



## Global Information and Communication Technologies



# Mobile 2.0: Beyond Voice? Research agenda

Keynote address, Dr Tim Kelly,  
Lead ICT Policy Specialist, *infoDev*/World Bank  
ICA Pre-Conference, organised by LIRNE *asia*,  
Chicago, May 20-21, 2009

The logo for infoDev, featuring a stylized globe icon above the text 'infoDev' in a serif font.



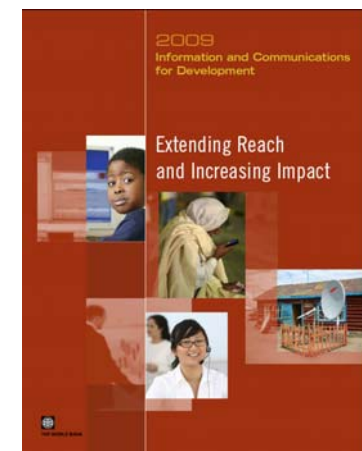
“ICT is the single most important new development tool of our generation ... this technology is so incredibly powerful that we should think about proactive public investments to create the network of public information ... [to] accelerate the uptake of these very important technologies in very poor areas.”

**Prof. Jeffrey Sachs**  
**ICT Sector Week, January 28 2009**



“By the end of 2008, there were an estimated 4 billion mobile phones globally. No technology has ever spread faster around the world. Mobile phones now represent the world’s largest distribution platform .... The next billion mobile subscribers will consist mainly of the rural poor”

**World Bank, Information and  
Communication for Development 2009:  
Extending reach and increasing access**





- Why mobile phones?

- The world's largest distribution platform
- Evidence for impact on economic growth, especially at the base of the pyramid
- Why mobile broadband?

- What are the World Bank / *infoDev*, and its donor partners, doing?

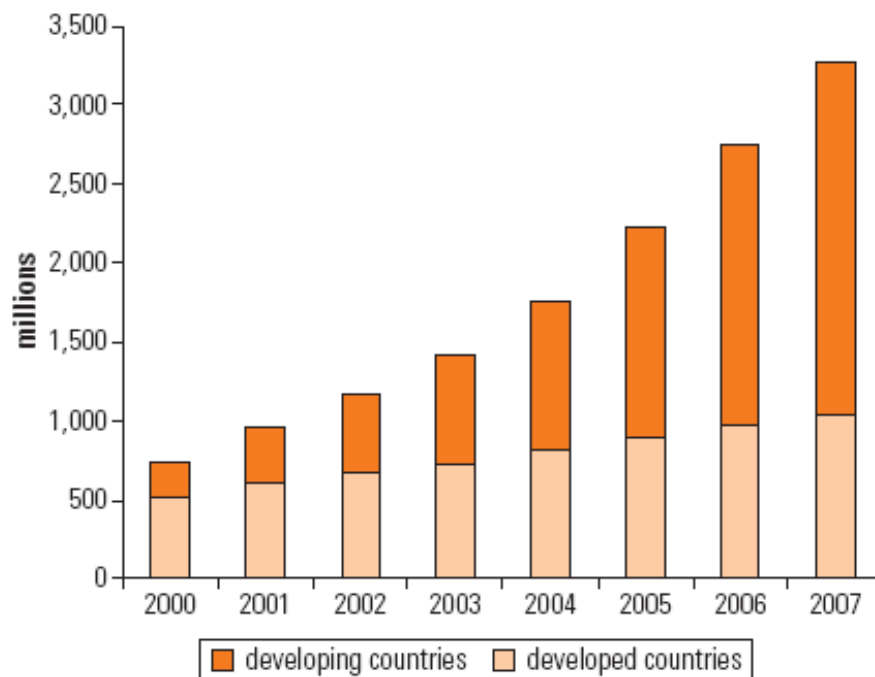
- Supply-side interventions
- Applications development and demand-side interventions
- Analytical work

- Research challenges

- What do we know?
- What do we need to find out?



