



# *Connect ! developing Rural perspectives*

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ITU New Initiatives Programme

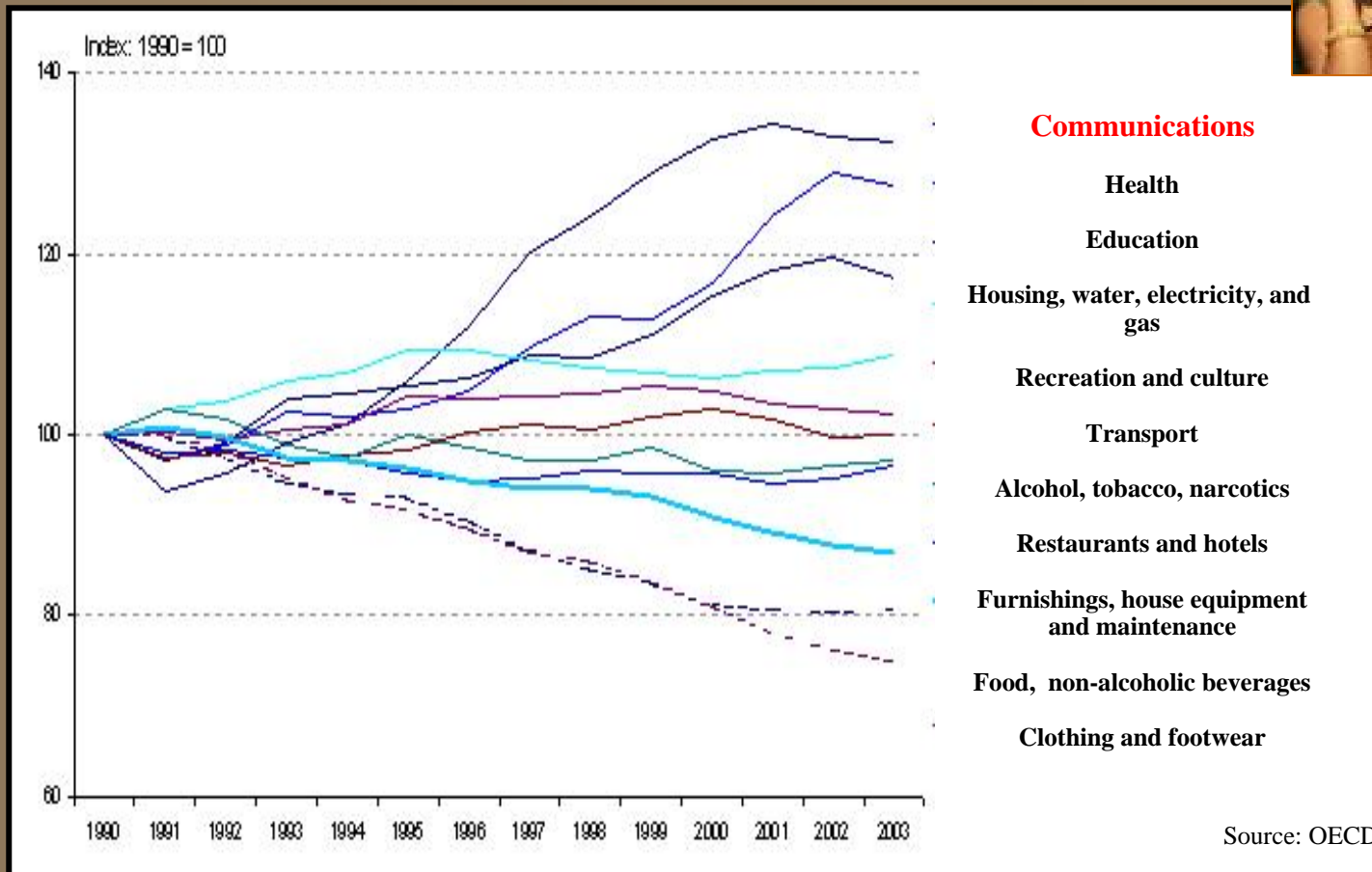


**4<sup>th</sup> International Conference on Communications Convergence  
Mumbai, 16 March 2006**

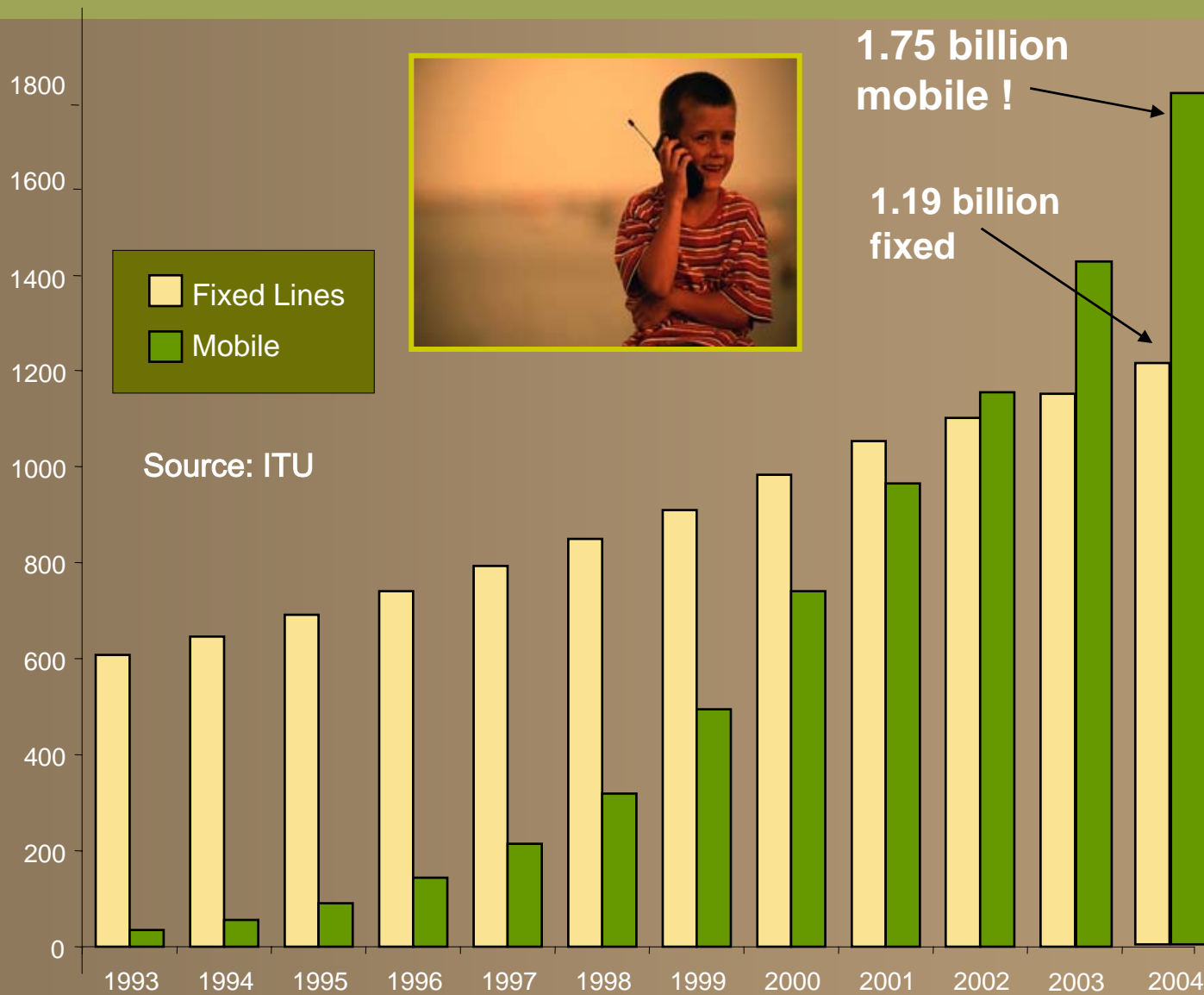
The views expressed in this presentation are those of