



Indonesia's *WiFi* Access Innovation

Divakar Goswami
& Onno Purbo



LIRNEasia.NET

Learning Initiatives on Reforms for Network Economies

Indonesia overview



- World's largest archipelago-17,000 islands
- Poses a challenge in rolling out communication infrastructure and providing access to 241 million inhabitants of Indonesia, 4th most populous country in the world.



Project Objectives

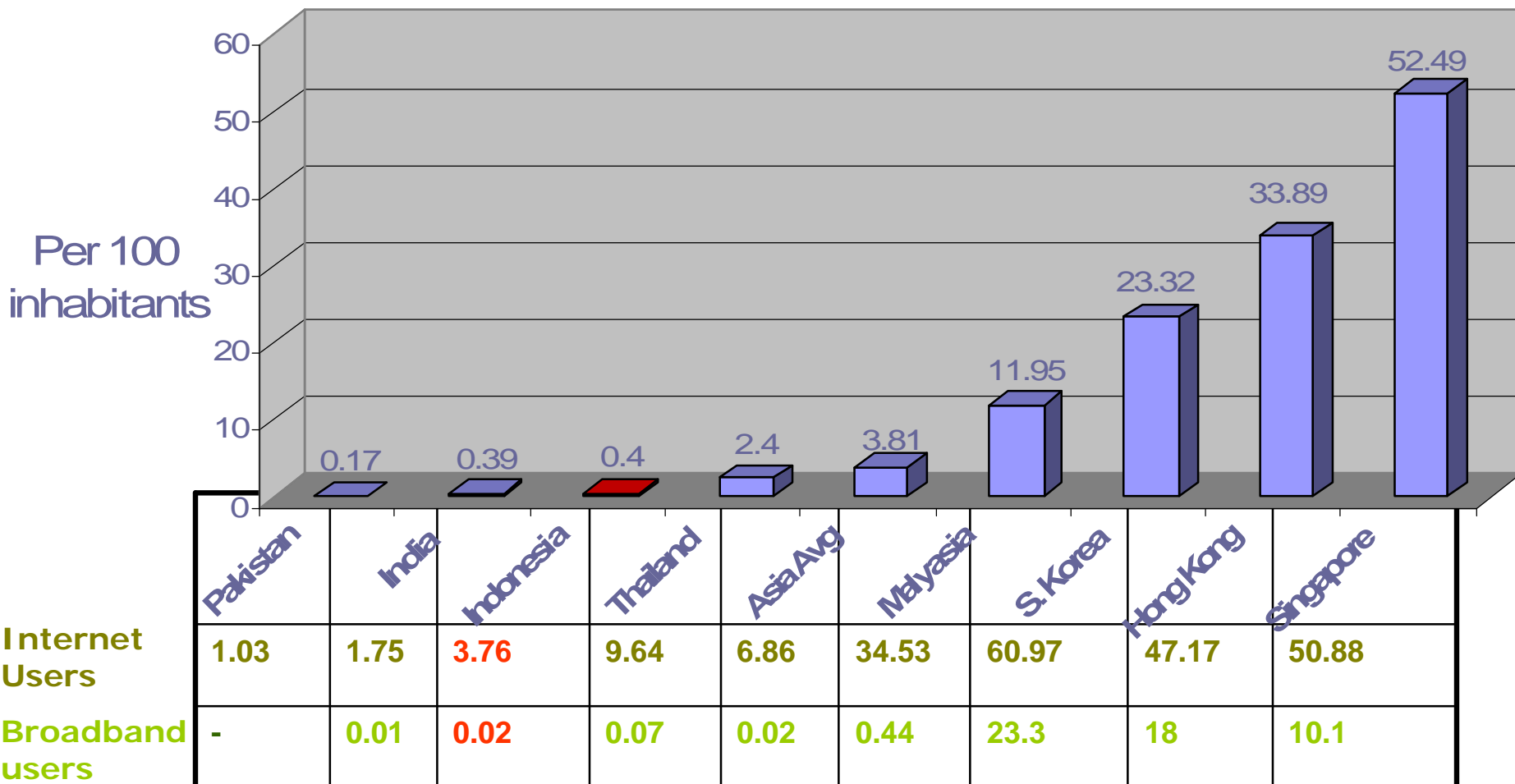
- What are the conditions that gave rise to WiFi becoming the access technology of choice for Internet in Indonesia?
- Can WiFi access innovation in Indonesia be replicated in other developing countries?
- What steps need to be taken for higher Internet growth in Indonesia?
- Will highlight lessons learnt from Indonesian study that have regulatory relevance.

