



How WiMAX can bring Broadband for All

*ITU/BDT Regional Seminar on Broadband Wireless Access
for rural and remote areas for Africa - Yaoundé (Cameroon)*

Stéphane Lecomte
September 2006

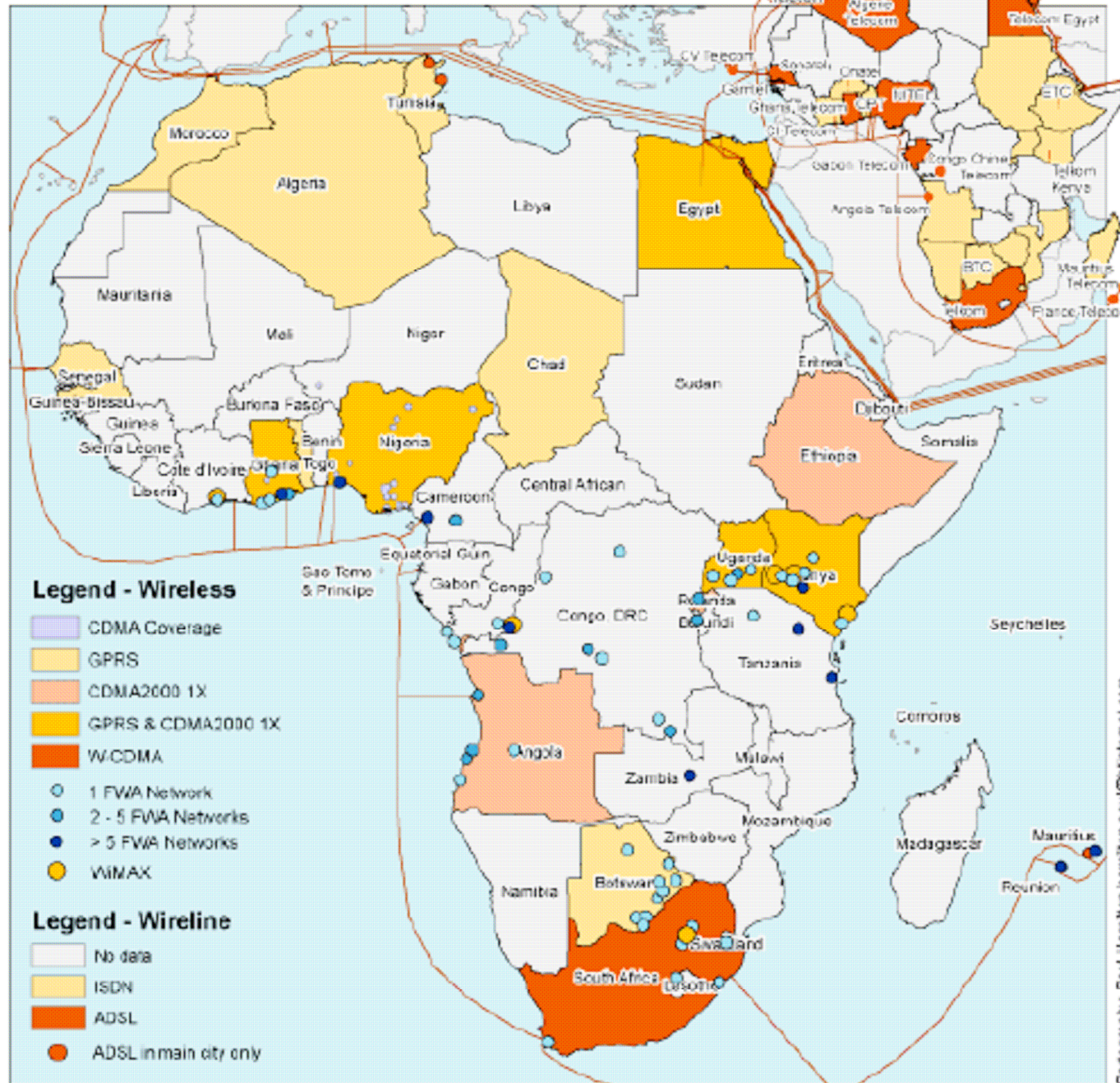


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Broadband Africa

Wireless: 2.5G, 3G, FWA, WIMAX

Wireline:
ISDN, ADSL



Today in Emerging Markets

- Broadband access is still in infancy
- Demand exceeds the offer
- A lot of competing technologies

Cartography: Paul Hamilton hamilton.peul@btinternet.com

How is access evolving?

