

# Regulation under constrained capacity: Lessons for Myanmar\*

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## Abstract

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Successful reform of telecom (or information and communication technology (ICT) infrastructure) sectors requires ex-ante, sector-specific regulation under present market and technological conditions. Theories and concepts relevant to regulatory agency design and the practice are not nation-specific. But what is appropriate for a particular country at a particular time depends on the fit between the conditions and the design, as pointed out by Levy and Spiller (1994). In addition, constraints are unique to specific times and places. It is for these reasons that this paper has Myanmar at this particular moment in its reforms as the problem domain.

Myanmar, having completed the “big bang,” initial reforms is in the process of establishing a regulatory agency to be known as the Myanmar Communication Commission (MCC). Due to years of enforced isolation from the world and neglect of education, Myanmar suffers from severe constraints in terms of skilled personnel. Having already achieved good results by learning from the experience with previous reforms, the government may benefit from learning from the experiences in the design of regulatory agencies and the conduct of ex-ante, sector-specific regulation. From desk research and questionnaires administered to informed respondents, this paper assembles relevant evidence from National Regulatory Agencies (NRAs) in member states of the Association of South East Asian Nations (ASEAN) of which Myanmar is a member. In addition, the paper identifies negative aspects of conventional solutions and suggests ways to address them.

The paper proposes solutions for the problems of finding qualified persons to serve on the decision-making collegial body and as the chief executive. On the former, a collegial decision-making body constituted by persons from within Myanmar who serve part-time, at least in the initial phase, is proposed. On the latter, the need for an expert with in-depth knowledge who can shape the culture of the inchoate organization is recognized. Given the paucity of persons with the necessary regulatory knowledge within Myanmar, there may be merit in creating a limited window/pathway for the employment of an expatriate Myanmarese or even a foreign national. In addition, the overall design of the reforms should factor in resource constraints by reducing discretion and setting default outcomes. The MCC should be required to publish regulatory manuals and work plans.

In terms of funding it is not advisable to rely on the central budget, because it can be detrimental to long-term stability of the NRA and because annual disbursements from general funds allows for the exertion of its ASEAN peers do, requires safeguards, such as the setting budgets and accountability. The yield from a regulatory fee may increase too quickly in a fast-growing industry. Review of budgets through periodic public hearing that reset the percentage is suggested.

Expertise that is sector specific is essential for NRA employees. What they require is knowledge that is different from the generalist knowledge characteristic of the “civil service.” While it is ideal to retain employees in the organization so that specialized knowledge can accumulate, the negative aspects of non-transferability, such as limited promotional prospects must be addressed. The ability to attract qualified personnel and hold them depends on compensation and working conditions. When designing compensation packages, it is necessary to think beyond just money, taking into account the intrinsic rewards of public service and the experience, public exposure and contacts that come from the roles. Outsourcing work to consultants is common in NRAs. This is to obtain expertise that is not available in house. It also helpful in dealing with the inevitable peaks and valleys of workload over time. The first rationale is especially relevant to NRAs in their early years and those lacking a pool of qualified and trainable persons to recruit from. Here, the emphasis necessarily shifts to the international, since the local labor market is where the problem lies. The paper discusses possible solutions to possible negative outcomes of outsourcing.

## Introduction

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Successful reform of telecom (or information and communication technology (ICT) infrastructure) sectors requires ex-ante, sector-specific regulation under present market and technological conditions. Theories and concepts relevant to regulatory agency design and the practice of ex-ante, sector-specific regulation are not nation-specific. But what is appropriate for a particular country at a particular time depends on the fit between the conditions and the design, as pointed out by Levy and Spiller (1994). In addition, constraints are unique to specific times and places. One cannot say much that is useful about capacity constraints devoid of context. It is for these reasons that this paper has Myanmar at this particular moment in its reforms as the problem domain.

Myanmar, described as the last or one-before-the-last green-field market,<sup>1</sup> is completing the “big bang,” initial phase wherein multiple operators were licensed. The government is in the process of establishing a regulatory agency to be known as the Myanmar Communication Commission (MCC).

The government and its advisors have already achieved good results, as described below, by learning from the experience with previous reforms. In the same manner, there is value in learning from the experience of others in the design of regulatory agencies and the conduct of ex-ante, sector-specific regulation. From desk research and questionnaires administered to informed respondents, this paper assembles relevant evidence from member nations of the Association of South East Asian Nations (ASEAN) of which Myanmar is a member.

Due to years of enforced isolation from the world and neglect of education, Myanmar suffers from severe constraints in terms of skilled personnel. Given the ability to generate funds from rapidly expanding ICT sectors, funding is not the main constraint. But the management of the funding could be.

Theories and concepts relevant to regulatory agency design and the practice of ex-ante, sector-specific regulation are not nation-specific. But what is appropriate for a particular country at a particular time depends on the fit between the conditions and the design, as pointed out by Levy and Spiller (1994). In addition, constraints are unique to specific times and places. One cannot say much that is useful about capacity constraints devoid of context. It is for these reasons that this paper has Myanmar at this particular moment in its reforms as the problem domain. It is possible, of course, to abstract up from the conclusions reached for Myanmar to develop broadly generalizable insights. But they would have to be recontextualized to extract useful insights for similar problems in another country.

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<sup>1</sup> Cuba is perhaps the last one.

## Literature review

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As a result of the development of the regulatory state (Majone, 1994), regulator watching has become a major preoccupation of academics, business analysts and financial journalists since the late twentieth century. The Fourth Protocol of the General Agreement on Trade in Services (GATS) which deals with telecommunications codified expert consensus on the need for an independent regulatory body that is separate from and not accountable to any provider of telecommunications service.

How a National Regulatory Agency (NRA) is funded is a key determinant of its independence and operational capacity. Funding sources are often varied and may include funding from the consolidated revenue fund of government, cost recovery fees from regulated entities, spectrum charges and earnings, monies from penalties and fines and interest earned on investments and trust funds (OECD, 2014). If the regulatory body depends on an appropriation from the government's budget, it is possible that a government may use this discretionary power to control a regulator (Okomoto, 2006). Eberhard (2007) argues that high level government decisions are often required to disburse funds, despite a shift away from funding from consolidated revenue.

The need for competent institutional capacity has been stressed by many (Berg, Memon, & Skelton, 2000; Brown, Stern, Tenenbaum, & Gencer, 2006; Samarajiva, 2000). The successful management of a regulator and exercise of its functions will be affected by the administrative structure of the regulator, such as its staffing process and ethical conduct of its staff (Telecommunications Management Group Inc., n.d.)

