

Poland: From Recovery to Expansion

How an Innovation-Based Economy Enabled by Broadband Will Enhance Poland's Competitiveness

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Considered a “tiger” among European nations, Poland has the highest foreign direct investment (FDI) in the region¹ and is a hub for Central and Eastern European businesses. While affected by the global recession (real GDP growth slowed significantly in 2009), Poland was the only European country to experience positive GDP growth.² In “The Global Competitiveness Report 2010–2011” by the World Economic Forum (WEF), Poland ranked 39th out of 139 countries, with growth forecasted at 2.5 percent in 2011 and 3 percent in 2012. (Poland ranked 53rd out of 134 economies in the report for 2008–2009.)

Sound policies and investments that promote and accelerate the adoption of information and communications technology (ICT) can play an important role in improving Poland's competitiveness—taking it from economic recovery to expansion. According to a 2009 study by The World Bank, based on analysis of 120 economies from 1980 to 2006, for each 10-percentage-point increase in the household broadband penetration rate, real GDP grows 1.4 percent.

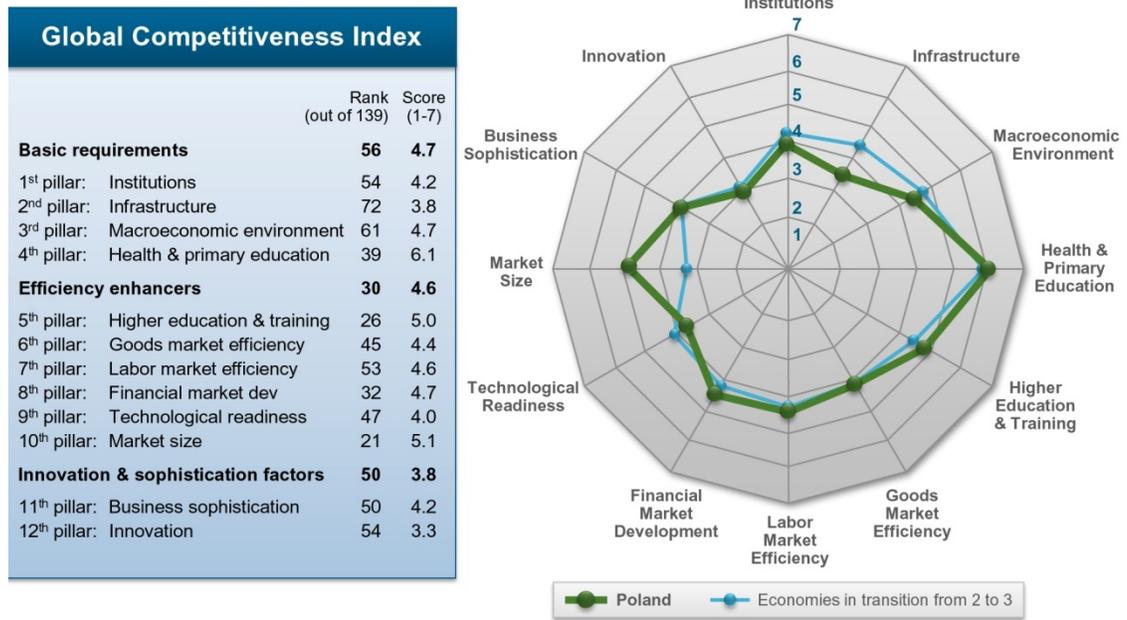
As a result, the Polish minister of infrastructure asked the Cisco® Internet Business Solutions Group (IBSG) to work with the Polish government to develop an aggressive case based on an assessment and global benchmark for integrating the country's development plans and strategy for a nationwide broadband infrastructure that would realize significant ROI. In addition, Cisco IBSG identified opportunities that would help Poland achieve its goal of increasing GDP growth rates in the next five years.

