



# Measuring the Information Society



2010

ITU-D



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CH-1211 Geneva Switzerland

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# Measuring the Information Society 2010

## Executive Summary

### Recent market developments

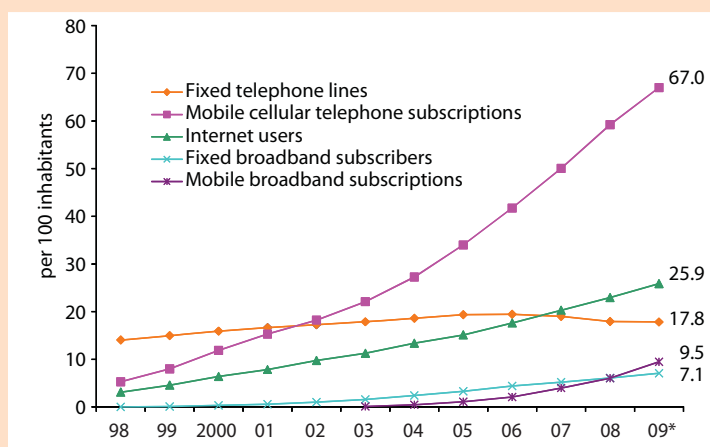
Despite the recent economic downturn, the use of Information and Communication Technology (ICT) services, such as mobile phones and the Internet, continues to grow worldwide. By the end of 2009, there were an estimated 4.6 billion mobile cellular subscriptions, corresponding to 67 per 100 inhabitants globally (Chart 1). Last year, mobile cellular penetration in developing countries passed the 50 per cent mark reaching an estimated 57 per 100 inhabitants at the end of 2009. Even though this remains well below the average in developed countries, where penetration exceeds 100 per cent, the rate of progress remains remarkable. Indeed, mobile cellular penetration in developing countries has more than doubled since 2005, when it stood at only 23 per cent.

Internet use has also continued to expand, albeit at a slower pace. In 2009, an estimated 26 per cent of the

world's population (or 1.7 billion people) were using the Internet. In developed countries the percentage remains much higher than in the developing world where four out of five people are still excluded from the benefits of being online. China alone accounted for one-third of Internet users in the developing world. While Internet penetration in developed countries reached 64 per cent at the end of 2009, in developing countries it reached only 18 per cent (and only 14 per cent if China is excluded).

One important challenge in bringing more people online is the limited availability of fixed broadband access, which is primarily confined to Internet users in developed countries and some developing countries. More than half of fixed broadband subscribers in the developing world are in China, which overtook the United States as the largest fixed broadband market in the world in 2008. Broadband penetration rates correspond to 23 per 100 inhabitants in developed countries and only four per cent in developing countries (two per cent excluding China).

Chart 1: The mobile miracle



Note: \* Estimates.  
Source: ITU World Telecommunication/ICT Indicators database.

Promising developments are currently taking place in the mobile broadband sector. The introduction of high-speed mobile Internet access in an increasing number of countries will further boost the number of Internet users, particularly in the developing world. Indeed, the number of mobile broadband subscriptions has grown steadily and in 2008 surpassed those for fixed broadband. At the end of 2009, there were an estimated 640 million mobile and 490 million fixed broadband subscriptions.

### The ICT Development Index (IDI)

The above indicators illustrate the trend of specific ICTs, but do not track the overall progress countries are making towards be-