the author and do not necessarily reflect the opinions of the ITU or its membership.  
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# a planet for communicating: *more talking, less eating?*

Relative Growth in Service Sectors from 1990-2003



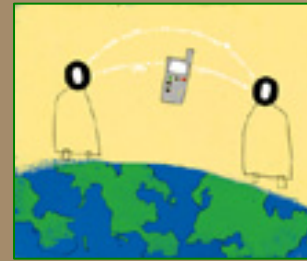
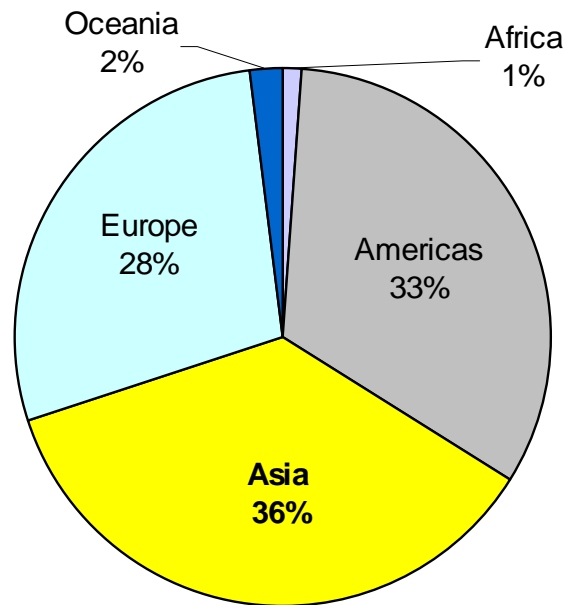
# more talking... even on the move!