This Point of View from Cisco IBSG discusses how Poland can accomplish its objectives through several government-driven broadband-based initiatives that will result in numerous economic benefits in both the public and private sector. More important, based on Cisco IBSG calculations and Poland's goals, such initiatives could contribute an additional 67 percent to the country's GDP by 2030.³

Where Is Poland Today?

Despite the economic crisis, Poland's prospects for 2011–2012 point to a robust recovery. Poland has an efficient financial system, strong internal consumption, inflow of European Union funds for infrastructure projects, and is poised to host large-scale events such as Euro Cup 2012. After 20 years of political change, however, Poland is challenged with building competitiveness through ICT, creating GDP impact, and enhancing productivity. To understand the impacts, we must refer to the WEF Global Competitiveness Index (GCI), which indicates that in terms of development, Poland is transitioning from an efficiency-driven economy to an innovation-driven economy (see Figure 1).

Figure 1. Poland's Current Stage of Development.



Source: "The Global Competitiveness Report 2010–2011," World Economic Forum

Despite its current stage of development, Poland is lagging in some key “pillars” (specific catalyst sectors) of competitiveness such as infrastructure, macroeconomic environment, goods market efficiency, and innovation. To evaluate the impact of broadband services, the Polish government must consider GDP growth and productivity benefits derived from improvements in the 12 competitiveness pillars outlined in Figure 1. The combined effect of the slowdown in real GDP growth and changes in exchange rates, however, suggests that nominal GDP in U.S. dollars will not exceed the peak level reached in 2008 until after 2012.⁴

To address GDP, the Polish Council of Ministers in November 2009 adopted a draft law (referred to as the “Big Bill”) on promoting the development of telecommunications networks and services, and on increasing investment demand in the telecom sector. The law would also help increase penetration of the Internet in Poland and enable the implementation of projects that will strengthen the Polish economy against global financial crisis and anti-crisis activities, and increase employment.

As a result of the Big Bill, the Board of Strategic Advisors to the Polish prime minister created “Poland 2030: Development Challenges,” a report that expresses the need for a long-term strategic approach to state policy planning. The purpose of the report is to set the development of the country on a new course over the next two decades. This agenda is driven by the government’s “Transition Civilization Project,” which was designed to help Poland (1) align the foundations of state and economic operations with democracy and the market economy, and (2) join the European Union (EU) in 2004.

Since then, the EU has embarked on an aggressive strategy for a flourishing digital economy. In May 2010, the EU Commission announced a digital agenda that outlines policies and actions to maximize the benefits of ICT for all by 2020.⁵

Broadband: Opportunity and Impact

Based on Cisco IBSG research and engagements with governments around the world, it is clear that broadband development is high on the agenda of most national, regional, and municipal government organizations. Identifying specific sources of value creation, however, is difficult. There are two major reasons for this:

1. Little data is available. Broadband is fairly new and economic impact takes time to develop; thus, not many countries can look back and report the “results” of their own broadband development programs.
2. Technology continues to evolve rapidly in terms of bandwidth, and regarding quality and sophistication of service. That means that there is literally no data available to document anticipated outcomes from a broadband-based economic development program launched today.

In the face of this uncertainty, Cisco IBSG worked with the Polish Ministry of Infrastructure to develop a shared scenario describing the economic benefits we expect to see in Poland as broadband becomes a ubiquitous feature of Polish households and sophisticated services are developed to support Poland’s general business environment, small and medium-sized businesses (SMBs), government operations, education, healthcare, safety and security, and other sectors.

Cisco IBSG Benchmark Study

Cisco IBSG worked with the government to address challenges and identify key themes and objectives—such as Smart Cities, innovation/productivity, and government collaboration—that will help Poland reach its 2030 goals.

