

## Highlights of *The Global Information Technology Report 2008-2009*

### Main Global Trends

**Denmark** leads the world as the most networked economy in the world for the third consecutive year. The other Nordic countries continue to teach the world's best practices on how to leverage ICT for increased competitiveness, with **Sweden**, **Finland**, **Iceland** and **Norway** at second, sixth, seventh and eighth places, respectively. Among the top 20, the **United States** continues to deliver a convincing performance in networked readiness, climbing one position to 3rd place, followed by **Singapore** (4th) and **Switzerland** (5th). Five other economies from the Asia-Pacific region place in the top 20 this year: **Korea** (11), **Hong Kong** (12th), **Taiwan** (13th), **Australia** (14th) and **Japan** (17th). Of the largest Asian emerging markets, **China** leapfrogs 11 positions to 46th, overtaking **India** (which is down four positions at 54th) and the rest of the BRIC economies for the first time.

The assessment of Latin America and the Caribbean varies, with only six economies in the top half of the rankings, namely **Barbados** (36th), **Chile** (39th), **Puerto Rico** (42th), **Jamaica** (53rd), **Costa Rica** (56th) and **Brazil** (59th). Chile loses five positions and the leadership in the region for the first time since the inception of the Networked Readiness Index (NRI). **Mexico** and **Argentina** are both losing ground, positioned at 67th and 87th, respectively.

Despite some positive trends, sub-Saharan Africa continues to lag behind the rest of the world by a significant margin, with only two economies (**Mauritius** and **South Africa** at 51st and 52nd, respectively) in the top half of the NRI, while 18 rank below 100. In Northern Africa, **Tunisia** (38th) leads again, with a large and widening gap. **Egypt**, **Morocco** and **Algeria** are at 76th, 86th and 109th, respectively.

By contrast, the Middle East further improves its networked readiness with all countries but one appearing in the top half of the NRI rankings: **Israel** (25th), the **United Arab Emirates** (27th), **Qatar** (29th), **Bahrain** (37th), **Saudi Arabia** (40th), **Jordan** (44th), **Oman** (50th) and **Kuwait** (57th).

### Europe

**Denmark** is ranked number one, confirming its superior capacity to leverage ICT for overall national competitiveness. The country posts an outstanding showing across the board, ranking fourth, second and first in the environment, readiness and usage components, respectively. In particular, the government's clear and consistent vision on the importance of ICT diffusion (second and first, respectively in government readiness and usage) reflects in an extremely ICT friendly regulatory environment (second), with the world's most-developed ICT legislation. Denmark continues to display the highest Internet bandwidth (346 mB/s per 10,000 population) and broadband Internet penetration rates (36.3 subscribers per 100 population) in the sample, together with extensive ICT usage by companies in their business transactions (5th).

The Nordic countries continue to feature prominently in the NRI 2008–2009 rankings, with **Sweden**, **Finland**, **Iceland** and **Norway** at second, sixth, seventh and eighth places, respectively. Strong education fundamentals and high levels of technological readiness and innovation shared by these countries represent their overall competitiveness; they will no doubt be of assistance to Iceland in overcoming the present severe economic crisis. Other European countries are greatly leveraging ICT in their economic, political and social systems, notably the **United Kingdom** (15th), **Austria** (16th), **Estonia** (18th), **France** (19th), **Germany** (20th), **Ireland** (23rd) and **Belgium** (24th),

On a less positive note, countries such as **Greece** (55th) and, to a lesser extent, **Italy** (45th) lag behind in networked readiness. While Greece remains stable with respect to 2007 and shows a slight improvement (from 3.94 to 4.00), Italy continues its downward trend from last year, dropping another three places. Important flaws preventing the country from leveraging ICT are the weak market (75th) and regulatory (92nd) environments, and the low priority given to ICT diffusion in the government agenda, as highlighted by its disappointing 83rd place for government readiness.

Among EU newcomers (the EU accession 12), **Estonia** (18th) and, to a lesser extent, **Slovenia** (31st), the **Czech Republic** (32nd) and **Lithuania** (35th) have successfully used ICT as a lever for structural transformation and modernization of their economies and societies after the fall of the Berlin Wall. In Estonia, in particular, ICT diffusion eased and facilitated the transition from a planned economy to an extremely competitive market economy in less than 20 years, thanks to visionary leadership and the government's continuous prioritization of innovation and universal ICT access as a tool for improved growth and competitiveness.