Myanmar's draft Telecommunications Masterplan speaks of the need to develop a team of economists and market analysts, regulatory lawyers, engineers, a procurement specialist, accountants and IT professionals and administrators to put together the wide range of skills required to carry out its duties. However, as discussed by Levy & Spiller (1994: 208), a nation's institutional endowment imposes constraints on the design of regulatory incentives:

Administrative capabilities-the ability of the nation's professionals (e.g., academics, lawyers, bureaucrats) to handle complex regulatory concepts and processes in a relatively efficacious manner, without triggering excessive disputes and litigation-are of particular relevance. These capabilities will determine the potential for the successful implementation of complex regulatory designs.

Berg, Memon, & Skelton (2000) indicate that compensation policy needs to be flexible enough to recruit able staff and retain the expertise that is developed. They go on to say that it is essential that the incomes of key staff be comparable to those employed in the private sector, especially the companies they regulate. On the other hand, it is noted that it is not uncommon for regulators, particularly in leadership positions, to be composed of individuals who are less concerned about compensation than about some combination of public service along with the experience, public exposure and contacts that come from holding a regulatory leadership position (Telecommunications Management Group Inc., n.d.).

According to a global survey of regulators carried out by the World Bank, the most frequently reported constraint was the lack of specialized skills in utility regulation with 30 percent of respondents citing insufficient training as a significant constraint. Sixty one percent stated that the training that was received lacked continuity and was poorly targeted. The survey concludes that "quality human resources are scarcer than money" and quotes regulators as saying "we lack good people" (Tremolet & Shah, 2005).

Hiring external resource personnel is a possible solution to the problem of limited human resources and regulatory capabilities (Smith & Wellenius, 1999; Tremolet, Shukla, & Venton, 2004; Brown, Stern,

Tenenbaum, & Gencer, 2006; Eberhard, 2007). In addition to hiring outside experts, some regulators are empowered to delegate their powers not only to particular divisions within the authority, but also to outside experts. In Singapore, the Infocomm Development Authority (IDA) is empowered to create committees for purposes which the IDA feels would be better managed or regulated by a committee (Telecommunications Management Group Inc., n.d.).

According to a World Bank survey on contracting-out practices<sup>2</sup> 75 percent of the regulators interviewed stated that they engaged external consultants. This number is likely to have increased since. A key constraint faced when outsourcing was budgetary limits with 70 percent citing it as a challenge; 47 of the sample cited a small supply market as a challenge (Tremolet, 2007). Although the problem of a small supply market may be addressed by hiring international consultants, budgetary constraints are likely to hinder this process.

Capacity constraints may also be alleviated by initially limiting regulatory discretion. The greater the discretion enjoyed by the regulator, the more acute is the need for trained, experienced, and competent staff (Tremolet & Shah, 2005; Levy & Spiller, 1994)

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<sup>2</sup> 61 regulators were interviewed in the World Bank contracting out survey carried out in 2004.

## The problem domain

Myanmar is a member of ASEAN, comprising ten member states with a combined land area of 4.46 million sq. km and is home to over 600 million individuals. ASEAN's political systems span a wide spectrum, from competitive democracies to one-party states and monarchies (Mahbubani & Severino, 2014). There is wide variation in ICT relevant metrics, as shown in Table 1.

**Table 1: Comparative data from ASEAN countries**

Country	Population (millions)	GDP at market prices (current US\$) (millions, 2014) <sup>3</sup>	GDP per capita (PPP, constant international \$) (2014) <sup>4</sup>	Gross enrolment ratio, tertiary education (%) <sup>5</sup>	HDI rank (2014) <sup>6</sup>
Brunei Darussalam	0.42 <sup>7</sup> (2014)	17,105	67,912	32 (2014)	31
Cambodia	14.68 <sup>8</sup> (2013)	16,778	3,113	16 (2011)	143
Indonesia	205.1 <sup>9</sup> (2010)	888,538	10,033	31 (2013)	110
Lao PDR	6.69 <sup>10</sup> (2014)	11,997	5,076	17 (2014)	141
Malaysia	28.3 <sup>11</sup> (2010)	338,104	24,460	39 (2013)	62
Myanmar	51.49 <sup>12</sup> (2014)	64,330	N/A	14 (2012)	148
Philippines	92.34 <sup>13</sup> (2010)	284,777	6,649	36 (2014)	115
Singapore	5.54 <sup>14</sup> (2015)	307,860	78,958	30 <sup>15</sup> (2013)	11
Thailand	65.98 <sup>16</sup> (2010)	444,824	15,012	51 (2013)	93
Viet Nam	90.73 <sup>17</sup> (2014)	186,204	5,370	30 (2014)	116

Sources: World Bank, NSOs, UNDP

<sup>3</sup> <http://data.worldbank.org/indicator/NY.GDP.MKTP.CD/countries>

<sup>4</sup> <http://data.worldbank.org/indicator/NY.GDP.PCAP.PP.KD>

<sup>5</sup> <http://data.worldbank.org/indicator/SE.TER.ENRR>

<sup>6</sup> HDR 2015: <http://hdr.undp.org/sites/default/files/ranking.pdf>

<sup>7</sup> <http://data.worldbank.org/indicator/SP.POP.TOTL>

<sup>8</sup> [http://countryoffice.unfpa.org/cambodia/drive/CIPS\\_Report\\_English\\_Final.pdf](http://countryoffice.unfpa.org/cambodia/drive/CIPS_Report_English_Final.pdf)

<sup>9</sup> [http://unstats.un.org/unsd/censuskb20/Attachments/2009IDN\\_ISI-GUIDfba441dd463e4ca5907f1a1ae508f3ff.pdf](http://unstats.un.org/unsd/censuskb20/Attachments/2009IDN_ISI-GUIDfba441dd463e4ca5907f1a1ae508f3ff.pdf)

<sup>10</sup> <http://data.worldbank.org/indicator/SP.POP.TOTL>

<sup>11</sup>

<sup>11</sup> [https://www.statistics.gov.my/index.php?r=column/cthemByCat&cat=117&bul\\_id=MDMxdHZjWTK1SjFzTzNkRXYzcVZjdz09&menu\\_id=L0pheU43NWJwRWVVSZkIWdzQ4TlhUUT09](https://www.statistics.gov.my/index.php?r=column/cthemByCat&cat=117&bul_id=MDMxdHZjWTK1SjFzTzNkRXYzcVZjdz09&menu_id=L0pheU43NWJwRWVVSZkIWdzQ4TlhUUT09)