## Mobile phones, in developed and developing countries, worldwide, 2000 - 2007



Source: International Telecommunication Union (ITU), World Telecommunication/ICT Indicators Database.

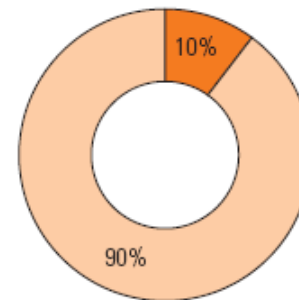
- Mobile phone subscriptions worldwide reached four billion at the start of 2009
- Most of the new growth has been in developing economies
- As such, mobile phones can be a “leapfrogging tool” for economic and social development (ie fostering growth at a faster rate than might be predicted by measures of economic wealth)



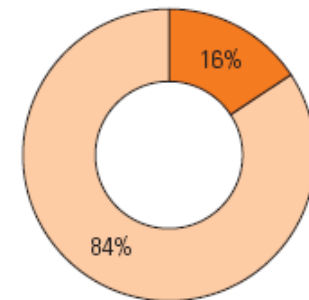
- In developing countries, mobile phone markets are much more open to competition than fixed-line ones
- By contrast, in developed countries fixed-line markets have the same level of competition as mobile ones
- This may be one of many reasons why mobile has taken off faster than fixed-line in developing economies

## Percentage of markets open to competition, mobile and fixed, worldwide, 2008

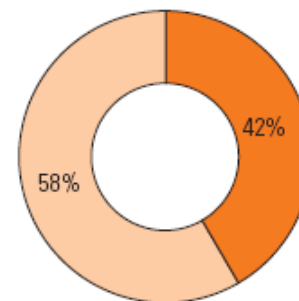
a. Developing countries, mobile



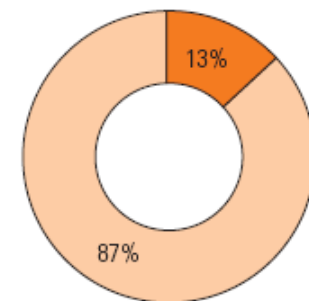
b. Developed countries, mobile



c. Developing countries, fixed, international long distance



d. Developed countries, fixed, international long distance



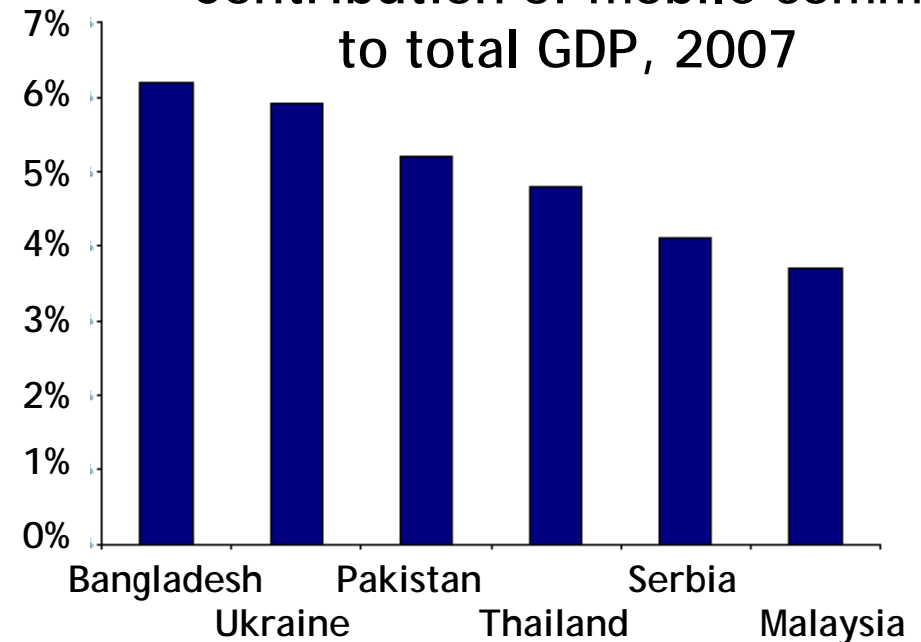
monopoly competitive

Source: ITU, World Telecommunication Regulatory Database; based on World Bank classification of economies.



