The costs of internet access in developing countries

Internet in South-East Asia
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Claire Milne

http://www.antelope.org.uk

mailto:cbm@antelope.org.uk

tel/fax: +44 20 8505 9826

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Introduction

- Study commissioned by UK DFID with DTI: contact k-yeomans@dfid.gov.uk
- Standard disclaimer: “the views expressed do not represent or commit DFID or DTI in any way”
- Team effort: 12 in core team plus many others
- Full report available on website http://www.antelope.org.uk
- Studies of 6 countries: 2 full and 1 short case study in each of Africa and Asia
- Review of legal and regulatory framework for internet interconnection (especially WTO implications)

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Outline of presentation

- Overview of study and findings
  - End-user costs – cybercafe, dial-up, leased line users
  - Breakdown of end-user costs between telco and ISP
  - International component of ISP costs
- A little more on the Asian countries
- The cost-sharing issue
- Policy options (recommendations)

NB: differences found are mainly LDCs vs bigger/richer countries (rather than Africa vs Asia)

Study terms of reference

- Commissioned because of:
  - complaints from developing countries about high costs and lack of competition for their international internet connectivity
  - debate about cost-sharing principles in APEC TEL
- Aim:
  - to understand the impact on developing countries of the international dimension of the internet market

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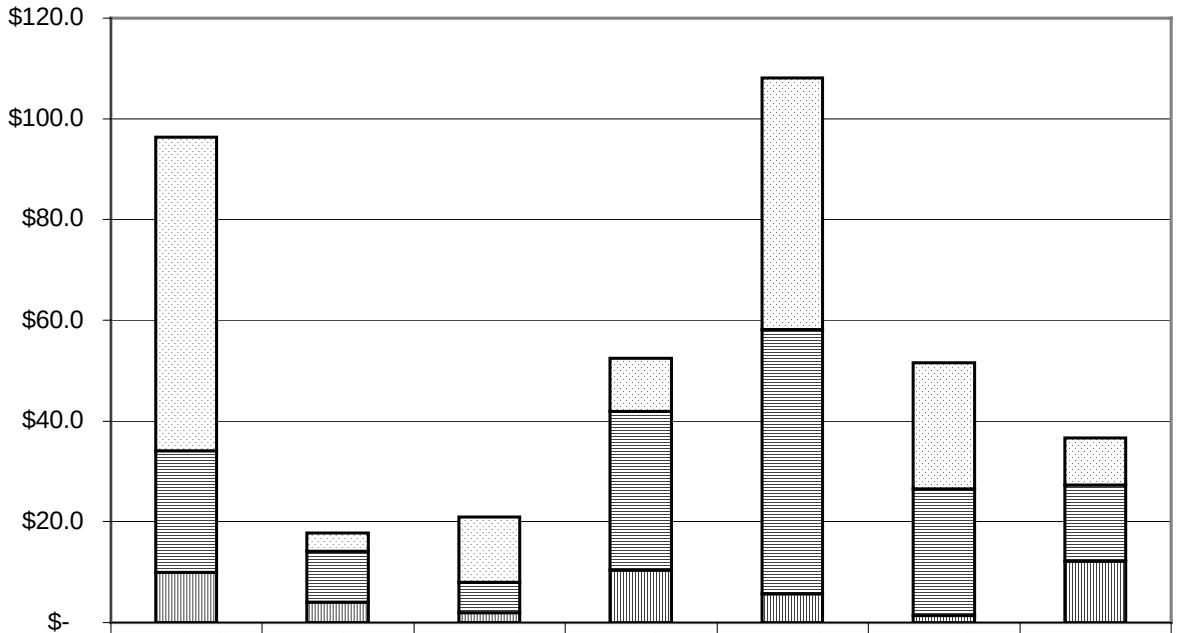
Prices for 20 hours of local use per month (US$)



	Cambodia	India	Nepal	S Africa	Uganda	Zambia	OECD
ISP charges	$62.4	$3.5	$13.0	$10.6	$50.0	$25.0	$9.4
Telephone Call Charges	$24.0	$10.2	$6.0	$31.5	$52.4	$25.3	$15.1
Telephone Line Rental	$10.0	$4.0	$2.0	$10.4	$5.8	$1.3	$12.2

