

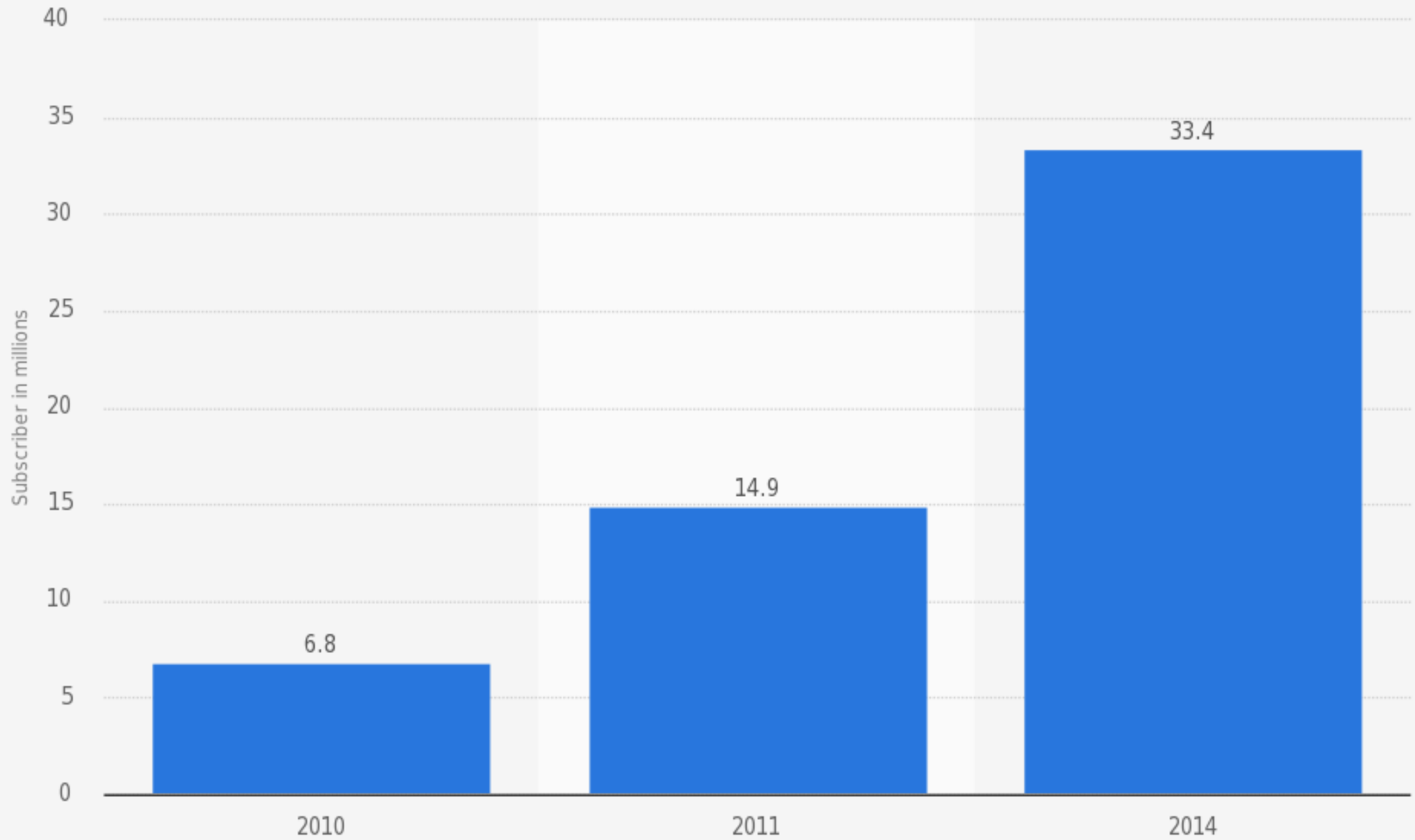
Is WiMAX/Wi-Fi the answer to Underserved Areas?

