



CASE STUDY:

DELIVERING AFFORDABLE INTERNET IN MYANMAR



An Internet cafe in Pyinmana, Mandalay Region, Myanmar. [Photo: Markus Kostner / World Bank](#) (CC BY-NC-ND 2.0)

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SUMMARY

This brief A4AI case study examines the current state of Internet affordability in Myanmar and assesses: the current state of ICT use; the development of the country's policy and regulatory environment; key challenges to improved access; and the opportunities and challenges to making services available and affordable to all who want to use them.



1. THE INITIAL IMPACT OF LIBERALISATION

Once the least connected nation in the world, Myanmar now has one of the world's fastest growing telecom markets. The change can largely be attributed to the liberalisation of the ICT sector, consequent competition between service providers, and falls in the cost of connecting to both voice and Internet services. In 2000, the cost of a SIM card in Myanmar (Burma) presented a significant barrier to usage – at US\$5000, few Burmese could afford to subscribe to mobile services. Despite the falling cost of a SIM card during the last decade, the price remained an insurmountable barrier for many until 2014. As recently as 2013, a potential mobile subscriber in Myanmar would need to pay US\$150 for a SIM card. The liberalisation of the ICT sector, and market entry of competing mobile operators Ooredoo (in August 2014) and Telenor (in October 2014) contributed to a dramatic drop in the price of a SIM card – today, a potential subscriber has to pay just US\$1.50 for a SIM, equivalent to just 1% of the 2013 cost.¹

The competition for Myanmar's subscribers is fierce. Within their first month of operation, both the private licensees, Ooredoo and Telenor, each acquired one million customers. By the end of 2014, the GSMA reported a figure of 11.7 million mobile connections² and year-on-year growth of 25%, confirming Myanmar's status as one of the fastest growing markets in the world.

If the plans and investment projections of Myanmar's operators are an indicator of the ICT sector's future success, then the future looks bright. Ooredoo, for example, has plans to connect 97% of Myanmar's population to basic telecommunications services and has pledged to invest US\$15 billion during its 15-year licence period. Telenor has outlined plans to invest over US\$1 billion in its first year of operation alone.³

With three-quarters of Myanmar's 51.4 million people not connected to any basic telecommunication services, the commercial opportunities for

¹ A4AI research based on mobile provider estimated figures.

² <https://gsmaintelligence.com/markets/2274/dashboard/> (last accessed 13 December 2014)

³ <http://www.wsj.com/articles/SB10001424052702303743604579352310422552966>



operators, as well as the socio-economic development opportunities for the Burmese population, are clear.⁴

⁴ Population and Housing Census of Myanmar, 2014,
http://unstats.un.org/unsd/demographic/sources/census/2010_phc/Myanmar/MMR-2014-08-28-provres.pdf



2. ICT USE IN MYANMAR

In 2013, the fixed-line telephone penetration rate stood at 1%, mobile penetration at 12.83%, and Internet users at 1.2%.⁵ While all of Myanmar's ICT connection benchmarks are relatively low, it is perhaps the low number of Internet users that is most concerning for those focused on leveraging ICTs for development. Evidence from other developing markets in Asia and farther afield indicates that mobile telephony can experience exponential growth given the right conditions. While many hope that a similar explosion in Internet and broadband usage can occur given the right environment, evidence suggests that, unlike the development of mobile voice telephony, governments and other stakeholders must do much to stimulate both the supply of and demand for Internet and broadband services. Challenges including limited user awareness, the high cost of smartphones and other devices, the limited availability of services, and the cost of services themselves, are all cited as barriers to increased access and all require intervention.