What is WiFi?

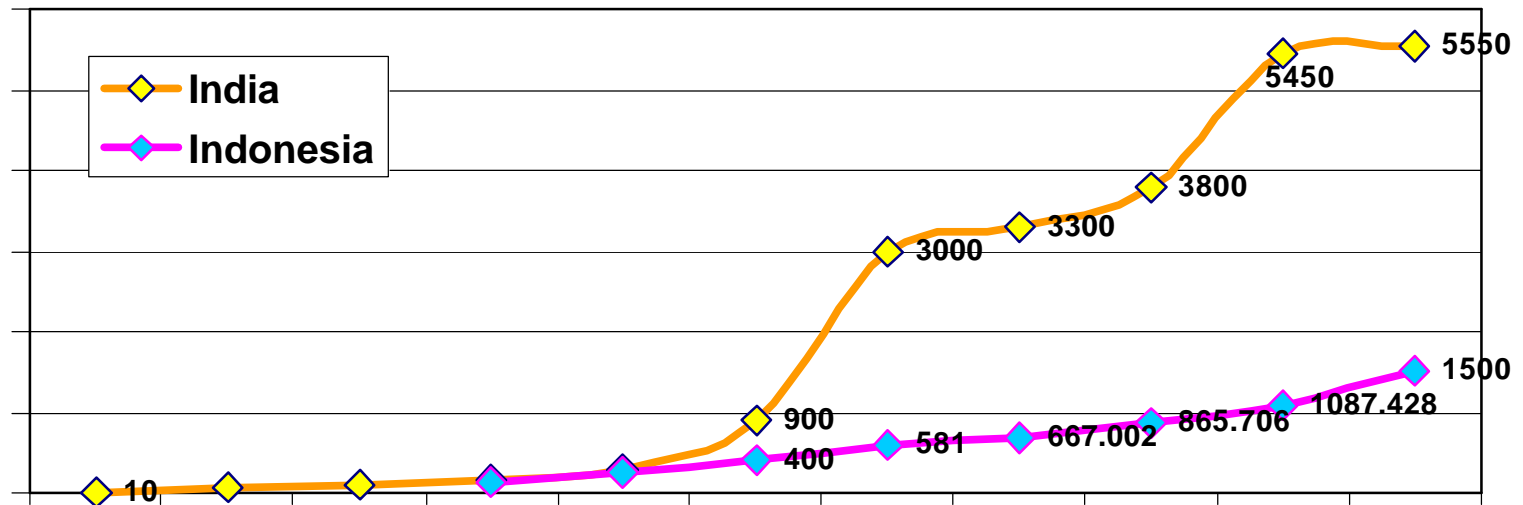
- Many countries (USA, EU, Indonesia etc.) have unlicensed portion of 2.4 Ghz (2400 Mhz to 2483.5 Mhz) including use of spread spectrum technology for uncoordinated sharing of band.
- 5Ghz to unlicense or not? 5.8 Ghz suitable for long range communication.
- Industry developed IEEE 802.11 (2Mbps), 802.11b (11Mbps) and 802.11g (54Mbps) standards for high rate data transmission.
 - Advantages: Quick deployment time, low-cost, minimal rights of way needed, “free” bandwidth.
 - Disadvantage: Prone to interference, weather conditions, steep range/bandwidth tradeoff, doesn't offer carrier class reliability.