# and especially here in ASIA

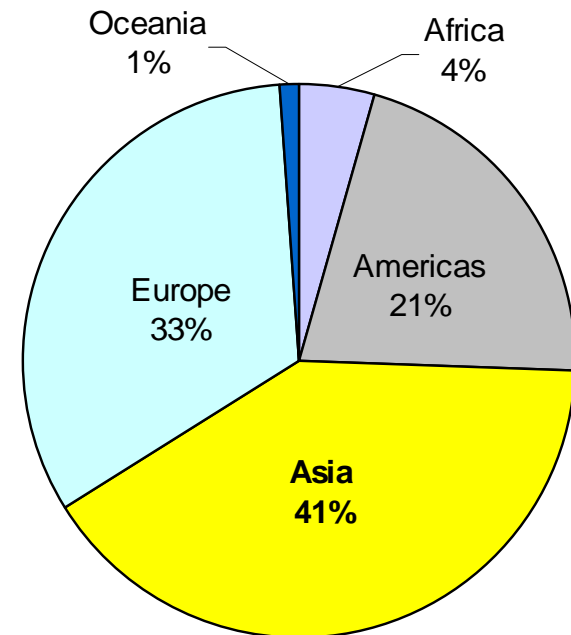
1998

Percentage of world's mobile subscribers by region (Jan 1998)



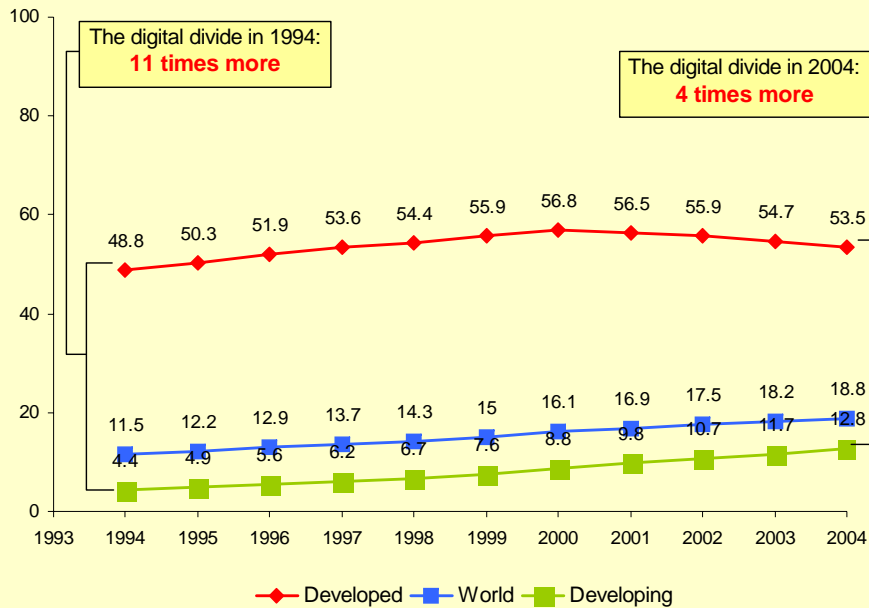
2005

Percentage of world's mobile subscribers by region (Jan 2005)

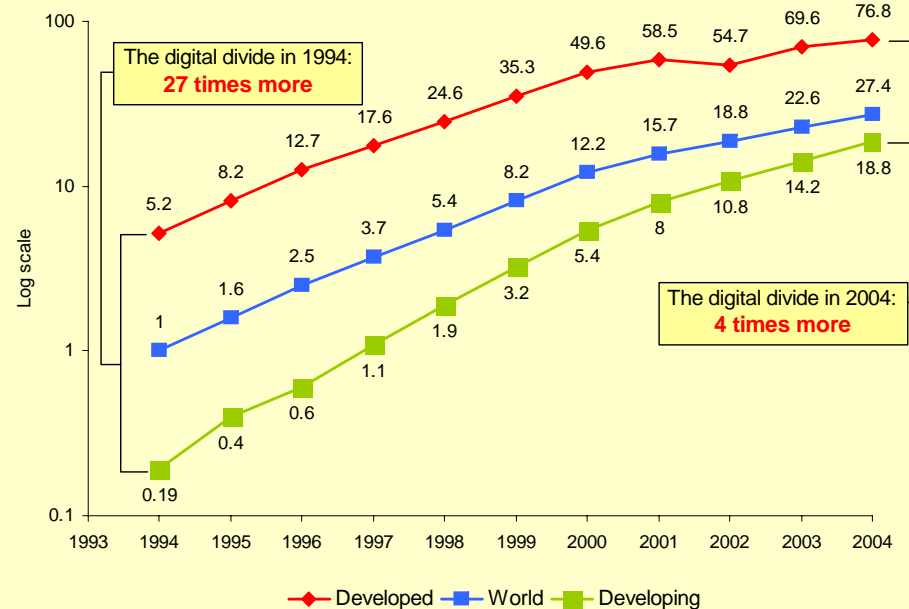


# developing world catches up – differences down to 4X in 2004

Fixed telephone lines per 100 inhabitants



Mobile telephone subscribers per 100 inhabitants





**catching up...**  
**but not across the board**





# still, connecting rural areas everywhere remains a challenge

- both in the developed and the developing world
- both in areas with low population density (like canada) and high density (like india)
- typically plagued with high costs of deployment
  - how to stimulate investment?
- topography (e.g. rough terrain) a key hurdle
  - how to reach the hard-to-reach?