We then benchmarked Poland against its peers to see where it stands in competitiveness today, using both the WEF’s GCI and Networked Readiness Index (NRI). Extensive evaluations were conducted to develop scenarios for low, medium, and aggressive broadband services growth forecasts and how these would impact economic growth and sectors in Poland. Having broadband is not enough; therefore, specific country objectives for 2030 were analyzed and mapped to areas of highest importance for Poland. These areas were double-checked against the EU recommendations and results from the WEF Global Benchmark Competitiveness Report to ensure that prioritization was based on the right themes for Poland’s broadband services portfolio.

Cisco IBSG Broadband Dynamic Value Assessment

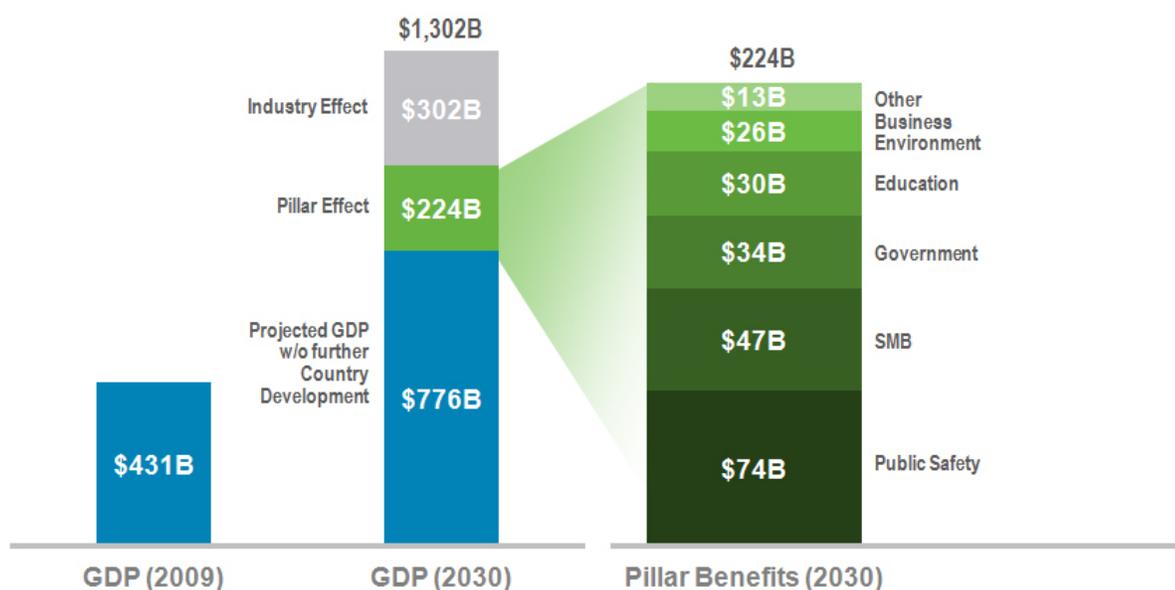
Cisco IBSG applied its Broadband Dynamic Value Assessment (BDVA) model to explore scenarios in which the value of broadband investments could be maximized through Poland-specific pillars that would yield the greatest economic return. These sectors are SMBs, government, education, and the general business environment.

First, Poland’s household broadband penetration in 2009 was estimated at 41 percent, and is expected to rise to 81 percent by 2030. These estimates, from the Cisco IBSG Research & Economics Practice, are based on forecasts of Poland’s income distribution, broadband prices, and number of households that would remain geographically inaccessible or never purchase broadband under any circumstance (such as the elderly).

Based on additional research from the Cisco IBSG Research & Economics Practice, our baseline economic growth forecast indicated that Polish per-capita real GDP is expected to grow at a 3 percent compound annual growth rate (CAGR) through 2030.

Assuming that broadband penetration will reach this maximum rate by 2030 and that Poland will implement broadband-based economic reform in each key sector of the economy and public life by then, per-capita GDP growth could attain a CAGR of 5.7 percent rather than 3 percent over the next 20 years (see Figure 2).

Figure 2. By 2030, the Combined Impact of Public Policy Pillars and Industry Effects Could Increase Poland's GDP by Two-Thirds.



