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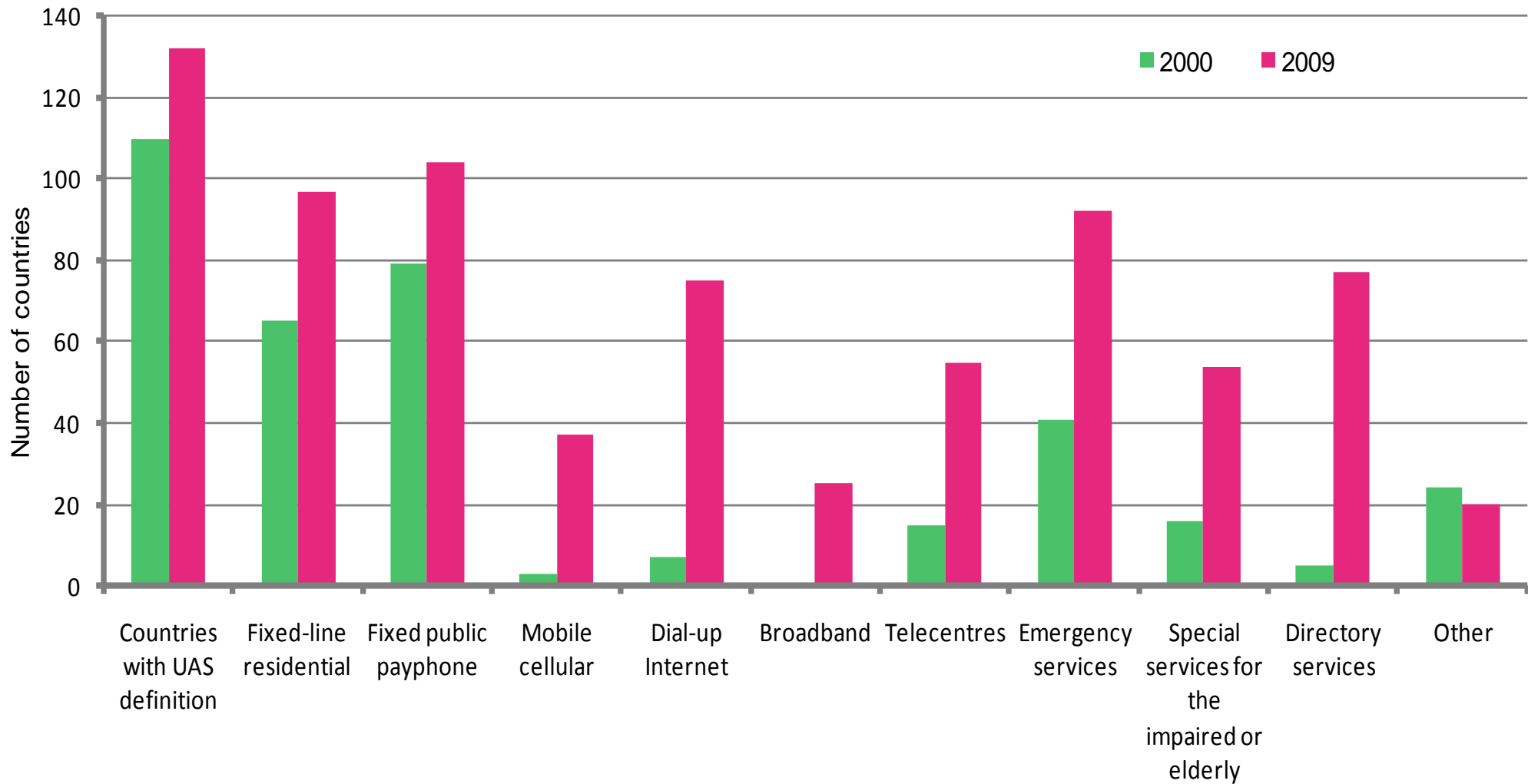
# Universal Access & Service today

