

8. Conclusions

8.1 A successful SIDS

The Maldives faces greater constraints than even most small islands: it is a Least Developed Country (LDC), has a small population of less than 300'000 and consists of 199 inhabited islands spanning 820 kilometres from north to south. Despite these economic, demographic and geographic challenges, the Maldives was able to provide access to telephone service to all of its inhabitants by the year 1999. This was accomplished through a compact between the government and the private telecommunication operator.¹

Despite this impressive achievement the Maldives cannot afford to rest on its laurels. It needs to evolve to a new stage that fully seizes the benefits of Information and Communication Technology (ICT) for development. This includes moving from universal access to universal service and widely diffusing newer ICT such as the Internet, particularly in underserved areas.

One concern is that the Maldives is not fully exploiting the potential of ICT for delivering services to remote, dispersed locations. While there is a telemedicine project, benefits have not thus far been widespread. Distance education, beset by concerns about the quality of learning, has not been fully exploited.

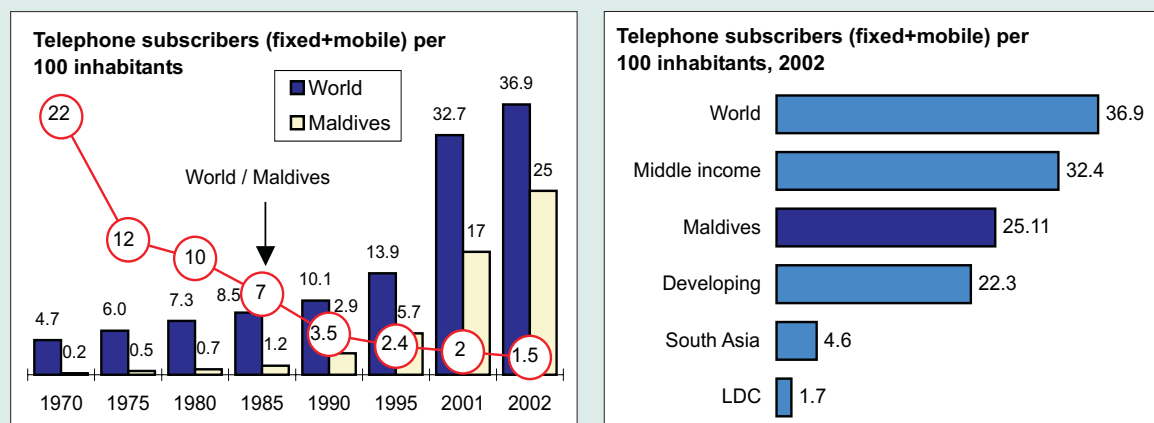
The issue of injecting additional liberalization in the telecommunication sector is complex. Dhiraagu has served the nation well. It installed the backbone network under difficult geographical conditions allowing the nation to achieve universal access. The fixed, mobile and Internet networks are reliable. Fixed telephone tariffs for most consumers are reasonable. Though mobile tariffs are

relatively high, they do not seem to have been a deterrent to uptake. Internet pricing is partly a result of high international connectivity costs that the Maldives pays and should drop with the newly licensed ISP. Further liberalization raises questions about feasibility given the population dispersion of the country. Without adequate regulation, the digital divide could widen as investors focus on the more populated islands. For liberalization to work, regulatory skills will need to be deepened to deal with a multi-operator market. Additional competition may also lead to a rebalancing of tariffs. Local telephone service prices would rise and possibly create concerns about affordability.