- High and rising contribution of mobile to total GDP (Deloitte: see chart)
- Job creation: 3.6 million jobs created in India by mobile industry (Ovum)
- Productivity increases through business expansion, employment search, entrepreneurship, mobile banking, lower transaction costs etc (Deloitte)

Contribution of mobile comms to total GDP, 2007



Source: Deloitte, cited in World Bank (2008), "The role of mobile phones in sustainable rural poverty reduction"

- Critical mass in economic impact appears to be reached at 25% penetration (Vodafone, India study)
- Increased tax revenue (GSMA)



*Safari Bima is personal accident  
coverage activated by SMS*

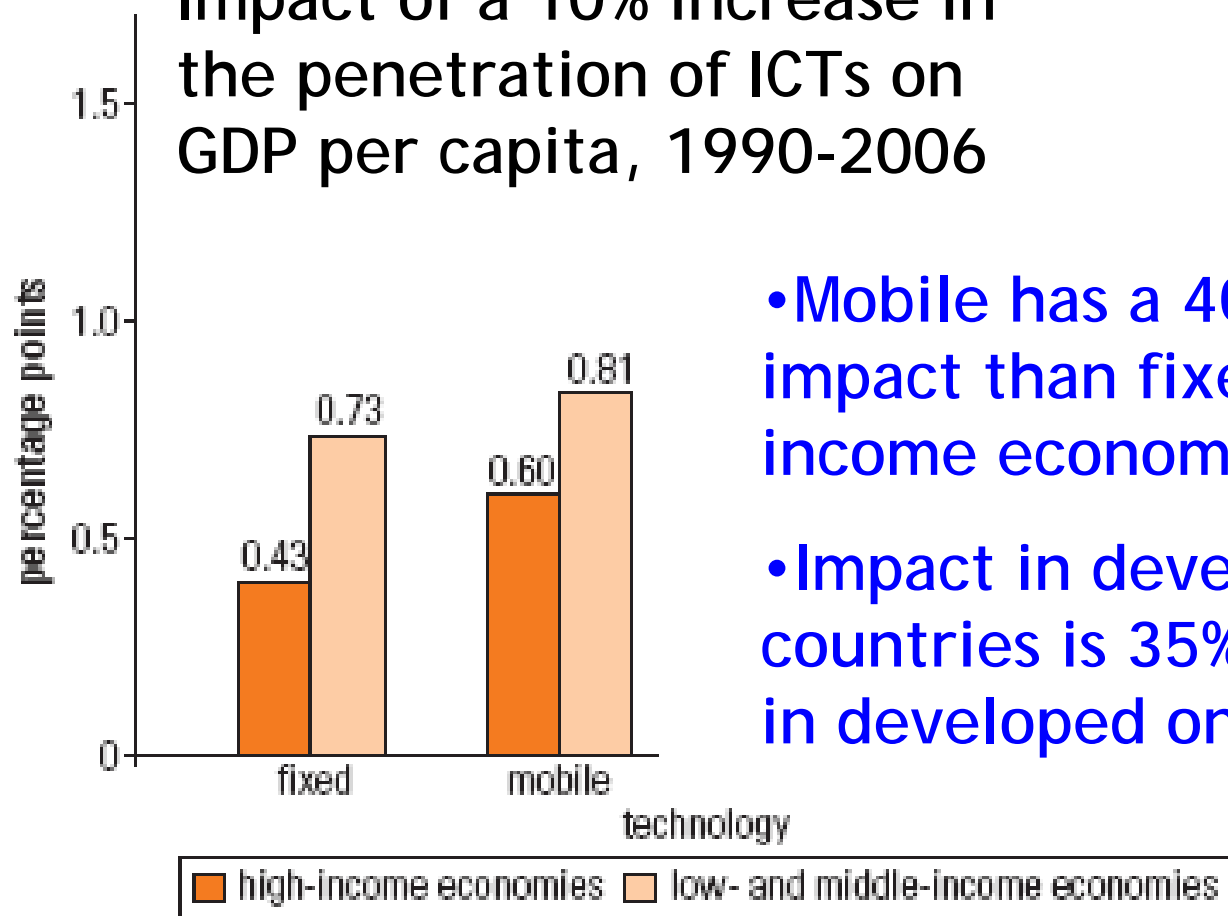