Note: Poland's GDP is indexed to 2009.

Source: Cisco IBSG Research & Economics Practice, 2010.

Two types of benefits could accrue to the Polish economy: pillar effects and industry effects. "Pillar effects" refer to the direct benefits that would emanate from implementing government-sponsored broadband programs and policies. Some examples of these pillars are enumerated in the right-hand bar graph in Figure 2.

"Industry effect" refers to the productivity gains that would be achieved as businesses and consumers adapt to a more broadband-intensive economic environment. As seen in Figure 2, a majority of the long-term benefits come from these more indirect productivity gains.

As illustrated in Figure 2, Poland's economy would grow from \$431 billion in 2009 to \$776 billion in 2030, a 3 percent annual growth rate under a business-as-usual scenario. However, with a concerted public-policy-driven effort to increase broadband penetration, this could increase to \$1,302 billion (\$1.3 trillion) by 2030. About 57 percent of these benefits would come from industry effects, and the remainder from pillar effects. Pillar effects can be further subdivided into other elements:

- **Improvements in public safety and security will contribute \$74 billion to GDP.** Public broadband activities could include increasing video surveillance and creating more comprehensive databases of contracts, assets under liens, and records of past

criminal activity. Economic growth would occur as Polish organizations divert resources away from unproductive security-related functions to other areas that add to economic growth. Over time, as the world becomes more global and competitive, large businesses will find it easier to collaborate with value-chain SMB partners, increasing competition, FDI, and growth.

- **Broadband-based applications can reduce the number of process steps and increase the speed at which SMB formation takes place.** Additionally, by streamlining licensing and regulatory procedures, business formation can also be enhanced. Over time, a vibrant and efficient SMB sector can help the macro-economy reduce input costs and be a conduit for inflows of foreign capital.
- **Improvements in government services will also contribute to GDP.** Savings and productivity benefits will come from both new online services for citizens and improved operational efficiencies within government departments (reduced travel due to increased use of communication and collaboration tools, for example).
- **Education costs could also be reduced by increased use of broadband, while improving the quality of education.** On a macro-economic basis, it is readily apparent that a better-educated workforce can command higher wages for higher-level tasks. In the long run, higher-paying service-sector jobs can substitute for low-skill manufacturing jobs. Additionally, such education allows a country to compete more effectively in international trade markets. Providing offshore outsourcing locations or back-office processes for particular business/service support functions becomes more feasible with increased education. Reducing textbook costs, scaling teacher resources, and improving standardized curricula provide further school-related benefits.

Solutions

Broadband is the driver that will enable Poland to deploy a nationwide ICT infrastructure for sustainable economic growth. Poland's 20-year vision is to close the competitiveness gap by using ICT to realize 5 percent GDP growth annually, with ambitious goals of up to 25 percent GDP growth in the ICT sector and 40 percent GDP growth in high-tech exports.

The country's 2030 plan includes several key areas of opportunities designed to enhance citizen well-being and reach its goal of realizing 5.7 percent GDP growth while developing necessary broadband policies. Six major areas of focus are (1) social inclusion, (2) Smart Cities, (3) innovation and productivity, (4) aging well, (5) smart industries, and (6) government collaboration.

1. **Social Inclusion.** Digital cities, Smart Cities, and knowledge societies encompass the concept of a "Connected Communities" fueled by ubiquitous broadband Internet access. It is simply not enough to deliver broadband and wait for citizens and organizations to discover what they can do with it. The value delivered by network-based services and applications will drive collaboration and innovation, and generate ROI for governments seeking to empower their countries with ICT-based economies. With a Connected Community initiative, Polish policymakers can build the vision, develop the operating model, and deliver the infrastructure needed to increase the nation's competitiveness in a rapidly changing world economy. Programs that close

the social and digital divide for all include Citizen 2.0, Connected Learning, and Connected Health:

- **Citizen 2.0**—Today, Web 2.0 technology enables the Internet to bring people together in new ways. The essence of Web 2.0 is participation. Whether it is Facebook, Wikipedia, Flickr, YouTube, or a blog, the power of social media is its ability to enable people to find each other and collaborate.