<sup>12</sup> <https://drive.google.com/file/d/0B067GBtstE5TeUIIvJRjSjVzWlk/view>

<sup>13</sup> <http://psa.gov.ph/content/2010-census-population-and-housing-reveals-philippine-population-9234-million>

<sup>14</sup> [http://www.singstat.gov.sg/docs/default-source/default-document-library/publications/publications\\_and\\_papers/population\\_and\\_population\\_structure/population2015.pdf](http://www.singstat.gov.sg/docs/default-source/default-document-library/publications/publications_and_papers/population_and_population_structure/population2015.pdf)

<sup>15</sup> <https://www.timeshighereducation.com/features/no-sleep-for-singapores-universities/2009064.article>

<sup>16</sup> <http://popcensus.nso.go.th/file/popcensus-10-01-56-E.pdf>

<sup>17</sup> <http://data.worldbank.org/indicator/SP.POP.TOTL>

Myanmar, a member that is still categorized as one of the 48 Less Developed Countries (LDCs),<sup>18</sup> has experienced tremendous economic and political change within a short period of time. Among the economic changes, the reforms in ICT infrastructure has been the most noteworthy.

In 2011, Myanmar occupied the one-above-the-last place in the mobile SIMs/100 ranking according to the International Telecommunication Union (ITU). Below it was the South Atlantic territory of St Helena which had no mobile service (Fife, 2014).

In 2012, even before the market opening, the ITU reported rapid growth, but it was still inadequate, as shown in Figure 1 where Myanmar's mobile connectivity is compared with those of its neighbors.

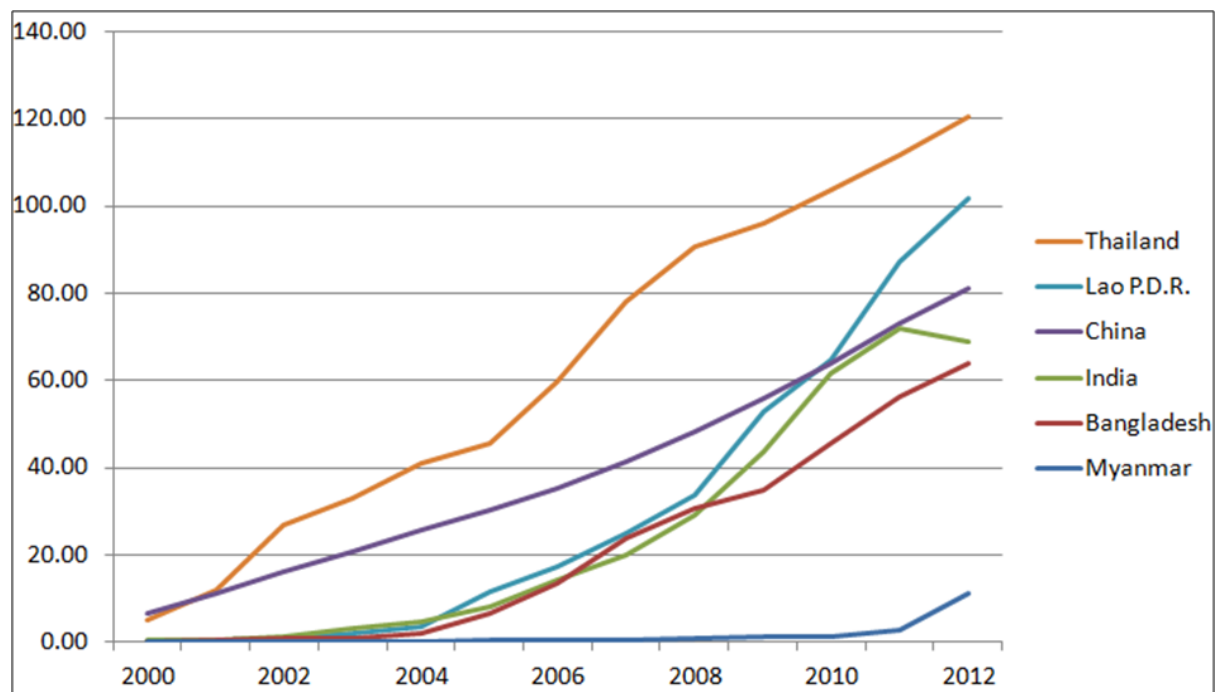


Figure 1: Mobile SIMs/100 in Myanmar & its neighbors, 2000-12

Source: International Telecommunications Union, ITU Eye

In 2013, the government of the Republic of the Union of Myanmar commenced reforms with the headline target of “from 10 (SIMS per 100 people) to 80 in five years.” There were other targets such as introducing mobile money, but the focus at that point was on mobile connectivity. The Ministry of Communication and Information Technology (MCIT) worked on parallel tracks to develop new legislation and to license two new foreign-owned operators.

The law was enacted in October 2013 (2013 Union Parliament Law) . The original draft was considerably modified, for example by stripping out exclusive rights for the incumbent to carry international traffic, removing a licensing category for content applications and inserting a provision that the regulatory agency would be created within two years. The law set out broad principles with details to be included in subsidiary legislation. The draft rules were published for consultation in November 2013, modified on the basis of comments received and promulgated.

<sup>18</sup> [http://www.un.org/en/development/desa/policy/cdp/ldc/ldc\\_list.pdf](http://www.un.org/en/development/desa/policy/cdp/ldc/ldc_list.pdf)

Section 86 of the Law contains the sum total of provisions related to the regulatory agency: “In order to be able to implement this law on telecommunications services, the Union Government shall establish an independent Myanmar Telecommunications Commission, led by an appropriate individual at the Union level, within two years of the effective date of this law.”

In parallel with the legislative process, the government selected Ooredoo (owned by the Government of Qatar) and Telenor (majority-owned by the Government of Norway) from among 91 companies that expressed interest. The licenses were issued in early January 2014, though the actual texts are yet to be made public. The commitments made by the winning companies (Table 2) indicate the priorities of the government.

**Table 2: Commitments made by the successful bidders for Myanmar mobile licenses**

<b>Ooredoo</b>	<b>Telenor</b>
84% voice & data coverage by five years	83% voice coverage & 78% data coverage by five years
240,000 SIM sales points	70,000 SIM sales points
720,000 sales points for prepaid top-ups	95,000 sales points for prepaid top-ups
Peak prepaid voice < 35 MMK/mt (on-net) & 45 MMK (off-net)	Peak prepaid voice < 25 MMK/mt
SIM < 1500 MMK	SIM < 1500 MMK
10,000 telecenters + schools & hospitals	200 community centers with Internet
99.9% employees Myanmarese by five years	Free central government SMS channel

Source: MCIT

Note: At the time of writing, MMK 1 = USD 0.00085

The government also issued a mobile license in 2015 to MPT, the incumbent, which had entered into a partnership with KDDI and Sumitomo of Japan in May 2014. The license is the same as those issued to Ooredoo and Telenor.