Table 1. ICT Development Index (IDI), 2008 and 2007

Economy	Rank 2008	IDI 2008	Rank 2007	IDI 2007	Economy	Rank 2008	IDI 2008	Rank 2007	IDI 2007
Sweden	1	7.85	1	7.27	Azerbaijan	81	3.18	82	2.77
Luxembourg	2	7.71	6	6.98	Lebanon	82	3.17	78	3.02
Korea (Rep.)	3	7.68	2	7.23	Albania	83	3.12	84	2.74
Denmark	4	7.53	3	7.18	Iran (I.R.)	84	3.08	86	2.73
Netherlands	5	7.37	5	7.06	Tunisia	85	3.06	83	2.74
Iceland	6	7.23	4	7.06	Viet Nam	86	3.05	93	2.61
Switzerland	7	7.19	8	6.83	Ecuador	87	2.95	85	2.73
Japan	8	7.12	7	6.89	Armenia	88	2.94	89	2.66
Norway	9	7.11	9	6.78	Dominican Rep.	89	2.91	87	2.73
United Kingdom	10	7.07	12	6.70	Philippines	90	2.87	95	2.61
Hong Kong, China	11	7.04	10	6.78	Fiji	91	2.81	88	2.69
Finland	12	7.02	11	6.70	South Africa	92	2.79	91	2.64
Germany	13	6.95	13	6.60	Syria	93	2.76	90	2.65
Singapore	14	6.95	15	6.47	Paraguay	94	2.75	98	2.46
Australia	15	6.90	14	6.51	Mongolia	95	2.71	94	2.61
New Zealand	16	6.81	16	6.38	Egypt	96	2.70	100	2.44
Austria	17	6.72	19	6.25	Morocco	97	2.68	103	2.33
France	18	6.55	22	6.09	Cuba	98	2.66	92	2.62
United States	19	6.54	17	6.33	Kyrgyzstan	99	2.65	96	2.52
Ireland	20	6.52	20	6.14	Algeria	100	2.65	97	2.47
Canada	21	6.49	18	6.30	Bolivia	101	2.62	101	2.39
Estonia	22	6.41	25	5.86	Cape Verde	102	2.62	107	2.27
Belgium	23	6.36	21	6.10	El Salvador	103	2.61	99	2.45
Macao, China	24	6.29	28	5.73	Guatemala	104	2.53	102	2.35
Spain	25	6.27	26	5.84	Sri Lanka	105	2.51	104	2.32
Slovenia	26	6.26	27	5.77	Honduras	106	2.50	105	2.32
Israel	27	6.19	23	5.93	Indonesia	107	2.46	108	2.15
Italy	28	6.15	24	5.91	Turkmenistan	108	2.38	106	2.27
United Arab Emirates	29	6.11	33	5.20	Botswana	109	2.30	110	2.08
Greece	30	6.03	31	5.28	Uzbekistan	110	2.25	113	2.06
Malta	31	5.82	29	5.48	Tajikistan	111	2.25	109	2.11
Portugal	32	5.77	30	5.32	Nicaragua	112	2.18	112	2.08
Bahrain	33	5.67	35	4.95	Gabon	113	2.16	111	2.08
Hungary	34	5.64	34	5.18	Namibia	114	2.04	114	1.95
Lithuania	35	5.55	32	5.22	Swaziland	115	1.90	115	1.78
Croatia	36	5.53	37	4.95	Ghana	116	1.75	119	1.54
Czech Republic	37	5.45	39	4.92	India	117	1.75	116	1.62
Slovak Republic	38	5.38	41	4.86	Lao P.D.R.	118	1.74	117	1.60
Cyprus	39	5.37	40	4.91	Myanmar	119	1.71	118	1.60
Poland	40	5.29	36	4.95	Cambodia	120	1.70	120	1.53
Latvia	41	5.28	38	4.95	Kenya	121	1.69	121	1.52
Brunei Darussalam	42	5.07	42	4.77	Nigeria	122	1.65	134	1.36
Bulgaria	43	4.87	43	4.42	Bhutan	123	1.62	124	1.48
Romania	44	4.73	48	4.11	Gambia	124	1.62	123	1.50
Qatar	45	4.68	45	4.25	Djibouti	125	1.57	125	1.48
St. Vincent and the Grenadines	46	4.59	49	4.10	Mauritania	126	1.57	128	1.43
Montenegro	47	4.57	44	4.36	Sudan	127	1.57	122	1.50
Russia	48	4.54	46	4.13	Pakistan	128	1.54	127	1.45
Argentina	49	4.38	47	4.13	Yemen	129	1.52	126	1.48
Uruguay	50	4.34	51	3.96	Zimbabwe	130	1.51	129	1.43
TFYR Macedonia	51	4.32	63	3.40	Senegal	131	1.49	136	1.34
Saudi Arabia	52	4.24	54	3.76	Congo	132	1.48	135	1.36
Serbia	53	4.23	52	3.85	Lesotho	133	1.46	131	1.40
Chile	54	4.20	50	3.99	Comoros	134	1.46	130	1.41
Belarus	55	4.07	53	3.77	Côte d'Ivoire	135	1.45	133	1.37
Malaysia	56	3.96	55	3.66	Zambia	136	1.42	142	1.26
Turkey	57	3.90	56	3.63	Bangladesh	137	1.41	137	1.34
Ukraine	58	3.87	58	3.56	Cameroon	138	1.40	132	1.37
Trinidad & Tobago	59	3.83	57	3.61	Angola	139	1.40	138	1.31
Brazil	60	3.81	61	3.49	Togo	140	1.36	140	1.27
Venezuela	61	3.67	66	3.33	Benin	141	1.35	146	1.20
Panama	62	3.66	64	3.39	Nepal	142	1.34	141	1.27
Colombia	63	3.65	69	3.27	Haiti	143	1.31	143	1.24
Bosnia and Herzegovina	64	3.65	65	3.38	Madagascar	144	1.31	139	1.27
Kuwait	65	3.64	59	3.54	Uganda	145	1.30	144	1.21
Seychelles	66	3.64	62	3.44	Malawi	146	1.28	145	1.20
Jamaica	67	3.54	60	3.52	Mali	147	1.19	149	1.08
Maldives	68	3.54	72	3.11	Rwanda	148	1.19	148	1.11
Kazakhstan	69	3.47	70	3.17	Tanzania	149	1.17	151	1.05
Costa Rica	70	3.46	67	3.31	Congo (Dem. Rep.)	150	1.16	147	1.13
Oman	71	3.45	71	3.17	Papua New Guinea	151	1.08	150	1.06
Mauritius	72	3.44	68	3.30	Eritrea	152	1.08	152	1.03
Moldova	73	3.37	73	3.11	Mozambique	153	1.05	154	0.97
Jordan	74	3.33	79	2.98	Ethiopia	154	1.03	153	0.97
Peru	75	3.27	74	3.03	Burkina Faso	155	0.98	155	0.93
Thailand	76	3.27	75	3.03	Guinea-Bissau	156	0.97	156	0.88
Mexico	77	3.25	76	3.03	Guinea	157	0.93	158	0.85
Libya	78	3.24	80	2.92	Niger	158	0.90	157	0.86
China	79	3.23	77	3.03	Chad	159	0.79	159	0.73
Georgia	80	3.22	81	2.87					

Source: ITU.

coming information societies. A useful tool to monitor such progress is the ICT Development Index (IDI), a composite index made up of 11 indicators covering ICT access, use and skills. It has been constructed to measure the level and evolution over time of ICT developments taking into consideration the situations of both developed and developing countries.

The latest IDI results show that between 2007 and 2008, all 159 countries included in the index improved their scores, confirming the ongoing diffusion of ICTs and the overall transition to a global information society (Table 1). Actual IDI scores vary little among the ten economies with the highest rankings (between 7.07 and 7.85 on a scale from 1-10), with only minor rank changes between 2007 and 2008.

The top ten 2008 IDI countries are (in order of their ranks) Sweden, Luxembourg, the Republic of Korea, Denmark, the Netherlands, Iceland, Switzerland, Japan, Norway and the United Kingdom. All but two of these countries are from Europe, the world's leading region in ICT infrastructure and services uptake. Mobile cellular penetration rates exceed 100 per cent in most European countries, and close to two out of three Europeans are using the Internet.

Overall, countries that rank towards the top of the IDI are from the developed world, whereas most of those towards the bottom of the IDI are low-income countries from the group of Least Developed Countries (LDCs).

Nevertheless, several countries - including some developing countries - have shown strong improvements in their IDI score and ranking between 2007 and 2008. Notable examples include Bahrain, Cape Verde, Greece, Macedonia, Nigeria, United Arab Emirates (UAE), and Viet Nam. While some of these countries still rank low on the IDI (e.g., Nigeria or Viet Nam), their improvements illustrate the progress these countries are making in information society developments.