# wireless does offer a low-cost solution

## Cost per Mile of Connectivity Infrastructure



Source: Industry Canada







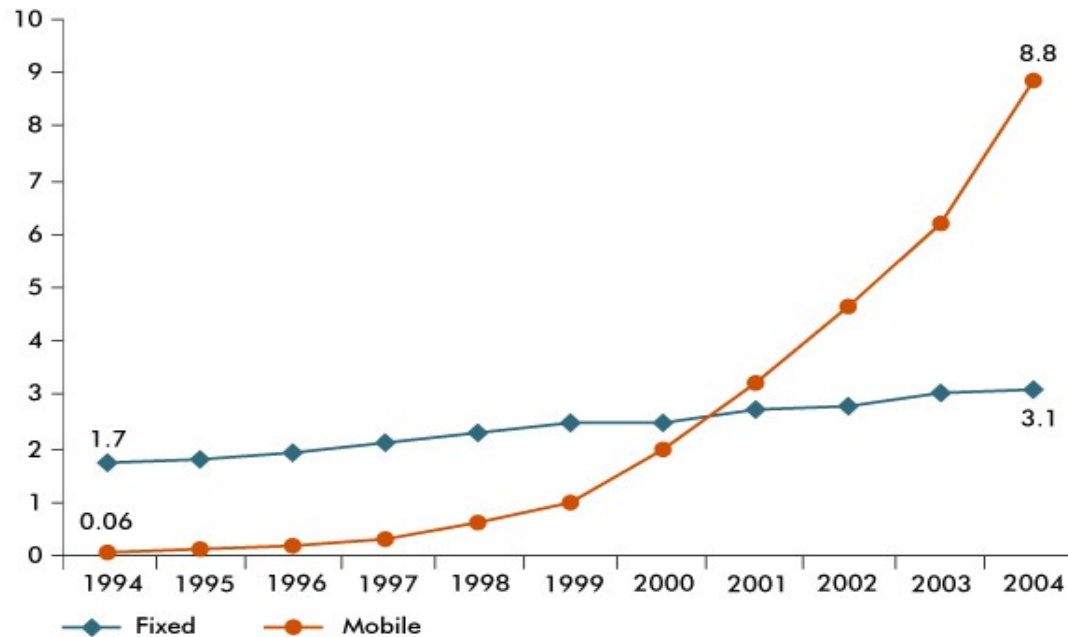
## the potential of mobile wireless for developing countries

- Developing countries have seen the greatest impact of mobile communications on access to basic telecommunication services
- Cellular networks can be built faster than fixed-lines networks and can cover geographically challenging areas
- Mobile services have served to boost competition, and prepaid models have opened access to mobile cellular for those who would otherwise not qualify for telephone subscription plans