- ❑ **Universal Access and Universal Service are taking place together (UAS) in almost every country**
  - Tailored separately to Urban, Mid –rural & Remote
- ❑ **Voice service**
  - Mobile has transformed the market & is also leading convergence
  - Universal service in urban and rural towns at all income levels
  - Universal access in remote places – beyond wire or mobile coverage
- ❑ **Internet – Useful UA *is* Broadband**
  - Essential facilitator of modern development
  - But Universal Service is much more complex – *useful content* is key
  - IP based services (VOIP/ IPTV) also a driver of the market
  - Access to Broadband is taking on a different look in various countries

# What are the key UAS trends?

- 1. Much more ambitious goals – towards e-inclusion across all sectors of the economy**
- 2. Internet more closely aligned with voice**
- 3. Targets being set higher & dates compressing**
  - Greater urgency for the economic benefits
  - Broadband essential for the economy – now eclipsing other aspects of UAS
- 4. More complex interactions necessary with other policies and between Government agencies**
- 5. Greater interest in reaching rural areas by commercial companies, especially mobile**
- 6. Common access *and competitive* infrastructure needed**
- 7. Funding – USFs, direct budget/stimulus & PPP's**

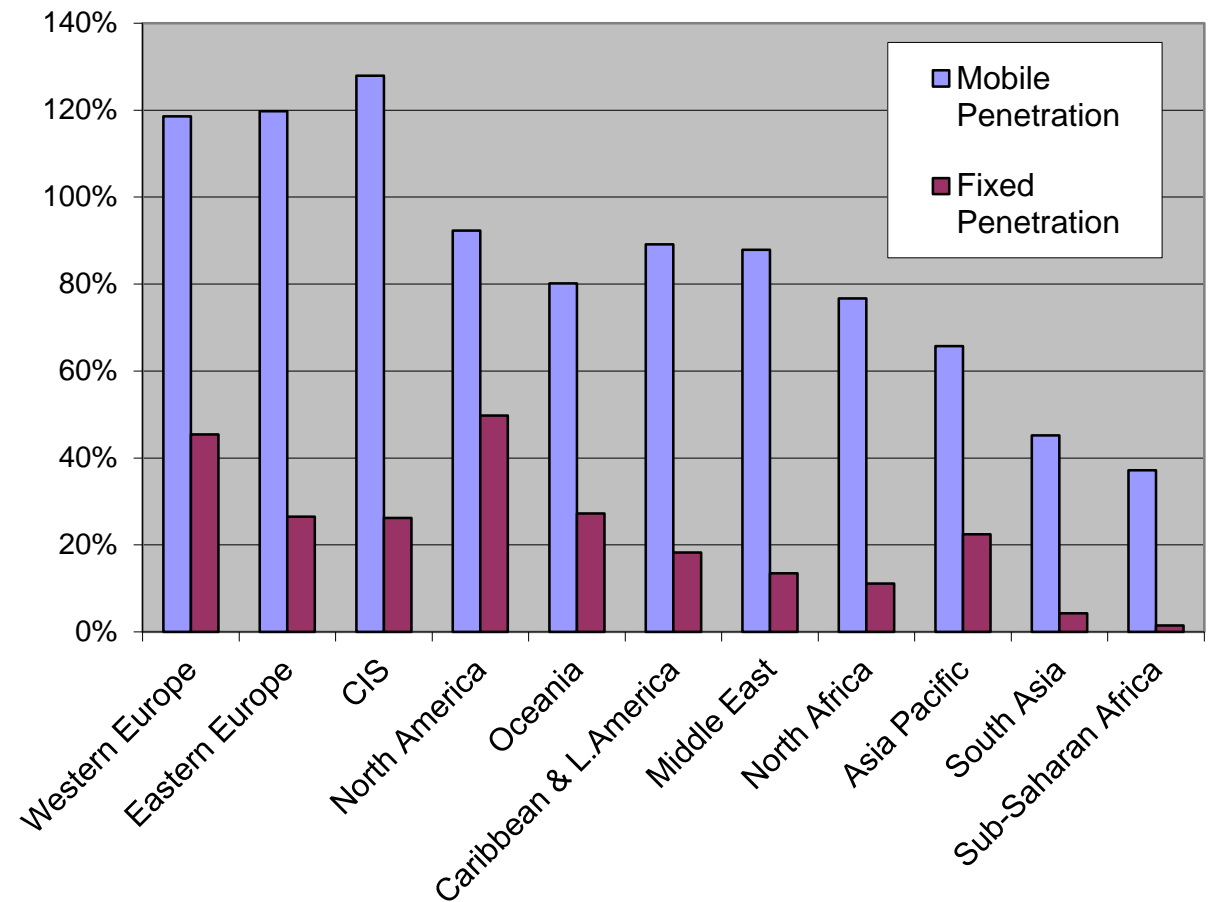
# Components of UAS around the world ITU