Internet penetration

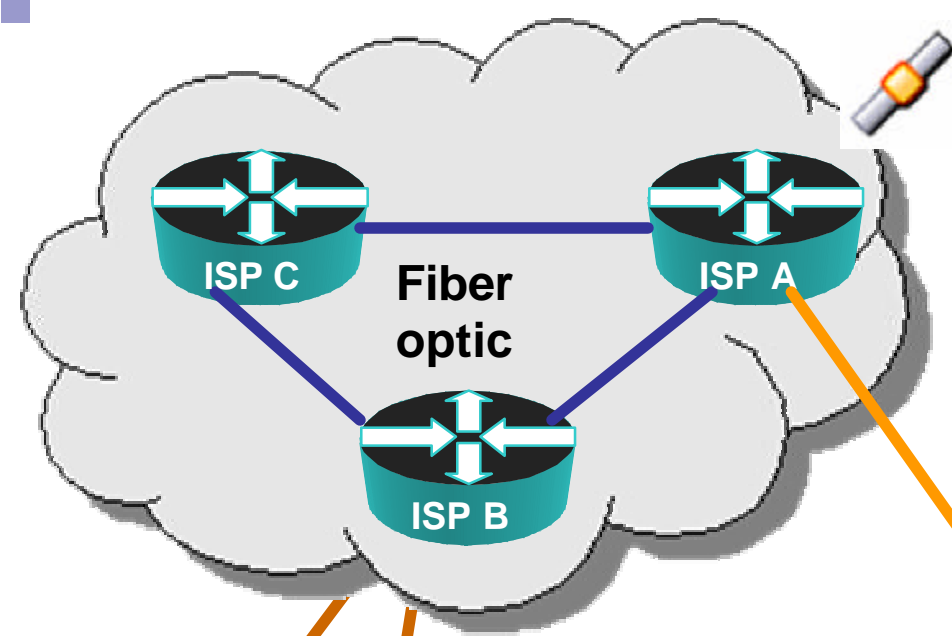
Internet Subscribers 2003



Internet growth rate comparison

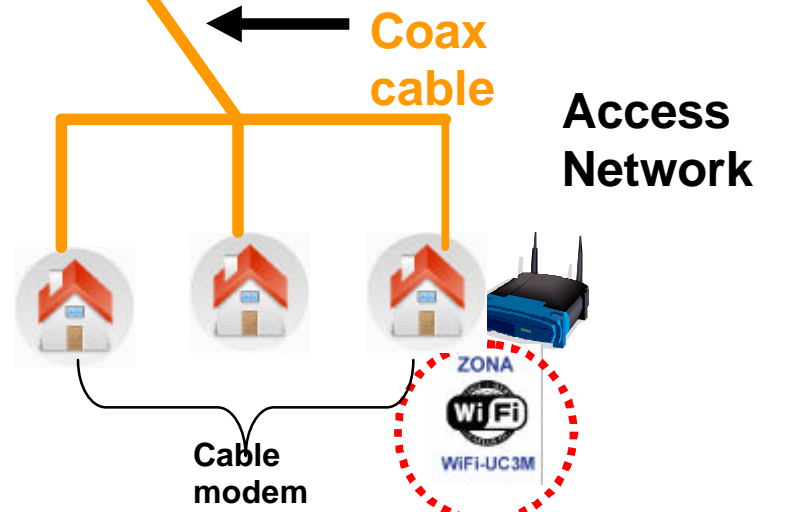
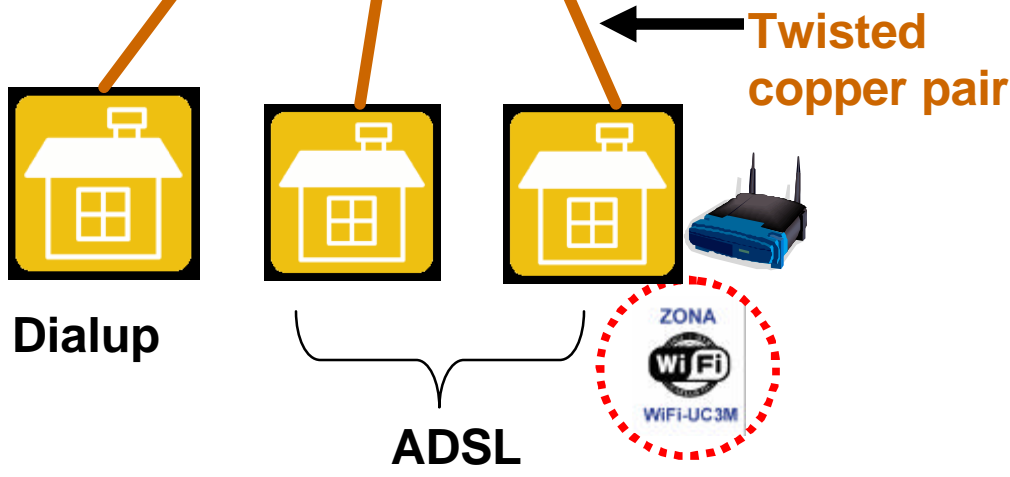


