Telecom Regulatory and Policy Environment in the Maldives

Results and Analysis of the 2008 TRE Survey

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List of Acronyms

AMPS	Advanced Mobile Phone System
ARPU	Average Revenue per User
C&W	Cable and Wireless
EBITDA	Earning before Interest Tax and Depreciation Allowance
GDP	Gross Domestic Product
GoM	Government of Maldives
GSM	Global System of Mobile
ICT	Information and Communication Technology
ISM	Industrial Scientific and Medical (radio bands)
ITU	International Telecommunication Union
Kbps	Kilobits per second
MNP	Mobile Number Portability
RIO	Reference Interconnection Offer
SIM	Subscriber Identity Module

TAM	Telecom Authority of the Maldives (the regulator)
TRE	Telecom Regulatory Environment
USO	Universal Service Obligation
WiMax	Worldwide Interoperability for Microwave Access

1. Executive Summary

The Maldivian telecom sector has gone through partial liberalization in the mobile and broadband sectors in the past few years. The incumbent Dhiraagu (a joint venture between the government of Maldives and Cable & Wireless of the UK) faces competition from the newcomers Wataniya in the mobile sector and Focus Infocom in the broadband sector. The fixed sector is a monopoly, but Dhiraagu's exclusivity is scheduled to end in 2008.

The 2008 Telecom Regulatory Environment (TRE) survey asked informed stakeholders of the Maldivian telecom sector to assess the regulatory and policy environment along 7 dimensions (market entry, access to scarce resources, interconnection, tariff regulation, universal service obligations, regulation of anti-competitive practices and quality of service regulation) for the three (sub) sectors of telecom (fixed, mobile and broadband) , on a Likert scale of 1 to 5 (1 being highly unsatisfactory, 5 being highly satisfactory, with 3 being considered average). The respondents were selected from 3 categories: those directly impacted by policy and regulatory actions of the government (operators, equipment vendors), those who broadly follow the sector (consultants, lawyers) and those who represent the public interest in the telecom sector (consumer groups, other government officials, journalists, etc). The scores given by them are summarized in Table 1:

Table 1: Summary of scores, 2008 TRE survey in the Maldives

Dimension	Fixed	Mobile	Broadband	Average for Dimension
Market entry	2.9	3.8	3.5	**3.4**
Allocation of scarce resources	3.6	3.6	3.8	**3.7**
Interconnection	3.4	3.5	3.0	**3.3**
Tariff regulation	3.2	3.4	3.2	**3.3**
Regulation of anti-competitive practices	2.8	3.1	2.8	**2.9**
Universal service obligation	3.6	3.5	2.9	**3.3**
Quality of Service	3.6	3.8	3.5	**3.6**
Average for Sector	**3.3**	**3.5**	**3.2**	**-**

Overall the mobile sector receives the highest scores, indicating a positive regulatory and policy environment. Maldives has seen significant growth of subscribers and reduction of prices with the two competitors competing head-to head to attract customers in the populated islands. Growth in mobile has far surpassed the growth in fixed. Broadband is still at a nascent stage, with only the major islands having a choice of broadband providers.

Across the dimensions, the regulation of anticompetitive practices receives the lowest scores – perhaps reflecting perception that the incumbent uses its dominant position (and historical relationships with the government and the regulator) to unfairly stifle the competition.

Stakeholders in seven other emerging Asian countries who completed similar TRE surveys during the same time period in 2008 have given lower (lower than 3.0, often closer to 2.0) scores for many dimensions, even when their sector performance (on objective terms, such as subscriber growth) is better than in the Maldives. In this context, the highs scores given by Maldivian stakeholders (where six of the seven dimensions and all three subsectors receive above average or above 3.0 scores) are unusual. The duopoly (i.e. less competitive) nature of each sub-segment, the small market size and island culture (where stakeholders know each other professionally and personally) may explain the "positive" perceptions among stakeholders. But these hypotheses need testing in future research. This behavior poses challenges to the feasibility of using TRE surveys to compare microstates with other countries.

However this does not prevent the use of the TRE scores as diagnostic tool *within* a country. In the case of the Maldives, the same set of stakeholders give significantly lower scores in one dimension (regulation of anti competitive practices) compared to the other six. The low scores are partly a result of problems with the regulatory rulemaking procedure, as opposed to a problem with the rules themselves (i.e. a problem with the "how", and not so much with the "what"). Regulatory decisions are made on an ad-hoc manner, with decisions often handed out when requested by the operators, as opposed to pro-actively and in anticipation of emerging market changes (or even to avoid upcoming roadblocks, before they actually take place). The rationale behind the rulings that are issued are not explicitly documented and publicized. There is a lack of documented basic set of regulations related to the key areas under the regulator's purview – as a result every decision allows the regulator absolute discretion. On top of all this, the regulators legal standing is and independence are in some doubt due to the lack of legislation. Based on these observations, our recommendations are:

1. Getting legislative approval for a new Telecommunications Act that gives legal and financial independence to the regulator
2. Adopting transparent and consultative procedures for rule making. The procedure could have characteristics such as the pre-publication of future rules for consultation, providing channels for stakeholders to give their input to the proposed rules (through public hearings, written submissions), clearly establishing the conditions and procedures for appealing against issued rulings and so on.
3. Following such processes, draft subordinate regulations and rules on key regulatory areas such as the regulation of tariffs, issuance and renewal of licenses, issuance of spectrum and other resources, regulation of anti-competitive behavior.

Next we make recommendations related to regulatory substance (the "what" of regulation, or the content of the decisions themselves). Here the primary goal is make the playing field equal for the incumbent and new entrants. At a minimum, this can start with ending the exclusivities enjoyed by the incumbent, thereby enabling the other 2 players to enter those segments of the market, should they so wish. Going further, the regulator could allow new market entry, and even make it attractive to new entrants through actions such as mandating non-discriminatory access to the backbone. However in a small, already saturated market where economies of scale are unlikely to come into play, the possibility

of entry, followed by exit is real. Exit cannot and should be prevented, but rules should exist to deal with stranded customers and other problems that will remain after an operator exits. In this context, we make the following recommendations:

4. Not renewing exclusivities currently granted to the incumbent (an example is the current exclusivity on fixed service provision, and the exclusivity to bring in international traffic and terminate on any network. Both these are up for renewal/expiry in December 2008)
5. Moving towards a unified licensing regime that enables at least the existing operators (and possibly new operators) to enter other (sub) segments of the market.
6. Establishing conditions and rules for market exit (e.g. how to deal with stranded customers and so on)
7. Create conditions to encourage competition for the market and competition in the market. Illustrative actions could include:
    - Mandating non-discriminatory access to the backbone by new entrants
    - Working pro-actively with the tourism authority and the incumbent to allow new entrants access to the resort island (currently Dhiraagu has a de facto monopoly on the towers at most of the resorts, and new entrants are left out of the most lucrative segments of the market).

2. Development of the Telecom Regulatory and Policy Environment

2.1 Country Background

Maldives is a country of around 1,200 small islands. It is located in the Indian Ocean near Sri Lanka and India. Its population of 309,575 is spread across roughly 200 inhabited islands. About 33 per cent of the population lives in the densely populated capital, Male. Maldives is a member of the South Asian Association for Regional Corporation (SAARC). It is wealthier than its SAARC peers, with a GDP per capita of US$ 2,992 in August 2008.[1]

Many uninhabited islands (around 92 of them, by June 2008) are leased to internationally popular holiday resorts that attract a significant number of high-end tourists each year. Tourism is the most important part of the Maldivian economy, contributing around 27% of the GDP (Table 2). The third and fourth largest contributors to the GDP (communication and transport) are also heavily dependent on tourism.

Table 2: Contributions to Maldives GDP by Sector

Sector	**% contribution to GDP**		
	2006	**2007**	**2008**
Tourism	27.4	27.8	27.4
Government Administration	14.8	15.8	17.6
Communication	8.9	9.1	9.6
Transportation	9.6	9.7	8.7
All other sectors	39.4	37.6	36.7

Source: Ministry of Planning and Development, Maldives

2.2 Development of the Telecom Sector

Until 1988 the Government of Maldives (GoM) and Cable & Wireless (C&W) of the UK provided all telephony in the Maldives. Only fixed line services were available. C&W operated the international telephony network through a franchise/approval of the government. Phone services were difficult to obtain (fewer than 4,200 fixed lines were operational in 1988) and penetration was low (2.1 fixed phones per 100 inhabitants), as per ITU data.

Partial Privatization: In 1988, a new, public-private monopoly "Dhiraagu" was created. 51 percent of the new firm was owned by Cable & Wireless while 49 percent was owned by the GoM. Later, GoM's share

[1] *Maldives at a Glance August 2008*, Ministry of Planning and National Development, Maldives, http://planning.gov.mv/en/images/stories/publications/mag/august2008.pdf, last referenced 22 Sep 2008

was increased to 55% and C&W's share brought down to 45%[2]. The move resulted in investment in the network and the installation of new technology. But penetration was well below acceptable levels, with 7.7 fixed lines per 100 inhabitants by the year 1998, 10 years after the restructuring. Dhiraagu's exclusivity to provide fixed telephony was renewed in 1995, and continues until December 2008.

Introduction of Mobile Services: In 1997, mobile services were introduced through Dhiraagu, under the brand name DhiMobile. Initially offered on AMPS (Advanced Mobile Phone System), the limited network soon reached capacity and the company had to stop taking new customers by May 1998[3]. Investment was made in a GSM network, and GSM based mobile phone services were introduced in 1999 and resulted in growth in the number of mobile subscribers. Subscriber growth was further increased due to the introduction of pre-paid services, per-second billing and free SMS in 2001 and 2002 respectively (Figure 1). Per second billing was mandated by the GoM which also acted as regulator.

Sector Status, pre-2003: Universal access was achieved around 1999 – 2000, mainly by installing public phone boxes in inhabited islands. Take up of fixed phones was low. Huge price disparities existed between Male (and the other big, populated islands) and the other populated islands further away from the capital. For example the monthly rental in 11 most populated islands was USD 2.3, while it was USD 270 in the other inhabited islands. The installation charges in the former set of islands was USD 134, while it was anywhere between USD 234 – 988 in the latter set (i.e., the majority) of islands. As a result, the majority of the population could not afford telephone services. According to the ADB, International calls were 7-8 times the prices in comparable countries.[4]

Lack of Independent Regulator: Not only were phone services not affordable, but a conflict of interest between regulator, policy maker and incumbent operator also existed. The Director General of Post and Telecommunication Department (DG) was the "regulator"; but the department itself came under the Ministry of Communication Science and Technology, the then policy maker. To complicate matters further the DG was a member of the Dhiraagu board of Directors. The Chairman of the Dhiraagu board was the Minister of Foreign Affairs; this meant the DG served under one of the most senior and important government officials. It is no surprise that the regulator was not in a position to insist on lower prices, increased network rollout and higher quality.

