Overview of ICT trends – emerging insights

Caribbean Region Seminar: Issues in Telecommunication economics and financing
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Regulatory & Market Environment Division
Telecommunication Development Bureau
International Telecommunication Union

The views expressed in this presentation are those of the author and do not necessarily reflect the opinions of the ITU or its Membership.
Outline of the presentation

- Overview of general ICT trends: Caribbean region in the context of world ICT
- Correlation between ICT trends and
  - Investments
  - Tariffs
- Emerging trends
General ICT trends

Growth in fixed lines, mobile subscribers and Internet users

**Worldwide**

![Graph showing growth in fixed lines, mobile subscribers, and Internet users worldwide.]

**Caribbean Region**

![Graph showing growth in fixed lines, mobile subscribers, and Internet users in the Caribbean Region.]

Source: ITU Trends in Telecommunication Reform 2007: The Road to NGNs and ITU World Telecommunication Indicators Database.
General ICT trends

Fixed-mobile substitution

**Worldwide**

**Caribbean Region**

Source: ITU World Telecommunication/ICT Regulatory Database.
General ICT trends

Growth in Internet and broadband subscribers

Worldwide

Caribbean Region

Source: ITU World Telecommunication/ICT Regulatory Database.
General ICT trends

Internet and broadband goes mobile worldwide

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Source: ITU Trends in Telecommunication Reform 2007: The Road to NGNs
General ICT trends: disparities

Distribution of major ICTs by income group, 2006

Source: ITU Trends in Telecommunication Reform 2007: The Road to NGNs and ITU World Telecommunication/ICT Indicators Database.
General ICT trends

ICTs become more equally distributed over time


But disparities between regions persist

Penetration of majors ICT, 2006*

* Users per 100 inhabitants

Source: ITU World Telecommunication/ICT Indicators Database

Are these disparities caused by differences in investments and/or services tariffs?
Investments
Telecommunication investments as % of revenue

Caribbean countries

EU countries

- Investments of the fixed incumbent operator in the EU in average reached 13.3 per cent of the received revenues;
- Investments of the main mobile operator – approximately 12.7 per cent of their received revenues in year 2006.

Investments into ICT sector are cyclical. The duration, periodicity and ect. of these cycles are determined by many factors:

- Current infrastructure;
- Current and potential competition;
- Technological development;
- Existing and potential demand;
- Timing of regulatory decision.

Source: ITU World Telecommunication/ ICT Indicators Database and OECD databases
Effective Regulation Linked to Investment

Relationship between Scorecard and Investment as percentage of GFCF

Source: ECTA Regulatory Scorecard 2005
# Investments: key drivers

<table>
<thead>
<tr>
<th>Primary Drivers</th>
<th>Level of expected returns</th>
<th>Risk and uncertainty associated with expected returns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary Drivers</td>
<td>Economy-wide</td>
<td>Industry-specific</td>
</tr>
<tr>
<td>GDP per capita</td>
<td>Regulation by NRA</td>
<td>Cost of capital</td>
</tr>
<tr>
<td>Demographic/geographic characteristics</td>
<td>Competition</td>
<td>Credit rating &amp; debt levels</td>
</tr>
<tr>
<td>Economic cycle (financial bubble)</td>
<td>Technological progress</td>
<td>Take-overs and mergers</td>
</tr>
<tr>
<td>General regulation (not sector-specific)</td>
<td>Demand for E-communications services</td>
<td>Company performance</td>
</tr>
</tbody>
</table>

*Source: London Economics*
**Tariffs: mobile services**

**Mobile penetration**:  
- Africa 21%  
- Americas 62%  
- Asia 29%  
- Oceania 72%  
- Europe 94%  

* Users per 100 inhabitants

Source: ITU Trends in Telecommunication Reform 2007: The Road to NGNs and ITU World Telecommunication/ICT Indicators Database.
New business models enable growth into low-income segments

World population split according to income segment (USD per capita per day)

- 4 billion mobile phone users
- 3 billion mobile phone users 2008
- 2 billion mobile phone users 2005

Business model
- Postpaid
- Prepaid
- Micro prepaid
- Microfinance
- Phone sharing

**Tariffs: broadband**

**Broadband penetration**:  
- Africa 0.12%  
- Americas 8.93%  
- Asia 2.71%  
- Oceania 13.69%  
- Europe 11.02%  

*Users per 100 inhabitants*

Source: ITU Trends in Telecommunication Reform 2007: The Road to NGNs and ITU World Telecommunication/ICT Indicators Database.
Broadband inequality… and it cause

**Distribution of fixed broadband subscribers, by income group, 2005**

- High income: 74.0%
- Upper-middle: 20.0%
- Lower-middle: 5.2%
- Low income: 0.7%

India and Vietnam represent 94%

**Broadband prices and affordability, by income group, 2006 (in USD per month)**

- High: $16.27 (2.1%)
- Upper-middle: $19.54 (1.9%)
- Lower-middle: $93.33 (72%)
- Low income: $186.21 (909%)

Tariffs: broadband

International survey of broadband prices
- Based on 133 economies that had broadband as early as 2004

Methodology
- Based on price in US$ per 100 kbit/s

Price trends
- Median price has fallen by 41% p.a.
- Median speed has risen by 66% p.a.
- Faster than Moore’s Law