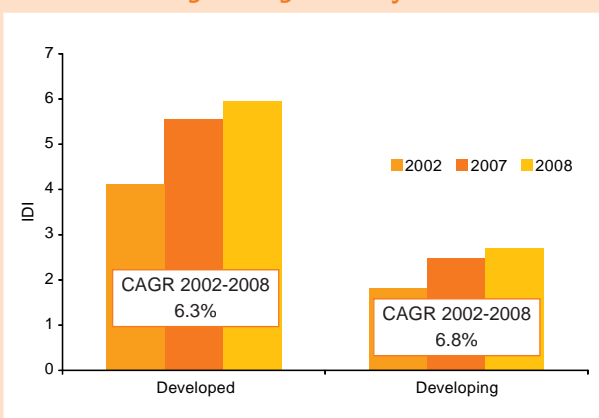
A closer look at each of the three IDI sub-indices (access, use and skills) reveals that on average, between 2007 and 2008, the access and use sub-indices increased equally - unlike between 2002 and 2008 when the access sub-index grew faster. This confirms that an increasing number of countries are moving towards more intensive ICT usage, with flattening growth in the access sub-index, and increasing growth in the use sub-index, in particular as a result of growing broadband use. The skills sub-index has changed little between 2007 and 2008 as it is based on proxy indicators measuring literacy and education for

which the majority of countries, especially developed countries, have already reached relatively high levels.

The top performers in the overall IDI tend to also rank highly in the IDI access and use sub-indices. Countries that have made outstanding progress in the area of ICT access (reflecting a substantial increase in fixed or mobile telephony, international Internet bandwidth or household access to the Internet and computers) include Armenia, Croatia, Estonia, Macedonia, Qatar, Romania, Saudi Arabia, St. Vincent and the Grenadines and Viet Nam. The countries that made the largest improvements in the use sub-index include Bahrain, Georgia, Greece, Kazakhstan, Lao P.D.R., Luxembourg, Macao (China), Nigeria, Sweden, Singapore and UAE (reflecting a substantial increase in Internet usage, and fixed or mobile broadband uptake).

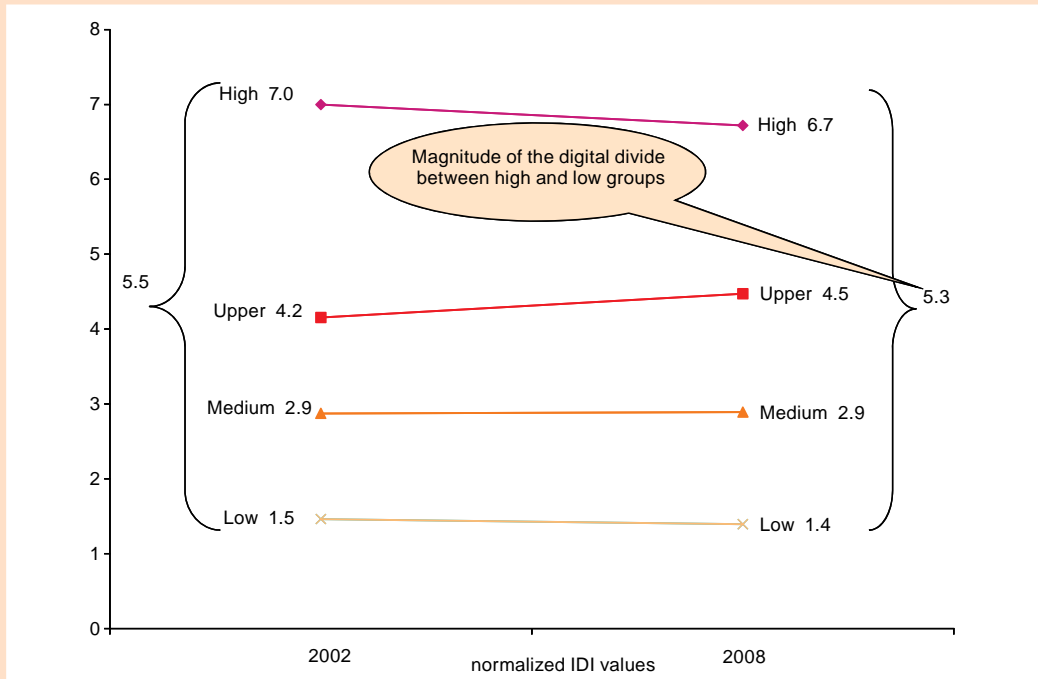
There are large inter- and intra-regional disparities in IDI performance. The differences are especially large in the Americas and Asia and the Pacific regions, reflecting the income differences in those regions. Plotting the IDI against GNI per capita confirms these patterns. While the distribution along the trend line is fairly homogenous for the CIS and Europe, the other four regions (Africa, Americas, Arab States and Asia and the Pacific) show a pattern with a cluster of lower income countries at one end combined with a few higher income countries at the other end, reflecting substantial differences in both ICT development and income levels within these regions.

Chart 2: IDI levels much lower in developing countries but growing steadily



Source: ITU.

Chart 3: The digital divide is shrinking slightly



Source: ITU.

### Monitoring the Digital Divide

The digital divide remains high on the agenda of national and international ICT policy makers, and one of the key objectives of the IDI is to help monitor and assess the digital divide, and highlight areas for improvement.

While the IDI values are on average much higher in developed than in developing countries, growth over the past years has been equally strong and even slightly higher in developing countries (Chart 2). The largest differences between developed and developing countries can be seen on the ICT use sub-index, where developing countries are still far behind developed countries, in particular for the uptake of mobile and fixed broadband.

The digital divide was analysed for four groups of countries, reflecting high, upper, medium and low IDI levels, along with the evolution from 2002 to 2008. The results illustrate that the digital divide between the “high” group and each of the other three groups is shrinking and that especially the “upper” group is catching up with the “high” group (Chart 3). The divides between the three other groups are increasing.

The analysis shows that the digital divide is still significant, although it is slightly shrinking, especially between those countries with very high ICT levels and those with lower

levels. This is partly explained by the flattening of ICT growth in the group of countries that are most advanced. At the same time, countries with reasonably high levels of ICT have made strong improvements thus increasing the gap with those towards the lower end of the scale. Given the relatively short time lag of ICT indicators compared to other development indicators, countries with low ICT levels could catch up relatively quickly, provided their ICT sectors receive adequate policy attention.

Another way of measuring differences in ICT development is provided by the time-distance methodology, which measures the number of years a country or region lags behind a benchmark country or region in terms of development indicators. The results illustrate that the gap between developed and developing countries in terms of ICT indicators is relatively small – especially compared to that for other development indicators, such as life expectancy or infant mortality rates. Indeed, in 2008, mobile cellular penetration and fixed broadband penetration in developing countries had reached the level that Sweden (ranking first in the IDI) had almost a decade earlier, and the number of Internet users per 100 inhabitants was the same as Sweden’s just over 11 years earlier. In contrast, life expectancy in developing countries is lagging Sweden by 66 years, and the infant mortality in developing countries in 2007 was at the same level where Sweden stood 72 years earlier.