Telecom Policy 2001-2005 and ADB involvement: It is in this environment that Asian Development Bank started policy discussions with the GoM about the need for establishing an independent regulatory body, liberalizing value added and non-basic services and enacting a telecoms law to support these first two objectives. The resulting Telecom Policy that was announced in August 2001 called for reducing all

[2] In 1993 GoM's transferred to Dhiraagu's the ownership of certain network assets that were previously rented out to Dhiraagu. The value of this capital infusion increased GoM's share of Dhiraagu by 6%

[3] Dhiraagu Marketing Communications & Public Relations, *Dhiraagu Stops Providing Service to Any New Mobile Customers*, Press Release, 12 May 1998, http://www.dhiraagu.com.mv/beta/media_centre/press_releases.php?id=143&cat=pressreleases

[4] Asian Development Bank, *Report & Recommendation of the President to the Board of Directors on a Proposed Loan to the Republic of Maldives for the Information Technology Development Project*, November 2001.

telecom charges, expanding service and narrowing the cost of service between Male and other islands, providing legal powers to strengthen the role of the regulator, opening up the market for competition, making government telecom less dependent on the profit of the sector[5] (i.e., Dhiraagu). In November 2001, ADB provided USD 9.5 million in funding to achieve these and other (ICT for Development related) goals.

Establishment of the Regulator: As a result of these initiatives started in 2000-2001, a separate regulatory body, the Telecom Authority of Maldives (TAM), was established in 2003. It was authorized to regulate the telecom sector through a decree, the Maldives Telecom Regulation of 2003. Though the envisioned Telecom Law has not passed yet, the Regulation and the direct support of the Office of the President provided sufficient grounds for TAM to conduct its activities.

Introduction of ISP competitor: In 2003, the first ever competitor in the telecom sector was allowed entry with the granting of an ISP license to a new player, Focus Infocom. Until then, all internet access was through Dhiraagu's NetLink service (later rebranded DhivehiNet), and was mostly dial-up. After making an initial investment of Rufiyaa 10 million, Focus started providing services under the brand-name *Raajje Online* in January 2004, offering a 256 Kbps connection for Rf. 1500 per month (about USD 117 per month) after a modem for Rf. 3,900 (USD 305) was purchased. [6] Focus Infocom was competitively selected out of 4 bidders that were interested in entering the Maldivian ISP market.

Introduction of Mobile Competitor: The first and only competitor in the mobile sector entered in February 2005 with the issuance of a mobile license to Wataniya Telecom Maldives, a subsidiary of Wataniya Telecom International[7]. There were 3 other bidders for this 2nd mobile license. Wataniya was selected based on its proposed investment in new services and fast network rollout plans. Figure 1 shows how the incumbent Dhiraagu dropped its mobile prices in anticipation of Wataniya's entry.

Start of WiFi: In 2006 TAM gave permission to Dhiraagu to run WiFi on the 2.4G ISM band. As a result, 42 islands were connected and converted to wireless internet zones (WiFi hotspots), bringing to 54 the number of islands with broadband (around 70% of the population).[8]

The 2006-2010 Telecom Policy: A new telecom policy was introduced by the new policy maker, the Ministry of Transport and Communications. It called for limiting Maldives' dependence on satellite connectivity to reach the global internet. By the end of 2006, all 3 operators had access to two submarine cables that connected them to the world. It also called for legal and financial autonomy for

[5] Ministry of Communication, Science and Technology, *Maldives Telecommunication Policy 2001-2005*, 1 August 2001.

[6] Haveeru Online, *Focus Info Com starts service as second ISP in Maldives*, 2004-01-18, http://www.haveeru.com.mv/english/?page=details&id=9877 (last referenced 22 Sep 2008)

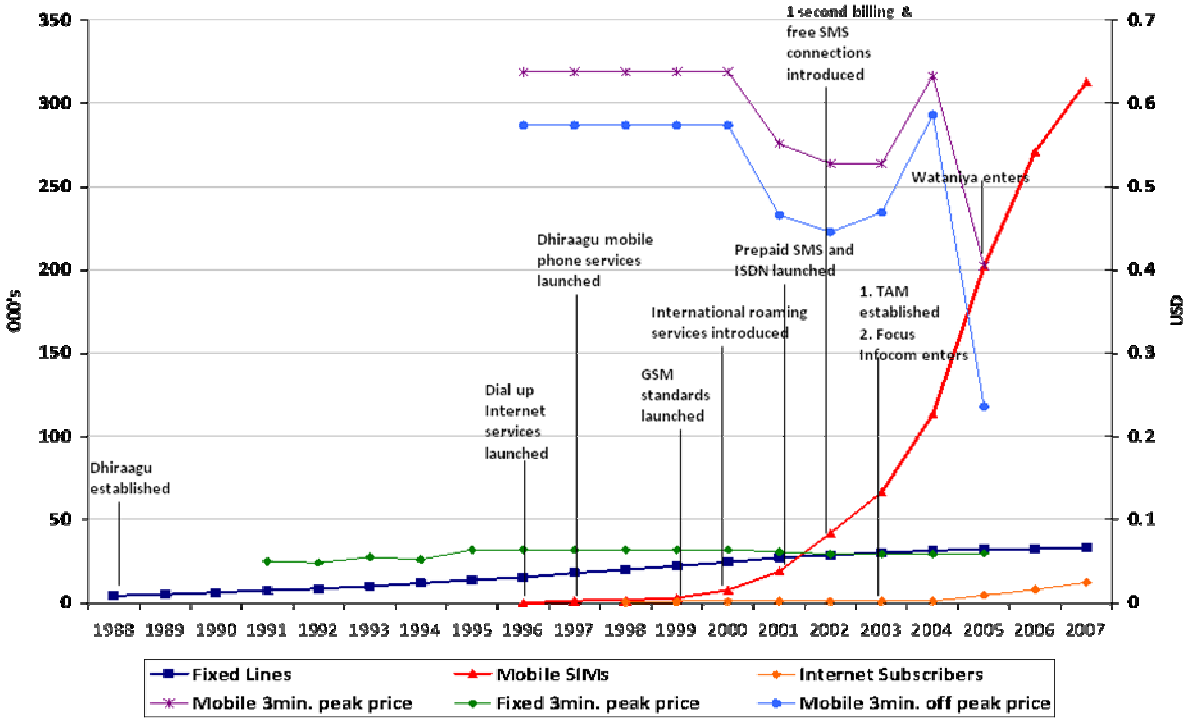
[7] Wataniya was the first private telecom operator in Kuwait. 51% of Wataniya is now owned by Qatar Telecom (Qtel). http://www.wataniya.com/AboutUsPortal/AboutUs.portal?_LANG_=en

[8] Dhiraagu, *Dhiraagu extends Wireless Zone Service to additional 27 Islands*, http://www.dhiraagu.com.mv/beta/media_centre/press_releases.php?id=593&cat=pressreleases (last referenced 22 Sep 2008)

TAM, through the passing of a Telecom Law by 2007. The policy also called for the diffusion of ICTs across the country and the use of ICTs to develop all sectors of the economy. Maldives has undertaken e-government initiatives and the installation of telecenters (community internet access kiosks) in recent years.

Through the market is only partially liberalized, we see from Figure 1 that regulatory action from around 1999 to 2005 has resulted in increased connectivity and lower mobile prices. After 2005, there are no significant regulatory actions, but momentum has been maintained. This is a result of competition between the two mobile operators.

Figure 1: Penetration of the phones & internet, with key market or regulatory events



2.3 Current market dynamics

The operators: Today the Maldivian telecom market consists of 3 major players: Dhiraagu, Wataniya and Focus Infocom. Fixed telephony is provided exclusively through Dhiraagu the partially government owned incumbent. Dhiraagu's fixed monopoly as well its exclusivity to terminate incoming international traffic on any network expires in December 2008.

The mobile and broadband sectors are duopolies. Mobile services are provided by Dhiraagu and Wataniya; Broadband services are provided by Dhiraagu and Focus Infocom.

Dhiraagu was the only provider of leased line services until recently. In the third quarter of 2008 Wataniya was granted permission to use its excess microwave capacity to provide leased line services.

Below we look at some of the indicators that describe the level of competition, health and size of the telecom market in the Maldives. However due to the duopoly situation in each of the markets, companies appear to be reluctant to disclose detailed financial data and sometimes even subscriber numbers. The new mobile entrant Wataniya (through its parent company) discloses more than Dhiraagu.

Market Size: The statistics related to the fixed, mobile and broadband market size, according to TAM, are shown in Table 3. Mobile penetration is higher than 100%, reflecting the common practice of using multiple SIMs from the two operators by many consumers to take advantage of different on-net pricing

Table 3: Mobile SIMs, Fixed connections, ADSL connections and penetration, as at August 2008

	Total, as at August 2008	**Penetration (per 100 people), as at August 2008**
Mobile SIMs	398,962 (89% prepaid; 11% postpaid)	129
Fixed Phones (including payphones)	33,592 (74% in Male, Villingili, Aarah, Hulhule and Hulhumale)	11
ADSL lines	9,973	3

Source: Data from TAM (August 2008); calculated by author using August 2008 population estimates from Ministry of Planning and National Development

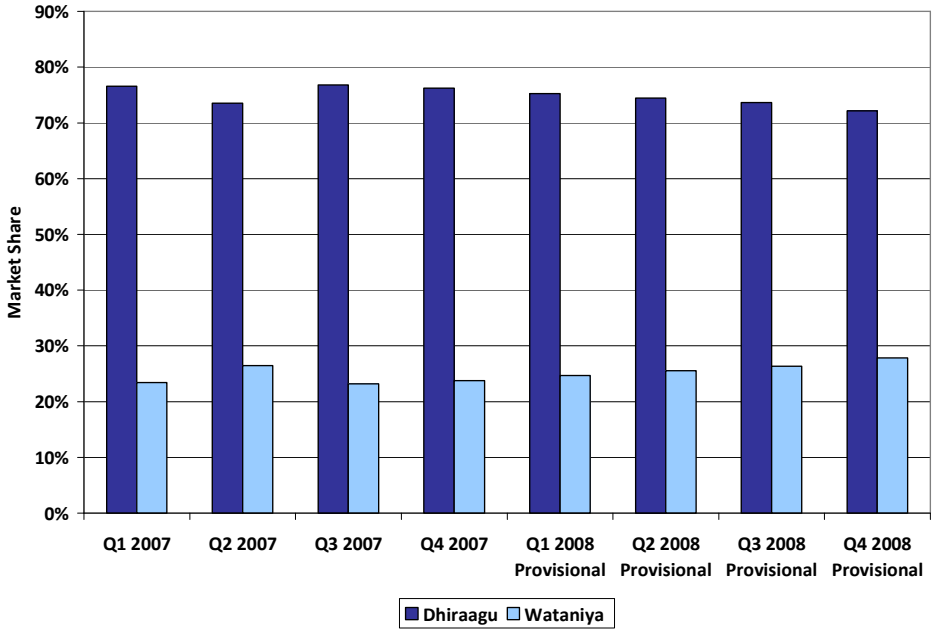
Market Shares: Given the duopoly in mobile and broadband, there is significant unease about disclosing publically market share or revenue information. TAM also does not officially disclose disaggregated data.[9] However it is commonly accepted that the mobile market is split roughly 25 percent vs. 75 percent between Wataniya and Dhiraagu. The broadband market also appears to be split 25-30 percent to 70-75 percent between Focus Infocom and Dhiraagu. Market shares calculated by the GSM Association in Figure 2 show that there has been no significant movement in market shares recently – Dhiraagu is holding onto its dominant position in the mobile sector, even as projected for 2008.