Citizen 2.0 is a program that uses Web 2.0 technology and social media to transform the relationships among citizens and public institutions, and encourage disadvantaged people to use e-government services from home rather than going to a government office. Citizen 2.0 can help the Polish government bridge the gap between citizens and public institutions by using social media to demonstrate how the public sector is committed to engaging with citizens. Furthermore, these tools can help produce more positive relationships by supplementing one-way communication with dialogue, and impersonal pronouncements with more personal interaction.

- **Connected Learning**—Powerful, new communication and collaboration solutions, ICT architectures, and education-specific solutions are changing the way teachers work and students learn. Connected Learning links all parts of the education system to the same network so that security constraints are removed and learners, teachers, parents, and other stakeholders can share expertise freely within their school, with other schools, and with others outside formal education boundaries.
- **Connected Health**—It is becoming essential to power all parts of the healthcare system with networked sources of data, information, and knowledge to reduce costs and improve access to and quality of care. Several emerging technologies are transforming the way we experience healthcare. Remote healthcare is a model that combines high-definition video, audio, medical devices, and medical information to create an environment that is remarkably similar to what doctors and patients experience in person.

2. **Smart Cities.** According to UN-HABITAT, the United Nations agency for human settlements, a majority of the world's population lives in urban areas. In 2010, 61 percent of Poland's population—the ninth-largest in Europe—was urbanized.⁶ At the same time, this number is now stagnant as Poland's population ages with the rest of Europe, which will require the country to innovate in terms of generating new productivity levels to address aging populations in cities.

From an environmental perspective, 75 percent of the world's resources are consumed by cities, which are responsible for 80 percent of greenhouse gas emissions.⁷ Smart City infrastructures take advantage of the network as the platform to change the way cities are designed, built, managed, and renewed—achieving economic, social, and environmental sustainability. Programs that support Poland's 2030 Smart City goals include the development of city infrastructures that provide broadband as a general-purpose technology for the 21st century; Connected Urban Development projects that give citizens access to city resources, content, and services, and encourage citizen involvement in green solutions; and Smart Grid infrastructures that reduce electricity consumption and accelerate adoption of distributed, renewable energy sources.

Most of the multi-industry pillar effects of broadband are a result of Smart City infrastructures that trigger demand and productivity. For example, Smart Energy decreases costs up to 10 percent, impacting all manufacturing sectors. ICT, in general, can reduce CO2 by 15 percent in other sectors, five times that of its sector footprint.⁸

- 3. Innovation and Productivity.** Based on the WEF's NRI, percentages of ICT spending by sector in Poland are high compared to those of other countries in transition.⁹ Compared to advanced economies, the biggest gaps in Poland are in the service provider (SP) and hospitality sectors. Government-driven broadband-based initiatives could create a “push” effect for business-based broadband services, thereby increasing innovation. Spending more on R&D, however, is not enough. A more holistic approach is needed to build regional technology-enabled “business innovation clusters” that operate beyond geographic borders and restrictions, and across sectors, to enhance collaboration among universities, government, and the private sector. As a result, this approach could lead to increased R&D and bring more scientists to the private sector, thereby increasing industry thought leadership and patents.
- 4. Aging Well.** Aging populations provide an opportunity for society to benefit from the economic engagement and broad experience of a growing number of older people. Aging populations, however, also present major social and economic challenges, including the need to stretch already-scarce health and social care resources, while responding to demands for greater participation by older people leading increasingly rich and fulfilling lives. Simply put, healthy people are more productive.