# Much more ambitious goals

- Driven by mobile success
- Countries are achieving UA for voice and move to US goals for voice as mobile phone penetration rises
- Migration to 3G & 4G increases Internet expectations & possibilities

Fixed and Mobile Penetration 2009



# Much more ambitious goals (2)

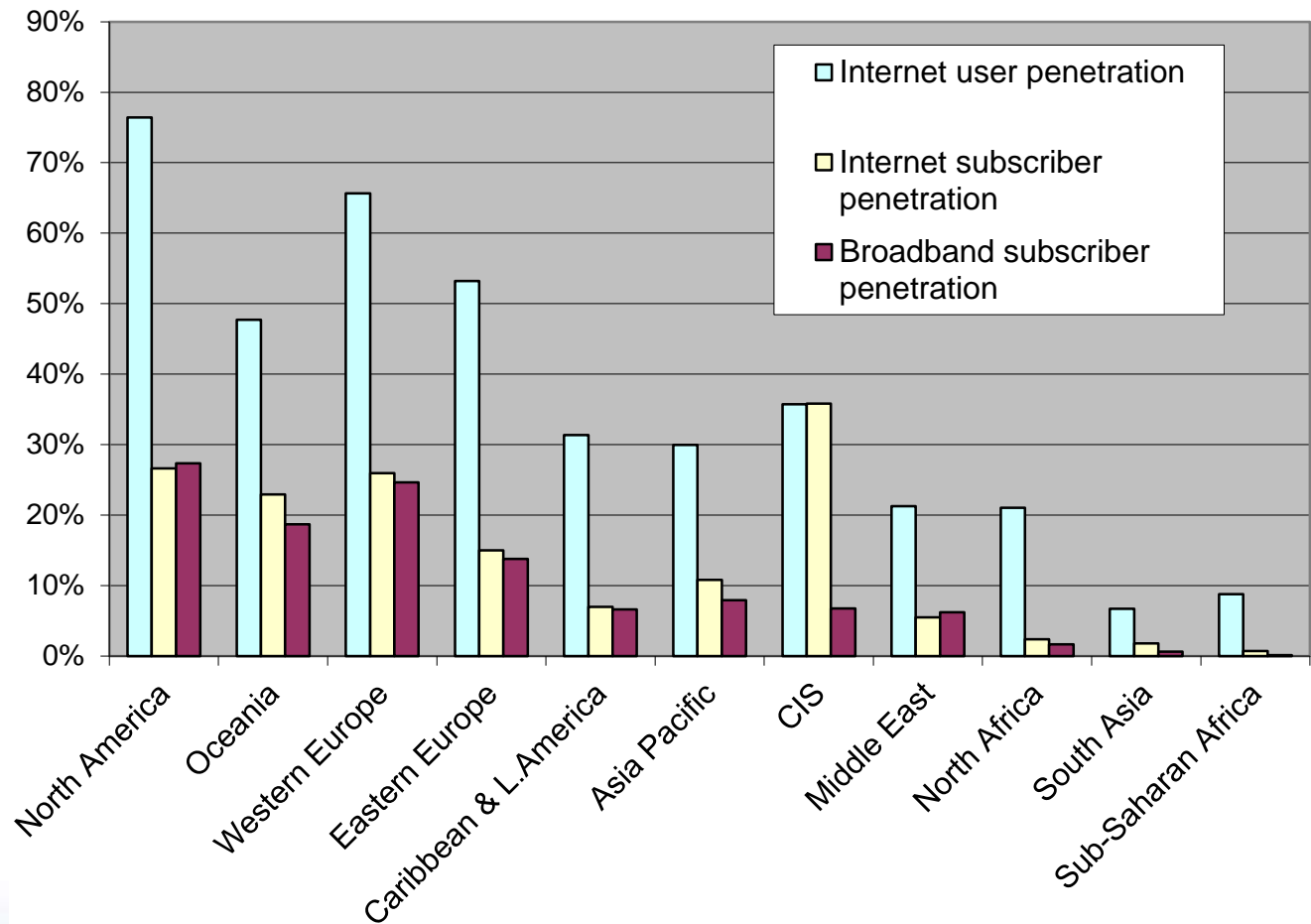
## Internet UAS requires broadband, but still a long way to go