# in africa, mobile has served to bridge the divide



Telephone subscribers per 100 inhabitants, Africa 1995-2004

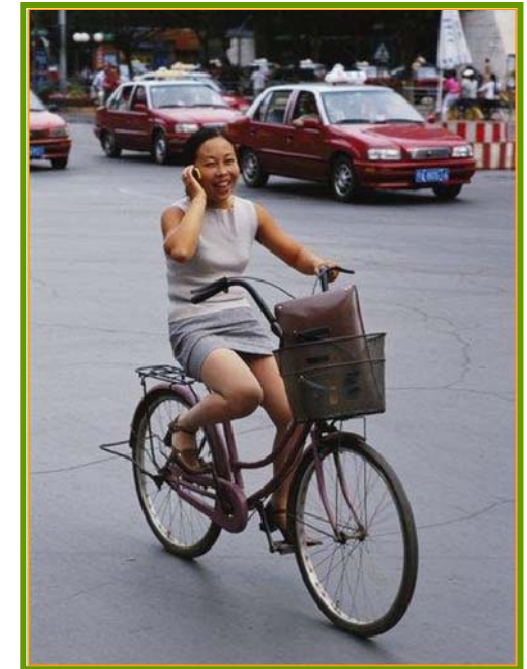
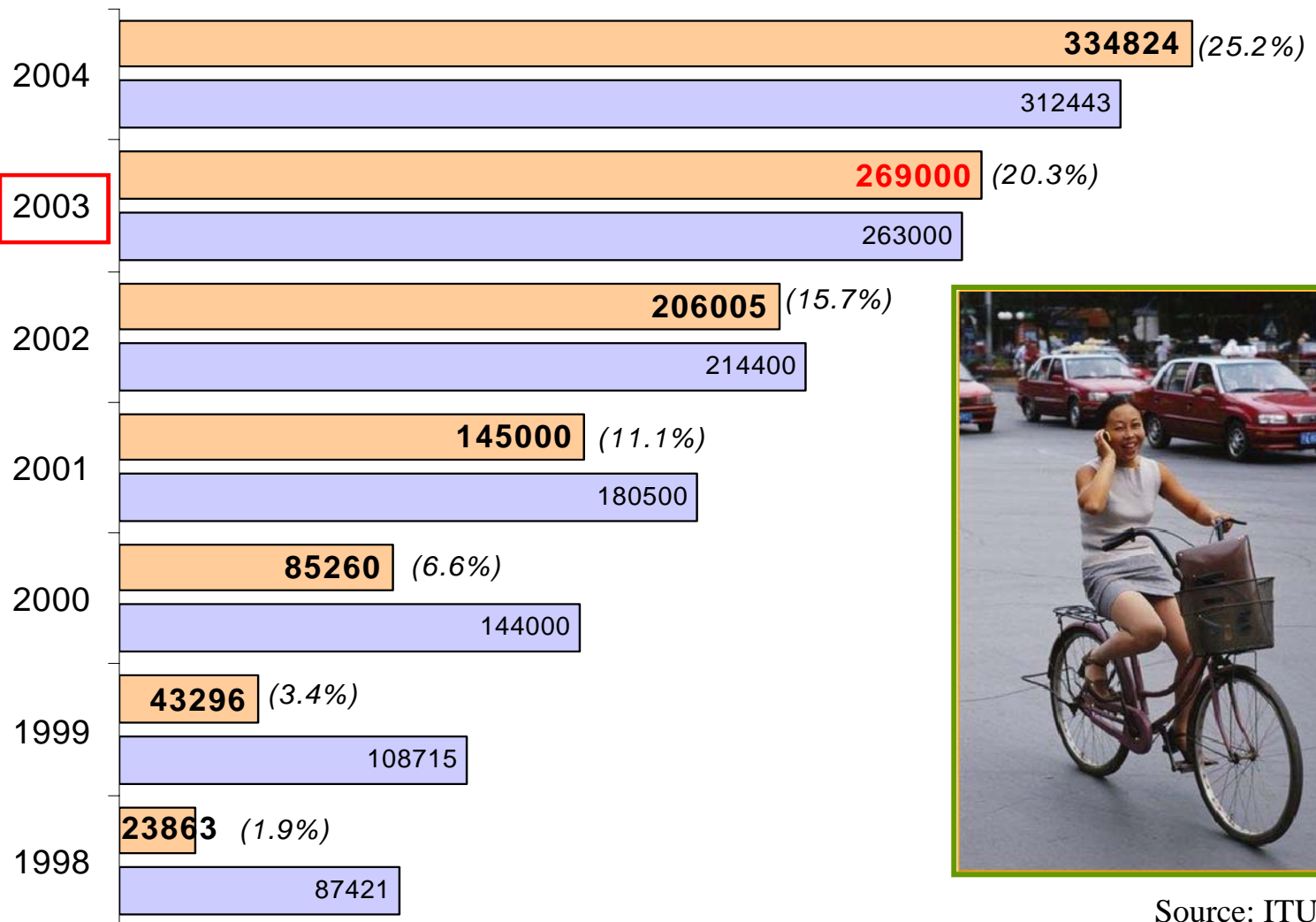