Lifelong education, preventive healthcare, telemedicine, and remote healthcare for rural communities will help Poland become more competitive. Innovative deployment of new broadband-based communications technologies can help improve health and social care, and extend the participation of older people in social and economic activities. Digital solutions for Poland include:

- **Social Interaction**—New ways to interact with family, friends, and the community—for example, video-based solutions such as telepresence, virtual experts who can provide specific advice, or social networking tools to find people with common interests—can help extend participation of older people via collaboration technologies at home.
- **Lifelong Learning/Working and Volunteering**—Smart Work Centers, home-based/mobile applications, and online portals can provide elderly people with flexible options for learning new skills, seeking employment, or finding volunteer opportunities, regardless of location.
- **Improving Health and Care**—Meeting the care needs of people, particularly those over 60 years of age, is a pressing requirement. Current care models are not sustainable in the face of changing demographics and disease patterns. Innovations in personal and formal health management—such as commercial devices (either wearable or implanted into the body) that enable citizens to monitor blood pressure or heart rhythm, or video-based telemedicine solutions that enable

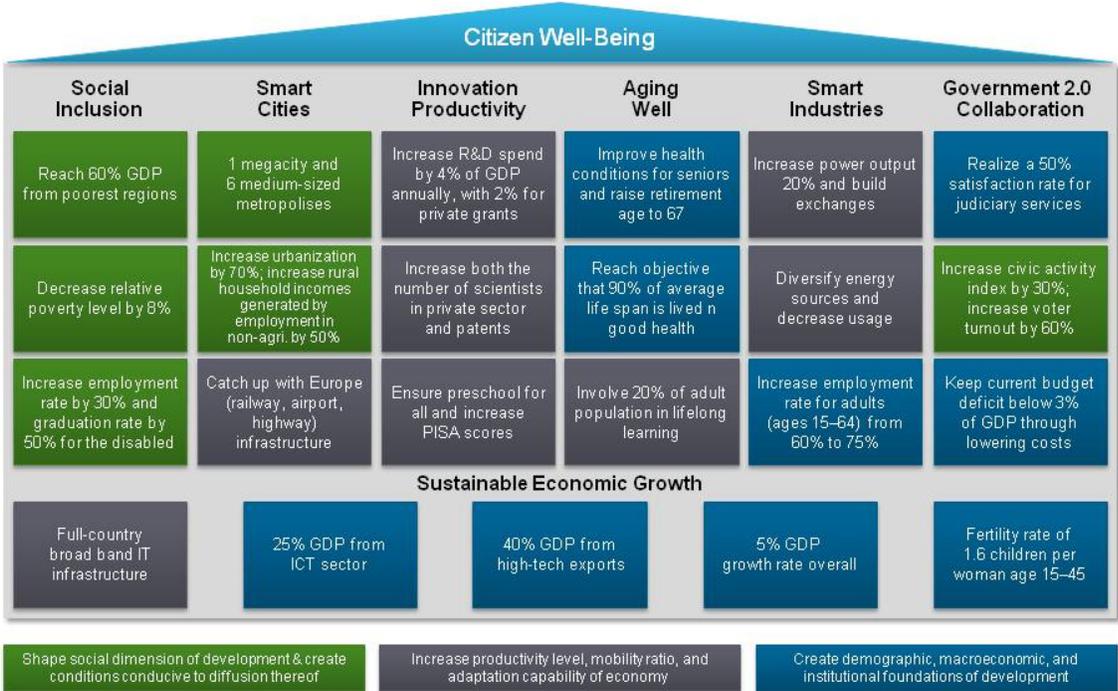
remote consultations with physicians—can improve health and social care of older people.