- Top 15 markets still average only 35%, but
- Household penetration more important

## Focus shifts from simple access to

- Bandwidth/speed
- ICT capacity/ ability
- Methods of verification
- Applications/services
- e-inclusion

Internet subscriber, user and broadband penetrations by region, 2009

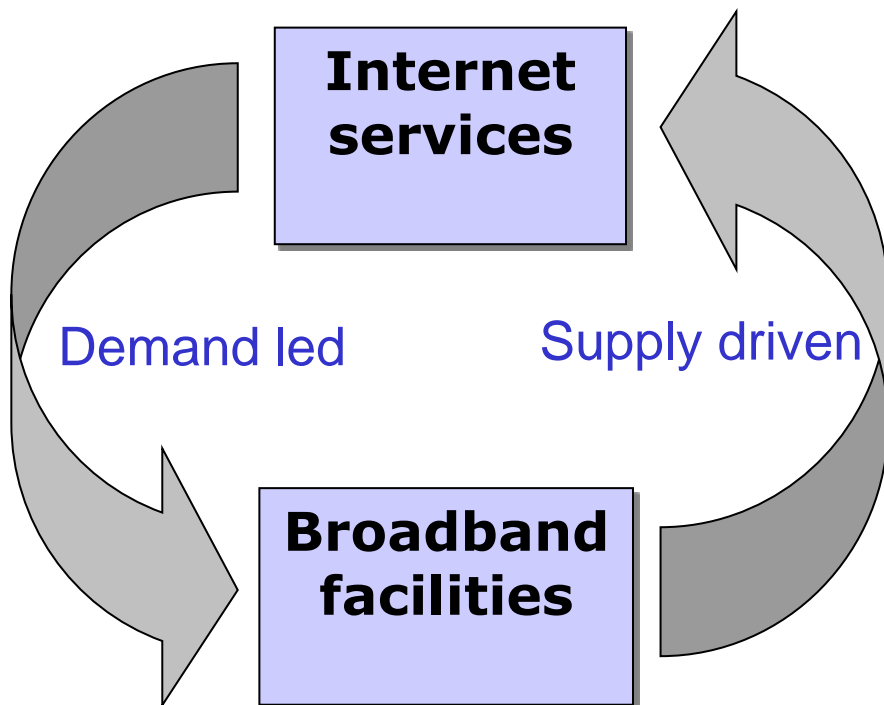


# UAS and broadband policies are merging

## UAS policy

Strong focus on Internet which requires minimum broadband speeds

Increased focus also on ICT enablement & training



## Broadband policy

Includes wide range of measures

Typically addresses broadband nationally

But heaviest intervention/ incentives required for rural areas

----->  
*UAS policies migrating to (rural) Broadband policies*

# Broadband is more than technology

## ***Must integrate***

- Diffusion of PCs and Internet access devices**
- Web Content, applications (“apps”) & services**
- eGovernment**
- New Law and Regulatory Policy**
  - Upgrade of Licensing
  - RF Spectrum
- Infrastructure policy**
  - Common access/competition /subsidy
- Policy coordination to underwrite ISP demand in education, health, administration**
- Skills and capacity development**