Another challenge is the need for greater broadband use to bring the Maldives more fully into the information age. The existing national backbone—mainly microwave links—was not designed with high-speed data transmission in mind. The network needs to be upgraded or an overlay needs to be installed. Options would include fibre optic cable and Very Small Aperture Terminal (VSAT) satellite technology. On the one hand fibre is an obvious solution at least for compact Male' and possibly for connecting atolls by using festooning to interlink islands. There is no need for the construction of towers but the ocean depths between atolls, the large spread of the country and price of fibre itself could be costly. Alternatively VSAT technology solutions could be explored. The option of connecting to an undersea fibre optic cable for international connectivity should also be more deeply investigated. Though initial inquiries have been made, and the costs appear high, this should be re-examined in the context of wider benefits. Options for sharing the cost of the connection and possibly obtaining financing assistance should

Figure 8.1: Catching up

Telephone subscribers per 100 inhabitants, 1970-2002, world average and Maldives (left) and telephone subscribers per 100 inhabitants, 2002, Maldives and various regional and economic group averages (right)



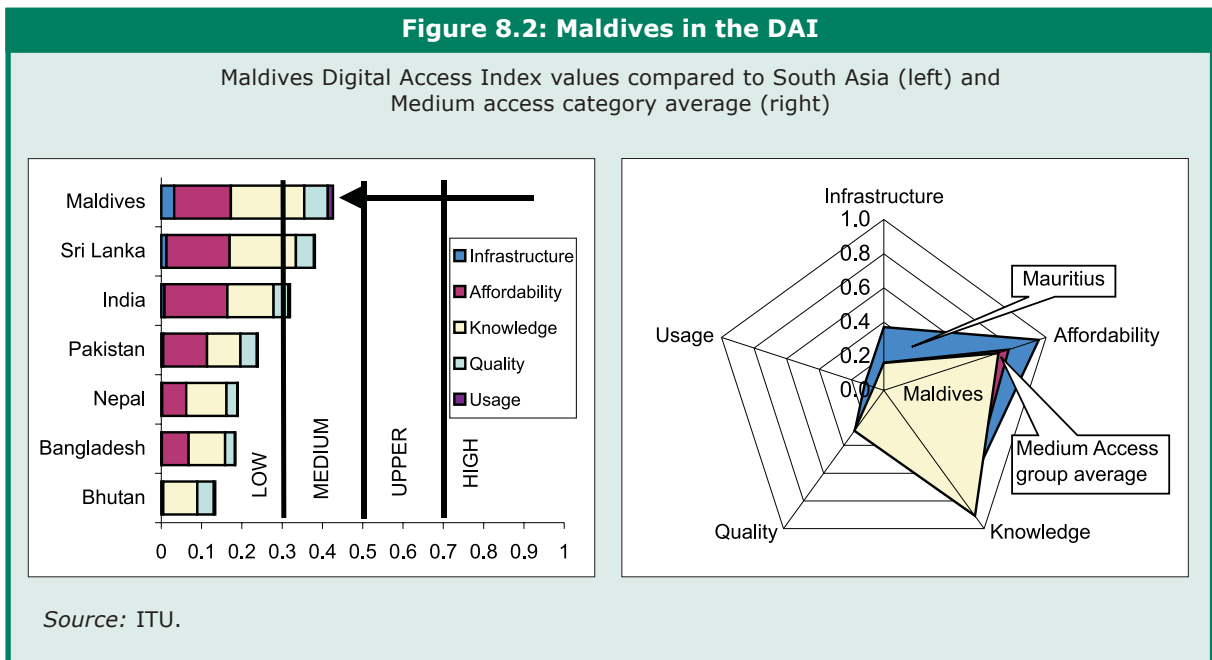
Source: ITU World Telecommunication Indicator database.

be explored. The government should fully leverage various options and encourage different parties to collaborate and not duplicate infrastructure unless absolutely necessary.

8.2 Assessing the Maldives

As noted throughout this report, the Maldives has made exemplary progress in expanding telecommunication access to its citizens. How does the Maldives compare internationally and how ready is it to make use of the benefits from ICT? In terms of overall infrastructure—fixed and mobile telephones—the Maldives' rank has risen by 30 positions (from 133 to 93) over the last quarter century. While the country's telephone density was 22 times less than the world average in 1970, this gap had been reduced to just one and half times by 2002 (Figure 8.1, left). The Maldives has the highest telephone subscribers per capita in South Asia as well as among the LDCs (Figure 8.1, right). It is on target to catch up with middle-income countries in terms of telephone penetration fulfilling one aspect of its aspiration of Vision 2020 to become a middle-income developing nation.