*It is going
Broadband*

*It is going
Wireless*

Broadband Wireless Access

Voice : From Fixed to Mobile

Wireless communication has proved to be the right solution for fast growing economies

- Cell Phones penetration outpaces fixed lines
- Cheaper to acquire, to deploy and maintain
- Reaches all users even in isolated areas



Information: From dial-up to BWA Mass Market

- Digital Bridge
- Cost effective
- Faster
- Simpler



Similarly Internet access is moving from traditional telephone line dial-up to Broadband Wireless Access for the same reasons:

- Cheaper to acquire, to deploy and maintain
- Reaches users in remote and isolated areas

The Opportunity for High-Growth Economies

Leapfrog to Cutting-edge Technology

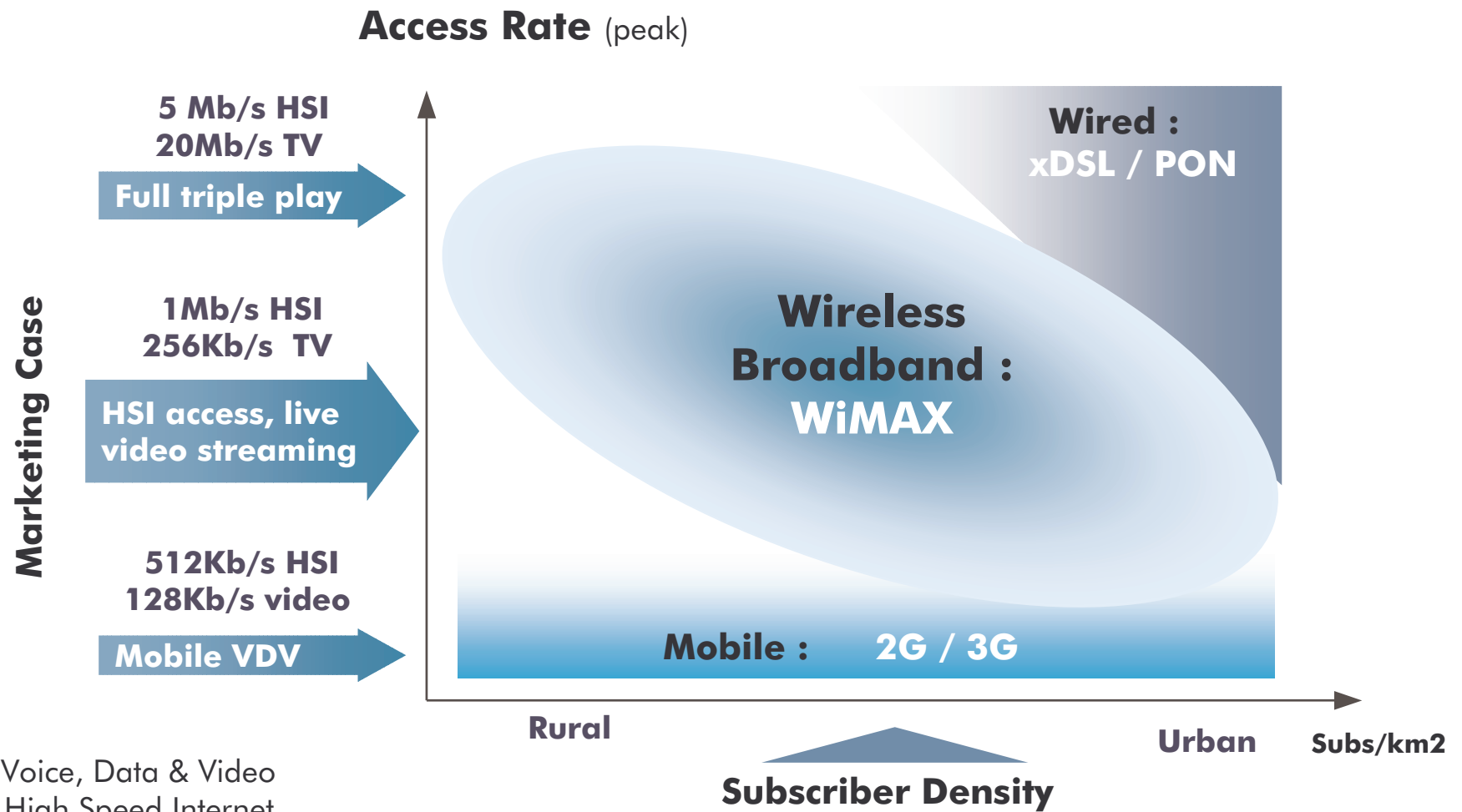
**Radical
Cost Efficiencies**
(eg : IP)