- **Reduced information asymmetry**, for instance in price discovery (fishers in Kerala, Jensen study)
- **Reduced market inefficiencies** (e.g Palliathya help line in Bangladesh)
- **Transport substitution** and reduced delays (McKinsey study in China)
- Assistance in **disaster relief efforts** (Deloitte study in Indonesia)

- **Agricultural market information systems** (e.g. TradeNet in Ghana)
- **Mobile banking** (e.g. M-Pesa in Kenya)



## Impact of a 10% increase in the penetration of ICTs on GDP per capita, 1990-2006



- Mobile has a 40% greater impact than fixed line in high income economies

- Impact in developing countries is 35% higher than in developed ones

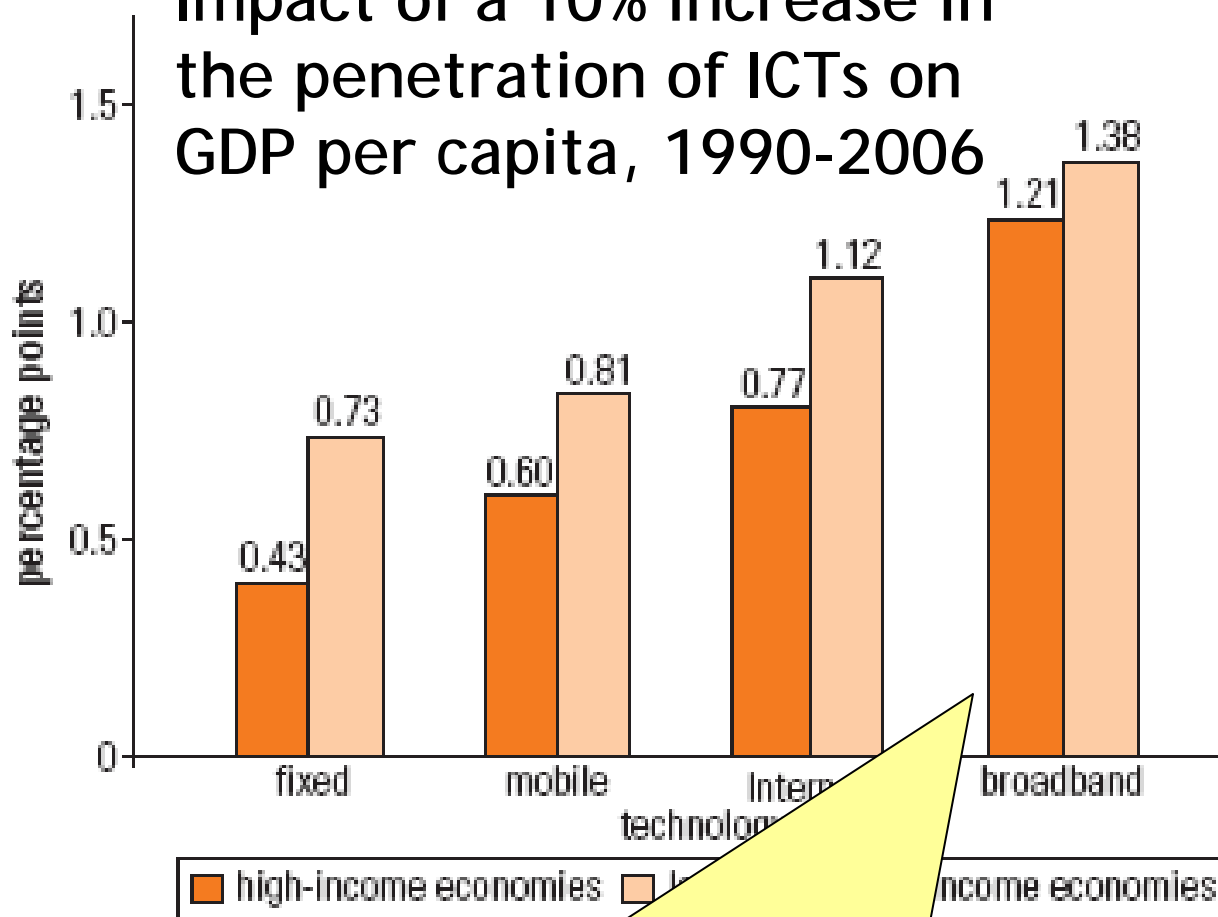
Source: Qiang 2008.