There is no mobile number portability in the Maldives . The charges for on-net vs. off-net calls were significantly different - i.e., Dhiraagu charges less when its customers call Dhiraagu numbers than when they call Wataniya numbers. Wataniya charges less when its customers call Wataniya numbers than when they call Dhiraagu numbers. Therefore carrying 2 SIMs (from the two operators) and using phones capable of accommodating two SIM cards is popular in Maldives. Given these conditions,

[9] This is not surprising, because even in Sri Lanka where competition and regulation have been in place for longer the regulatory website does not make disaggregated data available. This does not make it right, of course.

Wataniya is unlikely to increase its market share significantly unless it introduces significant price reductions or offers very innovative calling plans. That may already be happening – around the 3rd quarter of 2008, Wataniya started pricing its customers' calls to Dhiraagu numbers at the same on-net rate that Dhiraagu is offering its own customers. This means a consumer can use a Wataniya SIM to call Dhiraagu number and enjoy the same rate that would be enjoyed if the consumer used his/her Dhiraagu SIM to call a Dhiraagu number. Through the offer, Wataniya is attempting to eliminate the consumer's incentive to maintain a Dhiraagu connection. The impact of this offer is yet to be seen; but it is likely that market shares will be influenced.

Figure 2: Evolution of Market shares (based on subscribers) for Dhiraagu and Wataniya.

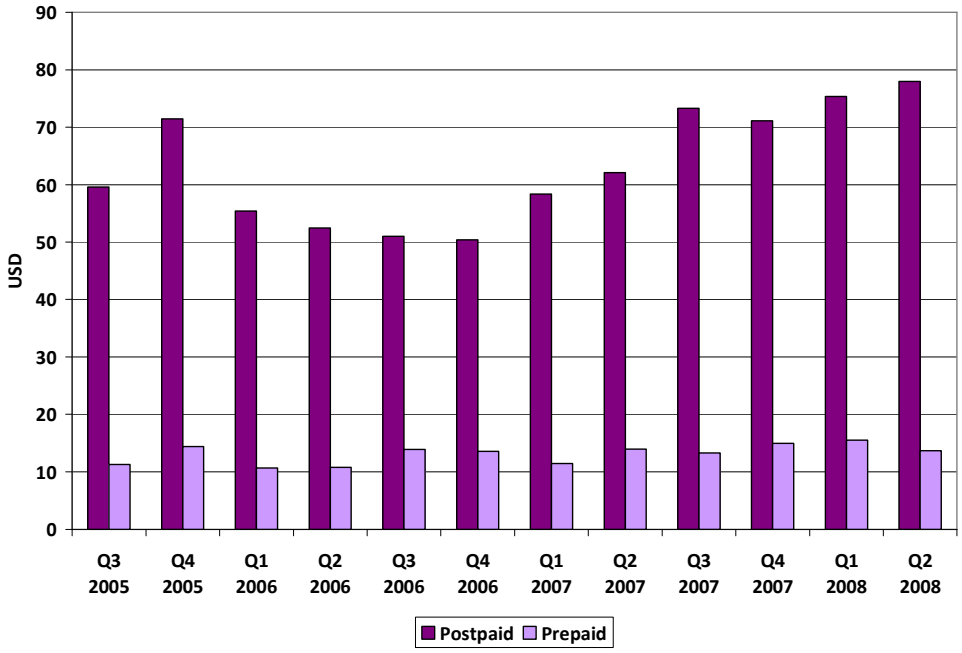


Source: GSMA, April 2008[10]

ARPU: While other South Asian operators are often operating on the ARPUs of under USD 5 per pre-paid SIM, Maldivian pre-paid SIM cards earn the operators in the range of USD 12 – 13. Postpaid ARPUs are around USD 70. Figure 3 shows the changes in ARPU for Wataniya has not faced significant downward pressure in the prepaid segment, as one would expect with increased competition. Indeed postpaid ARPUs are increasing slightly. Dhiraagu does not publish its ARPU data.

[10] GSM Asia Pacific. (2008). Retrieved online on 1 September 2008 from http://www.gsmap.org/information/statistics/country/.

Figure 3: Wataniya ARPU

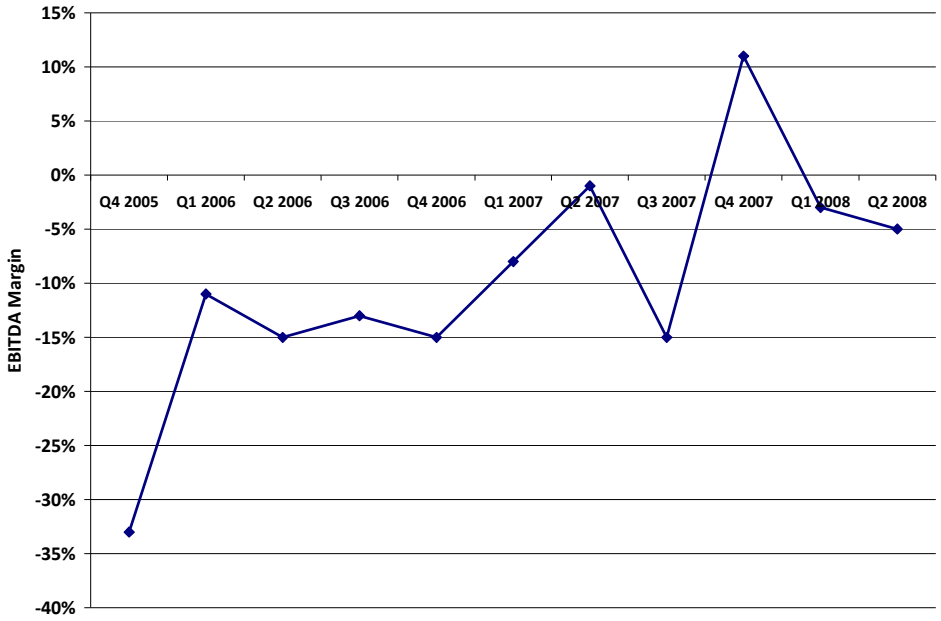


Source: Wataniya Telecom International 2008 quarterly reports [11]

Profitability: The new mobile entrant Wataniya entered the market in 2005 and had to invest in building out the backbone as well as the access network. As a result it is still not making a profit, with the latest EBITDA margins around –5%. However as the Figure 4 shows, the firm appears to be increasingly close to making a profit, as seen by the EBITDA margins at least approaching zero over time.

[11] Wataniya Telecom International. (2008). Annual Reports. Retrieved online on 18 September 2008 from http://www.wataniya.com/AboutUsPortal/AboutUs.portal;jsessionid=L18y2jS6MgLjfywwKTGXD9NLLZY4CGJybdY0phmVP4LJXyvpw1nP!-367353131?_nfpb=true&_pageLabel=Reports_page&_LANG_=en

Figure 4: EBITDA margins for Wataniya



Source: Wataniya Telecom International Quarterly Reports[12]

Dhiraagu does not publish EBITDA data. However we can quite easily see that Dhiraagu has positive (and high) profits by looking at how much profit C&W and the GoM separately make from their share of ownership [13](Table 4).

Table 4: Profits from Dhiraagu to owners, USD millions

	2005	2006	2007	2008
C&W's profits from Dhiraagu (reported for financial year ending in March)	28[14]	21[10]	23	24
GoM's profits from Dhiraagu (reported for financial year ending in December[15])	19	22	28	15[16]

[12] Wataniya Telecom International. (2008). Annual Reports. Retrieved online on 18 September 2008 from http://www.wataniya.com/AboutUsPortal/AboutUs.portal;jsessionid=L18y2jS6MgLjfywwKTGXD9NLLZY4CGJybdY0phmVP4LJXyvpw1nP!-367353131?_nfpb=true&_pageLabel=Reports_page&_LANG_=en

[13] The two figures cannot be simply added to get total profits. The financial years for the two entities (C&W and GoM) are different. C&W profits reflect profit after taxes in the UK as well as Maldives (if any). It is also unclear if C&W receives management/other fees on top of the dividend.

[14] Original amounts reported are 15 and 12 Sterling Pounds for 2005 and 2006 respectively. Converted to USD based on March 31 2005 and March 31 2006 exchange rates as reported by www.oanda.com

[15] Original figures given in Rufiyaa. Converted to USD based on exchange rates published by the Ministry of Planning and National Development Yearbooks for respective years.

Importance of the Telecom Sector: As with many developing economies that have gone through at least partial liberalization, Maldives too is seeing the increasing importance of the telecom sector in its economy. As shown in Table 1, the "communications" sector contributes nearly 10% of the GDP. Nearly all of this 10% is from telecoms. Telecom is the third largest contributor to the GDP. This percentage has been increasing over time.

Dividends from Dhiraagu are also a significant part of the GoM budget. From a low of about 4%, Dhiraagu's share of all non-tax revenues rose to 9.4% by 2007, as shown in Table 5.

Table 5: Dhiraagu's contribution to GoM revenues, in millions of Rufiyaa

	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
Non tax Revenue earned by GoM	443	567	609	788	861	1081	1189	1248	1486	1668	1684	2031	2867	3782
Contribution from Dhiraagu	20	26	30	36	50	55	67	97	106	186	166	248	281	355
Dhiraagu contribution as % of non-tax Revenue	4%	5%	5%	5%	6%	5%	6%	8%	7%	11%	10%	12%	10%	9.4%

Source: Ministry of Planning and Economic Development, Maldives

Technology and Resources: The geography of the Maldives poses challenges to the provision of telecom services. Undersea cables or costly microwave or satellite connectivity are required to connect the widely dispersed islands. For example, it takes more than 24 hours to go from one end of the Maldives to another by boat.