Source: ITU Internet Reports 2006: Digital Life.
## Tariffs: broadband

<table>
<thead>
<tr>
<th>Economy</th>
<th>Company</th>
<th>Speed Mbit/s</th>
<th>Price per month USD</th>
<th>Price per 100 kbit/s</th>
<th>Change 2005-06</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Japan</td>
<td>Yahoo! BB</td>
<td>51.2</td>
<td>31.19</td>
<td>0.07</td>
<td>-12.5%</td>
</tr>
<tr>
<td>2 Rep. of Korea</td>
<td>Hanaro</td>
<td>51.2</td>
<td>40.59</td>
<td>0.08</td>
<td>...</td>
</tr>
<tr>
<td>3 Netherlands</td>
<td>Internet Access</td>
<td>20.4</td>
<td>27.97</td>
<td>0.14</td>
<td>-81.3%</td>
</tr>
<tr>
<td>4 Taiwan, China</td>
<td>Chunghwa</td>
<td>12.3</td>
<td>22.67</td>
<td>0.18</td>
<td>...</td>
</tr>
<tr>
<td>5 Sweden</td>
<td></td>
<td>24.6</td>
<td>56.08</td>
<td>0.23</td>
<td>-6.5%</td>
</tr>
<tr>
<td>6 Singapore</td>
<td>Starhub</td>
<td>30.7</td>
<td>73.17</td>
<td>0.24</td>
<td>-85.0%</td>
</tr>
<tr>
<td>7 Italy</td>
<td>Libero</td>
<td>12.3</td>
<td>37.23</td>
<td>0.30</td>
<td>-73.8%</td>
</tr>
<tr>
<td>8 Finland</td>
<td>Elisa</td>
<td>24.6</td>
<td>85.64</td>
<td>0.36</td>
<td>-51.4%</td>
</tr>
<tr>
<td>9 France</td>
<td>Free</td>
<td>10.2</td>
<td>37.29</td>
<td>0.36</td>
<td>-90.1%</td>
</tr>
<tr>
<td>10 United States</td>
<td>Comcast</td>
<td>4.1</td>
<td>20.00</td>
<td>0.49</td>
<td>...</td>
</tr>
<tr>
<td>11 Germany</td>
<td>Freenet.de</td>
<td>6.0</td>
<td>30.95</td>
<td>0.52</td>
<td>...</td>
</tr>
<tr>
<td>12 United Kingdom</td>
<td>Pipex</td>
<td>8.1</td>
<td>50.89</td>
<td>0.63</td>
<td>-53.6%</td>
</tr>
<tr>
<td>13 Hong Kong, China</td>
<td>Netvigator</td>
<td>6.1</td>
<td>51.17</td>
<td>0.83</td>
<td>...</td>
</tr>
<tr>
<td>14 Portugal</td>
<td>Sapo</td>
<td>8.1</td>
<td>75.82</td>
<td>0.93</td>
<td>...</td>
</tr>
<tr>
<td>15 Canada</td>
<td>Bell</td>
<td>4.0</td>
<td>41.26</td>
<td>1.01</td>
<td>-3.9%</td>
</tr>
</tbody>
</table>

**Unweighted Average**

<table>
<thead>
<tr>
<th>Speed Mbit/s</th>
<th>Price per month USD</th>
<th>Price per 100 kbit/s</th>
<th>Change 2005-06</th>
</tr>
</thead>
<tbody>
<tr>
<td>18.3</td>
<td>44.33</td>
<td>0.42</td>
<td>-50.8%</td>
</tr>
</tbody>
</table>

*Source: ITU Internet Reports 2006: Digital.Life*
Tariffs: broadband

Global trends in broadband pricing schemes

<table>
<thead>
<tr>
<th>Year</th>
<th>Data</th>
<th>Time</th>
<th>Both</th>
<th>Flat-rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>44</td>
<td>89</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>2005</td>
<td>50</td>
<td>95</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>2006</td>
<td>56</td>
<td>100</td>
<td>5</td>
<td>4</td>
</tr>
</tbody>
</table>

Note: Data refers to price packages with bit caps. Time refers to time-metering. Both refers to packages with both data and time caps. Flat-rate implies unlimited monthly use.

Average cost of ICTs worldwide, 2003-2005

Source: ITU World Telecommunication/ICT Indicators Database
September 2007
Emerging trends

- Demand and supply of the "ubiquitous" connectivity – wireless networks
- Consumption and provision of global services
- Technological disintegration of vertically integrated structures of services provision
- All over IP

Source: eMarketer, 2003

Source: Ministry of Economic Affairs, Netherlands

Source: The state of VoIP worldwide 2006
Emerging trends

- From “one network, one service approach” to multi-service IP-native interoperable networks
- Convergence of IP-based networks with telephone, mobile and TV networks to build more efficient NGNs
- Reduced cost of deploying new networks that have more capabilities (voice, broadband, multi-media)
- Towards always on services: anywhere, anytime, anything
- Which are going to be the main drivers of the sector?
- What regulation in the NGN environment?
- How developing countries will benefit from these trends?
For more information on regulatory policy issues (research, data, publications), please visit:

www.itu.int/ITU-D/treg
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