5. **Smart Industries.** Poland's strategy is to increase employment, efficiency, and productivity in key sectors through the use of smart technologies. Its strategy is based on using alternatives to oil such as natural gas, deploying more CO₂-friendly solutions, reducing energy transmission failures, constructing and modernizing cross-border transmission hubs, and decreasing energy consumption to meet EU levels while increasing energy output by 20 percent. Some programs that can help Poland achieve its goals are:
 - **Virtual Clusters**—Industry-based business architectures can help Poland share key business processes and workflows across industry-related value chains. Virtual clusters can provide a platform that lets SMBs within specific value chains (such as textile, automotive, or energy) work together and collaborate as an extended enterprise.
 - **Smart Trade Marketplaces**—Also known as “digital marketplaces,” smart trade marketplaces can help Poland increase competitiveness by improving communications and collaboration among global buyers/sellers, providing access to ICT technology and training, and creating a business/technology platform to improve the delivery of services among the value chain.
 - **Smart Grid**—Poland is addressing the need to reduce electricity consumption, produce greener energy with lower carbon emissions, and improve the reliability of the electric grid via Smart Grid programs that bring government, electric utility companies, public electricity regulators, and IT companies together toward a common goal.
6. **Government 2.0 Collaboration.** The Polish government is already investing in ICT; its biggest challenge is using ICT to increase the transparency of policymaking. Government can address this by developing a new strategy based on transparent, collaborative decision making. This would include deployment of collaborative decision-making and virtual-meeting solutions within government to improve efficiency.

A government back-office program enabled by ICT could consolidate most shared services under one architecture, significantly reducing costs and budget deficits, thereby providing a one-stop-shop for citizen services. Such an approach is instrumental to building trust, encouraging interactivity, and increasing productivity for the nation. Web 2.0, video, and mobility are key to accomplishing these goals.

Based on our analysis, the benefits of such initiatives and programs supported by broadband-based solutions—with 90 percent coverage for 100-Mbps broadband—could help Poland generate 2.7 percent additional GDP growth annually. Broadband for rural environments would extend health, education, and job training services to everyone in the country. Other areas of opportunity detailed in Poland's 2030 plan are shown in Figure 3.

Figure 3. Poland 2030 Vision.

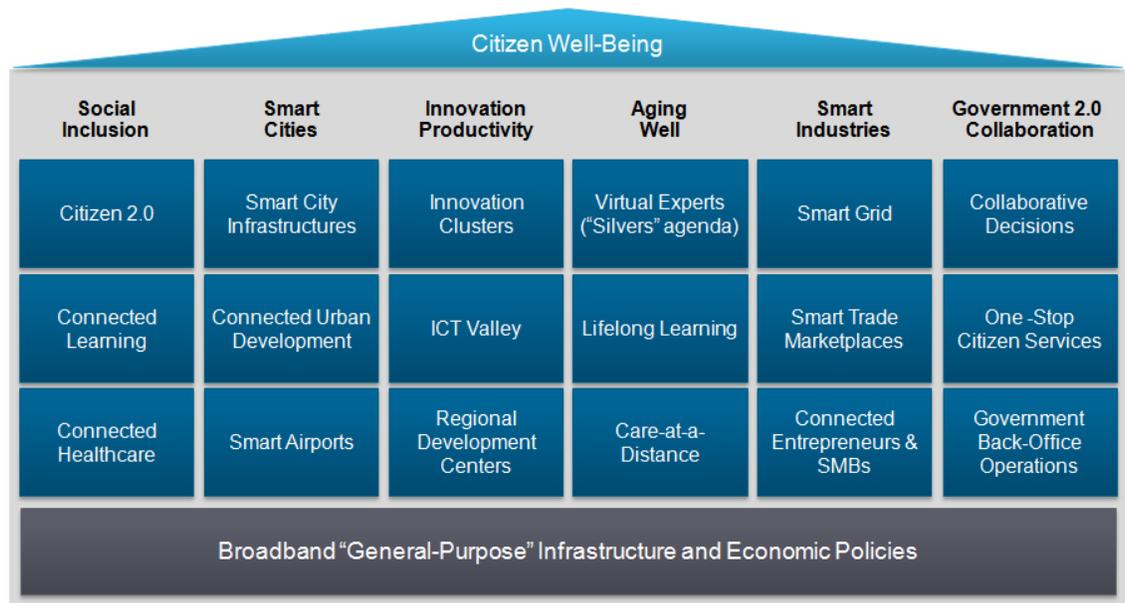


Source: Cisco IBSG, 2010

Figure 3 illustrates Poland’s development policy objectives over the next two decades, based on a three-part framework designed to create citizen well-being: (1) shape social development and create conditions conducive to growth; (2) increase productivity levels, mobility ratios, and adaptation capabilities of Poland’s economy; and (3) create demographic, macroeconomic, and institutional foundations for development.