## The ICT Price Basket

The cost of ICT services affects both ICT uptake and the use of ICTs. The ICT Price Basket, which measures the affordability of fixed and mobile telephony and fixed broadband Internet services, and the IDI are therefore closely related: lower prices may increase access and use, and higher levels of ICT uptake may reduce prices, with operators leveraging on economies of scale. Increased market liberalization and competition also tends to reduce prices, which in turn leads to higher levels of ICT uptake.

The ICT Price Basket allows policy makers to compare the cost of ICT services across countries, and provides a starting point for looking into ways of lowering prices – for example, by introducing or strengthening competition, by reviewing specific tariff policies and by evaluating operators' revenues and efficiency.

Between 2008 and 2009, the cost of ICT services has dropped in almost all of the 161 countries included in the ICT Price Basket, with an average drop of 15 per cent (Table 2). Fixed broadband services showed the largest price fall (42 per cent), compared to 25 and 20 per cent in mobile cellular and fixed telephone services, respectively.

In 2009, the ICT Price Basket corresponded on average to 13 per cent of GNI per capita. The ten economies with the lowest ICT service prices relative to income are Macao (China), Hong Kong (China), Singapore, Kuwait, Luxembourg, the United States, Denmark, Norway, the United Kingdom and Iceland. Overall, people in developed countries have to spend relatively less of their income (1.5 per cent) on ICT services than people in developing countries (17.5 per cent). This shows that, with a few exceptions, ICT services tend to be more affordable in developed countries and less affordable in developing countries, especially the least developed countries (LDCs).

The IDI and the ICT Price Basket are strongly correlated: high IDI values are associated with relatively lower prices, and vice versa. Furthermore, all (41) economies with an IDI value greater than five (compared to a maximum of 7.85 achieved by Sweden) have an ICT Price Basket value that represents less than two per cent of their monthly GNI per capita. At the other end of the scale, all of the countries with an ICT Price Basket value of more than ten (i.e. relatively expensive) have IDI values below three (i.e. relatively low). This suggests that prices are only a relevant factor for ICT

developments when they fall below a certain threshold, making ICT services affordable to a significant part of the population.

The analysis of the three sub-baskets highlights that prices vary considerably between countries and regions, as well as between services. In 2009, the mobile cellular sub-basket becomes the cheapest of the three sub-baskets. At 5.7 per cent of monthly GNI per capita in 2009, it lies just below the fixed telephone sub-basket (at 5.9) and well below the fixed broadband sub-basket (at 122).

The ten economies with the lowest relative prices for fixed lines are very diverse in terms of income levels, development status and geographic location. They include Iran, UAE, Belarus, Singapore, Kuwait, the Republic of Korea and the United States. The ten countries with the greatest decrease in the fixed telephone sub-basket are all low-income African countries that have relatively high fixed telephone tariffs.

The ten economies with the lowest mobile cellular sub-basket include Hong Kong (China), Norway, Denmark, Singapore and Austria. The countries with relatively low mobile cellular prices also tend to rank well on the overall ICT Price Basket and are generally high-income economies. Countries where mobile cellular tariffs dropped dramatically between 2008 and 2009 include Azerbaijan (81 per cent), Sri Lanka (67 per cent), Nepal (64 per cent), Ukraine (58 per cent) and Mexico (52 per cent).

Average mobile cellular prices vary substantially across regions, ranging from as little as 1.1 per cent of monthly income in Europe to as much as 17.7 per cent in Africa. Mobile services are relatively affordable in the CIS and Americas (representing on average 2.7 per cent of income) compared to Asia and the Pacific (3 per cent) and the Arab States (4.6 per cent). Although prices are dropping somewhat faster in developed countries, the cost of mobile services still corresponds to an equivalent of 1.2 per cent of monthly income compared to 7.8 per cent in developing countries.

At 122 per cent of monthly GNI per capita, the fixed broadband sub-basket remains by far the most expensive component of the ICT Price Basket. The countries with the relatively cheapest broadband prices are almost identical to those ranked at the top of the ICT Price Basket. They are high-income economies performing well in the IDI, such as Hong Kong (China), Singapore, Denmark, Luxembourg, the US, the UK, Switzerland and Sweden.