WiMAX
TECHNOLOGY

Introduction

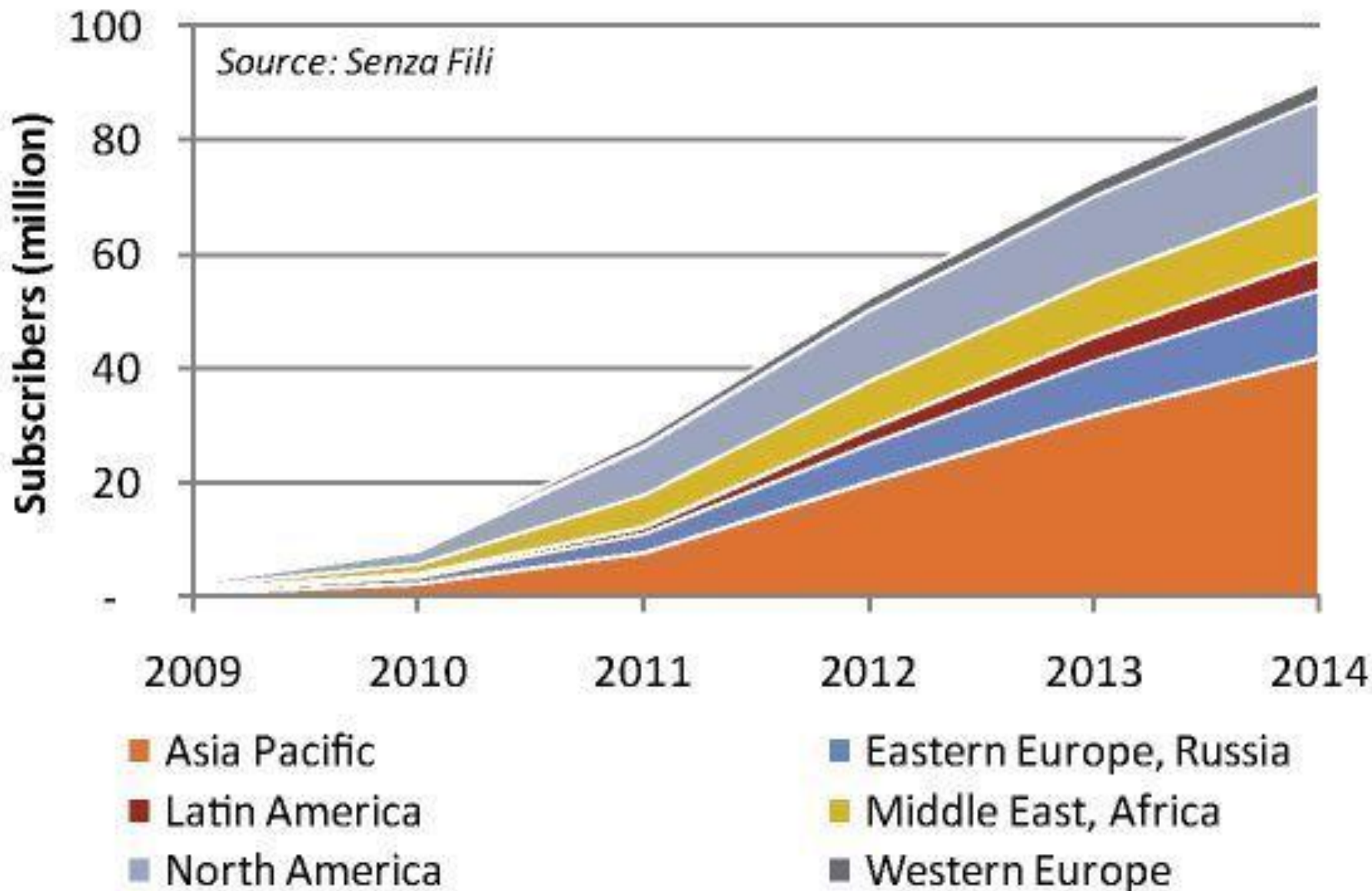


Number of WiMAX subscriber worldwide from 2010 to 2014 (in millions)



Mobile WiMAX subscribers

Source: Senza Fili



What makes WiMAX interesting for reducing the Digital Divide?

- Fast and Cheaper Deployment
- Efficient Long Range Data Communications
- Very Flexible Technology
- Quality of Service Support
- Capacity of Managing Resource Allocation to each and every users
- Standard Technology

Advantages of Wi-Fi

- Convenience
- Mobility
- Productivity
- Deployment
- Expandability
- Cost



Current Challenges

Island



Expanding national network to rural and remote areas posed many challenges:

Rumah Panjang



Lack of basic infrastructure such as road access & power supply

Difficult to maintain due to distance and rough geographical terrain

Kampung



Low return on investment: High cost, low ARPU

Un-optimize network resources for sparsely populated areas

Tourist Areas



Limited income to spend on communication

Perceived lack of direct value from Internet

Problem in Underserved Areas

- Rural Area of Under Developed Countries
 - Power Disruption
 - Difficulty in Providing Support
 - Time
 - Lack of Relevant Content
- Low Density Rural Areas in Developed Countries
 - Availability of 3G / LTE Devices
 - Adoption of New Device
 - Similar cost to ADSL

Added Advantages of WiMAX

- MIMO
- Space-Time Frequency Coding
- Downlink Channel Reorting
- Beam Forming
- Radio Interface OFDM and OFDMA

Limitation of WiMAX

- Lack of Adequate Spectrum
- Lack of Competitive Devices or Device Eco System
- Lack of an Mobility Management Technology
- Lack in 'Economy of Scale'

Bangladesh Perspective: WiMAX Scenario

- Most of the BTSs are connected through Fiber, as LOS communication was not possible in populated area
- All Backhaul is connected through Fiber
- Unreliable Power Supply
- Bandwidth Choking

Did WiMAX went on well as Predicted?

- Lack of development in right Eco-System
- Back Haul was either too costly or most unreliable

Recommendations

- Aged old Coaxial and fiber cable which were installed 15-20 years back, as backhaul, need to be changed
- Utilize License exempt Frequency bands (5.25 to 5.85 GHz)
- WiMAX Mesh Network
- Useful for 3rd world countries rural areas

Conclusion

Q & A