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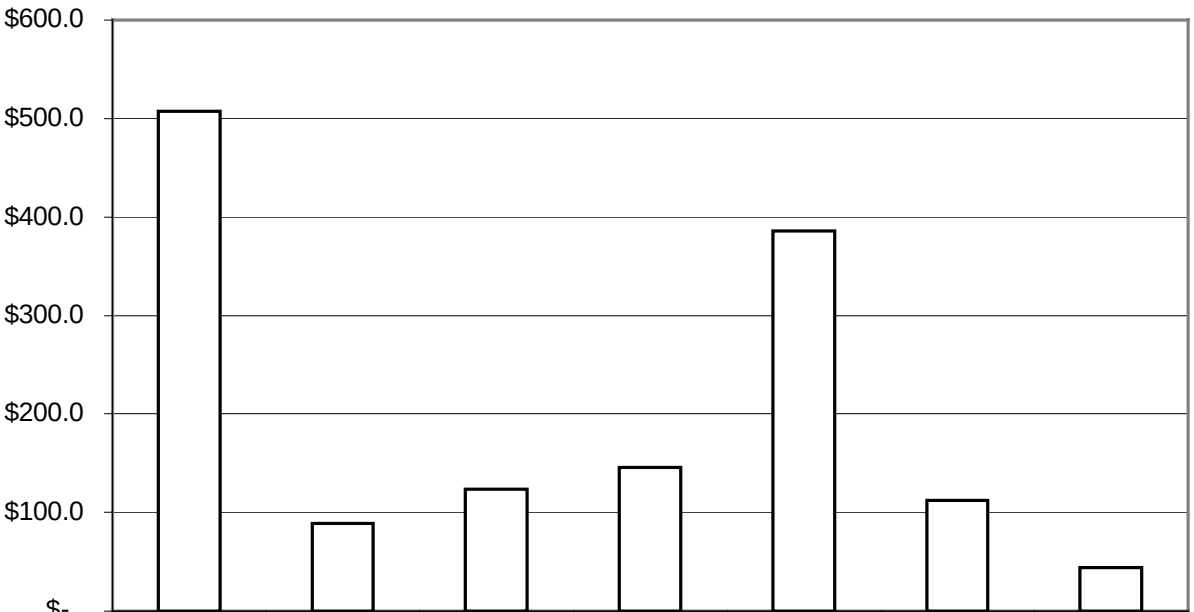
PPP prices for 20 hours of local use per month (US$)



	Cambodia	India	Nepal	S Africa	Uganda	Zambia	OECD
Total	$507.4	$88.9	$123.5	$145.8	$386.3	$112.2	$44.1

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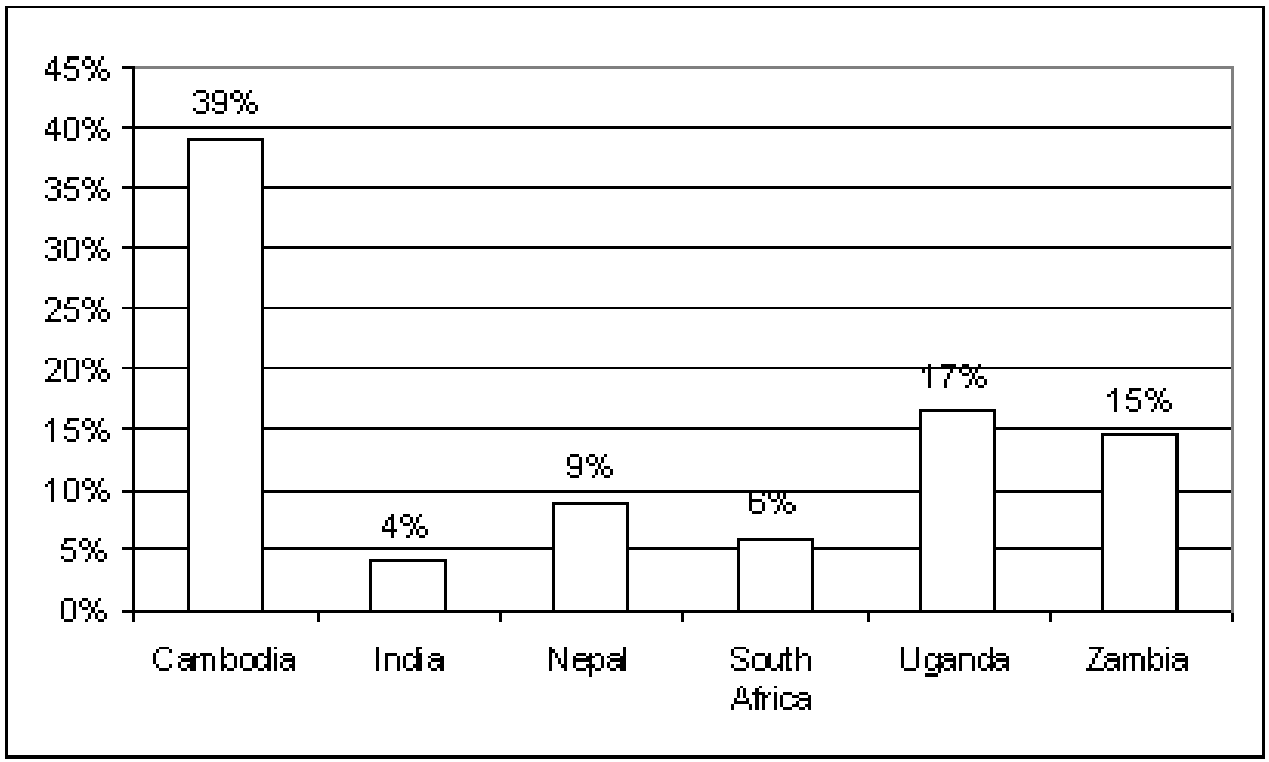
Case study findings: end user costs