The ITU launched the *Digital Access Index* (DAI) in November 2003 as a new way of measuring the ability of nations to provide access to ICT.² The DAI is based on four factors that have an impact on access: infrastructure (fixed and mobile telephone subscribers), affordability (Internet access costs), knowledge (literacy and school enrolment) and quality (international Internet bandwidth and broadband subscribers). A fifth factor, Internet user penetration, matches the theory of the index with actual usage. The Maldives ranked 92nd out of 178 countries and was the highest-ranking LDC and South Asian nation (Figure 8.2, left).³ Its overall score of 0.43 places Maldives in the medium access category. It is useful to compare how Maldives fares in the various factors to see its strengths and weaknesses. In terms of infrastructure it matches the medium access category average while knowledge, quality and usage are above the average. The area it does less well is in affordability (Figure 8.2, right). When compared to the top-ranking medium access countries, the Maldives needs to raise its level of infrastructure and lower its costs. The country should aim for the goal of moving into the next category, high access (DAI value above 0.49).



The ITU has been using a framework developed by the Mosaic Group to gauge the e-readiness of nations.⁴ That framework has been applied to the Maldives (Box 8.1). Maldives ranks in the mid-range of countries that have been studied. It performs well in terms of overall penetration and absorption of ICT in different sectors of the economy. It does less well in spread of ICT—particularly to the atolls—and organizational infrastructure—with a relatively closed telecommunication market. These are areas that the nation needs to work on to improve its e-readiness ability.

It is also useful to carry out a *Strengths, Weakness, Opportunities and Threats* (SWOT) analysis particularly as they relate to the development of the ICT sector. The Maldives has a number of strengths. Widespread use of English gives it an advantage in the ICT area where so much content and software is in that language. Another positive attribute is the Maldives sense of unity simplifying consensus on national goals and strategies. Good governance is another plus with the public administration scoring well in terms of transparency and efficiency compared to other developing

nations.⁵ Universal access to telecommunications is also a strong point. The Maldives location can be a plus particularly in attracting ICT businesses that are looking for security and distance from the world's problems.

The country also has several weaknesses. While the Maldives' small size and geography can be strengths they are also the source of most of its weaknesses. For example the country's small population base works against the establishment of a university, constraining higher educational opportunities. This is particularly important since the development of an ICT industry requires advanced skills. Another weakness is the lack of broadband capability in the national backbone. This inhibits the atolls from fully participating in the information society by restricting the functionality of applications such as telemedicine and distance education. The lack of a fibre optic connection for international Internet bandwidth is also a limitation since the quality and pricing of satellite connection is less favourable.

It is important to be realistic about e-opportunities particularly

Box 8.1: State of the Internet in Maldives

The International Telecommunication Union (ITU) has been using a framework to analyze the development of the Internet in different nations. Developed by the Mosaic group, the framework consists of values for six different elements that have an impact on Internet take-up.⁸ Values range from 0 to 4; the higher the value, the better.

Pervasiveness measures the overall access rate to the Internet. Maldives is rated *common*, 3, as the estimated penetration rate is 5.3 per cent of the population (above the one per cent to reach the common level).

Dispersion measures the geographical spread of Internet access. All inhabited islands in the Maldives have telephone service. Although Internet access is theoretically available wherever there is a telephone line at a standard nationwide fee, in reality the line would need a PC. On some of the islands, there are only payphones with no PC attached. Public Internet access is available on some 55 islands. Dispersion in the Maldives is rated 2, *moderate*, with Internet access available from approximately 25 – 33 per cent of inhabited islands.

Absorption measures the extent to which different sectors of the economy are using the Internet. Maldives is rated 3, *common*. Virtually all government agencies have Internet access, as do secondary schools. Large companies and sectors such as tourism and banking have Internet access. The Ministry of Health has a Local Area Network and two hospitals are involved in telemedicine project.