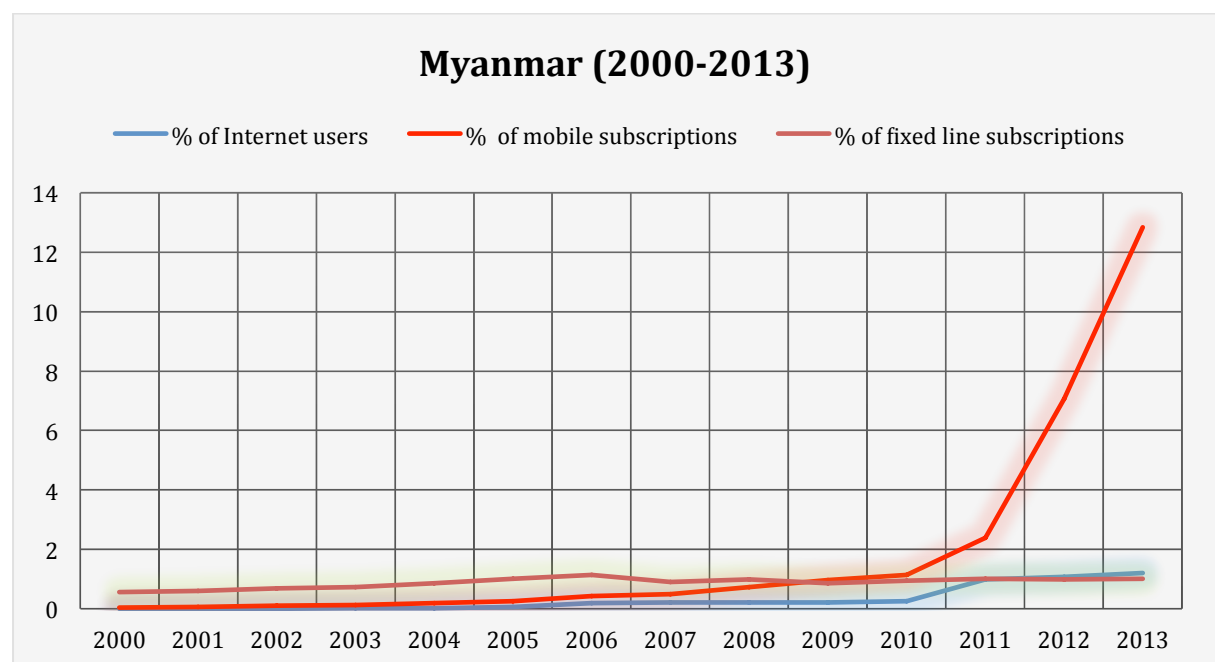


Figure 1: Myanmar ICT Use 2000-2013, ITU statistics databases

When compared to its regional neighbours, the need for Myanmar to do more to stimulate Internet and broadband access and demand becomes even

⁵ ITU Statistic Database (accessed January 28th 2015)



clearer. While just 1.2% of Myanmar's population was reported to be using the Internet in 2013 (ITU), the rates in neighbouring countries like India (15.1%) and Sri Lanka (21.9%) show other regional markets to be much more developed. The government of Myanmar is aware of the need to catch up as well as of the role that operators and other stakeholders must play in this process.

The Ministry of Communication and Information Technology (MCIT) of Myanmar has given mobile operators ambitious targets for the rollout of infrastructure and uptake of services. By 2017, Myanmar intends to have 22 mobile million subscribers, equating to 40% mobile penetration. A large proportion will be female, as operators must give access to 10 million women by 2015. The mobile network population coverage is expected to grow from the current level of 12% to 70% by 2017; by 2020, 95% of people must be covered.

Another objective is to increase the uptake of broadband Internet to at least 25% by 2018.⁶ The government of Myanmar has estimated that the rate of Internet usage in the country stands at 15%, representing a huge jump from the ITU's 2013 figure of 1.2%.⁷ While Internet usage is not broadband usage, this increase represents progress toward achieving the 2018 broadband goal. To achieve the desired growth in coverage and penetration levels, however, mobile operators need to follow through on the considerable investments in network expansion they have promised to make. The projected growth in the number of base stations gives some indication of the task ahead: the number of base station sites currently stands at 1,800; this number should grow to 7,600 sites by 2015, and to 17,300 sites by 2017.⁸

Despite recent rapid growth, it is clear that much hard work lies ahead. If Myanmar is to improve access, catch up with its regional neighbours, and derive the full benefits of ICTs, it must continue work to create an enabling environment that facilitates the widespread supply and demand of broadband services.