- By OECD standards, cybercafe and dial-up end-user costs are not high in India or South Africa (or in Nepal or Zambia for local access)
- However:
  - High long-distance call charges lead to high costs for national access in Least Developed Countries
  - Leased line charges are high (affecting business users)
- Even low costs are out of reach of most potential users
- Also:
  - The cost of the PC is not included (and is a large extra burden)
  - Average usage remains low (except in India)
  - Poor quality can add significant cost (repeat calls, slow downloads)

Case study findings: ISP costs

- ISP costs are less than 50% of the average end-user costs in all countries (the rest being telco charges)
- International internet connectivity accounts for about 30% of ISP costs (but 80% in Cambodia)
- Reticence on topic suggests it is key to competitiveness
- International internet connectivity has two parts:
  - *International leased circuits:* over-priced (often grossly)
  - *Global internet connectivity:* rarely identified separately ("free extra")

International component of average end-user costs



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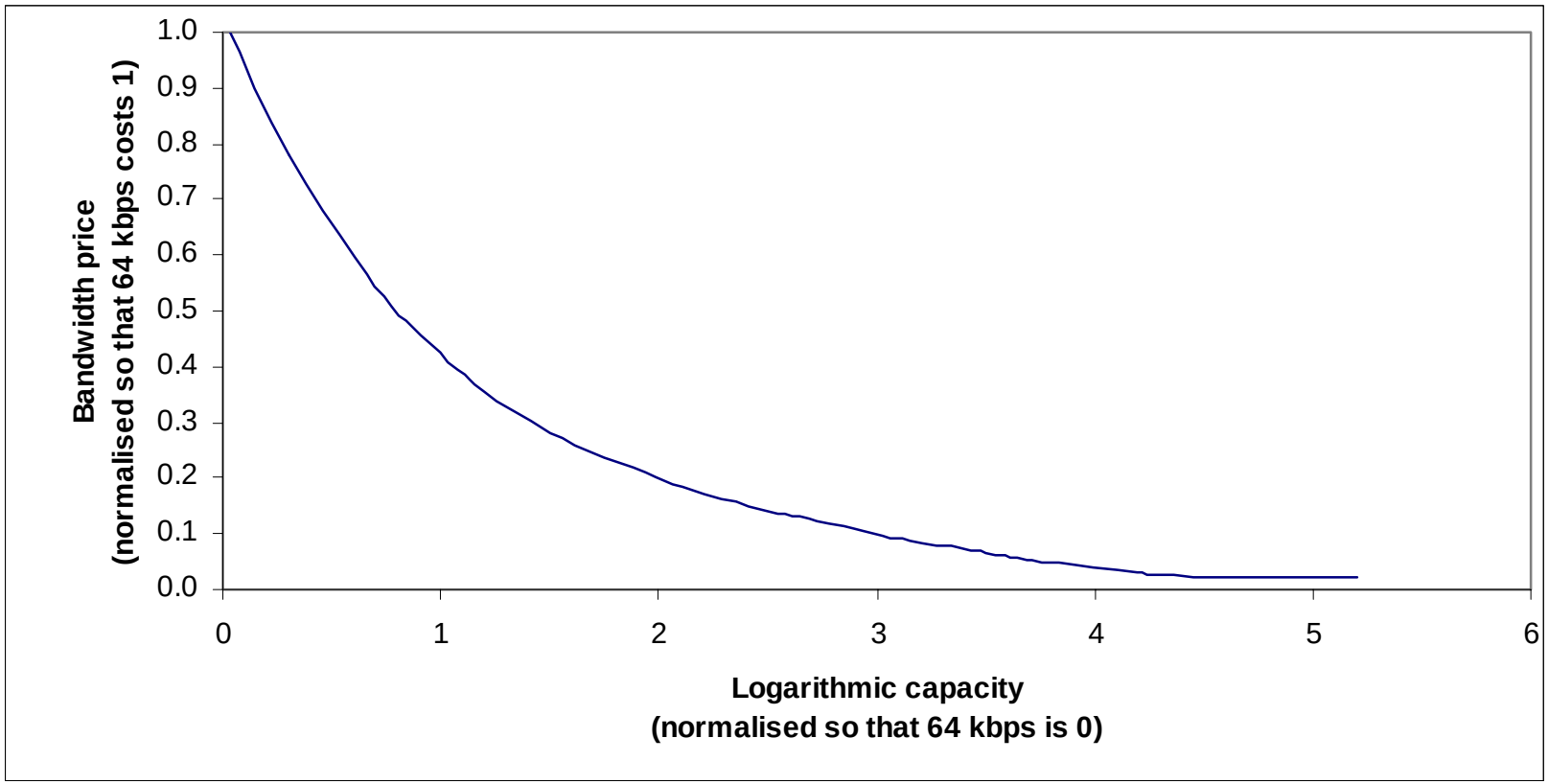
International component of ISP costs