Table 2. ICT Price Basket and sub-baskets, 2009 and 2008

Rank	Economy	ICT Price Basket		Fixed telephone sub-basket as a % of GNI per capita		Mobile cellular sub-basket as a % of GNI per capita		Fixed broadband sub-basket as a % of GNI per capita		GNI per capita, US\$, 2008 (or latest available year)
		2009	2008	2009	2008	2009	2008	2009	2008	
1	Macao, China	0.23	0.63	0.30	0.78	0.09	0.24	0.30	0.86	35'360
2	Hong Kong, China	0.26	0.50	0.27	0.43	0.03	0.10	0.49	0.96	31'420
3	Singapore	0.33	0.41	0.27	0.26	0.14	0.15	0.58	0.81	34'760
4	Kuwait	0.37	0.80	0.27	0.35	0.24	0.30	0.60	1.75	38'420
5	Luxembourg	0.40	0.47	0.42	0.49	0.18	0.22	0.59	0.70	84'890
6	United States	0.40	0.41	0.32	0.45	0.39	0.40	0.50	0.39	47'580
7	Denmark	0.41	0.47	0.50	0.62	0.13	0.13	0.59	0.66	59'130
8	Norway	0.41	0.55	0.41	0.59	0.12	0.15	0.70	0.90	87'070
9	United Kingdom	0.57	0.72	0.64	0.77	0.44	0.57	0.63	0.83	45'390
10	Iceland	0.58	0.70	0.48	0.54	0.25	0.31	1.00	1.26	40'070
11	Canada	0.58	0.73	0.53	1.00	0.51	0.59	0.71	0.60	41'730
12	Finland	0.59	0.62	0.46	0.51	0.33	0.37	0.97	1.00	48'120
13	Switzerland	0.60	0.65	0.58	0.58	0.62	0.71	0.60	0.65	65'330
14	Sweden	0.60	0.62	0.62	0.59	0.35	0.44	0.84	0.84	50'940
15	Austria	0.61	1.07	0.71	0.81	0.18	0.68	0.94	1.71	46'260
16	Israel	0.61	N/A	0.83	N/A	0.67	N/A	0.33	N/A	24'700
17	Netherlands	0.75	0.76	0.66	0.82	0.71	0.46	0.87	1.00	50'150
18	Belgium	0.75	0.87	0.91	1.07	0.56	0.65	0.78	0.90	44'330
19	Korea (Rep.)	0.79	0.84	0.29	0.39	0.68	0.89	1.41	1.24	21'530
20	Germany	0.81	0.79	0.92	0.89	0.27	0.31	1.23	1.18	42'440
21	Ireland	0.82	0.82	1.06	1.05	0.51	0.47	0.88	0.95	49'590
22	United Arab Emirates	0.82	0.83	0.20	0.25	0.21	0.21	2.03	2.03	23'950
23	Costa Rica	0.84	1.27	0.80	1.00	0.46	0.97	1.24	1.83	6'060
24	Italy	0.86	0.84	0.96	0.98	0.62	0.61	0.98	0.92	35'240
25	Australia	0.86	0.91	0.77	0.92	1.04	0.88	0.77	0.92	40'350
26	Bahrain	0.87	0.78	0.33	0.29	0.46	0.40	1.82	1.66	17'390
27	Belarus	0.87	N/A	0.23	N/A	0.77	N/A	1.62	N/A	5'380
28	Malta	0.88	1.13	0.41	0.85	0.78	0.89	1.45	1.66	16'680
29	Cyprus	0.92	0.77	1.32	1.27	0.27	0.25	1.19	0.79	22'950
30	Trinidad & Tobago	0.93	1.14	1.41	1.68	0.47	0.67	0.91	1.08	16'540
31	Slovenia	0.95	1.15	0.98	1.18	0.79	0.71	1.09	1.57	24'010
32	France	0.95	1.09	0.83	0.96	1.00	1.11	1.02	1.18	42'250
33	Greece	1.02	1.04	1.06	1.08	0.99	1.02	1.00	1.02	28'650
34	Russia	1.02	1.81	0.67	1.86	0.73	1.37	1.66	2.21	9'620
35	Japan	1.09	0.87	0.72	0.58	1.39	1.03	1.18	1.01	38'210
36	Spain	1.11	1.26	1.07	1.25	1.19	1.36	1.08	1.18	31'960
37	Saudi Arabia	1.12	1.49	0.71	0.72	0.58	0.68	2.06	3.09	15'500
38	Portugal	1.28	1.74	1.60	1.63	0.54	1.67	1.69	1.92	20'560
39	New Zealand	1.28	1.23	1.42	1.43	1.20	0.96	1.23	1.28	27'940
40	Lithuania	1.28	1.60	1.45	1.82	0.86	1.05	1.54	1.93	11'870
41	Poland	1.37	2.74	1.76	3.42	0.97	1.52	1.39	3.29	11'880
42	Latvia	1.46	1.82	1.13	1.44	0.74	0.89	2.52	3.14	11'860
43	Estonia	1.49	1.99	1.11	1.24	1.03	1.24	2.34	3.50	14'270
44	Serbia	1.60	1.59	0.82	1.23	1.09	1.25	2.88	2.28	5'700
45	Oman	1.64	2.49	1.25	3.51	0.61	0.59	3.06	3.37	12'270
46	Malaysia	1.65	1.93	0.82	0.94	0.85	1.09	3.27	3.75	6'970
47	Mauritius	1.67	4.95	1.06	1.21	0.84	0.97	3.11	12.69	6'400
48	Mexico	1.69	3.56	2.08	3.21	1.04	2.15	1.95	5.32	9'980
49	Croatia	1.72	2.14	1.70	1.88	1.62	2.15	1.83	2.40	13'570
50	Ukraine	1.79	5.20	1.06	1.99	1.62	3.84	2.70	9.77	3'210
51	Kazakhstan	1.82	N/A	0.38	N/A	1.71	N/A	3.36	N/A	6'140
52	Maldives	1.87	2.12	1.36	1.54	1.14	1.27	3.11	3.53	3'630
53	Romania	1.87	3.05	2.92	2.38	1.60	2.33	1.10	4.43	7'930
54	St. Kitts and Nevis	2.09	N/A	1.07	N/A	1.19	N/A	4.01	N/A	10'960
55	Slovak Republic	2.10	2.36	1.88	2.51	2.06	1.65	2.36	2.91	14'540
56	Uruguay	2.10	3.21	1.82	2.45	1.84	2.59	2.64	4.58	8'260
57	Panama	2.18	2.11	2.34	1.97	0.96	1.10	3.23	3.26	6'180
58	Hungary	2.18	2.46	2.25	3.13	1.44	1.67	2.84	2.58	12'810
59	Czech Republic	2.18	2.17	2.12	2.57	1.28	1.54	3.13	2.40	16'600
60	Antigua & Barbuda	2.19	N/A	1.29	N/A	1.08	N/A	4.21	N/A	13'620
61	Sri Lanka	2.25	7.31	3.18	3.73	0.61	1.86	2.95	16.34	1'780
62	Turkey	2.39	N/A	1.77	N/A	3.07	N/A	2.34	N/A	9'340
63	Qatar	2.42	N/A	0.91	N/A	0.86	N/A	5.49	N/A	12'000
64	Algeria	2.43	3.31	1.19	1.51	1.77	2.71	4.35	5.72	4'260
65	Tunisia	2.64	2.87	1.02	1.14	2.63	2.69	4.27	4.78	3'290
66	Argentina	2.71	3.68	0.64	0.95	2.28	2.48	5.20	7.61	7'200
67	Barbados	2.79	3.90	2.54	2.73	1.38	1.63	4.44	7.34	9'330
68	Montenegro	2.81	2.49	1.85	0.96	1.18	1.56	5.40	4.95	6'440
69	Venezuela	2.99	3.45	1.17	1.15	3.72	4.05	4.07	5.14	9'230
70	Mongolia	3.02	N/A	0.47	N/A	2.55	N/A	6.04	N/A	1'680
71	Jamaica	3.07	5.15	2.38	3.51	1.38	2.25	5.47	9.69	4'870
72	Lebanon	3.08	3.88	1.95	2.27	3.00	4.61	4.29	4.78	6'350
73	Seychelles	3.09	3.29	1.30	1.62	1.31	1.48	6.66	6.78	10'290
74	Bhutan	3.16	15.19	1.91	2.39	1.26	2.05	6.30	41.13	1'900
75	China	3.21	4.37	0.92	1.88	1.51	1.83	7.19	9.41	2'940
76	Bosnia and Herzegovina	3.25	3.60	2.33	3.00	2.49	3.12	4.93	4.69	4'510
77	Bulgaria	3.37	3.78	3.01	2.40	3.85	4.85	3.24	4.08	5'490
78	Egypt	3.40	3.95	1.97	2.05	2.76	3.46	5.46	6.33	1'800
79	Grenada	3.43	4.13	2.44	2.98	1.69	1.90	6.15	7.52	5'710
80	Chile	3.49	4.49	3.01	3.87	1.30	1.97	6.15	7.62	9'400