India's CAGR for an eight-year period between 1998-2005 was 58.4% in comparison with Indonesia's CAGR during the same period of 35%.

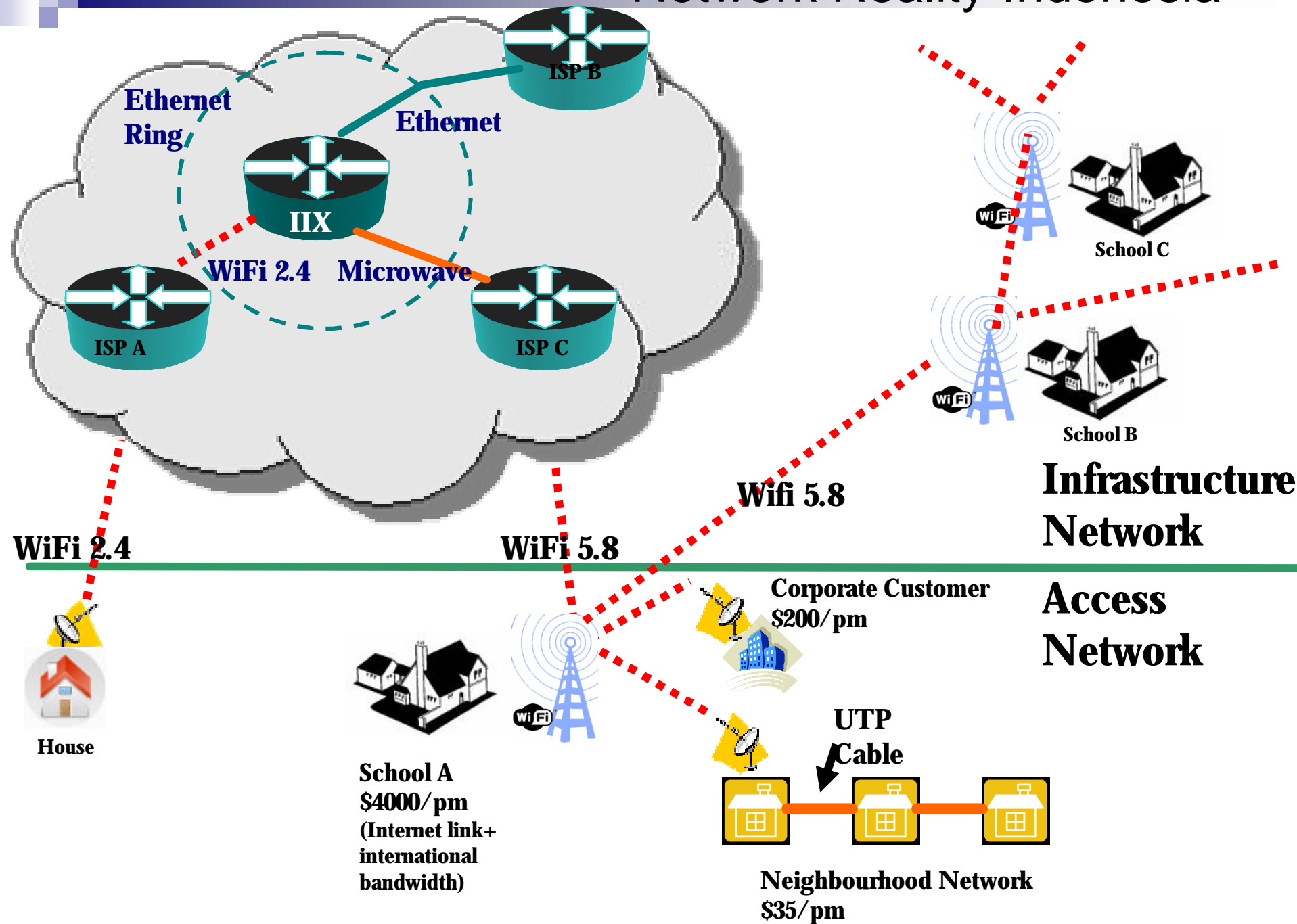


Typical ISP Network


Infrastructure Network



Network Reality-Indonesia



Uniqueness of Indonesian WiFi

- WiFi deployed in Indonesia but in unique manner:
 - Not inside home; not available for free.
 - Blurring of access and infrastructure network; used as backbone; up to curb WiFi, last mile aerial cable.
 - Many tiered retailing of Internet service....
 - WHY?  To recover high Internet retail prices

What gave rise to peculiar access network in Indonesia?

Regulatory environment

- **Non-independent regulator**
 - DG POSTEL is an unit of the Ministry of Communication & IT
 - Two regulatory bodies: DG POSTEL & BRTI
 - BRTI under-staffed, powers under transition, chairman is DG of POSTEL
- **Exclusivity clauses extending historical monopolies**
 - Indonesian govt owns 51% share in PT Telkom & 15% in Indosat plus “golden share”
- **Structure of licenses preventing ISPs from deploying infrastructure**
 - Licenses for Telecom Network & Service providers
- **No local loop unbundling**
 - Exclusivity until 2015
- **No regulation of leased line prices**
 - Non-regulation of uncompetitive market

Market environment

 No competition

 Limited competition

 Competitive

- Lack of competition in infrastructure sector
- Resulting in high leased line prices
- High international backbone prices
- Proliferation of unlicensed “reseller-ISP’s”