Based on the country’s strategy and further analysis by Cisco IBSG that combines in-depth knowledge of technology with an extensive understanding of economic and market trends, Cisco IBSG recommends a business architecture that will enable Poland to compete effectively through innovative approaches that strengthen the economy, support entrepreneurship, and increase levels of education and quality of life (see Figure 4).

Figure 4. Competitive Business Architecture for Poland.



Source: Cisco IBSG, 2010

Next Steps

The business architecture in Figure 4 is based on broadband as a general-purpose infrastructure and on broadband-based economic policies. In meeting Poland's 2030 goals, the government could consider certain initiatives to reinforce such policies and ensure an infrastructure that will evolve and scale for Poland's needs:

- **Broadband Center of Excellence (BCoE).** Comprised of NGOs, national regulatory bodies, and private companies, a BCoE would provide a management platform for processes, consulting and support services, leadership, and advocacy.
- **Agency for Government Prioritization of ICT.** Such an agency would allocate more funds to the ICT budget so that public sector organizations can make their services accessible via the Internet to help boost citizens' demand for broadband access and create an ICT agency to manage this initiative.
- **Government Stimulus Programs for Cloud Services.** Developing demand-side interventions to increase broadband supply and demand could enable Poland to provide various services—such as extensive skills training for entrepreneurs, teachers, and civil servants for free, or via subsidies—or funding for the construction of thousands of Internet access sites where residents in remote and semi-urban areas are given free access and training.

Governments can become catalysts for growth by investing in infrastructure for communication, collaboration, and cooperation critical to long-term economic growth. The economic, political, and social consequences of slow growth and stagnant economies have opened a window of opportunity for governments to look beyond historical models and slow recovery scenarios. They have an opportunity to “experiment” and use the freedom of our economic discontinuity to transition to more dynamic economic models. Governments that

respond by combining necessary retrenchment with smart investment will bounce back as leaders of a stable economic revival. Creative leaders will embrace:

- **Network-powered growth** to spark innovation, stimulate economies, and sustain long-term competitiveness and positive differentiation
- **Network-powered supervision and regulation** to better frame and monitor the global financial and economic ecosystem

Governments that promote incentives and innovation in networks will attract investment and build intellectual capital. They will be the first to emerge from recession and unemployment, and will become magnets for the resources and economic activity that will improve the economic and social well-being of their citizens. With the “Big Bill” law as an enabler, Poland has the opportunity to transform itself into a broadband-based innovation economy that will enhance citizen well-being and increase GDP.

For more information about Cisco IBSG in Emerging Markets, please visit our website at www.cisco.com/web/about/ac79/emgmt/index.html, or contact:

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Endnotes

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2. Ibid.
3. Apart from this baseline forecast, the minister of infrastructure requested that Cisco prepare an accelerated broadband penetration scenario. The accelerated scenario reflects Poland's aspiration to achieve 90 percent household broadband penetration by 2015–2016. The key challenge in such an accelerated scenario is that the economic benefits do not actually come from broadband penetration, but rather from adoption of social and economic services offered over the network. It is expected that many of the systems that create value in the BDVA concept may take much more than five to 10 years to develop and implement, and perhaps more time for the economic benefits to be fully recognized. The success of this scenario depends on efforts of the Polish government to make social and economic change happen at an extremely rapid rate.
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More Information

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