***Must also coordinate ICT Policy/Strategy and the Financing instrument/agency***

# UAS integration with other programs

## ❑ Education

- Vanguard user to be targeted under UAS
- First priority & demand – the emerging generation
- Education Ministry responsible for the computer strategy

## ❑ e-Government / e-governance

- ICT improves administration, services, health, etc.
- Accountability

## ❑ Electricity

- Raises the potential for ICT demand
- Reduces the complexity & cost of infrastructure build-out

## ❑ Microfinance and m-banking

- Allied initiatives with pro-rural and pro-poor direction
- m-banking regulated under Central bank but reliant on increasing ICT reach & telecom operator innovation

# Five approaches to Broadband Policy

|   | Approach  | Leading country examples                                     |
|---|---|--|
| 1 | Competitive tender to build new backbone &/or access infrastructure   | Canada, Chile, Sri Lanka, Singapore, USF countries           |
| 2 | Create / Underwrite Demand  | Malaysia, Singapore  |
| 3 | Stimulate Private Demand in the ICT Sector – e.g., PC initiatives, industry & educational initiatives, local services | Korea, China, Egypt, Thailand                                |
| 4 | Regulatory Reform, liberalisation, licensing, spectrum frequencies, & USF   | Pakistan, India, S. Africa, Chile, Brazil, Peru              |
| 5 | Integral part of an Economic Stimulus package   | USA, UK, Canada, Japan, Finland, Singapore, Korea, Australia |

- These address the main obstacles to broadband development
- Not necessarily exclusive to one another
- May be pursued in combination

# Broadband → Digital/ICT Strategies

*Most recent trend is re-naming to reflect breadth of policy*

- ❑ **UK: Digital Britain (2010)**
- ❑ **EU: Digital Agenda for Europe (2010)**
- ❑ **Australia: Australia's Digital Economy – Future Directions (2009)**
- ❑ **Norway: eNorway 2009 – The Digital Leap (2009)**
- ❑ **New Zealand: Digital Strategy 2.0 (2008)**
- ❑ **Chile: Digital Development Strategy 2007-2012 (2007)**
- ❑ **Philippines: ICT Roadmap (Under revision)**

# Trend to “e-Inclusion”- ICT in all sectors

- ❑ **Originally EU-centric term but is now the trend globally.**
- ❑ **Includes both ICT and the use of ICT to achieve wider inclusion objectives.**
- ❑ **The Riga Declaration (June 2006) stressed actions in the following areas:**
  - Improve digital literacy & competencies
  - Reduce geographical digital divides
  - Use ICT to promote cultural development & diversity
  - Promote inclusive e-government
  - Use ICT to address the needs of older workers, elderly & disabled
  - Enhance e-accessibility & ICT usability for people of all abilities, gender & social standing