According to the data reported by the ITU in 2015, Myanmar was more than half way to its goal of 80 mobile SIMs per 100 people by the end of 2014 (Figure 2; connectivity at the commencement of reforms, the target to be achieved and the gap are marked). It was at that point still behind its neighbors on this particular indicator, but has made rapid progress, perhaps the fastest in the world. Unofficial reports indicate that the 80 active SIMs per 100 people target has been achieved in 2016 (Trautwein, 2016).



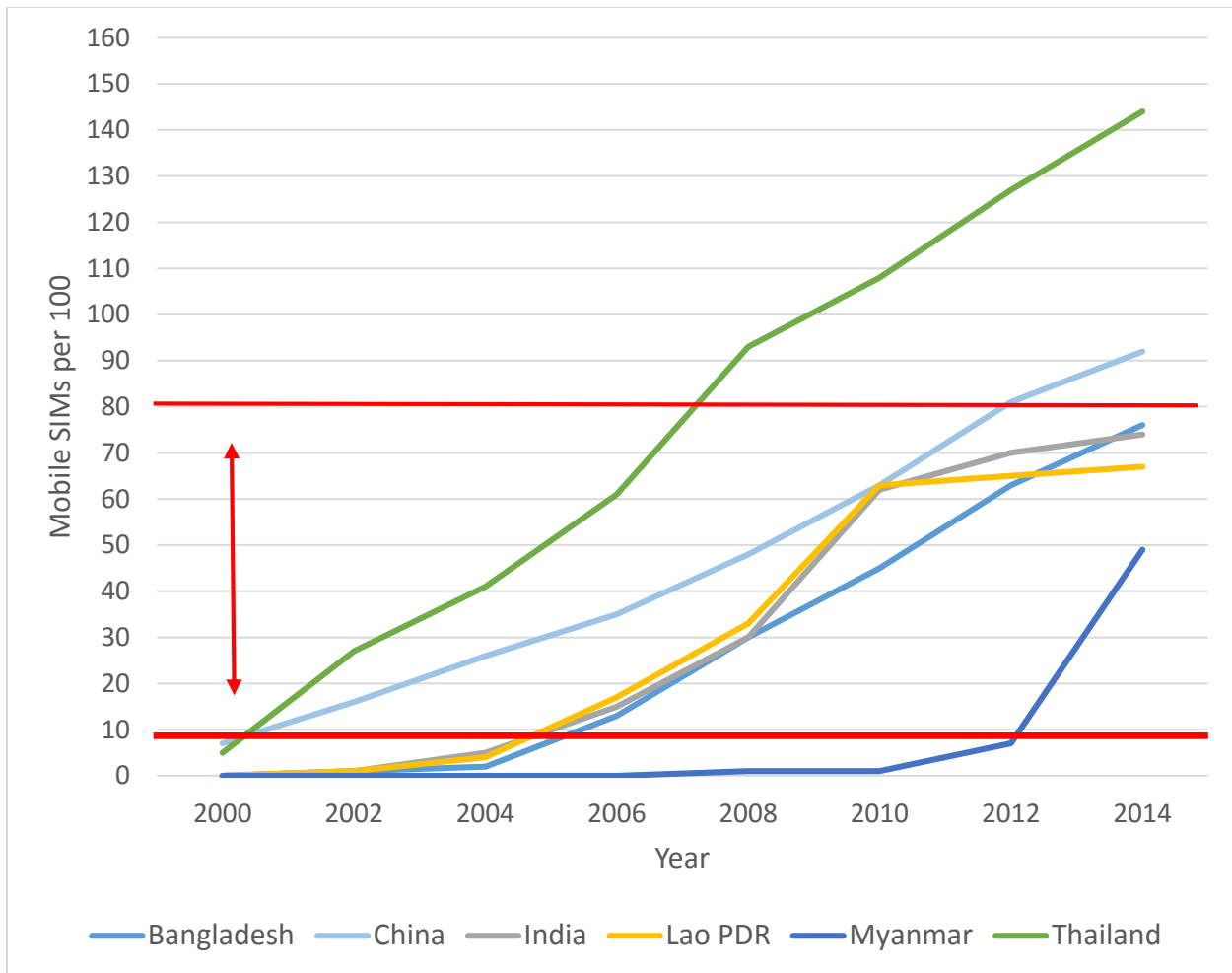


Figure 2: Mobile SIMs/100 in Myanmar & its neighbors, 2000-14

Source: International Telecommunications Union, ITU Eye

The ITU publishes a composite index known as the ICT Development Index (IDI) annually. In the version published in late 2015, Myanmar had advanced eight positions in the ranking, and had overtaken both Pakistan and Bangladesh (International Telecommunications Union, 2015). Significant progress had been made in mobile connections, but the principal drivers of better performance reflected in the composite index were Internet related. Myanmar is now ranked 142<sup>nd</sup> among the countries assessed by the IDI.

The number of mobile SIMs per 100 people increasing from one in 2010 to 49.5 by end 2014 contributed to a six-place advance in the Access Sub-index of the IDI. But most significant is that Myanmar overtook Pakistan and Bangladesh primarily on the strength of Internet use, as evidenced by the massive increase in active mobile broadband subscriptions and a close to fourfold increase in bandwidth per Internet user. Active mobile broadband subscriptions per 100 inhabitants increased from 0 to 14.9 within four years. As a result, Myanmar's Use Sub-index value was almost three times that of Pakistan and more

than double that of Bangladesh. These countries had started their sector reforms almost two decades earlier.

The designers of the 2012-14 sector reform, the three suppliers of mobile voice and broadband services, and the people of Myanmar have, with the help of some external factors, achieved an increase in Internet use at an unprecedented pace. The take-up reflected in the ITU data occurred over a short 12-14 month period, starting from August 2014 when competitive supply commenced.

The reformers in the MCIT and their advisors steered a path between continued dependence on the government-owned former monopoly supplier and over-reliance on new entrants supported by foreign direct investment. No exclusivities were granted, but the bidders for the new licenses were given a clear picture of what they could expect in terms of competition. Demands for compulsory partnership with domestic firms were resisted, thereby giving the two foreign-owned new entrants the flexibility to act as they saw fit and to energize the market. These demands were instead channeled into the fourth license that is about to be issued.