Source: International Telecommunication Union



# China has become the world's largest market

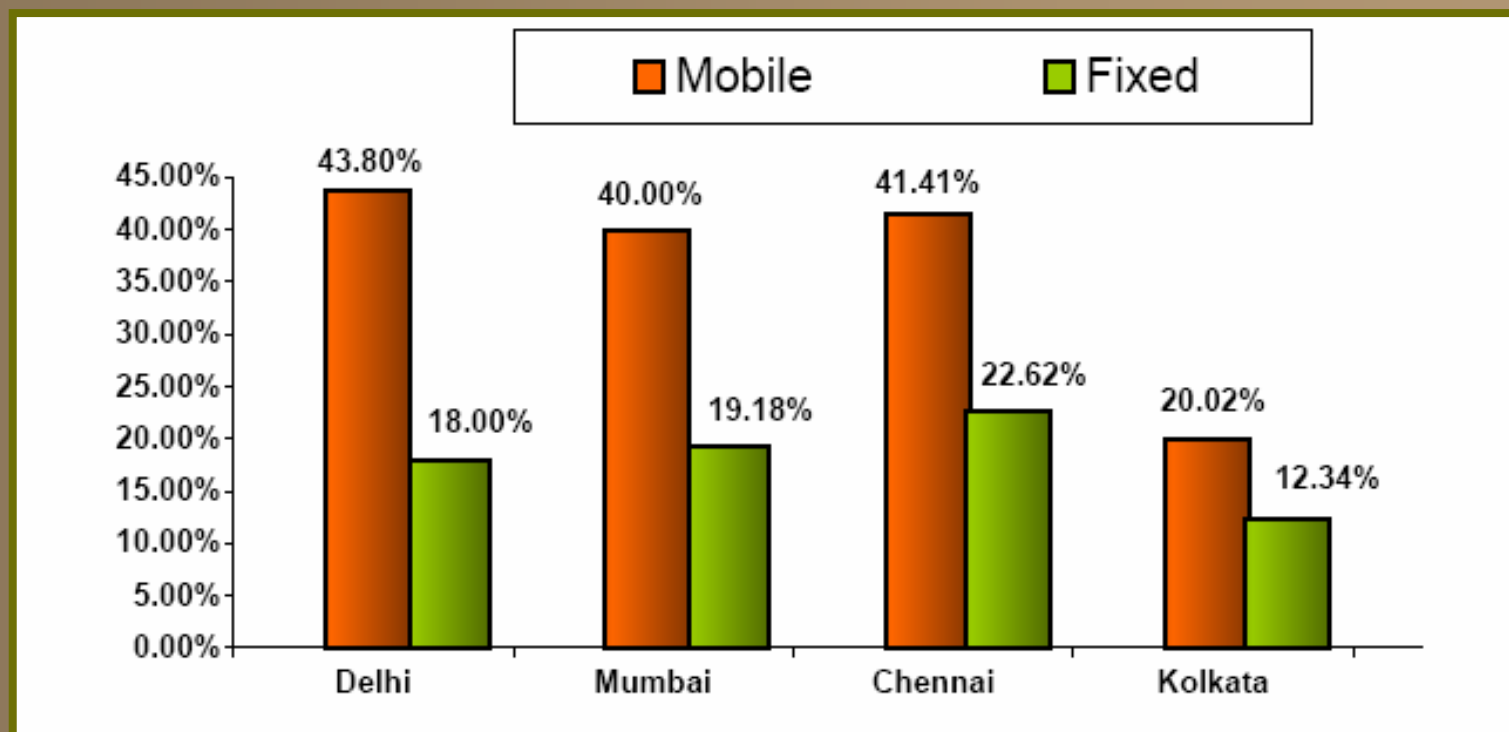
Mobile Phone Subscribers and Fixed Lines in China (000s)



Source: ITU, MII

# mobile teledensity also leads in india...

## Metro Teledensity (December 2005)



- Circle A: mobile has overtaken fixed throughout
- Circle B: mobile has overtaken fixed, except Kerala
- Circle C: mobile has overtaken fixed, except North East



## ... which has one of the fastest-growing mobile markets

- Between 1995-2001, number of new mobile subs each month:  
**~ 0.05 to 0.1 m/month**
- But after initiatives taken by the regulator, this increased to **2 million/month**
- In 2005, the first 9 months saw increase of **26 m** subs, i.e. average of **3 m/month**
- And new subscribers during December 2005 = **~ 4.5 million!**
- At **76 million subscribers**, TRAI says that monthly mobile growth rates have reached those of even China!