# Impact of ICTs on GDP growth

Impact of a 10% increase in the penetration of ICTs on GDP per capita, 1990-2006



- Developing country Internet has a 160% greater impact than developed economy voice
- Broadband has a 57% greater impact than narrowband

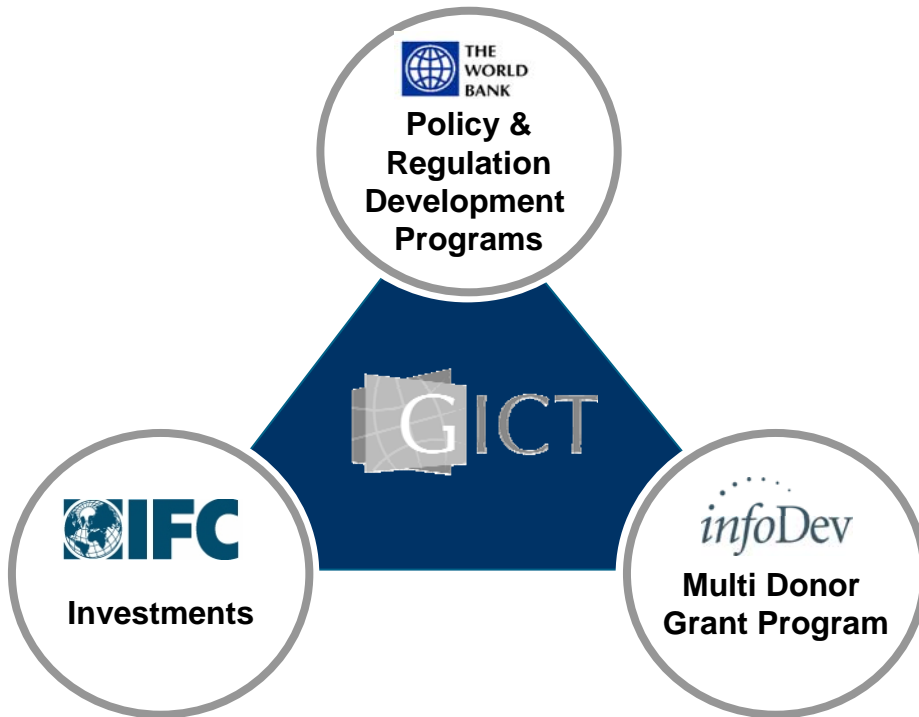
Source: Qiang 2008.

**Implication:** Future Mobile broadband could have a greater development impact than mobile voice when available



A joint World Bank and IFC department ...