⁶ <http://www.gsma.com/mobilefordevelopment/wp-content/uploads/2014/06/GPM-Market-Analysis-Myanmar-June-2014.pdf> (accessed on 28 January 2015)

⁷ Figure provided to A4AI by the Ministry of Communication and Information Technology, March 2015.

⁸ http://www.gsma.com/mobilefordevelopment/wpcontent/uploads/2014/08/GPM_August2014_FINAL.pdf (accessed on 28 January 2015)



3. MYANMAR'S ENABLING ENVIRONMENT

A. LEGISLATIVE FOUNDATION FOR INDEPENDENT REGULATOR

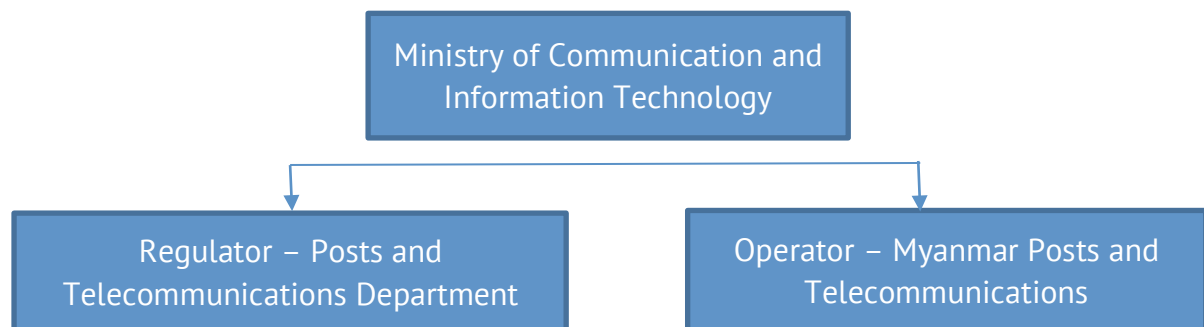
In 2012, telecom sector reform in Myanmar began with a year-long, nation-wide consultation that resulted in the enactment of the Telecommunications Law on October 8, 2013. The passing of the law meant the repeal of the 130-year-old Myanmar Telegraph Act 1885 and the 90-year-old Myanmar Wireless Telegraph Act of 1934. Among the many groundbreaking changes brought by the 2013 Act includes the legal provision for the creation of an independent ICT regulator, the Myanmar Communications Commission (MCC) by 2015.⁹ The importance of establishing the MCC as an objective and competitive “referee” of Myanmar’s ICT sector cannot be overstated. The existence of an independent regulator is a necessary condition for Myanmar to achieve its ICT penetration objectives and its socio-economic development goals.

For many years, Myanmar’s Ministry of Communications, Post and Telegraph (MCPT) acted as the telecom regulator at the same time that it owned the country’s primary telecommunications operator, the Myanmar Post and Telecommunications (MPT). With the legally mandated split between the regulator and the incumbent operator on the horizon, the government replaced the MCPT with the Ministry of Communication and Information Technology (MCIT), which has two departments: one is the Post and Telecommunications Department (PTD), which is trying to undertake the functions of an independent regulator; the other is the Myanmar Post and Telecommunications (MPT), which continues to operate Myanmar Post and Telecommunications (MPT). Despite its best efforts, it would be impossible for the PTD to be truly independent and this must be a concern for Myanmar’s ICT stakeholders.