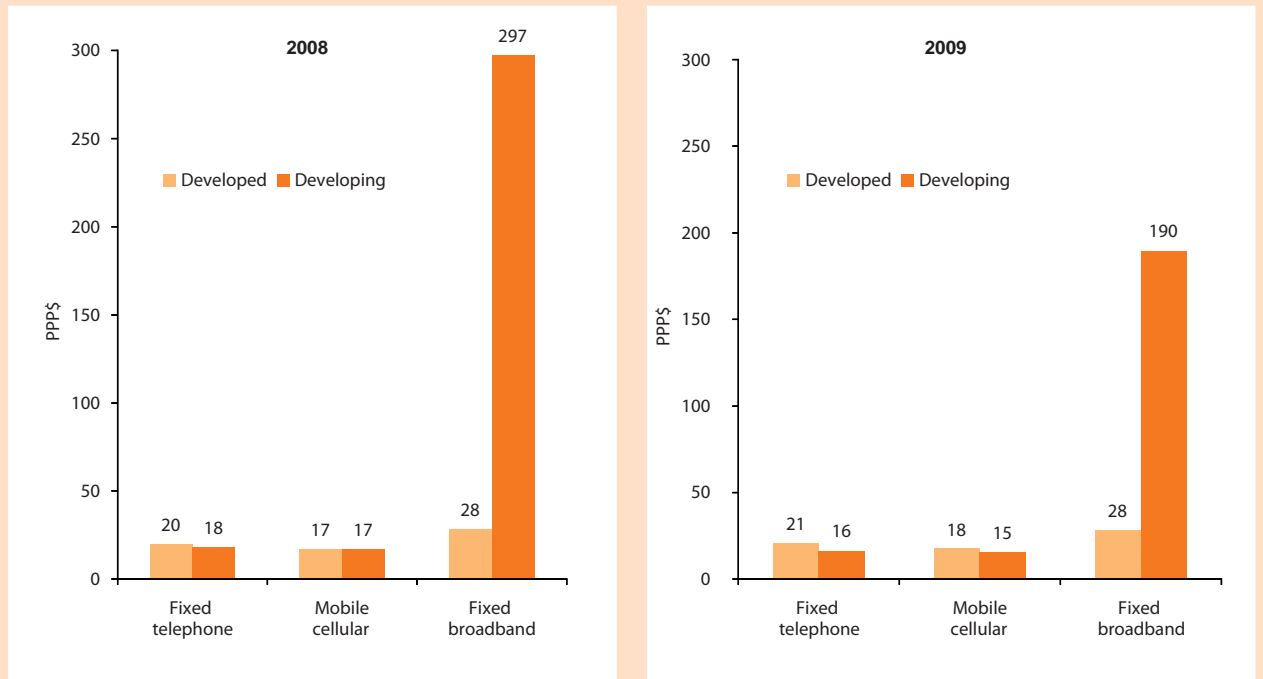


Rank	Economy	ICT Price Basket		Fixed telephone sub-basket as a % of GNI per capita		Mobile cellular sub-basket as a % of GNI per capita		Fixed broadband sub-basket as a % of GNI per capita		GNI per capita, US\$, 2008 (or latest available year)
		2009	2008	2009	2008	2009	2008	2009	2008	
81	India	3.64	4.71	3.50	4.41	1.57	2.06	5.84	7.66	1'070
82	St. Lucia	3.72	5.69	2.52	2.52	2.29	2.59	6.35	11.98	5'530
83	Iran (I.R.)	3.87	5.42	0.07	0.07	1.21	1.31	10.33	14.87	3'540
84	Fiji	3.94	5.24	2.34	3.11	3.29	4.38	6.19	8.23	3'930
85	TFYR Macedonia	3.97	4.24	3.89	3.03	3.89	4.57	4.12	5.11	4'140
86	St. Vincent and the Grenadines	4.11	7.41	2.53	3.09	1.94	3.40	7.86	15.73	5'140
87	Brazil	4.14	7.68	2.19	5.91	5.66	7.51	4.58	9.61	7'350
88	Thailand	4.15	3.25	3.52	2.04	1.00	1.38	7.94	6.34	2'840
89	South Africa	4.20	4.24	4.45	4.67	2.60	2.57	5.54	5.48	5'820
90	Dominican Rep.	4.29	5.80	3.36	4.87	2.33	3.07	7.18	9.47	4'390
91	Colombia	4.29	6.09	1.46	1.33	2.46	3.53	8.96	13.42	4'660
92	Albania	4.30	7.11	1.86	1.58	4.18	8.28	6.86	11.47	3'840
93	El Salvador	4.47	5.43	3.96	4.28	2.44	4.43	7.01	7.58	3'480
94	Armenia	4.94	7.98	1.46	2.30	2.08	3.80	11.28	17.84	3'350
95	Botswana	5.46	6.14	3.33	3.47	1.50	1.70	11.54	13.25	6'470
96	Jordan	5.51	6.13	3.43	3.48	2.08	1.88	11.01	13.02	3'310
97	Ecuador	5.56	6.52	0.42	0.50	3.10	3.52	13.15	15.55	3'640
98	Indonesia	5.81	7.65	3.33	3.30	1.67	3.87	12.44	15.77	2'010
99	Azerbaijan	5.82	16.02	0.78	1.14	1.39	7.16	15.27	39.77	3'830
100	Peru	5.98	6.93	4.30	5.35	2.69	2.78	10.96	12.67	3'990
101	Dominica	5.99	6.56	2.74	3.07	3.22	3.10	12.02	13.49	4'770
102	Paraguay	6.16	11.49	3.65	5.19	2.92	4.13	11.91	25.15	2'180
103	Moldova	6.65	11.17	2.34	2.95	6.70	8.48	10.91	22.08	1'470
104	Namibia	6.95	8.59	3.71	5.19	3.65	4.09	13.47	16.48	4'200
105	Cape Verde	7.09	11.26	1.93	4.22	5.98	9.90	13.37	19.65	3'130
106	Suriname	7.32	9.03	0.55	0.72	2.22	2.27	19.21	24.10	4'990
107	Guatemala	7.39	7.74	3.48	4.26	3.27	2.23	15.42	16.72	2'680
108	Pakistan	7.56	11.05	3.49	4.98	1.28	2.66	17.89	25.50	980
109	Syria	7.73	14.02	0.72	0.85	4.38	6.23	18.08	34.98	2'090
110	Georgia	8.62	11.96	1.70	4.14	3.68	4.80	20.49	26.93	2'470
111	Micronesia	9.04	8.56	4.10	3.89	2.52	2.39	20.49	19.41	2'340
112	Belize	9.15	13.18	5.50	6.59	4.67	4.70	17.28	28.26	3'820
113	Philippines	9.25	10.68	10.12	10.49	3.95	4.24	13.68	17.31	1'890
114	Viet Nam	9.34	11.90	2.86	3.54	4.37	6.38	20.80	25.78	890
115	Morocco	9.69	12.38	10.93	14.62	10.32	11.83	7.83	10.68	2'580
116	Sudan	10.80	15.97	4.12	5.49	3.60	5.99	24.70	36.43	1'130
117	Guyana	16.73	18.31	2.17	2.35	6.27	6.86	41.75	45.72	1'420
118	Bolivia	18.06	19.73	19.28	21.65	6.01	5.63	28.89	31.91	1'460
119	Nicaragua	19.68	19.94	5.26	6.20	15.54	16.88	38.25	36.72	1'080
