Harmonised spectrum for mobile: challenges for ASEAN and South Asia

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As smartphones and other devices drive up data traffic on wireless broadband networks, governments are placing greater emphasis on spectrum policy as an engine of wider economic development. In many ASEAN and South Asia countries, there is currently a 200 MHz shortfall in spectrum assigned for mobile services compared to countries in Europe and North America. This spectrum "divide" is likely to widen by 2020 and have significant consequences for broadband provision in urban and rural areas. To address this policy actions are required to facilitate the availability of more harmonised spectrum and ensure efficient assignment of spectrum to mobile operators.

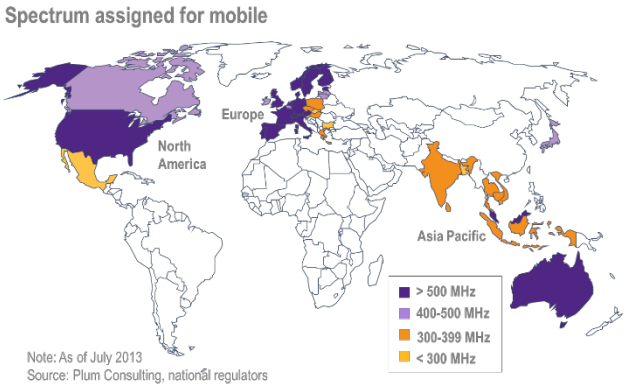
Promoting growth through spectrum policy

Governments around the world are seeking ways of developing their broadband infrastructure to enhance productivity in all sectors, stimulate job creation and promote social inclusion.

Until relatively recently, demand for mobile communications services was driven by voice calls, text messaging (on mobile networks) and, to a lesser extent, low speed internet access. However, the rapid adoption of smartphones and other mobile devices is changing this picture. For example, mobile data traffic in the Asia Pacific region overall is forecast to grow nine-fold between 2013 and 2017.[2]

Mobile services require access to spectrum to operate. As a result there is now a greater emphasis on spectrum policy as an engine of wider economic development. In Europe and the United States, governments and policymakers have set ambitious targets to make available more spectrum to support the rapid growth of wireless broadband.[3] [4]

In comparison, a number of ASEAN and South Asia countries appear to losing ground both in terms of assigned spectrum to mobile network operators and the identification and allocation of more spectrum for mobile services.



As of July 2013, many high income countries in Europe, North America, and the Asia Pacific region have already assigned some 500-600 MHz of spectrum to mobile services while in ASEAN and South Asia typically around 300-400 MHz has been assigned.

The opportunity for ASEAN and South Asia

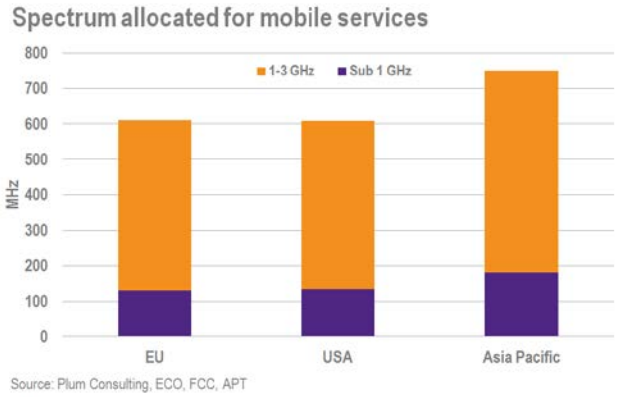
There is potentially more harmonised spectrum available to countries in the Asia Pacific region than in Europe and North America because of the availability of specific regional bands (700 MHz, 2.3 GHz) in addition to bands harmonised in other regions.

[1] This Insight is based on a report commissioned by Axiata Group Berhad "Harmonised spectrum for mobile services in ASEAN and South Asia: an international comparison", Plum, August 2013. http://www.plumconsulting.co.uk/pdfs/Plum_Aug2013_harmonised_spectrum_for_mobile_asean_south_asia.pdf

[2] Cisco Virtual Networking Index 2013

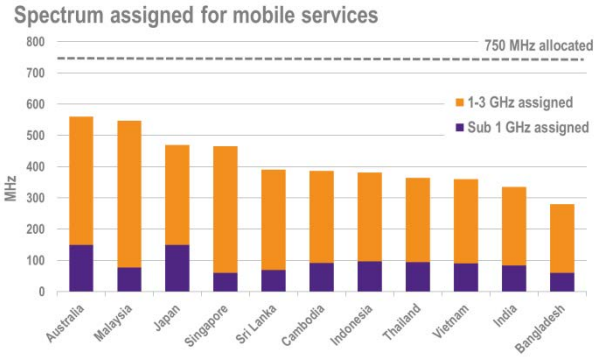
[3] Presidential Memorandum "Expanding America's leadership in wireless innovation", 14 June 2013. http://www.whitehouse.gov/the-press-office/2013/06/14/presidential-memorandum-expanding-americas-leadership-wireless-innovatio

[4] RSPG Opinion on "Strategic challenges facing Europe in addressing the growing spectrum demand for wireless broadband", 13 June 2013. http://rspg-spectrum.eu/rspg_opinions/index_en.htm



Source: Plum Consulting, ECO, FCC, APT

However, this regional competitive advantage has not been fully realised in many middle and low income ASEAN and South Asian countries. In terms of actual assignments to operators, there is a spectrum "divide" of around 200 MHz compared to higher income countries in the region.