... offering a full range of services

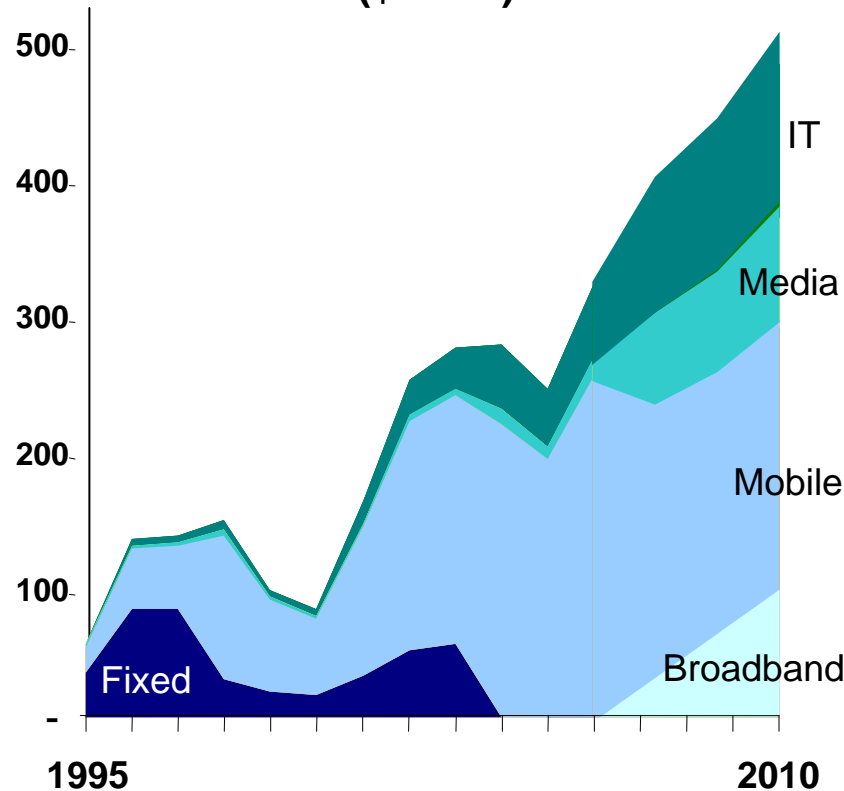




## Sample IFC dealsheets, and Portfolio

<p>2000 MOROCCO</p> <p><b>Medi Telecom</b> US\$ 429,000,000 Syndicated Senior Debt</p> <p>Lead Arranger Greenfield Capital</p> <p><i>Awarded African Telecom Deal of the Year by Global Finance magazine</i></p>	<p>2000 ROMANIA</p> <p><b>MobilRom</b> US\$ 255,000,000 Syndicated Senior Debt, Quasi-Equity &amp; Equity</p> <p>Arranger, Lender &amp; Investor Greenfield &amp; Expansion Capital</p>	<p>2000 AFRICA REGION</p> <p><b>Celtel International</b> US\$ 116,000,000 Senior Debt &amp; Equity</p> <p>Arranger Corporate Loan &amp; Equity</p>	<p>2001 INDIA</p> <p><b>Bharti</b> US\$ 70,000,000 Senior Debt &amp; Equity</p> <p>Sole Guarantor &amp; Investor Expansion Capital</p>
<p>2001 RUSSIA</p> <p><b>Megafon</b> US\$ 30,000,000 Senior Debt &amp; Quasi-Equity</p> <p>Co-Arranger &amp; Investor Expansion Capital</p>	<p>2002 CAMEROON</p> <p><b>Orange Cameroun</b> US\$ 70,000,000 Senior Debt &amp; Syndicated Local Currency &amp; Quasi-Equity</p> <p>Guarantor Greenfield Capital</p>	<p>2002 DOMINICAN REPUBLIC</p> <p><b>Orange Dominicana</b> US\$ 94,000,000 Syndicated Senior Debt</p> <p>Arranger Greenfield Capital</p>	<p>2002 JAMAICA</p> <p><b>Mossel Jamaica</b> US\$ 50,000,000 Syndicated Senior Debt, Quasi-Equity &amp; Equity</p> <p>Arranger, Lender &amp; Investor Greenfield &amp; Expansion Capital</p>
<p>2002 THAILAND</p> <p><b>True Corporation</b> US\$ 106,000,000 Partial Credit Guarantee &amp; Quasi-Equity</p> <p>Guarantor &amp; Investor Recapitalization &amp; Expansion Capital</p>	<p>2003 ALBANIA</p> <p><b>Vodafone Albania</b> US\$ 53,000,000 Senior Debt</p> <p>Co-Lead Arranger &amp; Lender Greenfield Capital</p>	<p>2003 NIGERIA</p> <p><b>MTN Nigeria</b> US\$ 100,000,000 Senior Debt &amp; Equity</p> <p>Co-Lender &amp; Investor Expansion Capital</p> <p><i>Awarded Deal of the Year by Project Finance Magazine</i></p>	<p>2003 PERU</p> <p><b>TIM Peru</b> US\$ 70,000,000 Senior Debt</p> <p>Sole Lender Expansion Capital</p>