On the other side of the spectrum, **Bulgaria** (68th) and **Poland** (69th) continue to trail behind. While Bulgaria's rank is essentially unchanged from last year, with a small improvement (from 3.71 to 3.80), Poland is losing further ground to the most networked among the EU accession 12 countries. Poland has not tackled perennial weaknesses in its networked readiness landscape, such as the poor market and regulatory environment (ranked 87th and 100th, respectively) and the marginal importance given to ICT in the national agenda (103rd and 127th for government readiness and usage, respectively).

**Turkey** drops six places from 2007, positioned at 61st, with a homogeneous showing across the different pillars composing the NRI. While the environment appears to be quite ICT friendly (56th), especially in its regulatory dimension (56th), significant room for improvement remains in the readiness subindex (69th), in particular in ICT accessibility, the quality of education, and the government's vision and e-leadership in ICT diffusion, among others. In particular, Turkey's government readiness, at 87th, receives the lowest mark across the nine pillars.

**Russia** is fairly stable at 74th, with a minor improvement (from 3.68 to 3.77) since 2007. The country can count on important competitive advantages for leveraging ICT, such as the quality of educational and research systems together with fairly innovative firms (45 for innovation capacity) that invest significantly in R&D (46th). However, significant weaknesses remain in the unsatisfactory quality of the market (96th) and regulatory (85th) environments, as well as the scarce ICT focus in the government's agenda and competitiveness strategy, reflected by below-par marks for government readiness and usage (81st and 111th, respectively).

## **Asia and the Pacific**

**Singapore** leads Asia once again in networked readiness at fourth place, one position up from last year, thanks to important strengths such as the world's most ICT-conducive market and regulatory environment, and exceptional levels of government readiness (first in the sample) and usage (second). Singapore's growth into a vibrant high-tech economy in the space of a few decades has much to do with the government's savvy promotion of ICT readiness as a key element of its competitiveness strategy, coupled with continued focus on education and innovation, and important private-public partnerships.

**Korea** remains stable at 11th position. The Korean government is a major catalyst of ICT diffusion and innovation (fourth for both government readiness and usage). These components have been a cornerstone of the government's development strategy over the last couple of decades and have resulted in high quality educational and research systems, producing a large number of scientists and engineers (19th) and leading research institutions (14th). Coupled with a sophisticated business sector, this has transformed the country into one of the world's innovation powerhouses, registering 129.7 utility patents per million population in 2007 (7th worldwide) and massively exporting high-tech products to international markets (28% of its total exports, 8th).

**Hong Kong** (12th) is down two places, and essentially has not changed its performance from last year. Major strengths are found in its business friendly market environment (first worldwide) characterized by low taxes, strong competition and a well-developed financial sector. Individual readiness (7th) is excellent, thanks to the affordability of ICT and the high quality of the educational system, while the government leads when it comes to ICT usage (7th). On a less positive note, the infrastructure environment (37th) is the main area for improvement, notably in the availability of scientists and engineers (67th) and tertiary education enrolment (63rd).

**Taiwan** moves up four places to 13th. Taiwan's impressive networked readiness is reflected in the economy ranking 15 or higher in eight of the nine pillars composing the NRI, confirming the success of the development strategy followed by the government over the last three decades (14th and 8th for government readiness and usage, respectively).

**Australia** (14th) delivers a performance in line with the previous three editions. Remarkably, the country ranks no lower than 22nd in any of the nine dimensions of the NRI. The infrastructure environment (8th), the political and legal framework (9th) and the government's zeal at using ICT (9th) are Australia's main strengths.

**Japan** is up two notches at 17, thanks to a small improvement from 5.14 to 5.19. Japan boasts undeniable prowess at leveraging ICT and innovation, as reflected by the level of business readiness (11th) and usage (4th), individual usage (13th) and the number of utility patents per capita (3rd). However, ICT readiness is still impaired by several regulatory, administrative and infrastructural shortcomings. Furthermore, the rating for government readiness (25th) and usage (34th) has plummeted – the result of a sharp fall in prioritization, promotion and procurement of ICT.

**China**, at 46th, moves up 11 places, overtaking India and the rest of the BRIC economies for the first time. Although generalized, the improvement is especially remarkable in the readiness component of the NRI, where China jumps from 54th to 36th. Individual readiness is soaring (38th, up 21 places), while business (44th, up 14 places) and government (33rd, up nine places) readiness display significant progress. ICT usage by the government is also increasing, translating into more services and efficiency. Yet, major challenges remain. Mobile telephony (94th), PCs (79th) and the Internet (78th) are spreading but not as rapidly as in many other countries, and remain low (83rd, down three places, for individual usage), while the market environment (59th) and infrastructure (74th) represent major impediments to further ICT diffusion.