Source: Plum Consulting, National regulators, Operators

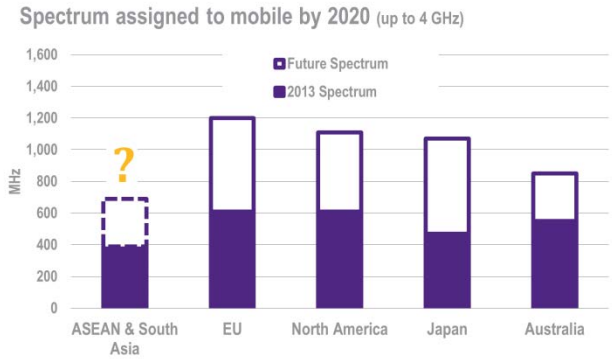
In addition, compared to Europe and North America, unlicensed spectrum for wireless LANs / Wi-Fi is also more limited in many ASEAN and South Asian countries.

Therefore it appears the opportunity to catch up with wealthier regions and countries by assigning further spectrum nationally to support mobile services has not been seized. This may be seen as particularly concerning given the low availability of fixed broadband in many middle and low income ASEAN and South Asian nations.

A growing "divide"?

The World Radio Conference 2012 acknowledged the need for more spectrum to be allocated for mobile services in order to accommodate the exponential growth in broadband traffic. Spectrum release targets for wireless broadband have been published in a number of countries, sometimes based on demand analyses and often in advance of detailed work being conducted on the potential availability of bands.

A review of published future spectrum plans suggests that this spectrum "divide" between is likely to increase substantially over the next seven years, possibly amounting to around 500 MHz by 2020.



Source: Plum Consulting, national regulators

The Asia Pacific Telecommunity (APT) 700 MHz band plan has been influential globally and a number of ASEAN and South Asia countries have announced their commitment to this plan.[5][6] However other harmonisation activities initiated by the APT have not yet resulted in widespread public plans for spectrum assignment at a regional or national level.

Meanwhile new regulatory approaches are being developed in Europe and the US to enable more efficient use of assigned spectrum such as implementation of technology neutral licences, spectrum trading, and spectrum sharing. There are also initiatives to increase the amount of spectrum allocated for Wi-Fi to support high bandwidth services including offload from mobile networks.

[5] IDA. Brunei Darussalam, Indonesia, Malaysia and Singapore pledge commitment to align with the APT 700 MHz band plan, press release, 18 June 2013. Available at https://www.ida.gov.sg/

[6] TRAI. Recommendations on IMT-Advanced mobile wireless broadband services, 19 March 2013. http://www.trai.gov.in/WriteReadData/Recommendation/Documents/Final%20-%20IMT%20Reco%2019.3.13.pdf

Countries such as Australia, Japan, the US and core countries of the EU are likely to continue to have considerable advantages over middle and low income ASEAN and South Asian nations due to:

- Greater availability of fixed broadband reflecting historic investment by operators;
- Plans to release greater amounts of harmonised mobile spectrum for broadband services; and
- Increases in wireless LAN / Wi-Fi spectrum which leverages these advantages for mobile broadband users.

There is a significant possibility that the middle and low income ASEAN and South Asian countries, which have low amounts of spectrum assigned by international standards and have yet to publish plans to address and improve the situation over the next 5-10 years, may be strategically disadvantaged as a result of lagging spectrum release policies.

What are the consequences?

It is widely recognised that broadband communications networks are required to support economic growth and competitiveness, particularly with the current growth of information-based economies.[7] The economic benefits of broadband availability include improved productivity, extended geographic reach of markets, lower barriers to entry, innovation and employment opportunities.