	Total inbound international bandwidth	Average price (US $ 000 per Mbps/month)	International component as average % of ISP total costs	International kbps per account
Cambodia	2 Mbps	40	80%	0.6
India	1 Gbps	2.6	19%	0.2
Nepal	10 Mbps	10	24%	0.4
South Africa	260 Mbps	7	22%	0.4
Uganda	5 Mbps	20	30%	0.4
Zambia	5 Mbps	16	25%	0.5

Cable bandwidth scale economies



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Cambodia

- Internet is held back by a severe shortage of fixed lines
- There is very limited market entry, with integration between the incumbent and its ISP
- The international component is a significant cost to end users
  - Low total bandwidth
  - Prices much higher than would be expected

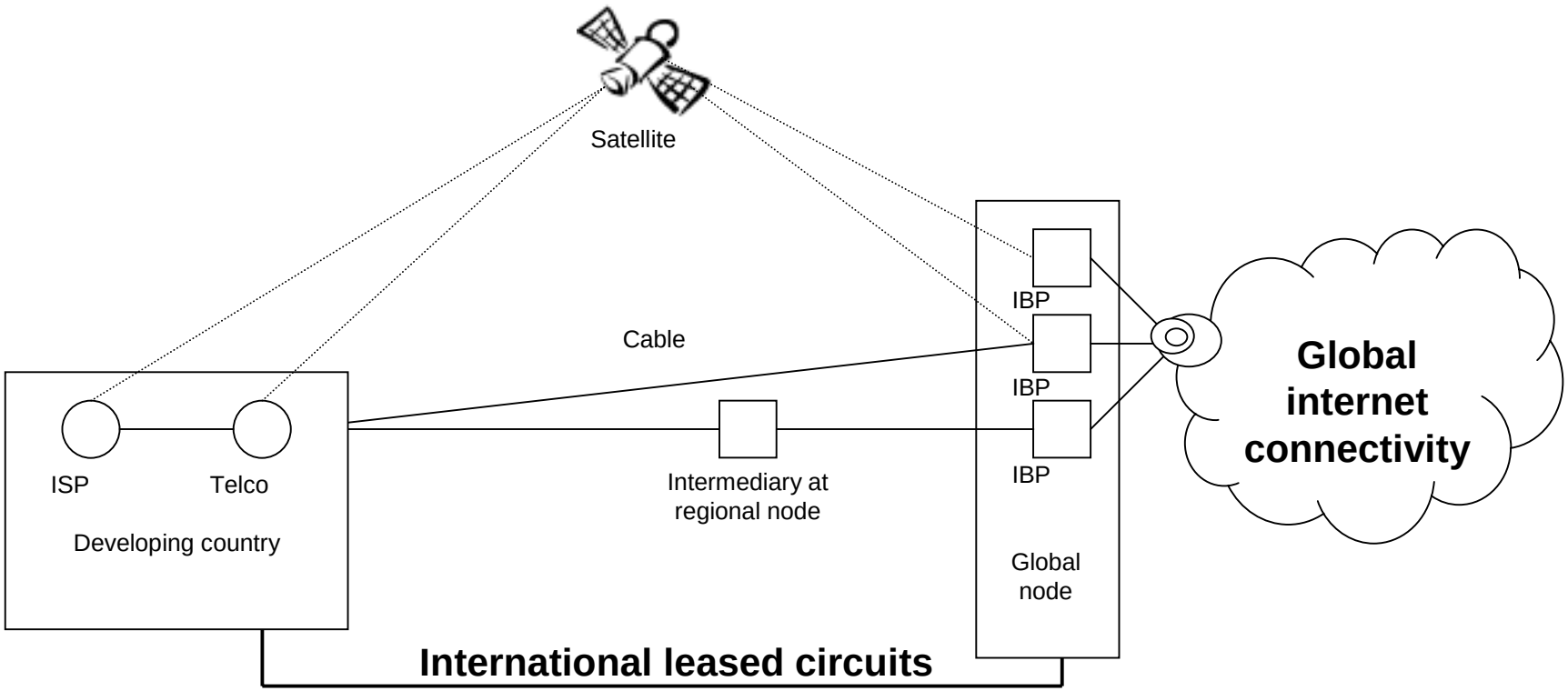
India

- There have been steep ISP price falls since 1995 (so now the total price is US $0.80 per hour)
- Healthy ISP competition has been achieved by early constraints on incumbent
- International internet gateway provision has been fully opened to competition recently
- Cable television is expected to expand internet access
- Most Indian websites are in the USA: more caches in India would save bandwidth and perhaps reduce delay

Nepal

- Internet is held back by few fixed lines, few multi-person enterprises and little relevant or local language web content
- ISP growth and relatively low prices have been helped by
  - VSAT liberalisation
  - Continuing low local charges from monopoly telco
- The international component is a significant cost to end users, but less than 50% of telco charges and other payments to the government

International internet connectivity: two parts



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International internet connectivity: two markets

- International leased circuits:
  - suppliers: telcos and, where allowed, satellite carriers
  - traditional monopoly
  - deliberate policy of high prices
  - time lag between market liberalisation and consequent price fall (especially if voice remains a monopoly)
- Global internet connectivity:
  - suppliers: internet backbone providers
  - several competing suppliers at the main global nodes
  - low barriers to switching between suppliers
  - low prices compared with international leased circuits
  - widespread bundling of connectivity with international leased circuits