**Most Innovative
Services**
(eg : IMS)

Looking for a new standard to arise
Profitable business case for **“Broadband for All”**

How to bridge the gap ?



(*)VDV: Voice, Data & Video
HSI: High Speed Internet

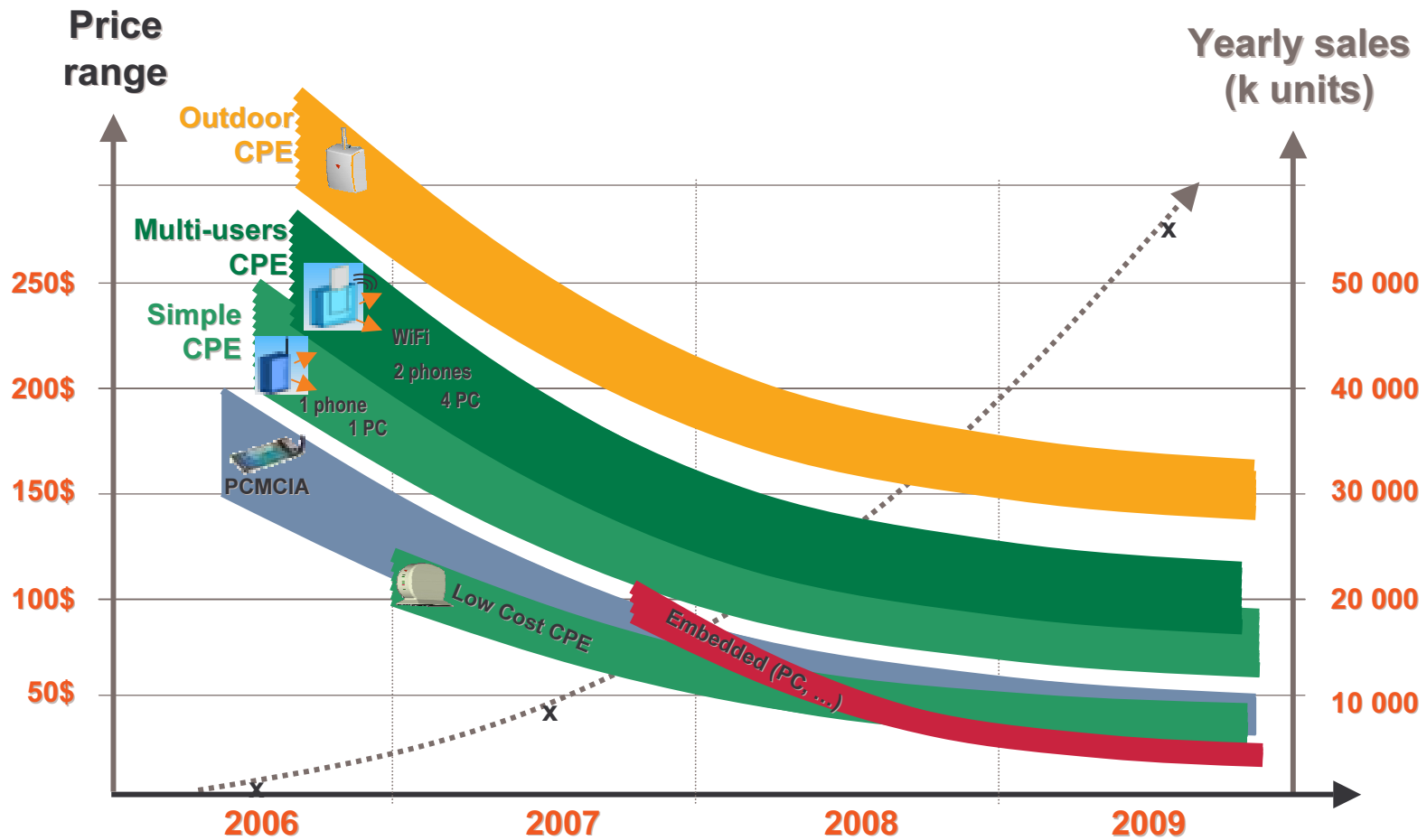
Alcatel WiMAX 802.16e-2005 meets the challenge