The former monopolist, MPT, was not left to respond to the well-resourced new entrants on its own. Its management was handed over to international partners KDDI and Sumitomo with experience in competitive markets and access to capital. The first nationwide representative sample survey of tele-use in Myanmar conducted by LIRNEasia in February-March 2015 showed that still the largest number of connections were being supplied by the rejuvenated former monopolist (Galpaya, Zainudeen, & Suthaharan, 2015). This had not changed by 2016.

The suppliers were aggressive in their rollout and marketing, perhaps even at times connecting more customers than their inchoate networks could handle. But they were also flexible. They deviated from their original plans, for example when it was seen that Myanmar customers were more interested in data than originally thought (Trautwein, 2016).

And the consumers played their part too. The LIRNEasia survey showed that by February-March 2015, 63 percent of all phone owners had purchased smartphones, with three percent owning both smartphones and feature phones. (Galpaya, Zainudeen, & Suthaharan, 2015) Smartphone penetration is in the 60-90 percent range, according to some reports. (Nyunt, 2016)

The availability of relatively low-cost smartphones at the time of rollout was a critical external factor. While cheap smartphones were found among those surveyed, the mean price that had been paid in early 2015 was USD 87. Despite continuing problems with the standardization of the Myanmar font, the smartphones made it possible for the rapid take-up of data services. At the end of 2015, Telenor Myanmar reported that 52 percent of its customers were data users. (Hammond, 2016)

There may be concern that the full potential of the Internet cannot be realized through the predominant smartphone interface. In cooperation with local civil-society organizations, operators are rolling out large numbers of common-access centers. Digital literacy is being promoted. Apps and content that would be of interest to Myanmar customers are being developed at a pace.

A fourth license is to be issued to a consortium that includes 11 local companies, a subsidiary of the military-run Myanmar Economic Corporation and VietTel, the transnational mobile operator owned by Vietnam's Ministry of Defense.

## Legislative, policy and regulatory challenges

The Law that was passed in 2013 was a major improvement on the drafts that were circulated in 2012. Heroic efforts have been made to improve it through the subsidiary legislation. But, as analyzed elsewhere (Samarajiva, 2016), it has flaws and lacunae. The creation of the promised independent regulatory agency requires new legislation, or at least a substantial amendment.

The Law, as written, gives a large role to the Ministry.<sup>19</sup> For the Ministry to play its role of setting the broad policy frameworks that take into account the larger priorities of the government (even if regulatory functions are handed over to the new regulatory agency through an Amendment or a new Law), it must have the necessary expertise. In the past, the Ministry has drawn expertise from the incumbent MPT. It would not be proper, in the present competitive environment, to rely on experts drawn from only one licensee. An alternative is needed. Generalist administrators, unless of very high quality, cannot perform telecommunication policy functions effectively.

The Post and Telecommunications Department (PTD), the existing regulator, was upgraded to a level two ministerial department in 1999 with 16 officers and a staff numbering 61 (Gunaratne & Myat, 2014). Myanmar's draft Telecommunications Masterplan states the government's intention to transform the PTD into the Myanmar Communications Commission (MCC),<sup>20</sup> a separate, independent government commission whose core functions include licensing, spectrum management, interconnection & infrastructure sharing. Significant progress has been made in building capacity within the PTD, but much remains to be done. A sector-specific, ex-ante national regulatory agency exercises an enormous amount of power over the sector. If it does not work properly, it is like having a traffic-lights system that works erratically. Therefore, the greatest care is needed in the design of the proposed MCC to ensure that it follows the principles of natural justice (UK term) or due process (US term) resulting in procedural legitimacy (Samarajiva, 2001). Its decision makers should be independent of the entities it regulates<sup>21</sup> and insulated from day-to-day interference by the political authorities.

The facts that the government will continue to own MPT, still the largest operator and one which enjoys legacy advantages, and the Tatamdaw (Myanmar Armed Forces) will have a stake in the fourth operator make the independence of the MCC very important. Competitors do not feel they are treated less favorably than the either government-affiliated entity. Infrastructure requires long-term investment, which depends on stability of policy environment and confidence in the regulatory agency.

In most developed economies, competition authorities exist. It will be some time before a competition authority is established in Myanmar. There may be merit in including competition powers in the legislation creating the MCC. Given the necessity of coordinating actions with other regulatory bodies, existing or which will be created in the future, provision would have to be made for mechanisms to ensure consistency and to avoid forum shopping.

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<sup>19</sup> The recently elected National League for Democracy government combined the MCIT with the former Ministry of Transport in the new Ministry of Transport and Communications.

<sup>20</sup> Note the change in name from Telecommunications Commission in the Law to Communication Commission in Plan.

<sup>21</sup> An internationally accepted principle included in the Regulatory Reference Paper that around 90 countries have committed to, which forms part of the Fourth Protocol to the General Agreement on Trade in Services.

[https://www.wto.org/english/tratop\\_e/serv\\_e/telecom\\_e/telecom\\_e.htm](https://www.wto.org/english/tratop_e/serv_e/telecom_e/telecom_e.htm)

## Learnings from ASEAN

Despite their heterogeneity, the experiences of ASEAN countries were examined because Myanmar has been a member in the regional organization since 1997. ASEAN is not a perfect comparator. Member states include relatively developed countries such as Singapore and Malaysia, which can serve as aspirational benchmarks. Countries such as Indonesia and Thailand are of value in seeing how the problems were addressed in similar conditions of constrained resources. Brunei Darussalam and Lao PDR are not comparable. Insights from Vietnam and the Philippines would have been valuable but it was not possible to get responses from them.

Desk research and questionnaires were used to gather data on currently implemented solutions, with emphasis on the financial and administrative aspects as discussed in (OECD, 2014).

### Funding

Funding is a central issue both in terms of independence and capacity. The sources of funding for National Regulatory Agencies (NRAs) in four important ASEAN countries are shown in Table 3.

**Table 3: Sources of funding for the NRAs**

Country	Indonesia	Malaysia	Singapore	Thailand
Central budget	✓			
License fees		✓	✓	✓
Spectrum/frequency fees		✓	✓	
Frequency auctions				✓
Service contracts/service fees			✓	
Interest/dividend income		✓	✓	✓
Development project income			✓	
Fines				✓

Source: Authors

Indonesia's telecom regulator, Badan Regulasi Telekomunikasi Indonesia (BRTI), is funded wholly through the central budget. The BRTI collects revenues through fees and fines which are remitted to the Government. Every year the BRTI submits an operational budget to the Ministry of Finance, which has to be approved by Parliament (see annex 2.1 on revenue collection by the BRTI).