Infrastructure measures the extent and speeds of backbone and local access networks. Maldives is

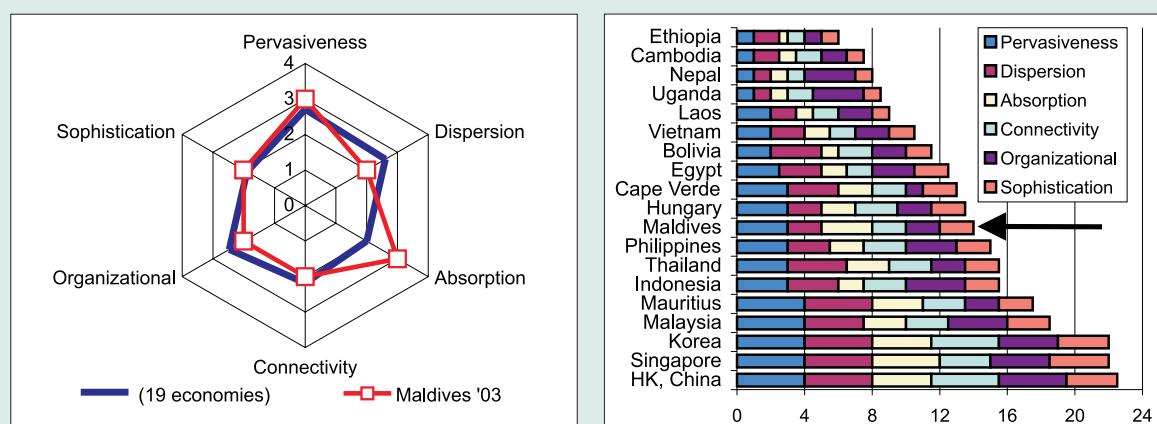
rated 2, *expanded*. Maldives has a well-developed telephone network and has introduced broadband access. However, the predominant method of access to the Internet is still via low-speed, dial-up; there is no national data backbone and international Internet connectivity is via satellite rather than fibre.

Organization measures market conditions. Maldives is rated 2, *controlled*. The Internet market has been a monopoly. A second ISP license was issued in 2003.

Sophistication measures how usage ranges from conventional to highly sophisticated. Maldives is rated 2, *conventional*. The most popular Internet applications appear to be surfing and e-mail. The usage of more advanced applications such as media streaming, online banking, e-commerce transactions and government interaction are still developing.

The ITU has carried out evaluations for 19 economies since January 2000. One way of comparing economies is to sum the scores of each element. The highest ranked economy thus far is Hong Kong, China with an overall score of 22.5 (out of a possible maximum of 24). The Maldives ranks eighth out of the 19 economies with a score of 15. One benefit of the Mosaic framework is that it highlights which areas a country need to improve to enhance its Internet diffusion. In the case of Maldives, this would be dispersion and organizational, areas where it is below the average of the 19 countries evaluated. In the case of dispersion, there is a need to expand Internet access in the atolls. In the case of organizational, Maldives has recently awarded a second ISP license and it is too soon to see the impact.

Figure 8.2: State of Internet in the Maldives



Note: The higher the value, the better (0=lowest, 4=highest).

Source: ITU.

considering the Maldives' constraints in terms of small population and limited post-secondary training facilities. However there are certain niche areas worth exploring. One is e-tourism or the application of ICT to tourist services. The country already has a significant tourism industry. Tourism is an information intensive business with the need to provide details to consumers as well as process reservation requests. The Maldives could leverage its large tourism industry to become a leader in e-tourism applications.⁶ Another opportunity is India given the Maldives historical relations, business ties and geographical proximity. India has the developing world's largest export-oriented software development industry and hence much expertise in ICT. India has been sharing its expertise with the Maldives and is willing to extend it further. The Indian Prime Minister notes, *"Our cooperation in human resource development spans an entire range - from defence to hospitality, from medicine to information technology. We will further widen and intensify this range. We have also discussed some*

new ideas - for an IT village, for the ecological preservation of Hulhumale, for digital mapping of your islands, for a telemedicine link and for a remote sensing centre. These lay down markers for our future endeavours."