<p>2004 BANGLADESH</p> <p><b>GrameenPhone</b> US\$ 100,000,000 Senior Debt</p> <p>Arranger Greenfield &amp; Expansion Capital</p>	<p>2004 RUSSIA</p> <p><b>TV3 Russia</b> US\$ 10,000,000 Quasi-Equity</p> <p>Lead Investor Expansion Capital</p>	<p>2004 SRI LANKA</p> <p><b>Dialog Telekom</b> US\$ 50,000,000 Senior Debt &amp; Quasi-Equity</p> <p>Co-Lender &amp; Investor Expansion Capital</p>	<p>2004 THAILAND</p> <p><b>True Move</b> US\$ 33,000,000 Local Ccy Senior Debt &amp; Quasi-Equity</p> <p>Co-Lender Expansion Capital</p>
<p>2005 GHANA</p> <p><b>areeba</b> US\$ 40,000,000 Senior Debt</p> <p>Sole Lender Expansion Capital</p>	<p>2005 LAO PDR</p> <p><b>Millicom Lao</b> US\$ 4,000,000 Senior Debt</p> <p>Sole Lender Expansion Capital</p>	<p>2005 NIGERIA</p> <p><b>MTN Nigeria</b> US\$ 35,000,000 Senior Debt</p> <p>Co-Lender &amp; Investor Expansion Capital</p>	<p>2005 MALDIVES</p> <p><b>Wataniya Telecom Maldives</b> US\$ 20,000,000 Senior Debt</p> <p>Lead Lender Greenfield Capital</p>
<p>2005 PARAGUAY</p> <p><b>Millicom Paraguay</b> US\$ 15,000,000 Senior Debt</p> <p>Sole Lender Expansion Capital</p>	<p>2005 &amp; 2006 RUSSIA</p> <p><b>TV3 Russia</b> US\$ 32,000,000 Senior Debt &amp; Quasi-Equity</p> <p>Lead Investor Expansion Capital</p>	<p>2006 AFGHANISTAN</p> <p><b>areeba Afghanistan</b> US\$ 45,000,000 Senior Debt &amp; Equity</p> <p>Sole Lender Greenfield Capital</p>	<p>2006 HAITI</p> <p><b>Digicel Haiti</b> US\$ 15,000,000 Senior Debt</p> <p>Lead Lender Greenfield Capital</p>
<p>2006 PAKISTAN</p> <p><b>Paktel</b> US\$ 35,000,000 Senior Debt</p> <p>Co-Investor Greenfield Capital</p>	<p>2006 TURKEY</p> <p><b>Avea</b> US\$ 120,000,000 Senior Debt</p> <p>Joint Lead Arranger Acquisition Capital</p>	<p>2007 RUSSIA</p> <p><b>Prof-Media</b> US\$ 50,000,000 Structured Debt</p> <p>Lender Expansion Capital</p>	<p>2007 SAMOA</p> <p><b>Digicel Samoa</b> US\$ 8,200,000 Senior Debt</p> <p>Lender Greenfield Capital</p>

ICT commitments by business line (\$US M)



Current portfolio: \$1 billion  
Mobilized over \$7 billion



- 64% of Bank projects (pipeline and portfolio) have ICT components
- Total cumulative ICT investments estimated at about \$7.73 billion ('94-'06)