  - confidential contracts (perhaps discriminatory, but no evidence of this)

Comment on APEC principles

- Sharing the costs of international leased circuits between a poor country and the USA based on the direction of traffic:
  - Would benefit poor countries little short-term, because most traffic is instigated by them (and flows towards them)
  - Has been pressed mainly by more developed countries (e.g. Singapore, Korea) that want to become regional hubs
  - Cannot be imposed by regulatory means
  - Poses significant measurement challenges
  - Will come anyway in amended form through commercial processes; but less of an issue as prices fall

Comment on ITU recommendation D.50

- “Administrations..[should].. **negotiate and agree to bilateral commercial arrangements** enabling direct international Internet connections that take into account the **possible need for compensation between them**
  - for the value of elements such as traffic flow, number of routes, geographical coverage and cost of international transmission…”
- This has no force, as it simply describes what is happening anyway.

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Policy options – developing countries

- Liberalise telecoms industry within developing countries, including internet telephony
- Separate ISP part of monopoly from telco part
- Require incumbent to provide flat-rate national numbers with revenue sharing for internet access
- Encourage better use of scarce international bandwidth (e.g. local internet exchanges and caches) – may be opposed by larger, established ISPs
- Open doors to lower-cost technology (especially wireless and terminal equipment)

Policy options – international bodies

- Launch an information service to help developing country ISPs get best buys, especially among satellite carriers (plus other support, e.g. training)
- Be alert to potential competition problems in internet backbone provision
- Consider requiring dominant backbone providers to interconnect on cost-based, non-discriminatory terms
- Consider developing EU and WTO avenues for redress
- Investigate the transition to IPv6, and better utilisation of IPv4, from the viewpoint of developing countries
- Note that charging for content could be the sting in the tail of commodity pricing for access