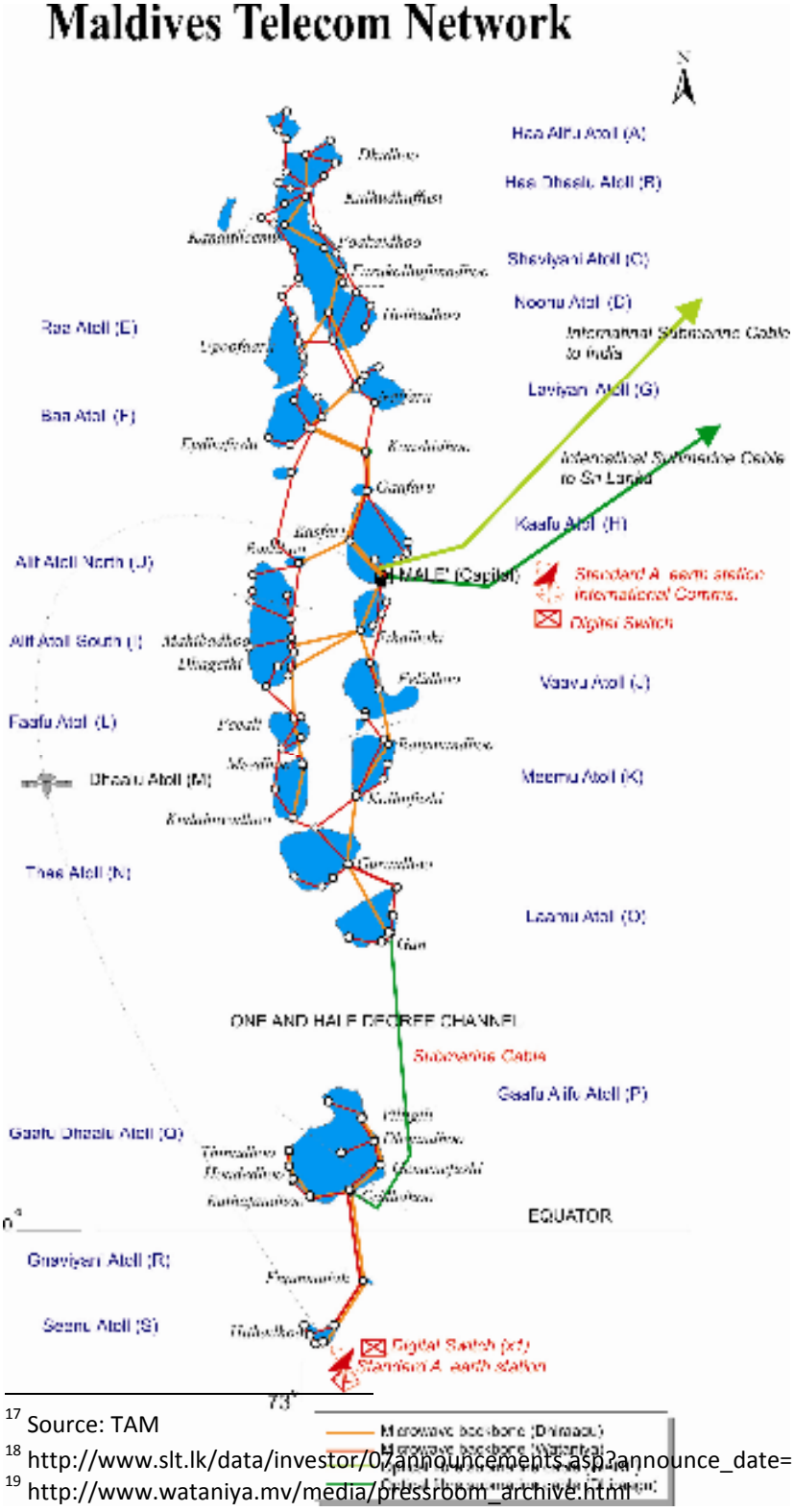
The operators however have met the geographic challenge and have succeeded in providing connectivity to each of the 200 or so inhabited islands. Male (the capital island) has fiber rings laid by Dhiraagu (the incumbent) and at least one other cable company (MediaNet). Focus Infocom has access to this fiber in Male (for a fee, obviously) and uses them to provide broadband services.

Traffic among islands and atolls is hauled predominantly using microwave. As shown in Figure 5, the two operators Dhiraagu and Wataniya run nearly parallel microwave connections between islands.

The southernmost islands and Male also have satellite connectivity via 2 satellite earth stations operated by Dhiraagu.

[16] Estimates by the GoM. Converted to USD using exchange rate as of 24 September 2008 published by www.oanda.com.

Figure 5: Maldives Telecom Network[17]



For a small market of around 300,000 people, Maldives boasts access to 2 separate submarine/undersea cables that provide international connectivity. This is more than what Bangladesh, a country with over 140 million people has. The first is used by Dhiraagu to connect to Sri Lanka and beyond (it was installed through a partnership between Sri Lanka Telecom and Dhiraagu)[18]. The second cable is used by Wataniya and Focus Infocom (referred to as WARF, it was installed through a consortium of Wataniya, Focus Infocom of the Maldives and Reliance of India's FLAG business unit, and connects to India and Sri Lanka).[19]

While redundancy is a good idea in the backbone or the international cable, one could argue that one cable or one microwave backbone with mandated sharing among all operators might have proved more economical at least in the short term, given the small size of the Maldivian market. The argument is similar for the backhaul microwave links.

[17] Source: TAM

[18] http://www.slt.lk/data/investor/07announcements.asp?announce_date=12/12/2006

[19] http://www.wataniya.mv/media/pressroom_archive.html

Furthermore, unless prices are set independently, a comfortable duopoly pricing situation could develop in each of the markets, at least in theory.

WiFi is used to create hotspots in many of the populated islands as well as resort islands.

At present 2nd generation technology dominates the mobile networks. However at the time of writing (3Q 2008), Wataniya was about to introduce HSPA based broadband connectivity using third generation technology. WiMax is also currently being implemented, on an experimental basis, by Dhiraagu and it is reasonable to assume that commercial rollout will take place soon.

2.5 The Regulator and Regulatory Instruments

The Telecom Authority of the Maldives (TAM) was established in 2003, and was authorized to regulate the telecom sector through a decree (the Maldives Telecom Regulation of 2003). The policy maker is the Ministry of Transport and Communication, and issues policy direction based on government priorities. However in practice, it is TAM that takes the lead in drafting policies because it is the only body with sector expertise.

Even though multiple Telecom Policies have called for regulatory independence (financial and legal), it has not yet been achieved. TAM cannot decide on the allocation of funds – for example royalty fees earned from operators are given directly to the government and staff salaries are in line with government pay scales. A Telecom Act that would have given autonomy to TAM was drafted several years ago but has not been approved yet. But due to support from the executive (directly from the office of the president) TAM has been able to carry out its duties without too much (obvious) interference from various parties.

Among stakeholders, opinions differ about the level of independence exhibited by TAM. The connection between government and Dhiraagu is obvious (GoM owns 55% of Dhiraagu, and depends to a degree on Dhiraagu dividends to fund its activities). In parallel, TAM is financially dependent on government, and is supported by it. As such it is perhaps not surprising that the two new entrants feel that some of TAM's decisions/actions tend to have the effect of safeguarding Dhiraagu revenues. On the other hand, TAM's moves to open the market have not made Dhiraagu happy.

Even more relevant to perceptions about regulatory legitimacy is perhaps the manner in which regulation is done. Apart from the Telecom Regulation of 2003 (which established TAM and gave it powers), there are few rules or subordinate regulation. Ironically, several sub-regulations have been drafted, and are even used as guidelines by TAM. But most of them have not been formally made available to the operators and hardly any are available to the public. In the absence of documented and forward looking rule making, things are done on an ad-hoc basis, often when requests for various approvals are made by the operators themselves. The level of discretion allowed to TAM is high, and the level of regulatory certainty is low.

However all this (the lack of legal independence as well as the *perceived* lack of independence) could soon change. In August 2008 Maldives adopted a new constitution for the first time in its history. As a result, all existing decrees (including the 2003 decree that granted TAM regulatory authority) were nullified. In order to ensure that TAM could continue uninterrupted operations, the decree giving TAM its powers to regulate was grouped together with other decrees related to other government activities/organizations and collectively granted given an extension of 1 year. TAM therefore has one year to ensure that the necessary legislative authority is obtained. A Telecom Bill is currently in circulation and awaiting approval. Though not much different from previous drafts, it does call for more independence for TAM. Stakeholders appear confident that the new Act will be passed, though there is disagreement on when the approval will happen and on how much independence TAM will really have even after the passage.

At the time of writing, Maldives was approaching a new era of democratization, with multi-party elections held for the first time in the country's history. After 2 rounds of voting, Mr. Mohammad Nasheed has emerged victorious and is the new president in October/November 2008. Private TV stations have been allowed to operate[20], also for the first time (TAM assigns frequencies for all broadcasters as well). The overall trend leading up to the elections appeared to be towards greater media freedom and increased scrutiny of public institutions. Whether this trend will continue remains to be seen.

At the moment, until a new telecom law or regulations are adopted, the Telecom Policy of 2006-2010 serves as a roadmap of regulatory priorities in the country.