# success stories



# In the region: Grameen Phone

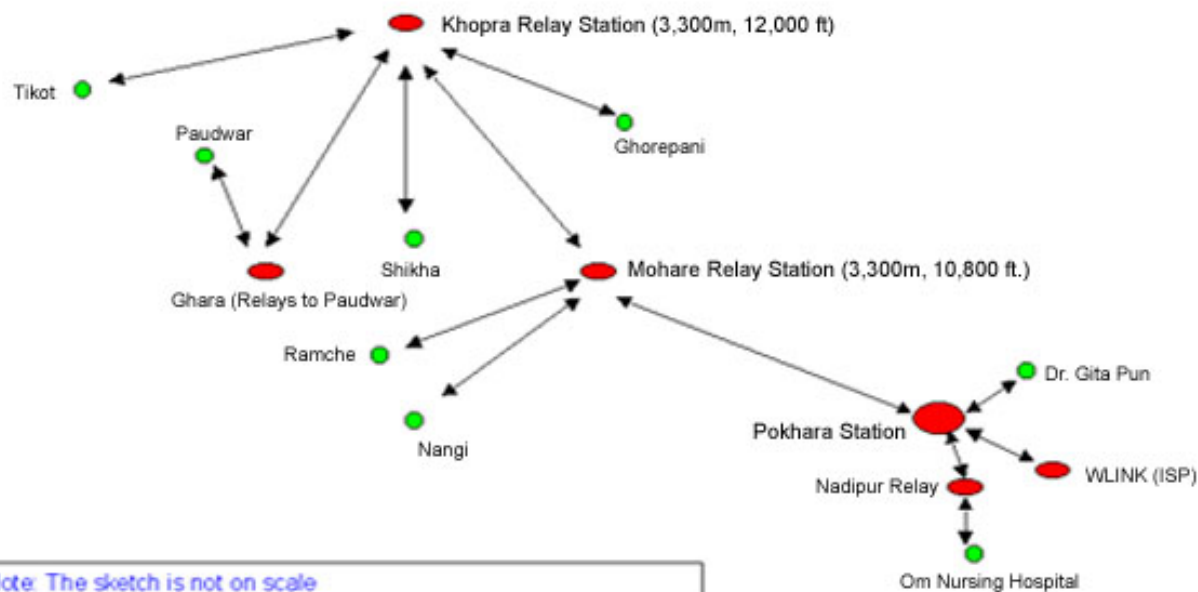
- Bangladesh – 80% live in rural villages and never used a phone
- Grameen Project enabled mobile services availability to over 40'000/68'000 villages
- Mobile public call offices managed by “village phone ladies”
- Sustainable model and has been exported to other countries



# Nepal Wireless Networking Project

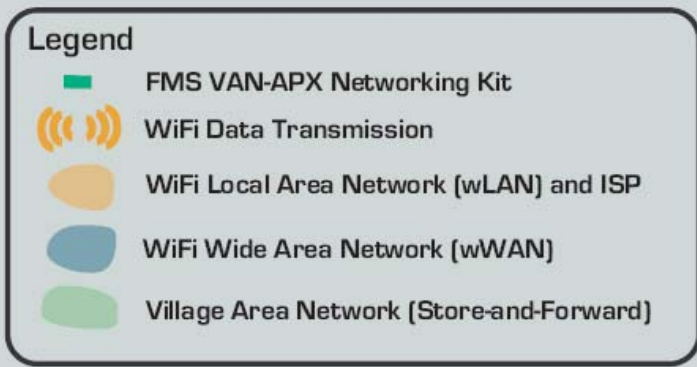
- Wi-Fi technology bringing connectivity to remote villages
- Nearest ISP at Pokhara, so villagers used Wi-Fi & TV dishes to relay connectivity

Sketch of Wireless Network in Myagdi and Kaski District of Nepal  
(Using 802.11b Wireless Access Points)