The Maldives is moving in the right direction and has a number of ICT plans and projects. One danger is they could stall due to a lack of commitment or resources. The loss of LDC status is a serious threat since many of the nation's projects in ICT have been with the assistance of the international development community. This is in some ways tied to another threat, that of marginalization. The Maldives is a small country and at times may seem irrelevant to the global community. This can have a negative impact in terms of raising support and awareness for issues that are important to the Maldives. This all the more reason to embrace ICT as a development enabler particularly since it also ties in with the current emphasis of the international community. In any case, the Maldives has few other alternatives for

Table 8.1: Maldives SWOT

Strengths, Weaknesses, Opportunities and Threats

<p>Strengths</p> <ul style="list-style-type: none"> Widespread English Widespread access to basic telecom Current government commitment to ICT Good governance Geographic isolation & small size High literacy Sense of national unity 	<p>Weaknesses</p> <ul style="list-style-type: none"> Lack of tertiary institutions Shortage of ICT professionals ICT regulatory inexperience Geographic isolation & small size Lack of fibre-optic bandwidth
<p>Opportunities</p> <ul style="list-style-type: none"> Niche in areas such as e-tourism Leverage on India's software development expertise Telemedicine and distance education 	<p>Threats</p> <ul style="list-style-type: none"> ICT goals become side tracked Loss of LDC status Marginalization Brain drain

Source: ITU.

diversifying its economy. With few natural resources, limited labour supply and a need to promote an environmentally clean image for the benefit of tourism, agricultural and manufacturing diversification of the economy is not a viable option.

8.3 Recommendations

- *Accelerate enactment of e-laws.* The Ministry of Commerce drafted an e-commerce law that legally recognizes electronic transactions. The draft was sent to the Attorney General's office two years ago but has yet to be approved because of heavy workload and other priorities. Another delay is that all legal documents need to be translated into the national language, Dhivehi. The lack of the necessary laws and online transaction processing is a significant hindrance to the development of e-commerce and e-government applications.
- *Telemedicine.* While there are a number of efforts to use ICT to make the health care system more efficient, these are largely limited to the collection and dissemination of information. The Health Master Plan, for example, stipulates the use of information, education and communication to empower people to lead healthy lifestyles. It also emphasizes the need to set up a database to collect essential health indicators and information on ICT-related projects. The Master Plan does not mention the use of telemedicine, despite the fact that it is already used, albeit in a limited way. The geographic particularities of the Maldives suggest that telemedicine should be an attractive application. Even basic telemedicine services, such as the exchange of images, could improve health care services in the islands.
- *Wireless and broadband push.* There has been a delay in the adoption of key wireless technologies such as high speed mobile and Wireless Local Area Networks (WLAN or Wi-Fi). This will change as the new ISP has been granted the exclusive use of the 2.4 GHz spectrum for Internet use for the next few years. This is the same frequency that Wi-Fi uses and it is expected that the ISP will quickly rollout services. Dhiraagu is examining the introduction of high-speed mobile service using General Packet Radio Service (GPRS). Given the rapid growth of mobile and the growing number of users that are utilizing their mobiles for data, GPRS looks promising. It could also be an appropriate technology in the atolls for accessing the Internet particularly where fixed lines are limited or slow. The government should encourage these initiatives by facilitating administrative procedures.
- *Test bed.* The Maldives should leverage its unique geographical characteristics and experience from tourism by becoming a development and expertise centre for ICT in these areas. For example, most islands are small. Thus they are ideally suited to wireless LAN technology such as Wi-Fi.⁹ This would be attractive in resorts for tourists who bring portable computers with them as well as to spread Internet access on inhabited islands for the local community. Another area would be the new Multimedia Messaging Service (MMS) for mobile phones. International roaming already generates considerable revenues and this could be increased given MMS ability to transmit "digital postcards".¹⁰
- *Local content development.* One of the barriers to getting more people online is that they may not be aware of the benefits or there may not be much content available that interests them. In the Maldives many Internet users surf abroad because there are still not many compelling national

sites and applications. In order to get additional people using ICT, more locally relevant content will have to be developed. The government can take the lead by developing e-citizen applications. This has particular relevance in the Maldives where distances are great. The ability to complete and process government forms online could save citizens and business transport costs and time spent travelling. The UNDP atoll portal project could also potentially help drive more Maldivians to use the Internet. Another area of content development is tourism. Resorts are in the Maldives and it is logical that content should be developed and hosted in the country.