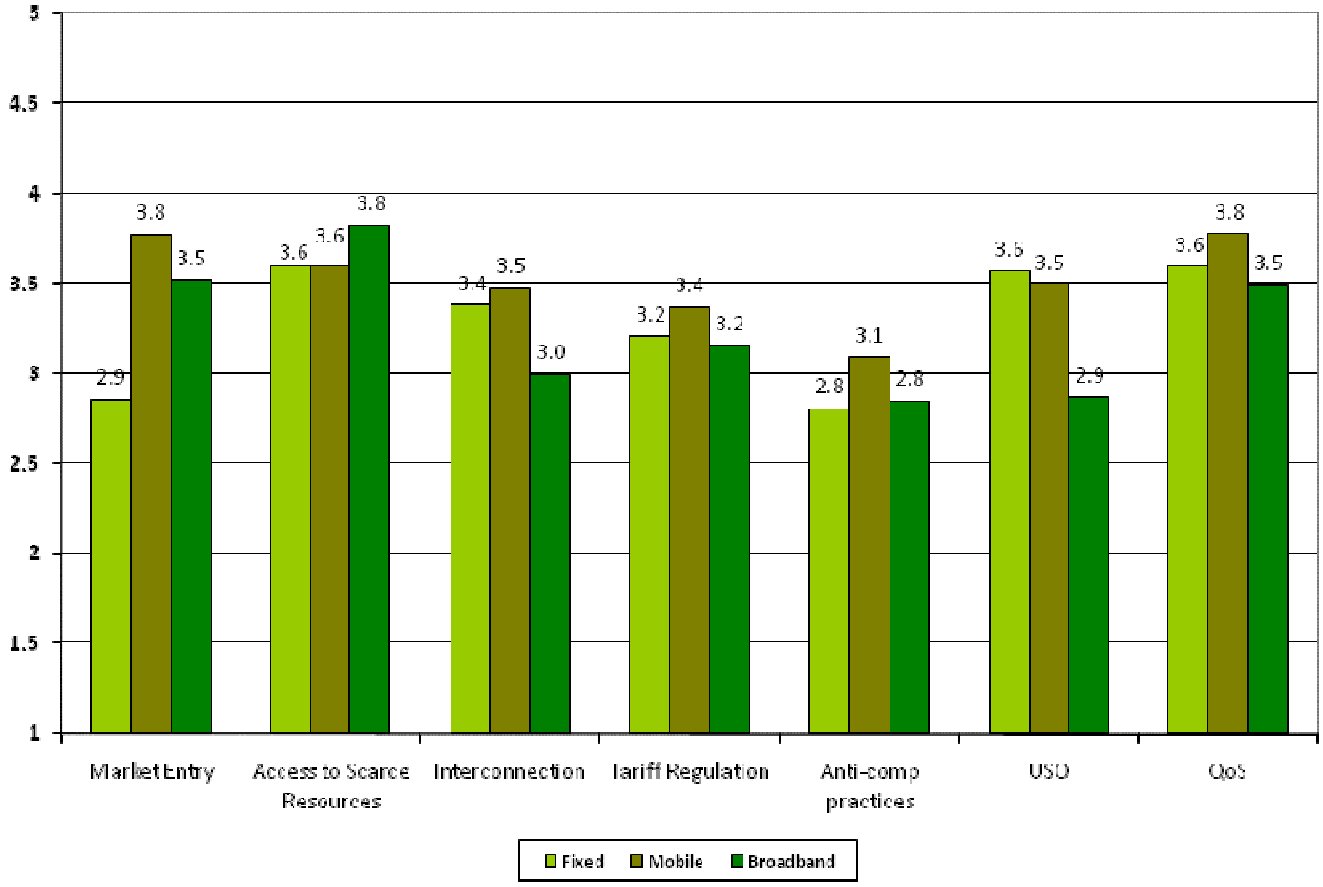
[20] From http://www.minivannews.com/news/news.php?id=4666

3. Results and analysis of the 2008 TRE survey for Maldives

3.1 Overall Scores

Figure 6 depicts the overall scores by sector for the 2008 Maldives TRE Survey.

Figure 6: 2008 TRE Scores for the Maldives



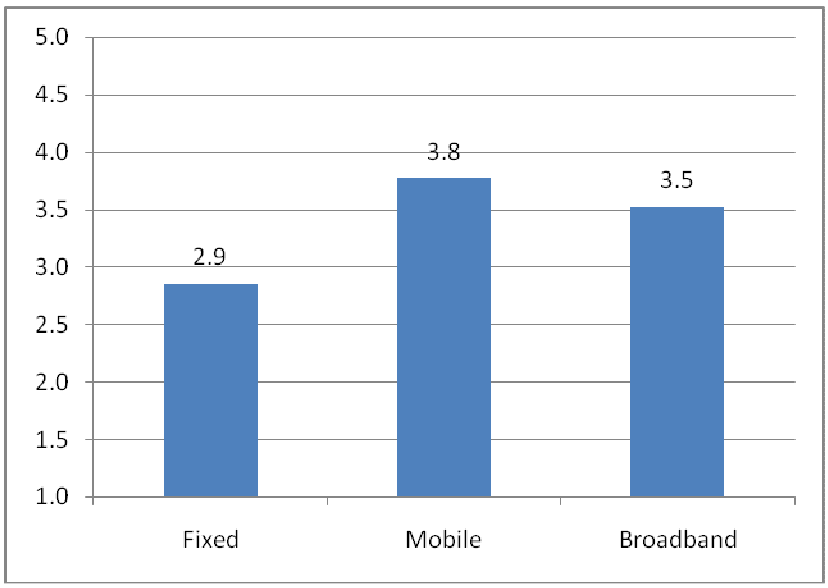
Average scores in each sector (3.2, 3.5 and 3.2 for Fixed, Mobile and BB, respectively) are above the level of average performance (i.e. above the midpoint of 3.0). In most cases (except in USO) we see the mobile sector receiving higher scores than fixed. We also see mobile receiving higher scores than BB, except in the case of access to scarce resources.

Looking at individual dimensions, the lowest scores are overall in the regulation of anti-competitive practices. Highest scores are seen in the regulation of quality of service dimension.

In the following sections we analyze scores in the context of historical and current regulatory and market activity.

3.2 Market Entry

Figure 7: TRE Scores for Market Entry



The fixed sector receives lowest Market Entry scores (Figure 7). This is not surprising since entry into the fixed sector is not an option for any other operator due to the exclusivity enjoyed by Dhiraagu, at least until December 2008[21].

In contrast, the mobile sector has allowed one new entrant (Wataniya) and the selection of that entrant was through a competitive process. These factors perhaps explain the high Market Entry scores received in the mobile sector.

Broadband scores are also high - higher than the mid-point of 3.0 and much higher than fixed scores. The sector also has competition (Focus Infocom) and the selection of that entrant was through a competitive process. This simple fact could perhaps explain the higher scores. Furthermore, it appears that that there are (or very soon will be) at least three (not two) different players in the broadband (or high speed data) market. While Dhiraagu and Focus Infocom are the usual competitors in the broadband sector, recently Wataniya was given approval by TAM to provide leased lines. Wataniya is also about to introduce high-speed mobile broadband through 3rd generation mobile networks using HSPA. In addition to this, Dhiraagu has been granted temporary WiMax frequency in order to test the technology, and it seems likely that a WiMax based broadband option will also be available in the market soon. Ability of the three operators to offer high speed data services through multiple

[21] This exclusivity will (hopefully) end by December 2008, if, as per "Action 4.1.5" of the Telecom Policy of Maldives 2001-2005, no exclusivity is be granted to any telecom operator after existing license expires

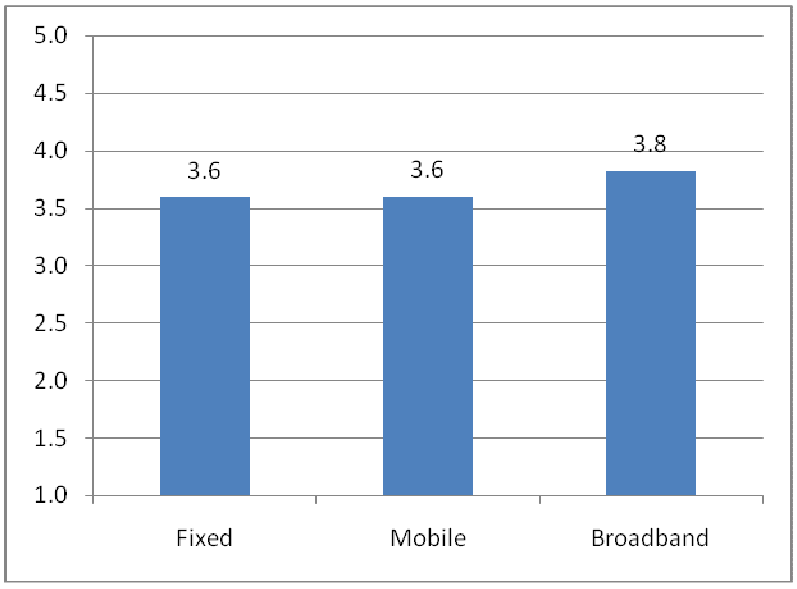
technologies (copper-based ADSL, dedicated leased lines, HSPA and WiMAX) are mostly recent developments, and signal relative ease of market entry in the broadband sector.

Market entry is not just about the ease of entering the market. It is about the conditions under which operators compete once in the market (i.e., competition *for* the market as well as competition *in* the market). When the latter (competition when in the market) is analyzed, there are certain moves by the regulator that can increase the level of competition. One is implementing mobile number portability (MNP). In a market like the Maldives where penetration of SIMs is already above 100%, the only way to acquire new customers is by getting them to switch from one operator to another. But most customers would prefer to do so while maintaining the same number. Obviously MNP has costs and it may not be economical for a very small market such as the Maldives. One could also argue that the value of a single (portable) number is slightly less in the Maldives because most consumers are already used to having two mobile numbers (one SIM from each operator). TAM recently conducted studies on MNP and deemed it not feasible for the Maldives.[22] Further, new pricing plans announced by Wataniya (where customers get same on-net rates offered by Dhiraagu, as pointed out earlier) may make the whole question of MNP irrelevant.

We will point out below at least 3 other dimensions (interconnection, access to scarce resources and anti-competitive practices) where regulatory action may be required to create a more even playing field.

3.3 Access to Scarce Resources

Figure 8: TRE Scores for Access to Scarce Resources



[22] Wataniya publically supported the implementation of MNP as per press releases, e.g. http://www.wataniya.mv/media/Press_release_Number_Portability_010707.pdf

The scores for the fixed and mobile sectors are practically equal. It appears that the operators are not faced with an undue lack of spectrum. Spectrum (including the latest 3G spectrum) is allocated by TAM when a request is made by the operators. Though not officially documented, TAM has a policy of automatically allocating spectrum when certain licenses (that require spectrum to operate) are issued – and example is that a GSM license automatically brings with it spectrum. So far it has been provided free of charge (though in effect there is a "royalty payment" of 5% of gross revenue (minus interconnection costs) charged to all license holders which takes the place of a license fee, spectrum charge and any other charges normally charged by regulators). It appears at least a nominal fee will be charged for WiMax spectrum when it is allocated in the future.

Moreover, in terms of access to international undersea cable and international gateways (a vitally important, yet often highly scarce resources to new entrants in markets that are still liberalizing), the playing field appears to be equal. Maldives has access to 2 separate submarine cables and gateways. Dhiraagu has access to one while Focus and Wataniya have access to the other.

In the BB sector, the two main competitors (Dhiraagu and Focus) have access to microwave links to give data connectivity to the islands (Dhiraagu has its own links, while Focus purchases capacity from Wataniya). Within Male, both companies have access to fiber optic cable – Dhiraagu has its own optical fiber. Focus has access to the fiber owned by the cable operators.