⁹ Terms of Reference for an advisor to assist the establishment of Myanmar Communications Commission,
<http://www.mcit.gov.mm/sites/default/files/ToR%20establishment%20of%20Myanmar%20Communications%20Commission.pdf> (accessed on 18 October 2014)



The MCIT plans to pass all regulatory functions to the MCC in 2015. This is an ambitious time frame – setting up a new regulatory agency while the ICT sector is expanding rapidly is likely to be a challenge, and few within the government have experience in modern ICT regulation. The MCC staff will need to work quickly to learn and fulfil the role an independent regulator, while also implementing regulations related to the existing licensing framework, as well as new regulations that will need to be developed as the sector develops.



B. UNIVERSAL SERVICE FUND TO CORRECT MARKET FAILURES

Market failure can occur in the most mature markets, and Myanmar's 2013 Act has provisions that aim to correct such failures. The Act legally mandates the establishment and supervision of a Universal Service Fund (USF) that will support the provision of services in underserved areas of the country. At present, there is no information about how the USF will be financed; a fact that is concerning, especially when one considers how important the fund could be for expanding access. This fund may prove critical in the coming years, as 66% of Myanmar's population live in rural areas and operators are likely, in the early stages of their growth, to concentrate most resources on urban areas.¹⁰ While there are a number of successful examples of USFs, evidence suggests that, amongst other things, poor strategic planning, failure to assess gaps, and ineffective monitoring and evaluation can undermine their positive impact. The managers of Myanmar's fund must act upon the lessons learned by others in order to avoid these potential pitfalls and make effective use of the USF.

¹⁰ World Bank Rural Population Data accessed 16th December 2014
<http://data.worldbank.org/indicator/SP.RUR.TOTL.ZS>



C. DEVELOPING ESSENTIAL POLICIES AND REGULATIONS

A4AI's recent [Affordability Report](#) shows that comprehensive broadband strategies, which consider both the supply of and demand for broadband services, and which reflect a partnership-based approach to decision-making and implementation, are more likely to be successful in increasing universal access to and use of affordable Internet. Myanmar has yet to finalise a comprehensive broadband policy – a step that will be essential to increasing Internet and broadband access. However, thanks to assistance from the World Bank and others, the country has made progress with developing some of its “nuts and bolts regulatory” tools. PTD recently received support from the World Bank's Public Private Infrastructure Advisory Facility (PPIAF) to develop an operational sector roadmap, institute a regulation making process, and develop and promulgate key regulations on licensing, competition, access, spectrum and numbering that will enable MCIT to address key bottlenecks to fair competition and increased private participation in the sector.

Examples of these developing policy tools can be found in the area of spectrum. A set of spectrum rules¹¹ – identified and agreed upon in December 2013 – are designed to create a simple, liberalised, transparent, and non-discriminatory spectrum management framework that promotes the harmonisation and efficient use of spectrum, and encourages innovation. The rules address spectrum property rights, trading, license-exempt bands and spectrum sharing. Observers suggest that Myanmar's operators are generally satisfied with the spectrum rules put in place, and with the progress made on other regulations, such as licensing. This satisfaction is partly evidenced by the fact that, in response to liberalisation, the private sector has entered the market, invested in the sector, and promised further investment. As a result of this market entry and the rollout of services, the cost to connect in Myanmar has already decreased.

¹¹ <http://www.mcit.gov.mm/sites/default/files/3%20-%20MCIT%20-%20Final%20Spectrum%20Rules%20-%20122213%20CLEAN-1.pdf> (accessed on 17 February 2015)



4. IMPEDIMENTS TO BROADBAND ACCESS AND USAGE

Myanmar's forthcoming broadband plan and continued policy developments must be timely and effective enough to overcome a number existing and future impediments to Internet and broadband access. This section highlights some of those impediments and the opportunities they create.