**802.16 Rev. E to become
the dominant WiMAX standard**
for fixed, nomadic and even mobile access

- Lower cost
- Better performance (eg: Spectrum efficiency)
- Path to Mobility
- Interoperability
- Broad industry support

IEEE 802.16 Rev. E (TDD modulation) = **Universal WiMAX**

Market price trends for Universal WiMAX CPEs



Access: Usages and Markets

LOW INCOME

HIGH INCOME



**e-learning
"Double play"**



Phone shop

**e-Government
e-trade**



Internet shop



Broadband shop

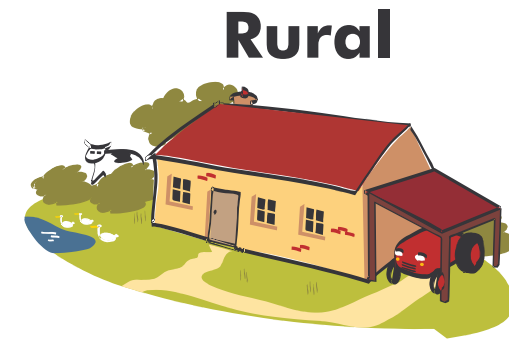
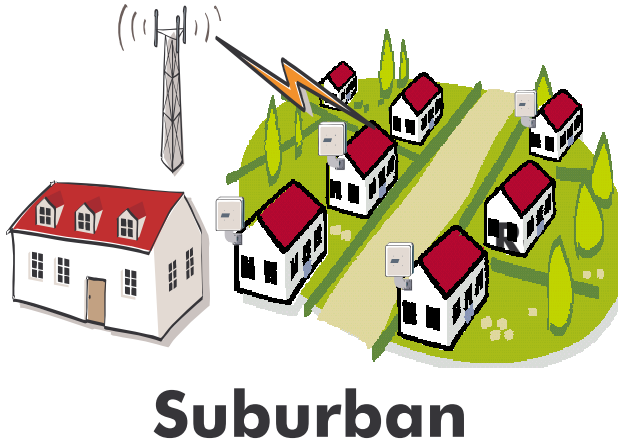
Universal Service



Mature, personal & business
phone & broadband

**Mobile TV
Managed services**

Wireless Broadband Deployments



Main concern :
*Sufficient Spectrum Ressources
For capacity & multiple operators*

Answer :
2.3, 2.5 & 3.5GHz bands

*Note : Opportunity under
analysis to increase reach*

*Answer :
< 1 GHz*

Applications for Rural Areas

e-health

- a healthy nation is the basis of economical growth and prosperity
- doctors are a rare resource and using their expertise is needed
 - Cost: One PC + web cam + WiMAX CPE on both sides

e-education



- education is the only way out for a country that wishes to build its economy and grow away from poverty
- bring to remote areas the benefits of knowledgeable teachers and worldwide knowledge available on the net
 - Cost: WiMAX Terminal + WiFi hotspot + Low cost terminals (eg: OLPC)

e-business

- no new business today can do without at least an email address
- internet access becomes indispensable to foster economic growth
 - Cost: One PC & WiMAX CPE for every new business

WiMAX in a Nutshell

WiMAX brings high spectrum efficiency

- 2,2 to 2,3 bits/Hz/sector with a reuse of 3
- For Fixed, Nomadic / Portable Usages
 - The 2 services can be colocated with no impact on reach
- Reach similar to mobile telephony thanks to technology breakthroughs (AAS, SOFDMA)

Need for :

- Spectrum 2.3, 2.5 ou 3.5 GHz
- TDD Modulation
- 30 to 40 MHz block for good capacity and reach