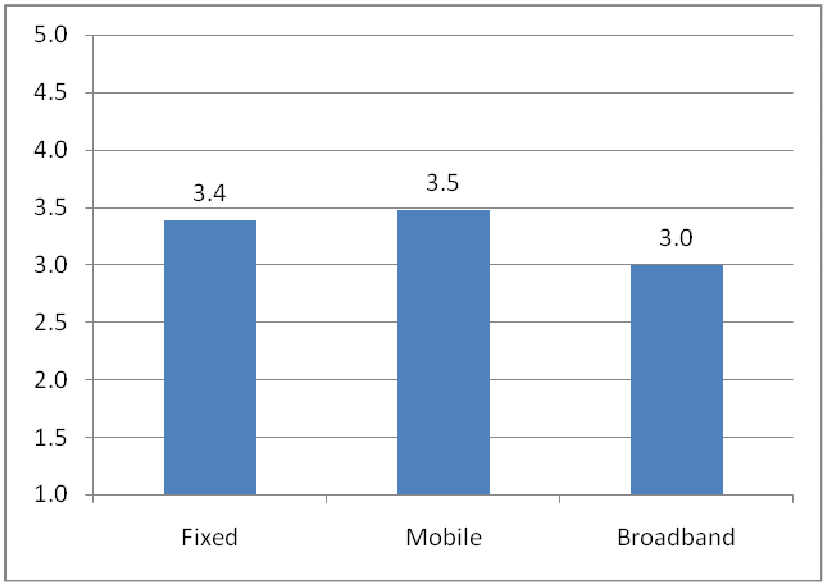
Dhiraagu has recently been granted spectrum to test WiMax services. Wataniya is close to launching HSPA data services based on 3G spectrum. As such, accessing resources (fiber or spectrum, either in the market or through the regulator) for the provision of broadband services does not appear to be cumbersome. These facts perhaps explain the high marks obtained by the broadband sector TRE scores.

While scores are high, in one important aspect, accessing certain types of resources appears to be very challenging for Wataniya. In an economy dominated by high-end tourism, inward international roaming by tourists who are guests at the many resorts is a highly profitable business. Maldives has around 88 resort islands (with many new ones being developed and the total soon to be well over 100). Dhiraagu, the incumbent, had set up base stations and provided roaming services to tourists. Once Wataniya entered the market, they too attempted to set up operations in these islands in order to access the profitable roaming market. However, only eight resort owners approved Wataniya's application for setting up towers. The resorts did not want their luxurious islands visually marred by two unattractive towers instead of the one they already had. When space was requested to use Dhiraagu's existing towers, agreement to share was only reached for one tower. It was and is Dhiraagu's position that the towers in the remaining 80+ islands could not be shared because they were incapable of accommodating the weight of Wataniya's transmitters/equipment, or because Dhiraagu already has plans for using any extra space available on the tower. Requests to the regulator or the Tourism Ministry appear to have not been successful. The result is that Wataniya and Focus, which partners with it to provide data services, are able to operate only in the most competitive segment of the market (i.e. the 200 or so inhabited islands, where they face increasingly stiff price competition from Dhiraagu and

faces a very cost-conscious consumer). They are essentially barred from competing in the lucrative inward international roaming market due to lack of access to the resort islands.

3.4 Interconnection

Figure 9: TRE scores for Interconnection



The scores for fixed and mobile are higher than the mid-point of 3.00 and are nearly equal.

When Wataniya was granted a license in 2005, Dhiraagu published a reference interconnection offer (RIO). Eventually the two operators negotiated and agreed upon rates. In practical terms, Wataniya does not appear to have faced undue difficulties or delays in interconnecting to Dhiraagu's network in Male when it first entered. Further both mobile operators receive an equal amount of money (Rufiyaa 0.46, around USD 0.036 at current exchange rates) when calls are terminated on their network. The fixed operator receives slightly more (Rufiyaa 0.49, or around USD 0.038) when calls are terminated on a fixed phone.

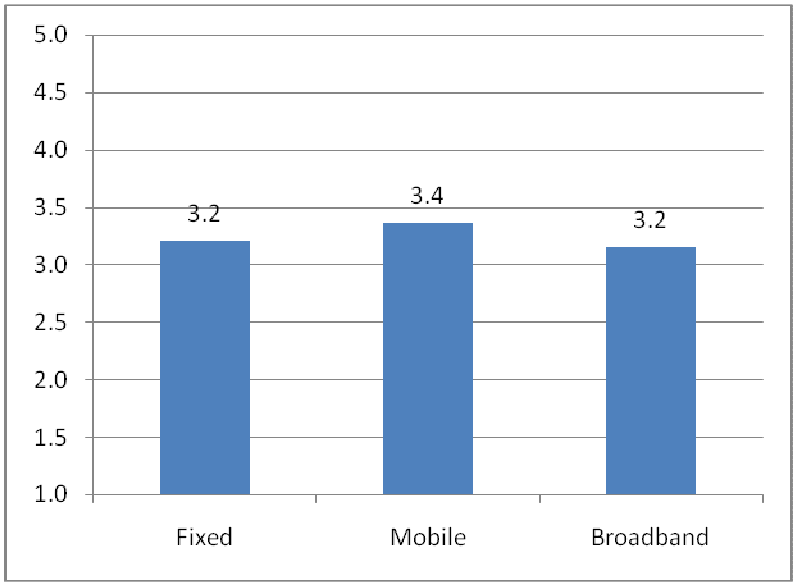
However in terms of international traffic, the rules are uneven. Wataniya is prohibited from carrying international voice traffic into the Maldives and then terminating it on Dhiraagu's network. This prevents Wataniya and Dhiraagu competing head to head for international incoming traffic. Moreover, when Dhiraagu terminates international calls on Wataniya's network, Wataniya states that it makes less money (only around USD 0.04 or 0.05, essentially local termination rates) than it could if it were to carrying its own inward traffic (around USD 0.12 – 0.18, depending on the country of origination). The difference is charged (retained) by Dhiraagu. It is possible (and hoped) that this will end when Dhiraagu's exclusivity runs out in Dec 2008.

There exist significant differences in on-net versus off-net pricing offering by both operators – for a Dhiraagu SIM owner it is significantly cheaper to call other Dhiraagu mobile numbers than to call Wataniya numbers, and vice versa. This is one of the reasons many Maldivians have SIM cards from both mobile operators and use dual-SIM phones. As a result, the situation is such that it's nearly impossible for the new entrant to poach customers from the incumbent. As mentioned already, Wataniya is attempting to eliminate this disparity by introducing calling plans that enable its customers to call Dhiraagu numbers using the Wataniya SIM at the same rate they would if they used their Dhiraagu SIM.

There is no internet exchange in the Maldives. The result is that packets from one ISP leave the country and are then routed back to reach the other ISP. At the moment, this may not be a significant issue since overall Internet traffic volume is low, there is sufficient international bandwidth and most accessed content is probably hosted outside of the Maldives. But usage will not be low forever and demands on international bandwidth will increase as a result (it will further increase if the GoM's plans to encourage off-shore call centers become successful). More and more content will also be locally generated and accessed. In this scenario, keeping local traffic local may be prudent.

3.5 Tariff Regulation

Figure 10: TRE scores for Tariff Regulation



The high scores in the mobile sector are attributable to the hands-off nature of mobile sector tariff regulation where TAM operates an "inform only" policy. The operators have to inform the regulator 5 days prior to introducing any new tariff plan. Unless the regulator raises an objection within 3 days, the operators are free to go to market with the proposed tariffs on the 5th day. In practice, most parties interviewed for this report claim that objections are rarely, if ever, raised for mobile tariffs. The reality is that prices have been dropping significantly, and the two mobile operators are competing head-to-head,

each offering new tariff plans that match or beat the other's prices. Though not publicly announced, the regulator does state that no operator will be allowed to drop prices below a certain level – say, below termination rates, for example.

The fairness of applying the same tariff regulation methods to the incumbent as well as to the new entrant could be questioned. The incumbent has over 70% market share. It enjoys exclusivities (e.g. bringing in international traffic and terminating on either network) and has access to markets (e.g. resorts islands) that the new entrant does not. Having been in the market for longer and built out its network under monopoly conditions in the past, its most likely amortized much more of its capital expenditure (unlike the new entrant whose network was only recently built-out). It is reasonable to claim that the incumbent has significant market power. In such an environment, it can be argued that asymmetric regulation of the incumbent provider may be more appropriate, at least until the market shares come close to each other, if not become equal. Of course it is vital to first verify if there is cross subsidy from the fixed business of the incumbent to its mobile business. The 2006-2010 Telecom Policy called for accounting separation prior to the end of 2008. It is unlikely that this deadline will not be met. But TAM does state that it is a priority and that it is working towards account separation in the near future.

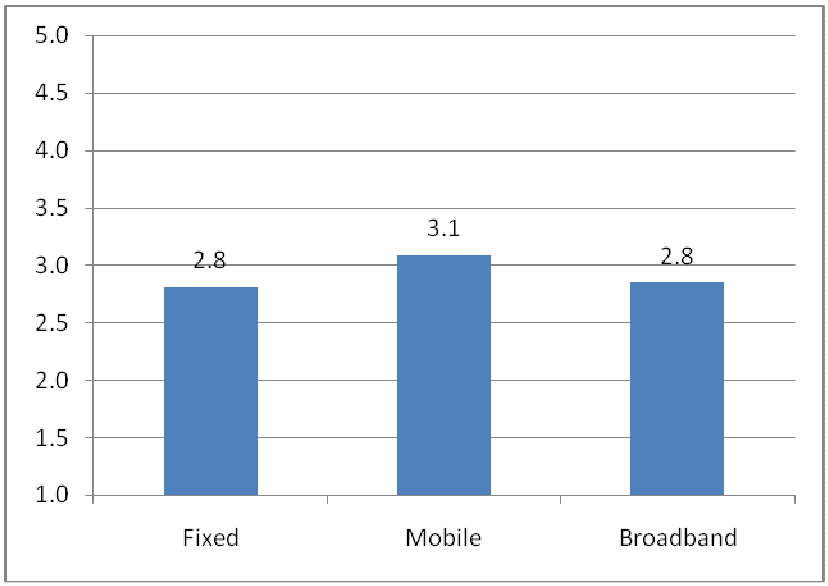
On the fixed sector, there is regulation of prices – Dhiraagu must first obtain TAM's approval before new tariffs can be introduced. However TAM appears to raise objections or call for justifications rarely – by some accounts it has been 6 to 8 months since TAM has even asked for detailed justification of a particular tariff.

Internet or Broadband tariffs also need TAM approval.

Proving that perceptions of negative or positive discrimination are subjective, Dhiraagu claims that they are asked to justify tariffs more often than Wataniya. Interestingly, a survey respondent stated in the questionnaire that "the confidentiality aspect is a problem" due to the "new tariffs being passed onto our competitors via the regulator".