A. ROLLOUT OF MOBILE INFRASTRUCTURE

One of the biggest challenges facing Myanmar concerns the rollout of mobile infrastructure. Although as per current forecast, some 5,800 towers will have been made operational early this year, serving the 51.4 million people who live in Myanmar will require around 20,000 towers to be built over the next few years.¹² The rollout of towers is slowed by a myriad of issues, including – but not limited to – inadequate regulation, bureaucracy, misinformation, poor logistical infrastructure, weather, topography, and land rights issues. Land rights remain a sensitive issue in Myanmar, partially as a result of widespread “land grabs” for business purposes over the last decade. Building permit processes are complicated, as there are various types of land use indicated by law. In addition, health and safety concerns, and misinformation concerning mobile telephony, have left many unwilling to have mobile infrastructure rolled out in their locality. The CEOs of the two private sector operators currently in Myanmar – Telenor and Ooredoo – have identified this as a significant challenge.¹³

With unclear and ambiguous land rights-related regulations, acquisition of land for towers requires clear direction from the government. The government is expected to provide a one-stop shop that tower companies, operators and landowners can use. A proposed “fast track” process, which would aid rollout, has not yet become a reality. The government must work to streamline the process of mobile infrastructure rollout, while also managing a complex array of legal, historical and cultural issues regarding land.

GSMA's research highlights the challenges and opportunities that exist in the infrastructure domain (see Figure 2 below).

¹² http://www.towerxchange.com/wp-content/uploads/2014/10/TowerXchange-Issue_10.pdf

¹³ <http://www.telenor.com/investors/presentations/2014/sustainability-in-myanmar/> (accessed on 13 December 2014)



| | Challenges | Opportunities/Solutions |
|------------------------------|---|---|
| Infrastructure | Under-developed transport infrastructure means challenging inland logistics | Secure local partner and use limited weight equipment loads including light weight towers |
| | Limited reach of grid power infrastructure and power supply shortages | Hybrid and renewable energy solutions with deep cycle batteries |
| | Lack of rural electrification | Community power model with Telecom Towers as anchor tenant |
| Rollout and Site acquisition | Limited telecoms construction experience of local contractors | Expat management trains local resources |
| | Difficulty co-ordinating rollout of shared infrastructure across four MNOs and four Tower Cos | Progressive MCIT strongly discourages tower builds at duplicate sites |
| | Monsoon rains | Robust fleet |
| | Site acquisition – lease ownership often unclear, lease holders reluctant to sign | Local and expat site hunters working very hard to overcome the challenges |
| | Ownership of land prohibited | Long term leases for foreign companies with an investment permit |
| | Unable to access religious and agricultural real estate | Access to the significant amount of land owned by government |
| Regulatory | Anticipated import complexities and taxes | Vendors report that taxes are reasonable, with efficient handling and warehousing through the |

Figure 2: GSMA Green Power for Mobile (June 2014)

B. POWER CHALLENGES

Like many countries, Myanmar is challenged by an inconsistent and limited supply of electricity. The national grid reaches only 25-30% of the population, and the per capita power consumption is the lowest in the region at 160KWh per year, reported in 2013. By comparison, per capita power consumption in India is 684KWh per year (2011) and 259 KWh per year in Bangladesh (2011). The rate of rural electrification in Myanmar was reported to be 25.54% in 2013, according to the Ministry of Electric Power. The situation improves in urban areas; Yangon, for example, enjoys an electrification rate of 67%, followed by Nay Pyi Taw at 54%, and Mandalay at 31%.



Frequent power outages and blackouts in those places that are connected to the grid compound the challenges facing telecommunications and tower companies, who are forced to rely upon diesel as a result. These capital and operational cost implications have resulted in major challenges for telecommunications companies that attempt to reach out to areas that are off-grid, and create a significant obstacle for those who wish to make services in Myanmar more affordable.

This challenge does offer Myanmar an opportunity to grow its market as a green telecom market, though the cost of building hybrid techniques that combine solar, battery and diesel generators is frequently seen to be too high. Establishing third party Energy Supply Companies (ESCOs) with adequate capital could result in saving energy-related operational costs on a year-on-year basis. This must be a key area of focus for government.