120	Angola	21.45	30.55	5.76	9.47	3.83	5.52	54.76	76.67	3'450
121	Tonga	21.90	21.04	3.03	3.31	2.76	3.01	59.90	56.80	2'560
122	Djibouti	25.00	N/A	8.61	N/A	7.02	N/A	59.36	N/A	1'130
123	Nepal	25.73	34.28	8.93	12.08	3.69	10.33	64.58	80.43	400
124	Lesotho	28.03	29.62	14.20	15.00	14.35	15.15	55.56	58.70	1'080
125	Kyrgyzstan	28.21	N/A	2.05	N/A	4.65	N/A	77.93	N/A	740
126	Senegal	29.79	32.98	29.74	25.43	10.29	12.23	49.34	61.28	970
127	Kenya	29.81	48.03	15.69	20.42	11.66	23.67	62.07	296.12	770
128	Ghana	31.36	40.49	6.84	9.49	7.63	11.98	79.60	130.96	670
129	Côte d'Ivoire	31.61	36.96	26.54	30.00	14.04	19.53	54.27	61.35	980
130	Uzbekistan	34.30	N/A	1.50	N/A	1.41	N/A	263.03	N/A	910
131	Vanuatu	35.18	42.12	12.22	16.51	6.67	9.84	86.64	293.47	2'330
132	Bangladesh	35.55	35.60	3.61	3.42	3.05	3.38	116.31	137.73	520
133	Yemen	35.64	35.96	0.83	1.16	6.09	6.71	277.82	311.37	950
134	Tajikistan	35.83	N/A	1.77	N/A	5.71	N/A	727.27	N/A	600
135	Samoa	36.08	30.99	4.46	5.07	3.78	4.30	202.44	83.59	2'780
136	Swaziland	36.15	35.96	2.35	2.25	6.10	5.65	408.56	873.24	2'520
137	Lao P.D.R.	37.24	38.09	6.10	8.16	5.63	6.11	315.12	555.08	740
138	Zambia	37.37	53.35	31.10	41.56	16.07	18.50	64.92	137.19	950
139	Mauritania	37.93	40.58	17.07	18.43	14.16	14.12	82.58	89.18	840
140	Ethiopia	37.98	41.57	3.76	8.07	10.19	16.65	2085.05	3512.83	280
141	Nigeria	38.88	42.98	5.90	13.30	10.74	15.65	108.61	890.41	1'160
142	Guinea	39.60	40.24	9.22	10.15	9.60	10.57	1546.19	2400.00	390
143	S. Tomé & Príncipe	40.20	41.98	11.31	14.55	9.29	11.38	243.88	377.22	1'020
144	Cameroon	40.60	45.76	14.74	16.95	14.58	20.32	92.49	210.03	1'150
145	Cambodia	41.86	43.01	15.65	17.86	9.94	11.16	177.03	201.24	600
146	Papua New Guinea	41.98	41.24	4.76	5.71	21.19	18.02	168.43	203.70	1'010
147	Gambia	42.20	45.91	7.26	15.11	19.33	22.62	945.43	1439.28	390
148	Comoros	46.65	48.76	17.73	20.53	22.23	25.74	685.44	793.67	750
149	Mali	46.76	49.25	19.50	23.74	20.78	24.02	114.61	139.58	580
150	Rwanda	47.68	54.99	23.70	27.34	19.34	37.62	257.64	344.35	410
151	Benin	47.69	51.71	17.34	22.43	25.74	32.71	204.63	220.38	690
152	Uganda	50.33	60.41	28.29	44.45	22.71	36.78	555.35	600.00	420
153	Malawi	52.85	57.82	13.84	16.07	44.70	57.39	2038.33	4320.00	290
154	Tanzania	53.72	55.36	33.30	32.83	27.85	33.25	173.35	204.01	440
155	Burkina Faso	54.96	58.57	28.82	28.66	36.06	47.06	228.13	5193.56	480
156	Madagascar	55.48	71.71	35.80	68.50	30.63	46.64	297.23	450.25	410
157	Central African Rep.	55.78	57.73	29.51	33.43	37.84	39.75	3891.20	4407.69	410
158	Mozambique	56.16	68.03	42.62	66.20	25.85	37.90	260.22	375.28	370
159	Myanmar	58.18	N/A	4.92	N/A	69.61	N/A	155.40	N/A	220
160	Togo	58.52	67.89	38.39	43.62	37.16	60.05	558.39	352.82	400
161	Niger	67.58	72.39	47.01	58.16	55.74	59.00	966.90	249.24	330

Note: N/A - Not available.