NRAs in Malaysia, Singapore and Thailand, on the other hand, fund their activities primarily through the collection of fees, and, to a lesser extent, interest from investments (see annex 2.2 on the revenue collection by the Malaysian regulator, Malaysia Communications and Multimedia Commission (MCMC)). At present, Thailand's National Broadcasting and Telecommunications Commission (NBTC) transfers all of the up-front payments from telecom spectrum auctions to the state treasury and those from broadcasting spectrum auctions to the NBTC's own broadcasting and telecom research and development (R&D) fund. The R&D fund

is to be replaced by a Digital Economy Fund. It has been reported that 60 percent of the up-front fees from telecom and broadcasting licenses will be transferred to the state and the rest to the upcoming Digital Economy Fund (Mongkolporn, 2015).

It is not advisable to emulate Indonesia, because it can be detrimental to long-term stability of the NRA and because annual disbursements from general funds allows for the exertion of pressure that could be harmful to the needed independence.

There are, however, negatives to staying outside the government's budget. The NRA may not be covered by financial controls that have been established for government funds, leading to inappropriate expenditures, and even corruption (Colombo Page, 2015).

Unconstrained funding is inappropriate for any organization. Setting budgets and living within them is good practice. Every organization, especially one serving a public purpose, requires some form of accountability with regards to funding. In a rapidly growing sector, even the yield from a regulatory fee set at a low level such as two percent of adjusted gross revenues of licensees is likely to become larger than needed for the NRA within a short time. Therefore, it would be useful to review budgets through a public hearing or equivalent periodically and reset the percentage.

Following the same logic, it would not be appropriate for one-time, windfall revenues such as those from spectrum auctions to form part of an NRA's revenue stream. The channeling of revenue from fines to the same organization that initiates action on the offence could create perverse incentives.

## Capacity to regulate

An effective NRA in the ICT infrastructure sector must have the capacity to regulate operators functioning in an environment where both the technology and market conditions are fast changing. Capacity includes both substantive knowledge about the industry (economics and engineering), about regulation (law and economics) and about legal procedures (law, specific to the country). Capacity is not disembodied, it is found in the employees of the NRA. In essence, they must know at least as much the regulatory and technical staff they interact with from the regulated entities. That was a minimum condition. Ideally, they would know more. But this is a challenge in a dynamic industry. One way to address this potential knowledge disparity is to mobilize consultants as required. This topic is discussed below.

In the 1990s, it was common to have a single individual serve as the regulator. Now the norm is a collegial decision making body. While it was reasonable to expect an individual serving as the "authority" to have subject expertise, now it is more common to expect the collegial bodies to function as panels of "wise men and women" who have wide experience and knowledge but are not necessarily experts on the regulated industry. That expertise is expected from the staff who develop the cases and "propose" the options, that the collegial authority decides on or "disposes." There has to be a knowledgeable chief executive who can effectively and confidently communicate the positions of the NRA to government, stakeholders and the media.

## Transferability of employees

In light of the above, expertise that is sector specific is essential for NRA employees. What they require is knowledge that is different from the generalist knowledge characteristic of the “civil service” by whatever name it is described in different countries. Generalists in the “civil service” are routinely transferred and are expected to be able to serve in Ministries or departments responsible for widely different topics. Because it was difficult to gather reliable and comparable information on training facilities for the staff and the levels of actual expertise, we instead sought information on the transferability of NRA staff. The responses are given in Table 4.

**Table 4: Transferability of employees**

Country		Indonesia	Malaysia	Singapore	Thailand
Staff considered public-sector employees	Commissioner	No	N/A	Yes	N/A
	General staff	N/A	Yes	Yes	Yes
Transferability	To public sector organizations	Yes	Yes	N/A	No
	To other regulatory organizations	Usually not	No	Yes	No

Source: Authors

In some cases, the commissioners/members and the general staff are considered public sector employees. This is the case in Singapore. All members, officers and employees of Singapore’s IDA are considered public servants for the purposes of Singapore’s penal code. The Singapore penal code includes statutes relating to crimes carried out by public servants, as well as punishments for crimes carried out against public servants and contempt for the authority of public servants (Telecommunications Management Group Inc., 2016).

Thailand’s NBTC is an independent organization. The employees of the NBTC are not considered civil servants despite being government employees. Due to incompatibility of pay, ranks and files, the employees of the NBTC cannot practically transfer to other public sector organizations or to other regulatory organizations. However, this is not the case in Indonesia and Malaysia. While employees of the BRTI and MCMC are able to apply for positions in government departments, they cannot be transferred to other regulatory organizations. Of the four countries from which responses were received, transferability to regulatory organizations is only permitted in Singapore’s IDA where it is allowed depending on job availability and compatibility of skill set.

While it is ideal to retain employees in the organization so that specialized knowledge can accumulate, non-transferability has downsides. In any pyramidal organization, promotional prospects are limited by definition. This could result in frustrations building up over time. It is in this context that transfer opportunities to other regulatory agencies may be justified. This would mean that salaries and terms and conditions of employment would have to be more or less similar among the subset of agencies that

qualify for transfer. The Singapore model of setting NRA salaries based on what equivalent personnel in the regulated industry earn would not quite fit. Of course, this would over time develop into a “regulatory service” similar to the various specialized services that exist within most administrative service structures.

### Qualifications and compensation

The ability to attract qualified personnel and hold them depends on compensation and working conditions. Relevant information is provided in Table 4

**Table 5: Qualifications and compensation**

Country		Indonesia	Malaysia	Singapore	Thailand
Qualifications of staff compared to standard public sector organizations		Higher	Similar	Likely similar	Likely similar
Salaries paid	Compared to standard public sector rates	Higher	Higher	N/A	Higher
	Compared to market rates	Lesser	Similar	Similar	N/A
Additional allowances to employees		Yes	Yes	No	N/A

Source: Authors

The qualifications required to join Indonesia’s BRTI are higher than those for other public sector organizations. This is particularly true for the Commissioners, who are often sourced from the private sector. While employees are paid slightly more than they would in a public sector organization, pay packages are significantly lower than that received by those at equivalent positions at telecom operators.