- *Statistics.* The Maldives has good administrative records for telecommunication services. In addition, the national statistical agency asked about the availability of certain ICT products and services in the 2000 Census (i.e., fixed telephone, PC, television). Policy makers are also monitoring appropriate accessibility indicators such as islands with telephone service and mobile cellular population coverage. There is a need to extend the analysis to other information society areas. For example, it would be useful to know how many households have mobile phones. In particular, there is an urgent requirement for an Internet user survey. This would provide information on the number of Internet users and their characteristics such as location, educational attainment, and gender. This could be carried out by the national statistical agency on a regular basis based on existing international models. In addition, there is a need for information about household expenditure patterns for communication services in order to have a deeper understanding of how affordability affects ICT take-up. There is also a need to measure the ICT sector in the

national accounts, the take-up of ICT in different sectors (i.e., business, government and education) and ICT employment.

- *Distance education.* Several development agencies have noted that distance education could have a meaningful impact in the Maldives where “bricks and mortar” educational facilities are limited because of small market size and where two thirds of the population is widely dispersed across two hundred islands.¹¹ While the Maldives seems like an ideal place to employ online education, neither the facilities in Male’ nor the atolls, are adequately equipped to support it. In addition, there seems to be misgivings about distance education particularly its ability to ensure quality. These issues need to be resolved and a meaningful distance education policy and projects implemented.
- *Universal access.* The Maldives has accomplished universal access to basic telephone service. It now needs to go further. The Telecommunication Policy states: “A majority of the population is deprived of the Internet service due to unavailability of residential telephone lines as well as public Internet access centres, such as cyber cafés, in most of the islands. Hence, priority must be given to expand the telecommunication services and reduce the existing disparity in service provision between Male’ and other islands.” In order to do this, a coordinated and concrete policy is needed. Projects and proposals should be coordinated and existing facilities leveraged to minimize duplication and maximize the resources available. Specifically the relationship between 1) existing private and community Internet cafes, 2) public kiosks as envisaged by the e-government plan and the 3) UNDP atoll ICT project need to be clarified. An

ideal solution would be to identify one location in each atoll capital (and eventually every island) where affordable high-speed Internet access to government and other Internet services will be available. By combining initiatives it would be possible to achieve a more attractive solution such as high-speed fibre optic, Wi-Fi or VSAT rather than just dial-up access. Pricing and training issues also need to be clarified.

- *Education.* The government needs to enhance university-level ICT training. One way is to provide support for ICT activities of the Maldives College of Higher Education. The government should further support the creation of an IT degree. The shortage of IT manpower affects all sectors across the economy, including the government, and the Maldives needs to make sure that it creates its own pool of IT professionals. While it would seem reasonable to rely on foreign universities for specialized training, Maldivians should have the possibility to receive basic IT training in such areas as database management, support, and networking.

There is also a need to promote computer literacy and awareness among the public at large. This includes providing training in basic computer skills, particularly for those outside the workforce and academic environment. This could be modelled on the country's successful adult literacy programme.

- *Liberalization.* There is no doubt that additional liberalization of the telecommunication sector will result in lower pricing for Internet and mobile services. This is the experience of other countries that have introduced competition. However the Maldives is unusual in that the compact between the government and the incumbent telecommunication operator has

been very successful. Dhiraagu has provided telephone service to all inhabited islands, a challenging accomplishment considering the geographical layout of the country. Given the unique circumstances of the Maldives—many small relatively sparsely inhabited islands—liberalization may be difficult. Though there is growing evidence that investors can be interested in small markets, the dispersion of population in the Maldives will make it a more difficult proposition. Furthermore, the government has been able to extract concessions from Dhiraagu that will be less likely in a more competitive environment. Thus liberalization should not be pursued as an end in itself, but rather as one way to achieve a modern telecommunication network with a high level of access. Liberalization will require greater resources devoted to regulatory issues such as interconnection and universal service if it is to be successful. A telecommunication act is also a necessary precursor for liberalization to be successful.