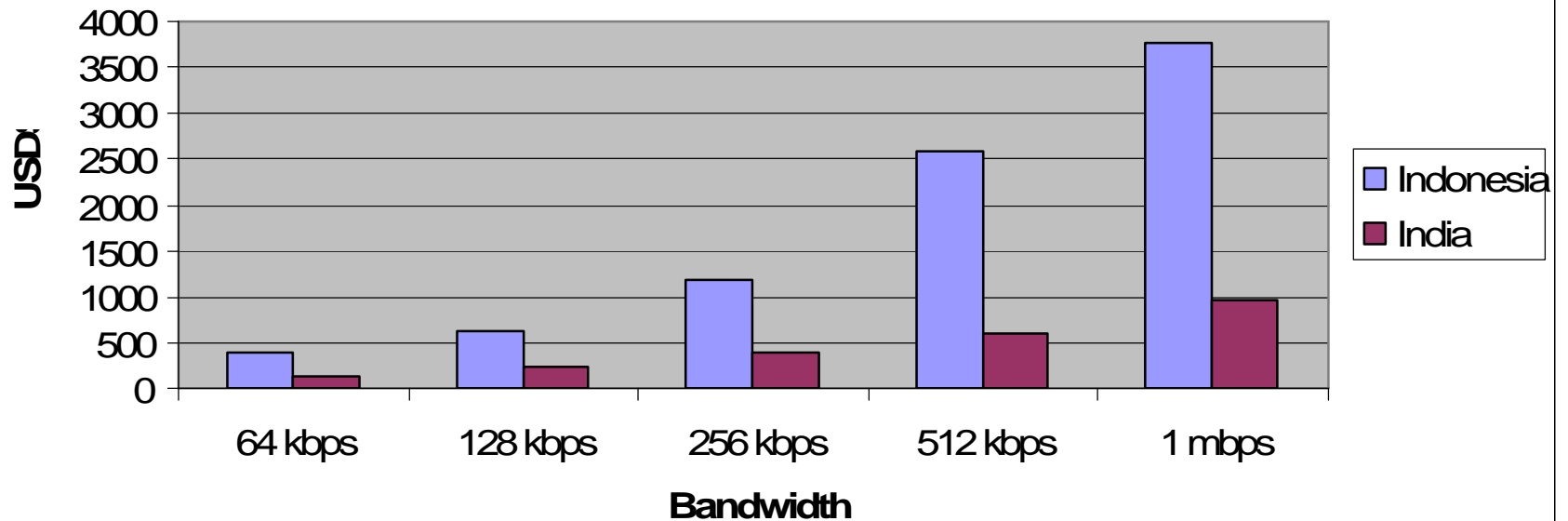
Telecom services	Telecom operations
Fixed wireline local	Exclusive right 1996-2010 PT Telkom
Fixed domestic LD	Exclusive right 1996-2005 PT Telkom
Fixed wireless local	Limited competition (Satelindo)
Fixed international	Duopoly 1995-2004 (Indosat, Satelindo)
Mobile	Competitive (Satelindo, Excelkomindo, Telkomsel etc.)
Internet service provision	Competitive Currently 124 ISPs official, 54 unlicensed

Annual Leased line prices 2Mbps Link

2Mbps link	2km	200km
Indonesia	US\$18,000 Ratios India EU 1: 47.9 1: 3.8	US\$45,000 Ratios India EU 1: 5.9 1: 4.9
India	US\$376.00	US\$7,603
EUBenchmark (Denmark)	US\$4,802	US\$9,219

Data compiled from Lokanathan, lirneasia.net, EU 10th report, interview with Indonesian ISP & Network Service Provider

Comparison of Internet Prices (monthly) for Business Users i Indonesia & India



Bandwidth	Indonesia	India	Ratio
64 Kbps	US\$393	US\$128	3.0:1
128 Kbps	US\$639	US\$230	2.8:1
256 Kbps	US\$1180	US\$396	3.0:1
512 Kbps	US\$2596	US\$612	4.2:1
1 Mbps	US\$3776	US\$970	3.9:1

Data from Indonesian ISP provider & BSNL, India

Comparison of ADSL Retail Prices (monthly) in Indonesia & India

Bandwidth	Indonesia*	India**	Ratio
384 Kbps Usage limit: 1 GB* 2GB**	US\$74	USD\$23	3.2 : 1
512 Kbps Usage limit: 2 GB* 5GB**	USD\$93	USD\$41	2.3 : 1

Lessons from the Indonesia

- Hostile environment (regulatory, market & infrastructural) spawned WiFi and related innovations in Indonesia.
- Until, leased line prices are regulated in Indonesia or effective competition is introduced in this sector, Internet diffusion will remain sluggish.
- This will be true of other countries who want to adopt WiFi without a competitive or regulated leased line market.
- Number of studies have shown the correlation between lower leased line prices and rapid diffusion of the Internet (Petrazzini & Guerrero 2000; Fan 2005;)

ISP in Jakarta Using WiFi as Access