# Daknet Project: "convergence" of transport and telecom



Source: First Mile Solutions





# beyond infrastructure

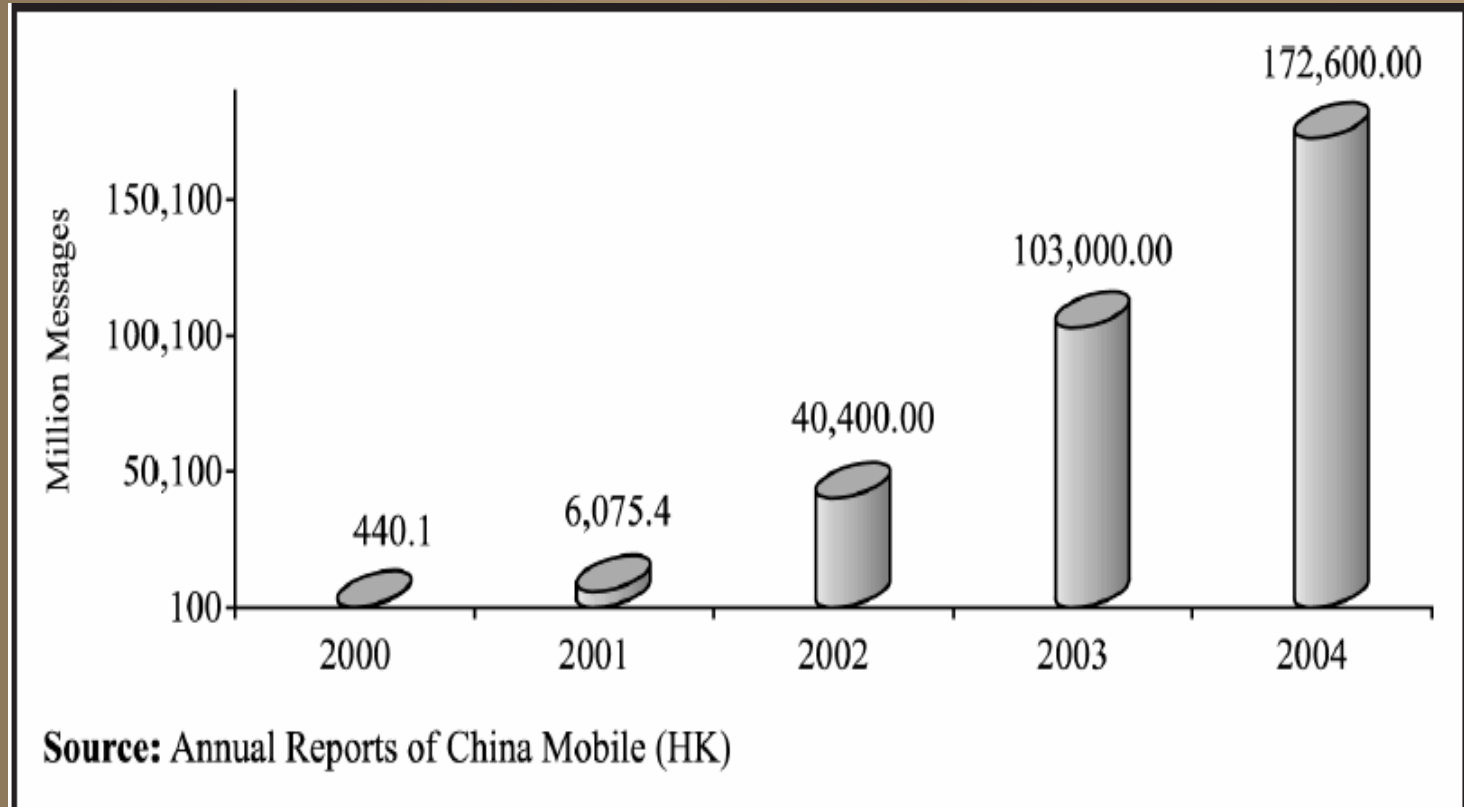




# Beyond infrastructure: The power of mobile

- Reflection of human identity
  - Individual, cultural and religious ...
- Builds social and human capital
  - The tailor
  - The farmer
- Fosters small businesses
- SMS and literacy
- SMS and citizenship

# Phenomenal SMS growth in the developing world, e.g. China



Source: XuYan,MinGong ,JamesY.L.Thong, INFO, VOL.8, NO.1, 2006

*and in 2005: over **300 billion** SMS messages !*





# Beyond messaging: potential of mobile internet

- Internet access using small portable devices
  - Even through 2.5G networks
- mobiles typically cost less than large PCs
  - More easily available to low-income populations, esp. through pre-paid
- Higher-speed 3G and HSPDA offer enhanced information access
  - video-conferencing can allow for applications enhancing quality of life, e.g. delivery of health care

# Access is not everything! it is part of a whole

- infrastructure itself does not suffice
- once information access is set up, mechanisms must be put into place to **capitalize** on its availability, through: education, education & more education
- in particular, training for **women & children** should be prioritized





# The power of education, but also of partnership

- awareness that market mechanisms do not suffice to connect rural villages
- private sector investment is to be encouraged
- entrepreneurship should be fostered
- regulatory initiatives and governmental incentives should be present to support both large-scale private investors and small-scale entrepreneurs

# key enablers

- low-cost solutions, not only for infrastructure but also for end-user devices
- literacy/educational initiatives
- promotion of relevant local content
- micro-financing
- public-private dialogue and collaboration








**looking to the future**





# Looking to the future – converging towards ubiquity

- New “always-on” ubiquity of technology
  - Ubiquitous networks and technological convergence
- In particular, growth of radio ID tags and sensors, creating an “Internet of Things”
  - imagine tags tracking inventory and ensuring the safety and delivery of pharmaceuticals
  - imagine “smart” wireless bricks ensuring that the structural integrity of buildings can be monitored;
  - Imagine medical facilities and care to underserved areas without requiring the need for travel
- India must keep up to date with these developments, and understand which to foster in the short, medium and long-term



**india empowered**



# india has many strengths: regulation

- Introduction of the CPP system (thereby lowering the cost of first-time mobile ownership)
- The facilitation of intra-circle mergers
- Introduction of a tech-neutral unified licensing regime





india has many other strengths

## Tradition and culture

- sublime fusion of the West & East
- steeped in tradition while remaining progressive
- adapt and adopt
- **Heterodoxy and open dialogue**
  - “the argumentative Indian” (amartya sen)
- **People power**
  - Highly qualified upper class and diaspora
  - Large skilled hi-tech workforce
  - Large population of technology-enthralled teenagers... (~35% under age 15)

# The country's "new charkha" - Connectivity?

- Individual empowerment
- The wheel of knowledge
  - Weaving human capital
- Linking villages and villagers to each other
  - Through a common goal
- Dignity and self-fulfillment
  - Each **village** matters
  - Each **villager** matters



*"An entirely new system of thought is needed,  
a system based on attention to people,  
and not primarily attention to goods"*

- E.F. Schumacher



thank you!

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*connect  
me too!*