C. LICENCE COMPLIANCE MONITORING

If Myanmar is to achieve the ambitious targets set out by the MCIT, the regulatory agency (now the PTD, later to be the MCC) will need to monitor operators and other players in order to ensure they are complying with their respective licence conditions. There is best practice from around the region and further afield that Myanmar can utilise, and the government of Myanmar will expect its new operators, who have full knowledge of the challenges it faces, to support it by complying with licence conditions. Competition, the speed of growth, Myanmar's ambitious targets, and the infancy of the country's institutions mean that the government must make compliance monitoring a priority, without it placing too much of a burden on regulators who are likely to be stretched.

D. INFRASTRUCTURE SHARING

When one considers the quality of ICT infrastructure and the ambitious targets that have been set for the sector in Myanmar, there appears to be a clear case for infrastructure sharing. Only 20% of the current switches in operation are automated, and the poor quality of the existing copper network means that upgrades and enhancements are urgently needed. More than 15,000 towers will be needed to maximise the existing 15,000KM of fibre that



runs in limited locations throughout the country.¹⁴ The currently limited penetration of telecom infrastructure presents the opportunity to tailor infrastructure to best fit the conditions of various locales, especially in rural Myanmar.

The success of tower companies in Myanmar suggests that commercial infrastructure sharing between operators has been relatively successful with respect to mobile infrastructure. This is unsurprising when one considers the many challenges facing operators' infrastructure rollout and their effect on capital and operational expenditure and quality of service. Poor power supply, the limited availability of galvanised steel, and legal and administrative challenges in securing land rights for tower sites, are just some of the compelling reasons for sharing.

Limited terrestrial fibre in the country also presents a challenge to the development of the ICT sector in Myanmar. While there appears to be a market opportunity for shared wholesale fibre infrastructure in Myanmar, operators have been unable to agree on how this shared infrastructure might be developed and managed. The government of Myanmar will need to find ways to incentivise sharing among operators who have hitherto failed to find common ground. There appears to be an opportunity for the development of an open access framework that operators can buy into. In other jurisdictions, the development of such frameworks has helped to catalyse the development of infrastructure and the shared use of that infrastructure by competing operators, like those in Myanmar.

E. HUMAN AND INSTITUTIONAL CAPACITY

The government is facing an array of policy and regulatory reform demands, and meeting these demands will require significant human capacity, especially because it will dictate institutional capacity. Furthermore, the capacity to reform the government-owned incumbent, Myanmar Post and Telecommunications (MPT), and to truly separate the regulatory and operational functions of the government is key. Increased institutional capacity will also be important for developing a universal service strategy and

¹⁴ <http://www.tmtfinance.com/news/15000-telecom-towers-required-myanmar>



implementing pilot projects, with a view to scaling up access and the provision of e-Government services.

F. FURTHER REFORMS TO FACILITATE FOREIGN INVESTMENTS

Myanmar requires approximately US\$650 billion by 2030 to support its development objectives, which include quadrupling the size of its economy. Some US\$320 billion of the \$650 billion is required for infrastructure development, including roads, ICT and power. In order to induce and effectively utilise the investment, it is important for Myanmar to modernise its financial sector with structures for monetary policy transmission, including that of foreign exchange operations. Clear licensing regimes for foreign banks and a well-administered and broad-based tax system will help to encourage investment in health, education and infrastructure. Investment in the telecom sector, which was identified as one of the seven sectors with the greatest potential for a positive cost benefit, will help the nation achieve its goal of quadrupling its economy by 2030.¹⁵