**India** is down four places this year, at 54th. On one hand, India's business readiness (27th) is impressive, thanks to high quality management schools (12th), significant corporate spending on R&D (29th) and a broad base of suppliers. This results in high ICT usage by businesses (30th), with a strong capacity not only to adopt new technologies (26th) but also to innovate (35th). On the other hand, like China, India ranks low (114th) in individual usage because of spotty ICT penetration. Notably, and despite a twofold increase, there are fewer than three PCs and only seven Internet users for every 100 inhabitants, corresponding to 94th and 99th, respectively.

## **The Americas**

The **United States**, amid the current major recession, continues to deliver a convincing performance in networked readiness, climbing one position to third place. One of the country's most notable competitive strengths is its highly ICT-conducive environment (3rd), displaying an efficient market environment (second in the world) as well as top-class ICT-related infrastructure (3rd). In particular, the large pool of scientists and engineers (6th) and the best-ranked research institutions in the sample equip the country with the necessary infrastructure for technology.

**Canada**, improving three positions from last year, re-enters the top 10 (10th) for the first time since 2005-2006. The country's networked readiness is boosted by an excellent ICT infrastructure (4th), a conducive market environment (15th) and widespread ICT usage (11th) by all social actors (12th, 12th and 13th for individual, business and government usage, respectively).

**Barbados**, two places up from last year at 36th with significant improvement (from 4.26 to 4.38), overcomes Chile as the most networked country in Latin America and the Caribbean for the first time since the NRI's inception. Barbados' networked readiness rests on an ICT-conducive environment (31st), especially in its regulatory and infrastructure dimensions (25th in both), and on an outstanding disposition and ICT usage by individuals (33rd and 35th, respectively, for individual readiness and usage). The relative degree of government readiness (38th) has failed to translate into high levels of usage, although government usage shows the largest improvement from 2007 (rising from 87th to its current 71st).

**Chile**, at 39th, loses five places as well as its networked readiness prominence in the region. The stable country score (4.32 vs 4.35 in 2007) underlines the importance of constant progress in ICT diffusion and usage for a country to maintain its competitive edge in the rankings. Chile displays an evenly robust performance across all the NRI's components, with an especially ICT-conducive market (35th) and regulatory (35th) environment coupled with strong prioritization of ICT by the government (42nd and 31st for government readiness and usage), as reflected also by its early adoption – with respect to regional standards – and successful implementation of a comprehensive digital agenda. The country's main relative weakness has to do, as in previous years, with the quality of the educational system, especially in math and science (107th) and, to a lesser extent, of research institutions (62nd) and collaboration between academia and industry (51st).

**Costa Rica** (56th) and **Colombia** (64th) have progressed four and five places, respectively, because of significant improvement in the readiness component from last year: from 48th to 39th and from 64th to 53rd, respectively.

**Brazil** is unchanged at 59th. The country's networked readiness is driven by high levels of usage especially by businesses (32nd) and the government (32nd). Indeed, Brazil is one of the regional and world leaders in e-government services (26th), and the Internet is widely used by businesses in their daily transactions (28th). However, Brazil's market (119th) and regulatory (82nd) environments continue to show important flaws in business and ICT friendliness. Soft infrastructure should be upgraded and general education and training standards are lagging behind.

**Mexico** is down nine places from 2007 at 67th. The country shows deterioration across all nine pillars. Mexico presents important strengths for leveraging ICT, notably a focus on ICT penetration in the government agenda (62nd in government readiness), which translates into high levels of government usage (36th). However, the country suffers from most of the same weaknesses highlighted for Brazil: that is, an overregulated market environment, a poor quality educational system and low R&D investment, coupled with low ICT readiness and usage by both individuals (74th and 66th, respectively) and the business sector (72nd and 76th, respectively).

### **Sub-Saharan Africa, the Middle East and Northern Africa**

**Mauritius**, at 51st, moves three places up from 2007 and overtakes South Africa as the most ICT-ready economy in the region. Mauritius' networked readiness is boosted by an excellent market environment (29th), which is characterized by little red tape and low and non-distorted taxes (8th and 12th for the extent and effect of taxation and total tax rate, respectively), among others.