# Digital/ICT Strategies - examples

| Common Topics Addressed in ICT Strategies |   |   |                     |             |                                |                               |                         |                                   |
|---|---|---|---------------------|-------------|--------------------------------|-------------------------------|-------------------------|-----------------------------------|
| Country                                   | Access/<br>Inclusion/<br>Infrastructure | Legislative/<br>Regulatory<br>Framework | Content<br>Creation | eGovernment | Interoperability/<br>Standards | Security<br>/ Cyber-<br>crime | Research/<br>Innovation | Skills/<br>Training/<br>Education |
| Australia                                 | ●                                       | ●                                       | ●                   | ●           |                                | ●                             | ●                       | ●                                 |
| Chile                                     | ●                                       | ●                                       |                     | ●           | ●                              | ●                             | ●                       | ●                                 |
| Egypt                                     | ●                                       | ●                                       | ●                   | ●           |                                | ●                             | ●                       | ●                                 |
| EU  | ●                                       | ●                                       | ●                   | ●           | ●                              | ●                             | ●                       | ●                                 |
| Kenya                                     | ●                                       | ●                                       | ●                   | ●           | ●                              | ●                             | ●                       | ●                                 |
| Malaysia                                  | ●                                       | ●                                       | ●                   |             | ●                              | ●                             |                         | ●                                 |
| Netherlands                               | ●                                       | ●                                       | ●                   | ●           | ●                              | ●                             | ●                       | ●                                 |
| New Zealand                               | ●                                       | ●                                       | ●                   | ●           | ●                              | ●                             | ●                       | ●                                 |
| Norway                                    | ●                                       | ●                                       |                     | ●           | ●                              | ●                             | ●                       | ●                                 |
| Seychelles                                | ●                                       | ●                                       | ●                   | ●           |                                |                               | ●                       | ●                                 |
| Singapore                                 | ●                                       | ●                                       | ●                   | ●           | ●                              | ●                             | ●                       | ●                                 |
| South Korea                               | ●                                       |   | ●                   | ●           | ●                              | ●                             | ●                       | ●                                 |
| UK  | ●                                       | ●                                       | ●                   | ●           | ●                              | ●                             | ●                       | ●                                 |

# Government structural approaches

- ❑ **Central ICT Policy – Ministry or Agency**
- ❑ **Inter-Governmental Coordinating Committee**
- ❑ **New, expanded approaches to Public-Private Partnerships**
- ❑ **USF is still a key financing instrument and most often remains separate from the Policy agency**
  - Regulatory Authority most often hosts the USF, but USF could also be an independent company
  - Credibility and Transparency
  - Technical Expertise
  - Consultative with stakeholders
  - Experience with tendering
  - Separation from Government accounts
  - Public Private Board Management

# Experience with USFs

- ❑ **100+ countries have decided on use of USFs for financing UAS**
  - Around 50-60 fully operational to date
- ❑ **The “Ideal” tool of a liberalized market, replaced monopoly cross-subsidization, but**
  - Some (e.g., Malaysia 6%, India 5%) have over-collected from operators
  - Most collect between 0.5-2% (**ECTEL** – Yr 1 0.25%/Year 2 0.5%/Yr 3+ 1.0%)
  - No developing country fund has distributed more than 2%
  - Only a few have successfully balanced receipts with disbursements
- ❑ **Should be used for current & future needs**
  - Target Broadband Access & backbone – Chile, India, Pakistan, S.Arabia
  - Competitive bidding process suitable to most cases
  - Can be used effectively for demand side funding – e.g., schools ICT
  - Should be balanced with other means and with targeted UAS supply side (e.g., rural) credits

# Enabling regulation for broadband

*As important as funding*

- ❑ **Good competitive practice applies especially to broadband**
  - Open access to dominant access networks
  - Access to international connectivity & capacity
    - Competition, joint volume purchase, or both
- ❑ **Liberalization of backbone:**
  - Enforcement or inducement to sharing & co-location
- ❑ **Facilitate legal/regulatory status & strengthen financing tools**
  - USF will remain a key institution for its process skills
  - PPPs may increasingly be the roll-out vehicles
- ❑ **Tax/fiscal incentives to network components & build-out**
  - Growth brings economic & social returns
- ❑ **Convergence & transition to IP/NGN**
  - Consider position of VOIP (“killer app”) & multi-media