- *Fibre optic.* The Maldives reliance on satellite technology for its international Internet connection has drawbacks. The price of Internet connections via fibre tends to be cheaper than satellite, quantity is more abundant and the quality better. The latter is an important point, for if the Maldives is to develop a vibrant software sector—particularly in the area of data hosting—fibre is a must for reliability and speed. Though the cost of an undersea fibre connection will be steep, it should not be measured in purely financial terms. There are wide-ranging spill over benefits that need to be quantified to form part of the equation.
- *ICT and the economy.* There is widespread belief that ICT can

play a pivotal role in the Maldivian economy. Indeed, with limited resources and a small manufacturing sector, the Maldives has few options for diversifying its economy and ICT seems one of the brightest. This is acknowledged in the various sector and national development plans and the draft ICT strategy which sees employment creation as one of the pillars of ICT mentioning areas such e-tourism, e-fisheries and software parks. What is now needed is more specificity about the exact impacts, layout and evolution of the ICT sector. This would include

an inventory of existing ICT businesses, their output and employment and future evolution. It would also include a detailed description about the types of future ICT businesses that the country would like to establish, employment requirements and linkages to existing and planned training. A macro-economic model showing the relationship between ICT and the economy would be useful for planning. The government should also pick a few strategic ICT businesses it wants to develop and assign resources to attract them.

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- ¹ Essentially this could be summarized as the operator meeting specific goals, particularly the completion of a nationwide transmission network in exchange for retaining market exclusivity. Part government ownership of the operator no doubt assisted in ensuring that the operator's goals were in line with national development priorities.
- ² "ITU Digital Access Index: World's First Global ICT Ranking." *Press Release*. 19 November 2003. http://www.itu.int/newsarchive/press_releases/2003/30.html. [Accessed 9 November 2004].
- ³ A Bangladesh newspaper commented on the South Asian rankings. See "Bangladesh crawls in the ICT race." *The Daily Star*. 24 November 2003. <http://www.thedailystar.net/2003/11/24/d31124050248.htm>. [Accessed 9 February 2004].
- ⁴ See "The Global Diffusion of the Internet Project" at <http://mosaic.unomaha.edu/gdi.html>. [Accessed 9 February 2004].
- ⁵ See the World Bank Governance Research Indicator Country Snapshot (GRICS): 1996-2002 at http://info.worldbank.org/governance/kkz2002/sc_chart.asp. [Accessed 9 February 2004].
- ⁶ For more on e-tourism and developing countries see the web page of the UNCTAD Expert Meeting on Electronic Commerce and Tourism held in September 2000: <http://www.unctad.org/Templates/meeting.asp?intItemID=1942&lang=1&m=4338>. [Accessed 4 February 2004].
- ⁷ Statement by Prime Minister Shri Atal Bihari Vajpayee at State Luncheon by President Maumoon Abdul Gayoom of the Republic of Maldives. 23 September 2002. <http://meadev.nic.in/speeches/stmt-pm-stateluncheon.htm>. [Accessed 9 February 2004].
- ⁸ For definitions of the elements and how values are assigned see "Questionnaire: Global Diffusion of the Internet" at <http://som.csudh.edu/fac/lpress/gdiff/quest.htm>. [Accessed 9 February 2004].
- ⁹ For example the Mirihi Island Resort, the first to obtain a satellite Internet connection, has installed a W-Fi network noting "It would be very good for the islands in terms of tourism and attracting people to the island." Alfred Hermida. 31 July 2003. "Paradise island gets wireless web." BBC News. <http://newsvote.bbc.co.uk/mpapps/pagetools/print/news.bbc.co.uk/2/hi/technology/3107027.stm>. [Accessed 4 February 2004]. The resort's website notes the availability of wireless Internet access for those "who need to keep in touch with work or want to send emails to family." <http://www.mirihicom.com/internet.html>. [Accessed 4 February 2004].
- ¹⁰ Data are not available on the number of postcards sent from the Maldives but can be inferred from international letter-post items which include postcards. There were 1.5 million international letter-post items sent in 2001 compared to around one million received. Assuming that the difference is accounted for by postcards sent by tourists, this suggests that around 500'000 post cards were sent from the Maldives in 2001.
- ¹¹ The World Bank calls for distance education to train O level graduates noting that computers are widely available in the atolls. [http://lnweb18.worldbank.org/oed/oeddoclib.nsf/DocUNIDViewForJavaSearch/A2B5EB7F276345B385256C860071A654/\\$file/Maldives_PPAR.pdf](http://lnweb18.worldbank.org/oed/oeddoclib.nsf/DocUNIDViewForJavaSearch/A2B5EB7F276345B385256C860071A654/$file/Maldives_PPAR.pdf). The Asian Development Bank also had planned for university level distance training as part of an education project. <http://www.adb.org/Documents/Profiles/LOAN/28161013.ASP>. The following paper also makes the case for promoting distance education at the secondary level: Ali Fawaz Shareet and Kinshuk. 2003. "Distance Education Model for Secondary Schools in Maldives." Proceedings of the International Conference on Information Technology: Research and Education.