Fourteen percent of the MCMC’s total expenditure was devoted towards human resources (Malaysia Communications & Multimedia Commission, 2013). Its pay scales are benchmarked to the market standard, and are higher than those paid to other public-sector employees. Because of a low-interest loan, the overall compensation package was said to be more attractive than in the private sector.

Employees of Thailand’s NBTC are not bound the civil servants’ pay scale. Remuneration packages offered to employees are roughly double those paid to those in the civil service. The packages are determined by a Royal Decree as proposed by the Executive Branch. The higher pay is likely to attract better qualified candidates, but the NBTC has been criticized for overpaying under-qualified staff.

In Singapore, the IDA is not required to adhere to the hiring, firing, and benefits practices in place for most public employees. This allows the regulator more flexibility to offer compensation packages that are benchmarked with the private sector. (Telecommunications Management Group Inc., 2016)

Additional allowances are provided to employees of certain job grades at the BRTI and MCMC. Staff above a certain rank at the BRTI are provided vehicle facilities.

In sum, it is important to ensure that compensation is adequate to attract and hold qualified employees. When designing compensation packages, it is necessary to think beyond just money, taking into account the intrinsic rewards of public service and the experience, public exposure and contacts that come from the roles.

### Use of consultants

Regulators in developed as well as developing countries outsource regulatory tasks. A third of the respondents allocated a fifth of their budgets towards hiring external expertise (Tremolet, Shukla, & Venton, 2004).

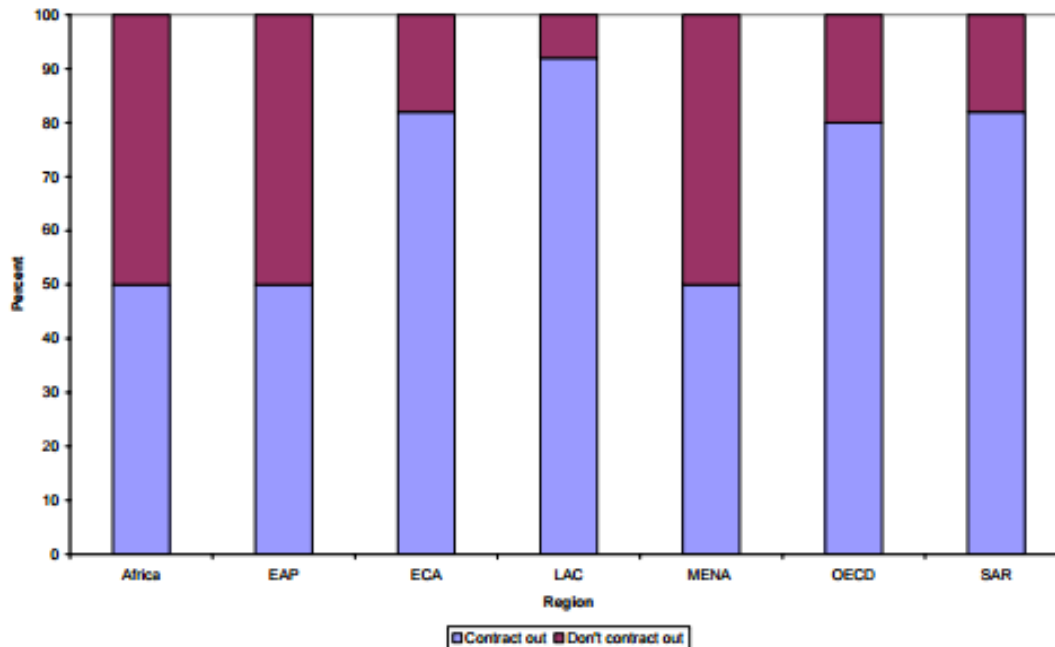


Figure 3: Contracting out by region

Source: Trémolet, Shukla, and Venton (2004)

However, the propensity to contract out varied from region to region in 2004 as shown in Figure 3. While 90 percent of the regulators in the Latin American and Caribbean (LAC) region obtained outside expertise, it was lower in other regions. In the East Asia and Pacific (EAP) region, only half the NRAs hired external consultants.

There are two reasons to outsource work to consultants. The first is to obtain expertise that is not available in house. The second is to deal with the inevitable peaks and valleys of workload over time.

Unless an NRA adopts an outsourcing strategy, it is unlikely that it can remain lean and focused. The efficiencies that would be realized by maintaining a core staff complemented by specialized expertise mobilized to deal with peaks in workload may be more economical overall than running an organization with slack. This rationale applies to NRAs in developed as well as developing countries.



The first rationale is especially relevant to NRAs in their early years and those lacking a pool of qualified and trainable persons to recruit from. Here, the emphasis necessarily shifts to the international, since the local labor market is where the problem lies.

The four NRAs that responded had experience with hiring consultants: both national and international, as shown in Table 6. In the case of Indonesia, it was said that international consultants could either be hired directly or through the national consultant.

**Table 6: Hiring of consultants**

	Indonesia	Malaysia	Singapore	Thailand
National	✓	✓	✓	✓
International	✓	✓	✓	✓

Source: Authors

Outsourcing regulatory tasks has several shortcomings that should be kept in mind.

First is the slow-down of NRA's responsiveness. All organizations follow procurement rules intended to ensure value of money is obtained for the organization and that illegal and unethical practices are precluded. In the case of government organizations, the rules tend to be more rigid. As a result, an NRA may not be able to mobilize consultants quickly to respond to matters that it responds to. In the case of predictable or regularly occurring matters, timely initiation of procurement can minimize delays.

Central to effective procurement and management of consultants is the crafting of terms of reference (TOR). This requires staff who can envision the task that is to be outsourced and can describe it in unambiguous language. It also requires effective follow through on the monitoring of deliverables and the ability to assess quality of work. In highly resource-constrained NRAs these essential skills are in short supply. But without them, the expected benefits of outsourcing cannot be realized.

Especially in the early stages of an NRA it may be necessary to house a few experts within the organization who can help train the (usually) young staff in the skills of consultant procurement and management. The Botswana Communication Regulatory Authority, recognized as one of the better NRAs in Africa, benefitted from this practice.

A second shortcoming is the possibility that the different tasks completed by different consultants will not cohere together, or, worse, will contradict each other. Transparent procurement, unless carefully designed, may yield different consultants whose approaches are not harmonized. The solutions are to give relatively large, multi-part assignments or to make harmonization a requirement in all TORs. Both solutions require sophisticated procurement and management skills discussed above.