Stimulating license fees and allocation process

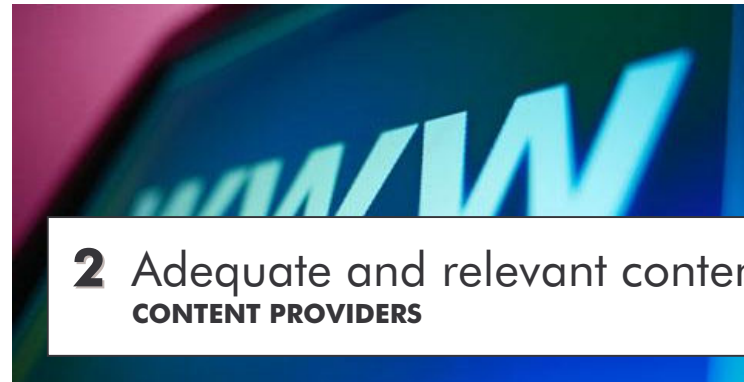
- All licences allocated since 2005 follow the same trend
 - Low license fees to stimulate economy
 - And terms fostering digital bridge

Strong Public Action Needed: National Broadband Policy

FOUR PILLARS :



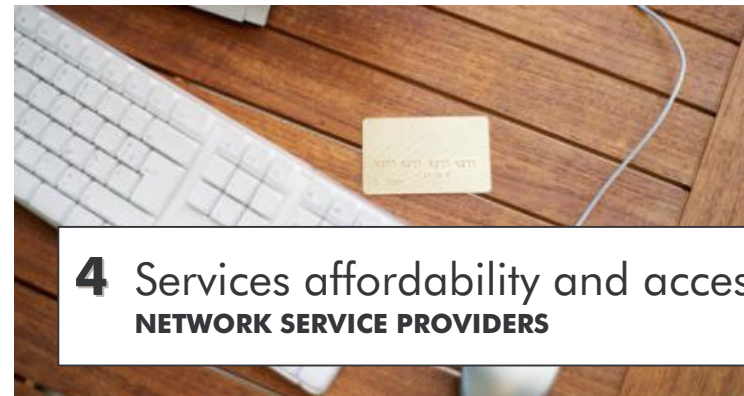
1 Public initiatives and policy
TELECOM POLICY MAKERS



2 Adequate and relevant content
CONTENT PROVIDERS



3 User awareness and expertise
PUBLIC EDUCATION



4 Services affordability and accessibility
NETWORK SERVICE PROVIDERS

Telecom Policy Makers : **Adapt Legal and Regulatory Policies to Encourage Broadband Uptake**

Market Regulation

Fair competition rules to:

- Attract new capital
- Protect investment
- Enable innovation in services packaging

Relevance of Universal Service Offering Assessment

- Government-managed
- Public-Private partnerships

Public Demand Aggregation

- Guarantee critical mass of business for investors
- Increase use by public administration, education and healthcare establishments

Telecom Policy Makers : **Adapt Legal and Regulatory Policies to Encourage Broadband Uptake**

Spectrum Management

- Flexibility vs harmonization enabling fixed and mobile convergence
- Licensed vs unlicensed bands enabling “light licensing” methods, such as spectrum swapping/trading, self-coordination processes
- WiMAX
 - Increase the amount of spectrum allocated to Broadband Wireless Access (BWA)
 - Support “16e” universal access based on technology and usage neutrality in all BWA bands

Support for Research and Innovation Centers

- Advanced network facilities (for example grid computing) for teachers, students, researchers
- Centers of innovation for testing new technologies and architecture for technology transfer

Sustainable Development Initiatives



Serge Tchuruk, Alcatel CEO
Tunis 2005, First Plenary Session of the General Debate

“I would like to express once again my conviction that the digital divide is not a fate and that BROADBAND FOR ALL is not a dream”



Connecting the Unconnected by 2015...

A multi-stakeholder effort established within the context of the [World Summit on the Information Society \(WSIS\)](#) to encourage new projects and partnerships to bridge the digital divide



A capacity building partnership dedicated to Local Authorities

Conclusion

Broadband Access **fosters** economical and social **growth**

National Broadband **Policy is key**
to accelerate broadband development

WiMAX is to Broadband
what GSM is to Telephony

Alcatel is a strong partner to network service providers
in delivering Broadband for All

- Local presence
- Cost effective and leapfrog broadband technologies and solutions
- Worldwide experience with broadband best practices

A person is silhouetted against a clear blue sky, sitting on the roof of a white van. The person is looking towards the right. The background is a vast, open landscape under a bright sky. The overall mood is serene and expansive.

Thank You !