G. AFFORDABILITY

At present, few people in Myanmar have subscriptions to fixed and/or mobile broadband services, mostly as a result of limited access. There are few fixed lines, though mobile operators are working to expand mobile infrastructure – Ooredoo is rolling out a wholly 3G network, and Telenor is considering 2G rollout, with options to upgrade to newer generation technologies. Yet even where access is available, affordability is likely to be a challenge. The ITU's 2014 MIS report does not rank Myanmar's fixed and mobile broadband pricing because such services were limited or non-existent when the data was collected in 2013. In March 2015, however, a 500MB entry-level mobile broadband package with Ooredoo cost just under US\$4. This suggests prices in Myanmar are lower than the UN target of 5% of GNI per capita, as it appears to be 4% of monthly per capita average national income in Myanmar. However, for the 26% of Myanmar's population that live on less than \$1 per day, this price is unaffordable, representing 13% of their monthly income. According to these estimates, Myanmar sits between its regional neighbours with respect to broadband costs – in Thailand, a prepaid 500MB

¹⁵ McKinsey & Company (2013), Myanmar's moment: unique opportunities, major challenges, p. 5



mobile broadband package costs 2.33% of GNI per capita, India 2.58%, Cambodia 3.47%, Nepal 7.92, and Bangladesh 9.82%.

In its new [Affordability Report](#), the Alliance for Affordable Internet (A4AI) has assessed the affordability environment in Myanmar. The report does not assess the cost of services as a percentage of national income like the ITU, focusing instead on policy and regulatory drivers of affordability. Using primary data and secondary data, A4AI developed an Affordability Index – a composite index, composed of two sub-indices that measure the impact of two drivers critical to affordability: infrastructure and access.

This Affordability Index scores each of the 51 countries surveyed in the report on a scale of 0 to 100. Higher scores indicate higher current penetration levels, combined with strong policy and regulatory conditions for advancing Internet affordability now and in the future. Myanmar is ranked 36 out of 51 countries in the Index and ranks poorly against its regional neighbours. Yet this ranking also indicates that Myanmar has scope to improve, and reflects the positive steps it has taken since liberalisation that have already enabled it to take huge strides in the right direction. Time will tell whether it will seize opportunities in order to catch up with its regional neighbours and the rest of the world.



| Rank | Country | Sub-index: Communication Infrastructure | Sub-index Access and affordability | Affordability Index: Overall Composite Score |
|-----------|-------------------|---|--|--|
| 1 | Costa Rica | 48.1 | 77.5 | 63.4 |
| 4 | Malaysia | 53.6 | 68.5 | 61.5 |
| 13 | Thailand | 44.3 | 54.9 | 49.8 |
| 22 | Viet Nam | 30.7 | 55.7 | 43.3 |
| 23 | China | 39.5 | 46.2 | 43.0 |
| 25 | Pakistan | 42.6 | 42.3 | 42.6 |
| 27 | Indonesia | 36.9 | 44.5 | 40.8 |
| 29 | Philippines | 36.1 | 43.1 | 39.7 |
| 30 | India | 40.8 | 37.4 | 39.1 |
| 33 | Bangladesh | 42.5 | 31.8 | 37.1 |
| 35 | Kazakhstan | 28.2 | 44.5 | 36.3 |
| 36 | Myanmar | 31.8 | 39.2 | 35.4 |
| 44 | Nepal | 23.0 | 27.1 | 24.7 |
| 51 | Yemen | 1.6 | 0.0 | 0.0 |

Figure 3: A4AI Affordability Index Rankings, Select Countries (May 2015)



5. QUESTIONS FOR MYANMAR

- Will Myanmar licence a third or fourth Mobile Network Operator (MNO) to induce more investment and increase market competition?
- How independent can the MCC be after transition?
- Will a streamlined one-stop shop that facilitates rollout of mobile infrastructure become a reality?
- How will Myanmar's Universal Services Fund be financed?
- Will the USF use lessons learned from other countries to deliver successful programmes?
- What can Myanmar do to increase the use of green infrastructure?
- Can Myanmar authorities do more to incentivise sharing of fixed infrastructure?
- Will Myanmar Post and Telecommunications (MPT) be attractive to private investors?
- Will the government of Myanmar develop an open access framework that will catalyse the development fibre infrastructure for the provision of wholesale capacity?
- If the private sector is not forthcoming, might the government of Myanmar use MPT to provide wholesale-shared infrastructure on an open access basis?