A third problem is non-transfer of knowledge. Especially where models are used for cost calculations, it is possible only the results are shared with the NRA, not the underlying model. In these cases, the NRA will have to keep going to the same firm year after year. Extraction of knowledge is also something that can be done through sophisticated procurement and management techniques.

## Conclusions

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It is common knowledge among regulators and those who study the subject that capacity, in the form of technically skilled personnel, is a significant constraint on good regulatory performance in developing economies. The commonly advanced solutions are those of increasing the compensation of regulatory staff and of making significant use of external consultants. But like all policy solutions, they have to be carefully implemented, taking into account country and time-specific conditions. In addition to compiling experience from ASEAN NRAs, the above discussion has identified negative aspects and suggested ways to address them.

One area that our questionnaire did not cover was the problem of finding qualified persons to serve on the decision-making collegial body and as the chief executive. On the former, we believe that the collegial decision-making body be made up of those from within Myanmar and that it would be better to have them serve part-time, at least in the initial phase, reflecting the definition of their role as that of applying their minds and disposing of cases proposed to them by the staff, rather than as experts in their own right.

The chief executive, on the other hand, must be an expert with in-depth knowledge who can shape the culture of the inchoate organization. Given the paucity of persons with the necessary regulatory knowledge within Myanmar, there may be merit in creating a limited window/pathway for the employment of foreign personnel (precedent may be found in Botswana, Singapore and Hong Kong) or expatriate Myanmarers (current Chair of Bangladesh NRA is an expatriate Bangladeshi; Sri Lanka brought in a Sri Lankan academic who was teaching in the US to establish the NRA in 1998; India also brought in expatriate experts when TRAI was established).

In addition, the overall design of the reforms should factor in resource constraints by reducing discretion and setting default outcomes. The MCC should be required to publish regulatory manuals and work plans. Consultant assistance may be obtained for these tasks. These documents should be developed in consultation with stakeholders. They should include time lines and default outcomes that when the time lines are not adhered to.

In terms of funding it is not advisable to rely on the central budget, because it can be detrimental to long-term stability of the NRA and because annual disbursements from general funds allows for the exertion of pressure that could be harmful to the needed independence. However, reliance on industry levies as many of its ASEAN peers do, requires safeguards, such as the setting budgets and accountability. The yield from a regulatory fee may increase too quickly in a fast-growing industry. Review of budgets through periodic public hearing that reset the percentage is suggested.

Expertise that is sector specific is essential for NRA employees. What they require is knowledge that is different from the generalist knowledge characteristic of the "civil service." While it is ideal to retain employees in the organization so that specialized knowledge can accumulate, the negative aspects of non-transferability, such as limited promotional prospects must be addressed. It is important to ensure that compensation is adequate to attract and hold qualified employees. When designing compensation packages, it is necessary to think beyond just money, taking into account the intrinsic rewards of public service and the experience, public exposure and contacts that come from the roles.

Outsourcing work to consultants is common in NRAs. This is to obtain expertise that is not available in house. It also helpful in dealing with the inevitable peaks and valleys of workload over time. The first rationale is especially relevant to NRAs in their early years and those lacking a pool of qualified and trainable persons to recruit from. Here, the emphasis necessarily shifts to the international, since the local labor market is where the problem lies.

Shortcomings of knowledge within the organization should lead to even greater reliance on stakeholder consultations. The positive image earned by the 2012-16 reforms should be capitalized on. It is likely that a good online consultation strategy will be able to attract useful inputs even from firms and organizations based abroad.

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## Annex 1: Regulatory agencies in the ASEAN region

<b>Country</b>	<b>Regulator</b>	<b>Regulator website</b>
Brunei Darussalam	Authority for info-communications technology industry of Brunei Darussalam	<a href="http://www.aiti.gov.bn/Pages/Home.aspx">http://www.aiti.gov.bn/Pages/Home.aspx</a>
Cambodia	Telecommunication Regulator of Cambodia	<a href="http://www.trc.gov.kh/">http://www.trc.gov.kh/</a>
Indonesia	Badan Regulasi Telekomunikasi Indonesia	<a href="http://www.brti.or.id/">http://www.brti.or.id/</a>
Lao PDR	-	-
Malaysia	Malaysian Communications and Multimedia Commission	<a href="http://www.mcmc.gov.my/">http://www.mcmc.gov.my/</a>
Myanmar	Post and Telecommunication Department	-
Philippines	National Telecommunications Commission	<a href="http://ntc.gov.ph/">http://ntc.gov.ph/</a>
Singapore	Infocomm Development Authority of Singapore	<a href="https://www.ida.gov.sg/">https://www.ida.gov.sg/</a>
Thailand	National Broadcasting Telecommunications Commission	<a href="http://www.nbtc.go.th">http://www.nbtc.go.th</a>
Viet Nam	Viet Nam Telecommunications Authority	-

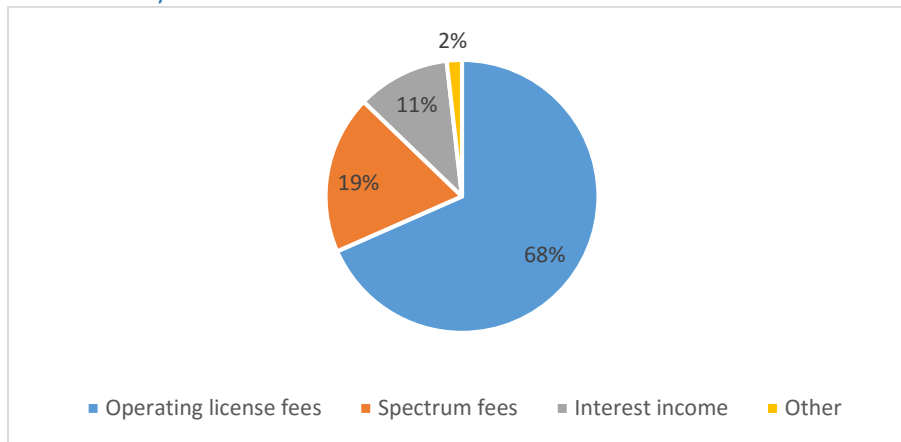
## Annex 2: Examples of NRA revenue collection

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### 2.1 BRTI Indonesia

1. Spectrum fees (Through auctions or individual Radio Transmitters fees. This accounts for approximately 10% of operators' gross revenues)
2. License operation fees (0.5% from operators gross revenue)
3. Equipment License fees
4. Fines (For non-payment of fees etc.)

### 2.2 MCMC Malaysia



**Figure 4: Breakdown of MCMC revenue**

Source: MCMC Annual Report 2013