Source: ITU.

**Chart 4: Fixed broadband Internet prices are dropping sharply but remain unaffordable in many developing countries**



Note: Average monthly price per service, in PPP\$.  
Source: ITU.

A regional comparison of prices for fixed broadband services highlights a striking disparity, mainly between Africa and the other regions. On average, a high-speed Internet connection represents 500 per cent of average monthly GNI per capita in Africa, making fixed broadband effectively inaccessible for most people in the region. In the Arab States and Asia and the Pacific regions, the fixed broadband sub-basket represents 71 and 46 per cent of income, respectively, compared to around ten per cent in both the Americas and CIS. At less than two per cent of average monthly income, fixed broadband services are by far the cheapest in Europe.

The broadband price gap is equally apparent between developed and developing countries (with an average price of PPP\$ 28 and 190 respectively) (Chart 4). Broadband access remains the single most expensive and least affordable service in the developing world. In 2009, there were still 28 countries where the price of the fixed broadband sub-basket exceeded the monthly GNI per capita, compared to 29 in 2008. These countries are all ranked relatively low in the IDI, reinforcing the argument that the affordability of services is crucial to building an inclusive information society.

### Measuring ICT impact

One of the main objectives of the IDI is to measure the development potential of ICTs, or the extent to which countries can use ICTs to enhance growth and development, based on available capabilities and skills required to make effective use of ICTs and enhance their impact.

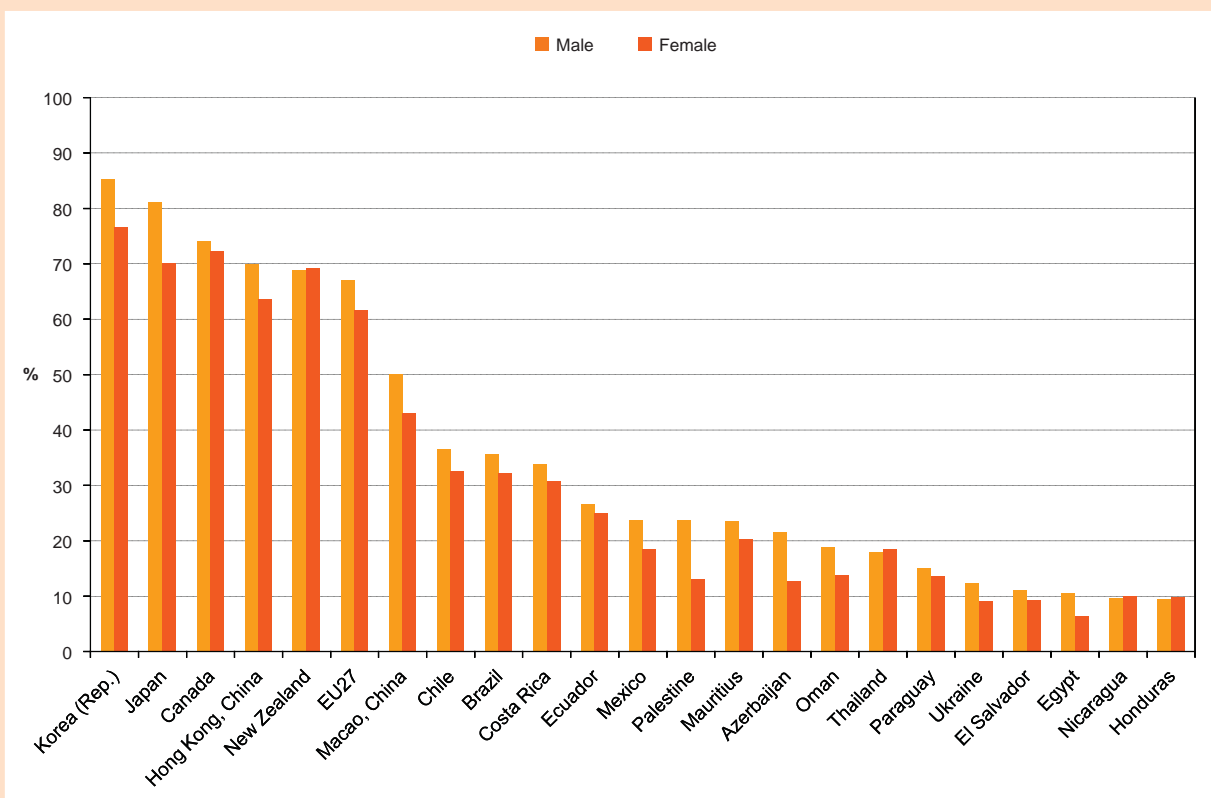
ICTs have a wide range of different economic effects which, directly or indirectly, can increase welfare and facilitate social and economic development. Direct effects include productivity gains resulting from the development and deployment of ICTs, and the development of new, related technologies. Indirect effects include trade creation and trade facilitation in service sectors, employment opportunities created by ICT-enabled reforms, enhanced flexibility for firms and workers; and the creation of new business models and opportunities. The possible broader socio-economic impacts have been explored less frequently. This is, at least in part, due to the data challenges involved in measuring and tracking such effects.

The report finds that ICTs can have important economic and socio-economic benefits, including those on a range of development goals. Analysis using ICT household data reveals that better educational performance has a positive statistical association with greater household Internet access, pointing to one possible channel via which the potential benefits of ICTs might occur. A statistical association was also found between the proportion of households with Internet access and female labour force participation, suggesting further potential benefits from the use of ICTs. These could occur directly or indirectly, for example by promoting gender equality, especially in the use of ICTs, and in helping women into economic

activity. Indeed, available data illustrate that the differences between men and women using the Internet tend to be relatively small (less than 10 percentage points in most developing countries) (Chart 5).

While these are preliminary indications that warrant further investigation, the analysis does point to the importance of ICT use and suggests that this is a key area to include in ICT policies that aim to build an inclusive information society. As the IDI framework itself indicates, ICT use is the second stage in ICT development. Maximizing the benefits of ICTs will depend on the use that is being made of them.

Chart 5: Empowering women – Internet users by gender, 2008\*



Note: \*Or latest available year.  
 Source: ITU, based on Eurostat and national sources.

The full version of the report, as well as the executive summary in all six official languages of the ITU, are available at:

<http://www.itu.int/ITU-D/ict/publications/idi/2010/index.html>