**South Africa** is stable at 52th. The country's satisfactory performance continues to rest on the ICT and business friendly regulatory (26th) and market environments (33rd). While the business sector appears quite disposed to use ICT (36th) and to leverage its latest advances (46th), major weaknesses remain in individual readiness (80th) due to a mediocre assessment of the quality of the educational system and high ICT access costs. This partly explains South Africa's low ICT penetration rates and, therefore, its poor showing in the overall individual usage pillar (78th).

**Botswana**, progressing one rank, comes in 77th overall and third in sub-Saharan Africa. The country posts a major improvement in its environment component (moving seven places up to 58th) because of progress in the infrastructure pillar (from 93rd to 77th). However, the low levels of usage by individuals (89th) and businesses (93rd), linked to poor individual and business readiness (67th and 96th, respectively) are areas of particular concern.

**Senegal** ranks at 80th this year, up five ranks. Sub-Saharan Africa's largest country, **Nigeria** (90th), regains some of the ground it lost last year. Despite posting the same score as last year, **Kenya** loses five places to come in at 97th. Still below 100, **Zambia** progresses 10 places and is now at 102nd. Entering just below is **Ghana**, at 103rd, clustering together with the two other African newcomers: **Malawi** (110th) and **Côte d'Ivoire** (111th). Among the other countries of the region, **Lesotho** is the only one that does not lose further ground, lagging however at the bottom of the global rankings (118th, up four).

**Tunisia** (38th) continues to lead in Northern Africa, with its gap with the rest of the region large and widening. The country's successful performance reflects the government's strong emphasis on ICT diffusion (27th and 39th for government readiness and usage, respectively) and rests on a business friendly regulatory environment (29th) and good preparation of the three main national stakeholders to use ICT (29th for the readiness component).

The results for the rest of the region are rather negative, with all countries losing some ground in networked readiness with the exception of **Libya** (up four positions to 101st). **Egypt** drops 13 ranks to 76th and **Morocco** loses 12 to 86th. **Algeria** is even more worrying, with the country plummeting from 88th to 108th.

By contrast, the Middle East region continues to improve its networked readiness, with all countries but one appearing in the top half of the NRI ranking.

**Israel**, at 25th, remains the leader in the region, although only by a small margin. A member of the top 20 from 2001 to 2007 consecutively, the country drops seven places because of a poorer assessment in individual readiness (34th) and individual usage (28th). Both the market environment (17th) and the political and regulatory framework (34th) deteriorate significantly. This does not put into question the fundamentals of

Israel's prowess in networked readiness and innovation, confirmed by its impressive 5th position in the world for the number of utility patents (154.3 in 2007), coupled with its 24th position for high-tech exports (12.7% of total exports). Indeed, Israel's recent development history is an inspiring example of a small, resource-poor country turned into a global high-tech powerhouse in less than 30 years, thanks to the government's coherent vision and strategy.

The **United Arab Emirates** (UAE) is up two positions at 27th, almost closing the gap with Israel. As mentioned in the historical trend analysis above, the government's push for ICT diffusion and usage has been impressive in recent years, as reflected by the country's 9th and 16th position in the government readiness and usage categories, respectively. The country realizes its largest improvement from 2007 in the environment component, going up seven places to 32nd in this dimension. The business environment is assessed as being quite ICT conducive (24th), with an impressive first and second place for the extent and effect of taxation and for the total tax rate, respectively, and little red tape (5th for the burden of government regulation). The challenge for the country in increasing its innovation potential in the years to come has to do with the quality of its higher educational and research system, which is assessed as poor and does not seem to provide local businesses with a sufficiently large qualified labour pool (75th for the availability of scientists and engineers).

**Qatar**, at 29th, continues its rise to the top of the rankings, with a cumulated improvement of seven places since 2006, the year of its first inclusion. The country makes significant progress in all three NRI components with gains of 14, 2 and 3 positions in environment (29th), readiness (26th) and usage (31st), respectively. Also on a steep upward trend, **Bahrain** soars eight ranks to 37 for a total gain of 13 ranks since its first NRI appearance in 2006. As for the UAE and Qatar, the most significant improvements are observed in the environment component (from 50th to 37th this year).

Thanks to progress across the board, **Saudi Arabia** (40th) improves by eight positions with respect to its inaugural ranking last year. While it places 45 or higher in seven other categories of the NRI, Saudi Arabia's situation presents serious shortcomings in terms of individual readiness (79th), notably the quality of the educational system, especially in math and science (85th). As a result, individual usage remains limited (53rd). While **Jordan** (44th, up three) and **Oman** (50th, also up three) are on the rise, **Kuwait** (57th) drops five places.