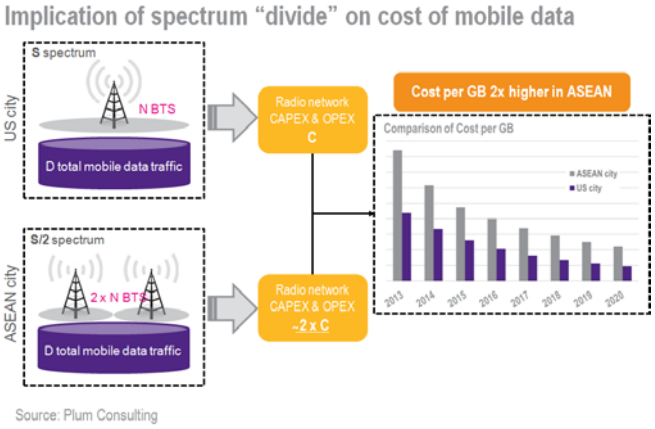
The size of an operator's spectrum portfolio has significant implications for broadband service delivery. For example, doubling the channel bandwidth for LTE corresponds to a two-fold increase in peak-data rates. This leads to a reduction in costs per gigabyte by more than 50%. With a lower amount of spectrum, the data throughput achievable will be correspondingly lower – either fewer subscribers are supported or service quality is reduced.

For ASEAN and South Asian countries, there are two potential impacts of a shortfall of spectrum on service provision:

1. Operators may not be able to meet expanding demand in urban areas

Without adequate spectrum, operators may not be able to expand their networks quickly enough to meet the ballooning demand in urban areas, particularly in cities and megacities.

Compared to cities in Europe or the US which have more assigned spectrum, the cost of accommodating growing traffic in densely populated cities in ASEAN and South Asia will be higher due to the need to invest in more network infrastructure (i.e. base stations).



Source: Plum Consulting

We estimate that the cost per unit mobile data in a typical city in ASEAN and South Asia will be roughly twice as high as in a typical US city through to 2020.[8] This could lead to higher prices, quality of service issues and limit the scope for expansion of services which depend on broadband technology

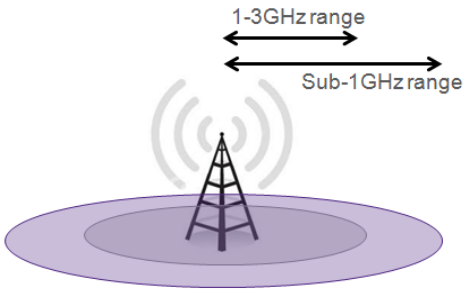
2. Lack of rural broadband coverage

The availability of sub-1 GHz spectrum is crucial to achieving wide, cost-effective rural coverage as lower frequencies experience lower attenuation and radio waves travel a longer distance compared to 1-3 GHz spectrum. All else constant, fewer base stations are required to cover an area using sub-1 GHz bands compared to 1-3 GHz bands.

[7] The Broadband Commission, "The State of Broadband in 2012: Achieving Digital Inclusion for All", September 2012. http://www.broadbandcommission.org/Documents/bb-annualreport2012.pdf

[8] For full description of the modelling methodology and assumptions see our full report.

Coverage advantage of sub-1 GHz spectrum



Source: Plum Consulting

The availability of sub 1-GHz spectrum will be crucial to provision of affordable mobile broadband services for the rural population in middle and low income ASEAN and South Asia countries, particularly as fixed broadband access is limited and costly.

Policy actions to address the spectrum "divide"

By assigning more spectrum for broadband, middle and low income ASEAN and South Asian countries have an opportunity to catch up with high income regions and countries in terms of the aggregate national capabilities of broadband service capacity and cost, and thereby enhance economic growth and social development.

Addressing the spectrum "divide" involves enhancing existing broadband policies and building national competence and regional co-operation. We suggest the following policy actions:

- Ensure a spectrum release and assignment policy is included in all national broadband plans.
- Assess requirements for additional spectrum for broadband services and identify further candidate bands for release. This involves undertaking a spectrum inventory and assessing demand and the costs and benefits of releasing spectrum.
- Remove regulatory restrictions on technology and use so that operators can refarm their spectrum holdings where this is beneficial.
- Allow operators to share spectrum to support wider bandwidth services where this does not have significant negative impacts on competition.
- Adopt a transparent, fair and timely approach to spectrum assignment so as to promote broadband development.
- Build further regulatory capacity to undertake these activities on a regional basis in the Asia Pacific e.g. managing interference, reallocation of existing uses to mobile services.

What we do

Plum is a global leader in the providing policy and regulatory advice on radio spectrum, telecommunications and online issues.

We provide consultancy services on all aspects of spectrum policy and regulation, including release of spectrum, spectrum pricing, award design, auction support, licensing and licence exemption, liberalisation and trading.

We work for regulators, governments and private clients in Europe, Asia-Pacific and the Middle East and Africa. Our clients include: Axiata, ACMA (Australia), Huawei, MDA (Singapore), NCC (Taiwan), PCCW, Qualcomm, Telstra and Vodafone.

Our spectrum team is led by Phillipa Marks, an international expert in spectrum management policy and economics. She is a member of the Ofcom Spectrum Advisory Board and the Irish Electronics Communications Expert Advisory Panel.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