3.5 Regulation of anti competitive practices

Figure 11: TRE scores for the regulation of anti competitive practices



The low scores in this dimension can perhaps be attributed to the perception that TAM (at best) treats the incumbent with market power and the newcomers equally, or (at worst) treats the incumbent more favorably than the new comers.

In the absence of a competition authority, it appears that TAM plays the role of mediator in case of disputes between two parties in the telecom sector. No law suits have been initiated by the 3 major players yet.

However some stakeholders point fingers at TAM and criticize it for being mandated with maximizing profit for the GoM (through the 55% ownership of Dhiraagu) and as such generally favoring Dhiraagu's profitability and growth over its rivals. However the incumbent too points fingers at TAM and claims that it discriminates against Dhiraagu, or that it makes decisions without keeping them informed.

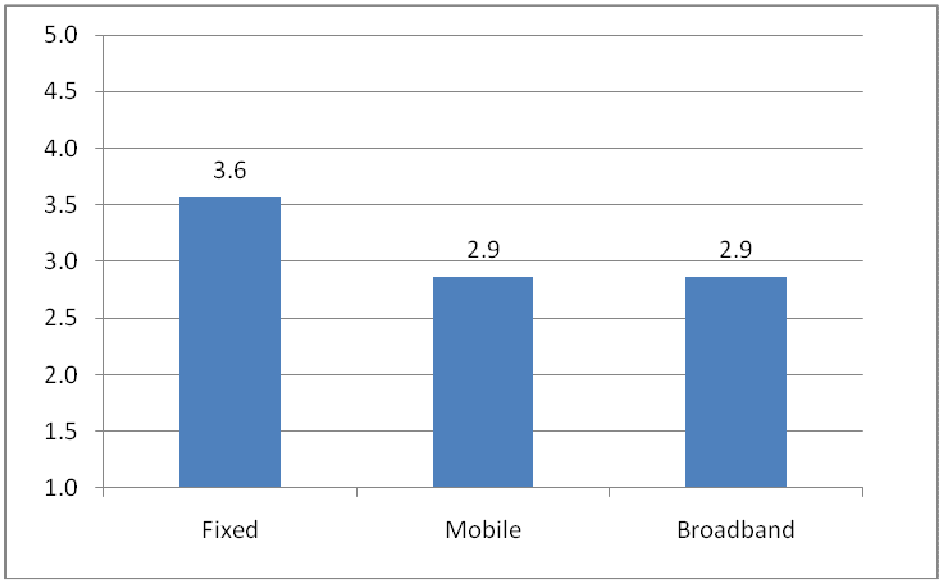
The opportunity for anti-competitive cross subsidization of a competitive service (e.g. mobile) with revenues earned from a monopoly service (e.g. fixed), does exists in the Maldives. It is occasionally hinted at by industry observers. However in the absence of publicly filed accounts, conclusions cannot be drawn. The Telecom Policy 2006-2010, in aiming for best practice, has called for accounting separation by the end of 2008. Interestingly the Policy appears to call for accounting separation for all companies, not just for the incumbent, and TAM states that it will be implemented by 2008 as planned. Though accounting separation is not a cure for everything, once implemented it could help answer the question of cross subsidization. A cleaner solution may be separation of the backbone business from the access business, with Wataniya also being allowed to provide fixed service as it sees fit.

Apart from the 2003 Telecom Regulation which established TAM, there are no other laws pertaining to the sector. There is also an absence of subordinate regulations and standards – as such, there are few documented rules for operators on anything (be it on how tariffs will be regulated, on how quality of service will be measured or the multitude of other dimensions under the regulator's purview). Most

decisions are therefore made on an ad-hoc basis, on demand. On the plus side, it is better to have no rules than to have rigid and/or bad rules. And the rules/decisions made by TAM so far have been by and large "good" ones. But the negative side, the regulator having so much discretion increases regulatory uncertainty.

3.6 Universal Service Obligations

Figure 12: TRE scores for Universal Service Obligations



The universal service obligations imposed on Dhiraagu and Wataniya on mobile services have been essentially met, with both operators covering 96% - 100% of the population. Take up is also high as evidenced by the mobile penetration of 129 SIMs per 100 people in August 2008[23].

On the fixed side, a phone is available within walking distance to every citizen, via public telephone booths installed by Dhiraagu[24]. However take up by citizens of residential fixed phones was low. This is perhaps due to the access network being under developed or non-existent in the most populated islands [25]. In 2007 attempts were made to bring fixed phone and broadband services to about 27 remote islands with over 1500 people by encouraging cooperatives (from the islands) to work on a risk and

[23] Note that this number is calculated based on the total number of SIMs reported by the regulator for August 2008 and the total population reported by the Ministry of Planning and National Development for August 2008. The regulator calculates a higher number (of 133.44 SIMs per 100 people) based on the 2006 population reported by the MPND.

[24] Seventh National Development Plan 2006-2010: Creating New Opportunities, Government of Maldives, Ministry of National Planning and Development, 2007 (http://www.planning.gov.mv/en/images/stories/ndp/seventh_ndp.pdf)

[25] According to the Maldives Telecom Policy 2006-2010, published on 1 August 2006, access networks to provide fixed line services have only been developed in 13 out of the 200 populated islands.

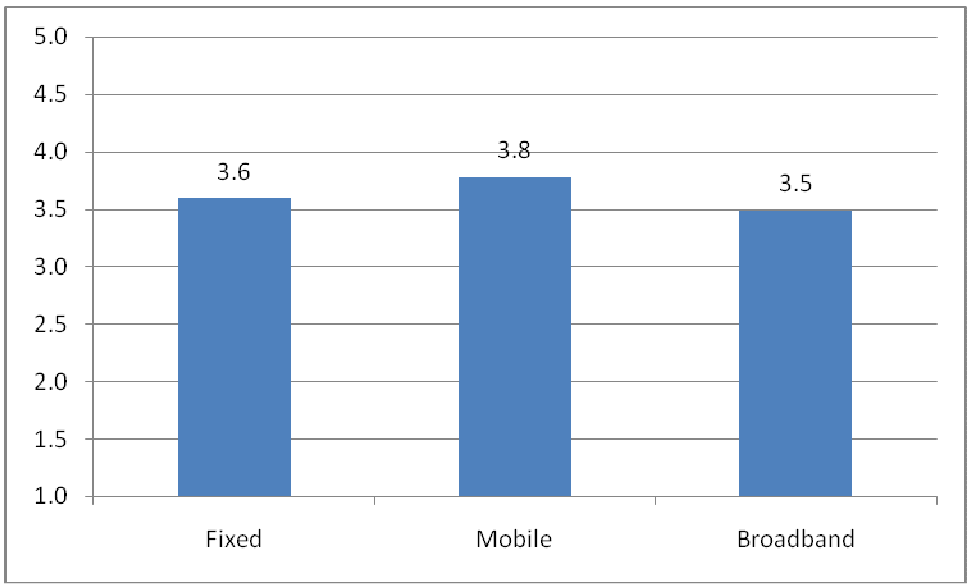
revenue share basis with Dhiraagu. The cooperatives were to build the access network within the island and provide residential connectivity. Dhiraagu was to sell access on its network. However the program has essentially been abandoned due to lack of interest and/or due to the inability of the island cooperatives to make sustainable profits. This is perhaps not surprising in light of the availability and convenience offered by mobile phones. Fixed lines are being substituted by mobile SIMs across emerging Asia.

Given the wider geographic coverage of mobiles, the low TRE scores given to the mobile USO TRE are odd. But from a regulatory point of view, though no USO payments were levied on the mobile operators, mobile USOs appear to have been explicitly imposed, while fixed services were allowed to rollout at a slower scale. This perhaps explains the lower scores in mobile.

At present it is estimated that around 70% of the Maldivian population can obtain access to broadband coverage through Dhiraagu. There are no universal service obligations imposed on the broadband sector, but the new telecom policy places a narrow-band offering (of a minimum 250 MB download limit per month at 56 kbps speed) in the "basic telecom package" that the GoM hopes will be available to all households for a specified price.

3.7 Quality of Service

Figure 13: TRE scores for QoS



All three sectors receive above-average scores.

The voice operators report to TAM data against standard quality indicators (e.g., faults per line). But it is unclear if TAM uses the data in decision making.

However consumer complaints on QoS appear to be taken seriously by the regulator. When such complaints are received they contact the relevant operator(s) and request them to act on it, and follow through.

3.8 Conclusions and Recommendations

Maldives has taken important first steps towards liberalization by enabling limited competition in two of the three sub-segments of the telecom market. However it still has to contend with an incumbent whose historical advantages continue to give it a significant advantage over the competitors. It also has less-than-ideal duopoly situations in the mobile and broadband segments. The obvious connection between the incumbent and the government, together with a regulator with little independence from the government, has contributed to creating the perception that new entrants face a less than equal playing field. That this is a key area of concern for stakeholders is shown in the TRE survey - the lowest scores given by stakeholders for the Regulation of Anti-competitive Practices dimension when compared to the other 6. Procedural legitimacy is compromised by the fact that:

- the current Telecom Act is on its last legs and a new one hasn't been approved
- there is a lack of subordinate regulation or rules issued by TAM (though several have been drafted and are used internally for decision-making, they are not made available to operators).
- the manner in which regulatory decisions are made is ad-hoc, demand driven and without standardized or transparent procedure

The first set of recommendations based on the TRE survey therefore is to address these concerns by:

1. Passing a new Telecom Policy which gives financial and legal independence to TAM

Regulatory independence however is not an end in itself. It is quite possible to have an independent regulator who makes arbitrary and unsound regulatory decisions. Worse, independence might free the regulator from interference and deep oversight by the government, but enable it to carry out the orders of other private parties, be they operators or other influential personalities. In small markets where the stakeholder is personally and professionally connected to each other, there is plausible risk of this happening. The goal therefore is not just independence, but the removal of discretionary power along with it. A starting point for reducing discretion is therefore to :

2. To adopt transparent and standard procedures in the rulemaking process. For example, TAM could say that it will always follow certain steps before a decision is made. These steps will include the publication of consultation papers (which is effect an advance announcement of the decision TAM intends to make in the future, soliciting feedback from stakeholder on said consultation paper through formal written submissions and public hearings, altering of decisions based on input received through such submissions by stakeholders). These actions reduce the

opportunity for one stakeholder to unduly influence the rules, increase the chances of better rule-making because more broad stakeholder input has been incorporated in the final decision, and reduces regulatory risk (because the operators are aware of future rules/decisions that will affect them well before they come into force). More importantly, such steps increase the transparency of the rule-making procedure.

