of those funds, KRW 4.2 trillion will go to investing in areas such as green IT products, building faster broadband networks, and investing in energy-efficient transportation systems. The remaining funds will be invested in R&D in 27 different green technologies, such as high-efficiency solar batteries, hybrid vehicles, high efficiency LEDs, and smart grid technology.<sup>7</sup>

To make the IT industry more energy efficient, South Korea has adopted initiatives to spur private sector development of green hardware and IT services. For example, the Korean government is instituting stronger certification requirements for manufacturers that want to use a “green” label on their IT devices, similar to Energy Star in the United States. The Korea Eco-Products Institute (KOECO) in the Ministry of Environment (MOE) is also creating a carbon labeling program to show consumers the total amount of greenhouse gases expected to be produced throughout the product lifecycle. The goal of these programs is to use certification to encourage green product development and to provide consumers with accurate information on environmentally-friendly items. In addition, the government is leading the way by using government procurement policies to make mandatory the use of more energy efficient technology in the public sector—recent legislation requires government agencies to give preference to products with these energy-efficient certifications when making purchases.<sup>8</sup> Finally, the Korean government green IT strategy goes beyond developing green hardware, such as servers and network devices, and includes government support for designing green data centers.

The government is also actively working to contribute to the development of greener global IT standards domestically and abroad. Specifically, government officials are pursuing low-energy standards for emerging technology like radio frequency identification (RFID), ubiquitous sensor networks, next generation networks and devices for a smart home. The government’s goal is to work with industry to develop and adopt regulations that meet or exceed international standards so that green guidelines do not become trade barriers. The government also uses standards and government certification to promote South Korean companies as international leaders in green technology.

South Korea also has many policies in place to use IT to make its overall society more energy efficient. For example, it is having government lead by example with telework by mandating that public buildings include space for satellite telework centers and developing interoperability standards for technology like video conferencing which facilitates telework. But the government plans extend beyond telework to virtually every sector of society from deploying electronic digital textbooks in classrooms to improving online access to virtual galleries of cultural performances and exhibits. The green agenda even includes major public infrastructure changes, such as building smarter traf-

fic systems to reduce congestion and building a smarter electric grid to improve commercial and residential energy efficiency. IT will even be used to monitor environmental factors and help monitor global climate change and predict atmospheric conditions. Finally, a high-quality broadband network is needed to maximize the energy saving potential from bandwidth-intensive applications such as telepresence technology. A key focus of its broadband efforts is to build an even higher-speed telecommunications network which will serve as a building block for energy-saving applications from telework to telemedicine to cloud computing. For example, the Korean government hopes to use telemedicine to minimize the number of visits needed to a doctor's office. To promote telemedicine, the Korean Ministry for Health, Welfare and Family Affairs revised its regulations in July 2009 to allow doctors to treat patients examined online. Previously, doctors could only offer medical advice, but they could not treat patients or order prescriptions.<sup>9</sup>

Such wide ranging policies illustrate the opportunities that other countries such as the United States have to pursue the benefits of the green IT revolution. In fact, effective national green IT policies use a wide array of policy tools, from tax policy to energy efficiency labeling, to developing green procurement policies to national government leadership. The United States should create a comprehensive strategy for green IT that includes policies to address both the supply and demand sides. On the supply-side, the United States should boost federal support for energy-efficiency related research through funding for competitive grants and R&D tax credits. The National Institute of Standards and Technology (NIST) should also continue to develop standards for green IT, such as interoperability standards for smart grid devices. In addition, the U.S. Department of Energy and the U.S. Environment Protection

Agency should continue to develop energy efficient and energy "smart" certification criteria for products and services that pull industry towards more efficient forms of computing.

The United States needs a national green IT strategy to ensure that it not only becomes a chief exporter of such technology, but that it also becomes one of the top users. Policymakers must remember the adage that "the shoemaker's children are often shoeless", and include policies that not only spur development of green IT, but also the domestic application of such technology. Such policies should include national large-scale infrastructure investments in areas such as intelligent transportation systems and the smart grid, as well as IT projects in other areas including telemedicine, on-line distance education, and telework. Moreover, these policies should include supporting investment in digital infrastructure, such as developing a national broadband plan designed to maximize the energy-savings possible from next-generation communication networks.

Finally, a national green IT strategy should also use IT to help measure and track progress in reducing greenhouse gas emissions. As the Koreans have shown, IT can help track environmental factors and improve response time to ecological threats, by implementing programs such as sensor-based forest monitoring. The use of information technology can also help create more transparency in energy-efficiency related research and ensure that federal dollars are spent on projects that generate the most energy savings.

Without a doubt we are in the midst of global digital transformation, but to maximize the benefits from the green IT revolution, the United States must ensure it is on the path towards a low-carbon economy and society.

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## Endnotes

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