# Licensing & UAS to Broadband

- **Countries that reform licensing regime in response to convergence, with technology neutral or unified licences, have opportunity to incorporate new UAS targets**
  - UAS targets more easily accepted in return for licences' flexibility
- **Newly offered licences can include territorial and UA obligations to Internet & broadband**
  - Important that those conditions are made public in advance
  - S.Africa's new entrant Neotel has to provide broadband connectivity to 5,000 public schools and rural medical clinics
- **Competition for new spectrum based licenses (3G, WiMAX)**
  - Mandatory roll-out targets & public and school access requirements
  - Matching attractive urban with less attractive region
- **Consider license fee reductions for meeting rural targets**
  - "Ex ante" subsidies may be more efficient than ex post

# Frequency spectrum trends

*First steps route towards broadband can be tactical*

## □ Review and expanded use of 850MHz & 900MHz

- Advantage of increased 3G coverage radius for rural areas
- UMTS900 - 3G networks using 900MHz 2G spectrum have been rolled out in Finland, Iceland, Australia, New Zealand, Thailand, Venezuela.
- Saudi Arabia also has approved the use of UMTS900 on its UAS strategy to bring 512 Kbps to all rural areas.

## □ 700/800MHz – Digital broadcast “premium”

- Use for 4G mobile / LTE developing quickly & also useful for rural

## □ CDMA 450MHz

- Has even better potential for coverage radius
- Broadband capable networks in Belarus, Czech Republic, Estonia, Georgia, Germany, Hungary, Indonesia, Kyrgyzstan, Latvia, Portugal, Romania, Russia, Tajikistan, Mongolia, Tanzania, Ukraine, Uzbekistan.

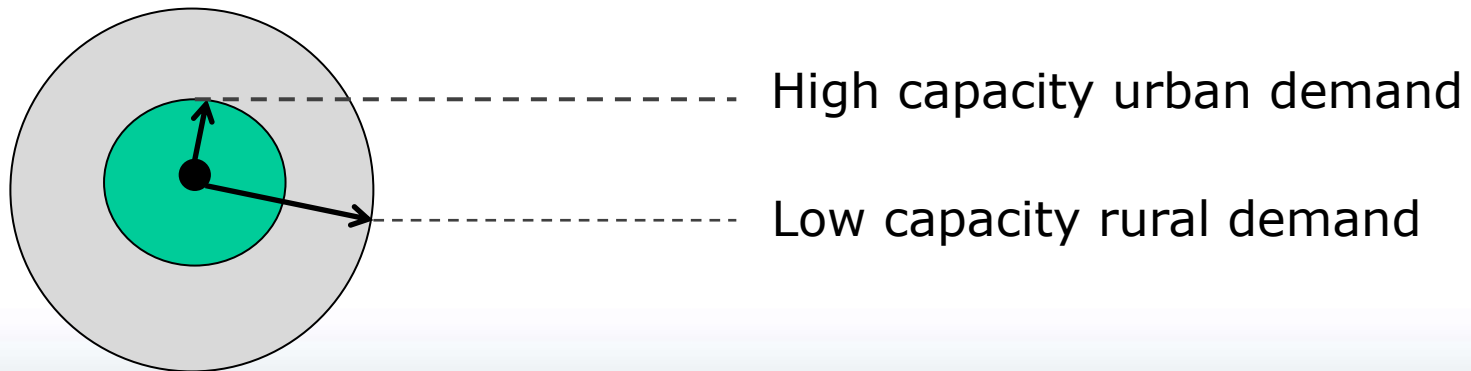
## □ Unlicensed bands

- Peru has allowed high powered 2.4 GHz for rural
- USA has allowed use of 2.4 GHz for rural backhaul