Once the procedures are established, TAM should move as fast as possible to identify key areas of regulation which require rule-making. Routine but important things such as tariff regulation and quality of service regulation require rules that don't impose undue burdens on the time of the regulator. Less frequent but other important activities such as rules on the allocation of frequencies, issuance of licenses, rights of way, numbering and so on can be more resource incentive in their implementation. In summary, the next recommendation is to:

3. Through a consultative process, draft and make available to all stakeholders subordinate regulations that cover the key areas under TAM's purview.

The above recommendations are aimed at addressing issues around independence and accountability of the regulator, the process (formal and informal) by which decisions are made, the transparency and predictability of decision-making and other matters related to regulatory governance, or the "how" of regulation.

The next set of recommendations are about regulatory substance, the "what" of regulation. They relate to the actual decisions made or to be made by the regulator and the reasoning behind those decisions. The recommendations are centered on making the competitive environments faced by the new entrants more equal to that faced by the incumbent. The opportunity for doing this is naturally presented when Dhiraagu's existing licenses come up for renewal in December 2008. The recommendations are therefore :

4. End Dhiraagu's existing exclusivities in all segments and sectors. This would

    a. Allow *at least* Wataniya and Focus (should they so wish) to enter each sub-segment of the market that they are not currently operating in. This means, for example, that both new entrants would be free to offer fixed phones. Ideally Maldives will move to a unified licensing regime to do this.

    b. Allow Wataniya to carry international traffic into the Maldives and terminate on any phone number, including those that belong to Dhiraagu.

Entry into a market that already has more than 100 percent penetration (in the mobile sector) is a challenge even for a new competitor with deep pockets. Access to backbone is the biggest challenge a new entrant will face. TAM therefore needs to avoid duplicate backbone having to be built (yet again, similar to what Wataniya did upon entry), and make market entry attractive to new comers by providing mechanisms for them to access backbone.

5. To make the market attractive to a new entrant and reduce investment in yet another backbone by:

    a. Mandating that existing operators share backbone with any new entrant into the sector on a non-discriminatory basis, or

    b. Separate the incumbent's backbone network and create a new company that operates the backbone. This would give a new entrant a choice of backbone providers between the two existing players, and only require that it invest in the access network. Further into the future (when the playing fields are more equal) TAM could even request that Wataniya also separate its backbone from the access network business.

If market entry allowed and is made attractive to newcomers through actions such as those listed in 4 and 5 above, it may attract new players into the market. However, even if a new entrant captured the whole market, it is still a small market in the Maldives. Therefore economies of scale are not likely to come into play. Anyway capturing 100% market share would be near impossible since (at least the mobile) market is already saturated. Therefore the chances of failure for a new entrant are high. In a large market like India, a failing company may have the opportunity to try to capture a different market segment, or focus on a different geographical region. In Maldives these are not options. The only option therefore is to exit. Exit is a natural part of a competitive market, and should not (and cannot) be prevented. However the regulator needs to ensure that:

6. Any firm wishing to exit the market is bound by a set of pre-defined conditions/rules that are clearly laid out prior to entry. At a minimum rules on how to deal with stranded consumers need to be included in these conditions. In addition, requirements such as entering into good faith negotiations with the government and other existing operators could be useful. A significant deposit could even be required of new entrants, with the understanding that these funds would be used to cover cost of exit.

Recommendations 1 – 6 above are important actions that often require changes in law or procedure. Such changes will take time. In the meantime, there is at least one area that TAM can address without too much effort: should and could address immediately.

7. Implement the accounting separation clause already listed in the Telecom Policy 2006-2010. At a minimum this will help prove or disprove the whispers about cross-subsidization and improve perceptions.

8. Play a more active (or forceful) role in getting Wataniya tower access in the resort islands. In order to do this, TAM needs to not only work with other government agencies (such as the Ministry of Tourism) but also think of creative solutions (perhaps running a competition among internationally renowned architects to design cell phone towers that "blend into" the resort island architecture, or create towers that are works of art in themselves. This way, the resort owners may look forward to installing them in their islands.

The above list is perhaps aspiration, and not all recommendations will pass feasibility tests. However these are all areas that need the attention of TAM in the short to medium term to ensure the vibrant telecom sector continues to grow, the operators remain profitable, and the communications needs of the citizens and business are met (affordable and high quality services, choice of service providers, innovative services made available).

4. Acknowledgements

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5. Annex 1: Methodology

The TRE instrument was developed by LIRNEasia and documented in detail in Samarajiva et al 2007[26]. It has been implemented in 2004 and 2006 in developing Asian countries. The TRE instrument asks informed stakeholders to rate (on a Lickert scale of 1 to 5, 1 being highly unsatisfactory, 5 being highly satisfactory) the Telecom Regulatory and Policy Environment in a country along 7 dimensions. 5 of the 7 dimensions are based on the GATS protocol. In addition, the QoS and Tariff Regulation dimensions have been included, given their importance.

Potential respondents come from 3 different categories:

- Category1: those directly involved in the sector such as operators, equipment vendors.
- Category 2: those indirectly impacted by the sector or those studying/observing the sector with broader interest such as consultants and lawyers.
- Category 3: those who represent the broader public interest such as media personnel, other government officials, retired regulators, civil society organizations.

Number of Responses: The minimum number of respondents per category for a micro-state such as Maldives is 5, as per the TRE methodology. The Number of respondents for Category 1, 2 and 3 were 7, 4 and 5, respectively. Given the small market size, and the very small number of operators, finding adequately informed respondents proved to be a challenge, perhaps not surprisingly. This proved to be particularly challenging for Category 2. The response rates for Category 1, 2 and 3 were 46%, 57% and 42% respectively.

Weighted scores: The methodology specifies that each category should contribute equally to the final TRE score. However in these types of surveys it is not possible to pre-plan how many completed questionnaires will be returned. As such, it is not always possible to obtain an equal number of respondents from each category. Therefore weights are used to equalize the contributions made per category. The weights assigned to Category 1, 2 and 3 were 0.7619, 1.3333, 1.3333 and respectively. The raw (un-weighted scores), weights assigned, and the final (weighted) scores for each dimension are shown in Table 5.

[26] Samarajiva R, Galpaya H, Goswami D, Ratnadiwakara D, *Telecom regulatory Environment Assessment: Methodology and implementation results from five emerging economies*. Available at http://www.lirneasia.net/wp-content/uploads/2008/05/lirneasia-tre-paper-for-tprc-v8.pdf

Table 5: Raw and weighted scores, Maldives TRE, 2008

Dimension	Dimension	Raw (un-weighted) score	Final (weighted) Score
Market entry	Fixed	2.8	2.9
	Mobile	3.8	3.8
	Broadband	3.5	3.5
Allocation of scarce resources	Fixed	3.4	3.6
	Mobile	3.7	3.6
	Broadband	3.7	3.8
Interconnection	Fixed	3.3	3.4
	Mobile	3.5	3.5
	Broadband	2.9	3.0
Tariff regulation	Fixed	3.1	3.2
	Mobile	3.5	3.4
	Broadband	3.1	3.2
Regulation of anti-competitive practices	Fixed	2.6	2.8
	Mobile	3.0	3.1
	Broadband	2.7	2.8
Universal service obligation	Fixed	3.3	3.6
	Mobile	3.3	3.5
	Broadband	2.7	2.9
Quality of Service	Fixed	3.4	3.6
	Mobile	3.8	3.8
	Broadband	3.4	3.5

Modes of completing the questionnaire: Though web and paper (in person or faxed) surveys were available, the primary mode (for 94% of respondents) preferred by the respondent was the web survey. Only 6% of the respondents used a paper-based survey.

Previous surveys: While TRE surveys were previously conducted in 2004 and 2006 in several emerging Asian countries, 2008 is the first time the survey was conducted in the Maldives. As such there is no time-series data to compare.

6. Annex 2: Summary of Regulatory and Policy Events for the Maldives

The following information was made available to all survey respondents in order to refresh their memory on recent regulatory and policy developments

Date	Event/Action

January 2007	**Regulation on the use of satellite phones passed:** Under the regulation, satellite phones need to be registered and used under license issued by TAM.
January 2007	**Carrier license issued to WARF:** Carrier license to WARF Telecom International Private Ltd, the company established to connect the Maldives to the international fiber optic backbone.
February 2007	**Guidelines on issuing frequencies for temporary use:** Guidelines issued for permitting the use of temporary frequencies for purposes like equipment testing, demonstrations and exhibitions etc.
April 2007	**Regulation for issuing frequencies for Terrestrial Broadcasting introduced:** The regulation was introduced in line with the announcement of the government intention of opening up of Broadcasting services in the Maldives to private parties.
August 2007	**Frequency Band identified for the use of WiMax Technology in Maldives:** After testing the use of WiMax on different bands, 3.3 GHz band was identified for the use of WiMax in the Maldives.
September 2007	**Regulation on satellite uplinking for broadcasting passed:** Regulation issued in line with the opening up of broadcasting services and the decision to facilitate broadcasters by permitting satellite uplinking for broadcasting purposes.
September 2007	**Broadcasting Station Licenses issued**: Station licenses issued to broadcasters to operate broadcasting stations and permit the use of assigned frequencies to transmit broadcasting signals.
October 2007	**Draft Telecom Bill prepared:** In accordance with the Telecom Policy which calls for the strengthening of the legal powers of the Regulator, a Telecom Bill was prepared and submitted to the President's Office and the Ministry of Legal Reform and Information for approval. It is expected that the Bill will be submitted to Parliament during 2008.
October 2007	**Feasibility study on Mobile Number Portability carried out:** In line with international precedents and as a means of ensuring relative competitiveness in the mobile market, introduction of Mobile Number Portability (MNP) was considered and a feasibility study was undertaken. The study concluded that the financial burden of implementing MNP was far higher than the consumer benefits to be gained.
October 2007	**Regulation on issuing 4-digit Short Codes for Important Public Services:** TAM to approve valid requests for Short Codes to provide important public services targeting a relatively large user base.

October 2007	**Arrangement with fixed line operator Dhiraagu on providing fixed line residential service to islands with no residential service:** Dhiraagu will enter into revenue share agreements with interested corporate entities belonging to island communities to provide fixed line residential service to the islands.
October 2007	**Approved provision of Wi-Fi internet services by Dhiraagu:** Regulatory Board approval for Dhiraagu to provide Wi-Fi internet services to Male' area use the 2.4GHz frequency band.
March 2008	**Amendment to Regulation for issuing Short codes:** Amended to included detail on classifying private and public short codes and fees to be charged.
June 2008	**Assignment of Frequency Band for Radio Linking:** 5.725 - 5.850 GHz frequency band assigned for establishment of radio links for broadcasting purposes.
June 2008	**Approved provision of satellite phone services by Dhiraagu:** Regulatory Board approved provision of satellite phone services by Dhiraagu using Thuraya satellite phones.