	No. of Projects identified with ICT	ICT Commitment Amt. US\$M
<b>Total</b>	<b>1'039</b>	<b>7'736</b>
<i>Portfolio</i>	930	6'198
<i>Pipeline</i>	19	467
<i>Other</i>	90	1'071

### Examples:

- Support for Remittances via Mobile Phone in Bangladesh
- Investment in shared infrastructure projects in Turkey, India, Brazil etc
- Transferring GrameenPhone experience with village phones to other markets
- Planned *infoDev*/Finland establishment of regional mobile apps labs

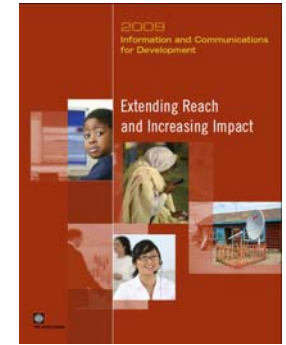
1: Refers to the total number of projects reviewed (1630) as part of the ICT dimension study – as of Nov 2006

2: Only includes pipeline projects with clear ICT components identified

3: 'Other' includes projects other than investment lending (incl. GPP, IDF, GEF, Special funds etc)



- Flagship report: *Information and Communication for Development 2009: Extending reach and increasing impact*
- *The role of mobile phones in sustainable poverty reduction* GICT report, June 2008
- Mobile Money Summit, Barcelona June 22-25 (with GSMA, DFID)
- Banking on mobiles: Why, How, For Whom? CGAP Report, 2008
- Micro-payment systems and their application to mobile networks, *infoDev* report, 2006
- M-Banking: A knowledge map, *infoDev* report, 2006
- Enhancing the livelihoods of the rural poor: Knowledge map, a framework paper for donors and five country case studies: Argentina, Bangladesh, South Africa, Sri Lanka Tanzania
- The Little ICT Data Book (country pages)
- Planned infoDev/Finland survey of BOP mobile usage in Africa





## What we know

- Mobile subscriptions
  - By country
  - By price
  - By subscription type (pre-paid/post-paid)
  - By service type (2G, 3G, 4G)
- Mobile applications
  - M-Banking subscriber numbers
  - Agricultural Management Info Systems
  - M-Health applications
  - Number of calls
- Mobile data
  - SMS prices
  - Mobile TV-equipped handsets
  - Mobile broadband handsets
  - Mobile data prices
- Economic impact of mobile voice
  - Strong positive impact on growth

## What we don't know

- Actual number of mobile users
  - By age, gender, ethnicity etc
  - Thresholds of affordability
  - Degree of optimization of subscriptions
  - Actual usage by service type
- Potential demand for mobile applications
  - Potential M-Banking subscribers
  - Mobile MIS usage patterns and benefits
  - Displacement effects
  - Displaced travel
- Actual usage patterns of mobile data
  - SMS revenues (only estimates)
  - Mobile TV potential
  - Actual mobile broadband use
  - Elasticity of demand for mobile data
- Economic impact of mobile broadband
  - What, where, when and to what degree



## Spectrum allocation

- How to reduce progressively the degree of centralised planning of spectrum management in favour of markets?
- What is the optimal number of players in a particular market segment?

## Evolving business models

- How can operators arrest declining ARPU?
- Will VoIP and IM over mobiles have a big impact on operator revenues?
- Is WiMAX a competitive or complementary service to cellular mobile?

## Base of the pyramid usage patterns

- What is the cost benefit analysis of mobile phone usage for the very poor?
- To what extent are BOP usage patterns of mobiles culturally determined?

## Policy issues

- Why are Universal Service Funds so often left unspent and how can mobile benefit?
- What level of policy intervention is desirable in roaming and termination prices?

## Applications

- What killer applications for BOP use of mobiles have not yet been invented?
- What factors prevent the spread of certain applications in some countries?
- How popular will location-based services be?

## Mobiles and climate change

- What can be done to stabilise or reduce to carbon footprint of the mobile sector?
- How can increased mobile usage mitigate carbon emissions in other sectors?
- How should mobile eWaste be handled?



## Global Information and Communication Technologies



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Thank You

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