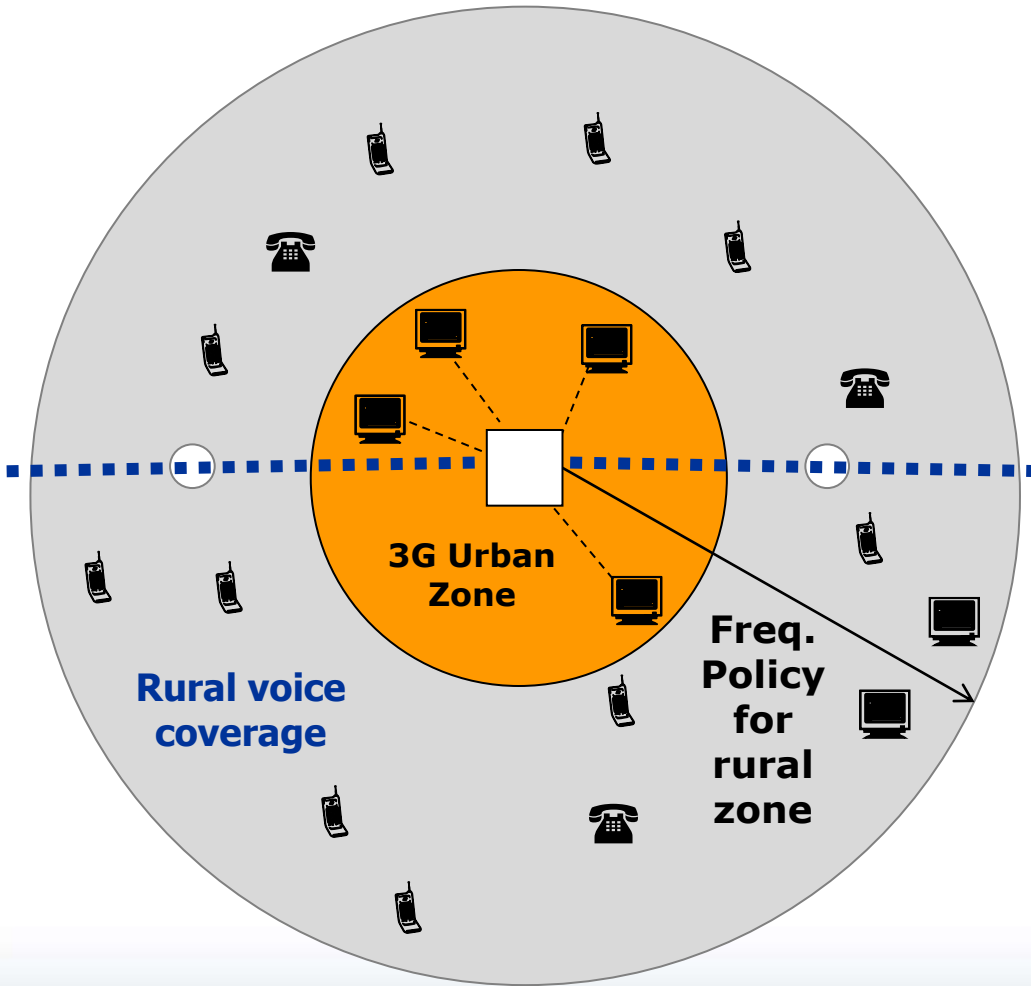
# Tactics - 3G Network characteristics

- ❑ **Coverage** - the radius of effective line-of-sight signal reception from BTS
- ❑ **Capacity** – how many customers downloading or uploading content at same time
- ❑ **Speed** – the experienced data rates in Kbps

***Cells "breathe" in response to demand***



# 3G/4G Broadband – the role of frequency



- ❑ Voice telephony 2G coverage to all areas by mobile
- ❑ Digital Backbone links all BTS sites
  - Available for broadband service support
- ❑ WiMAX / 3G rural options
  - First Internet demand within 2-5 Km radius from BTS towers ... can be reached by 3G
  - WiMAX and/or lower freq. (850/900 MHz) mobile can extend range to 10-12+ Km, similar to 2G voice range
- ❑ VSAT or LD WiMAX/ micro Wi-Fi cells needed beyond economic boundary of mobile network

# *Thank you*

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