Annex 1: Meeting schedule

<i>Date</i>	<i>Organization</i>	<i>Persons met</i>
28 May	Dhiraagu	Mr. Mohamed Maumoon, Head of Services
	Ministry of Communication, Science & Technology	Mr. Hussain Shareef, Director General Mr. Mohamed Amir, Director, Telecom Ms. Zulaikha Ibrahim, Telecom Analyst
29 May	Dhiraagu	Mr. Ismail Rasheed, Head of Networks Mr. Umayr Shafeeu, Manager Switching Mr. Ahmed Shaafiu, Marketing Manager Ms. Lina Atkinson, Manager Sales Outlets
	Ministry of Planning and Development, Statistical Office	Ms. Aishath Shahuda, Assistant Director
1 June	Ministry of Communication, Science & Technology	Mr. Midhath Hilmy, Minister Mr. Faig Umar, Assistant Director Ms. Malika Ibrahim, Assistant Director
	Ministry of Trade and Industries	Mr. Fazeel Najeeb, Director International Co-operation
	Ministry of Education	Mr. Ahmed Adeem, Senior System Programmer
2 June	Ministry of Communication, Science & Technology	Mr. Hussain Shareef, Director General Mr. Mohamed Amir, Director, Telecom
	Enviroweb (Consultants for e-government project)	Mr. Michel Boulanger, Consultant in Information Systems Mr. Jesus Garcia, Consultant in Information Systems
	Asia-Pacific Telecommunity (APT)	Mr. Amarendra Narayan, Secretary General Mr. G. Hugh Railton, Deputy Secretary General
	Dhiraagu	Mr. Ismail Waheed, Chief Executive Officer
3 June	Opening APT Study Group Meeting	
	College of Higher Education	Mr. Hassan Hameed, Rector
	Ministry of Health	Mr. Ahmed Afaal, Assistant Director
	United Nations Development Programme (UNDP)	Mr. Jan Thomas Hiemstra, Deputy Resident Rep. Ms. Nashida Sattar, Programme Officer
	Focus Computers (2 nd ISP)	Mr. Sobah Rasheed, Director

Annex 2: Acronyms

ADB	Asian Development Bank
COL	Center for Open Learning
FHTS	Faculty of Hospitality and Tourism Studies
FMC	Faculty of Management and Computing
ICT	Information and Communication Technology
ISP	Internet Service Provider
ITDB	Information Technology Development Project (ITDP)
Kbps	Kilo bits per second
LDC	Least Developed Countries
Mbps	Mega bits per second
MCHE	Maldives College of Higher Education
MMS	Multimedia Messaging Service
MOE	Ministry of Education
MPND	Ministry of Planning and National Development
NDP	National Development Plan
PC	Personal computer
Rf	Maldivian Rufiya. The 2002 annual average rate of Rf 12.85 per one United States dollar is used to make conversions in the report.
SAARC	South Asian Association for Regional Cooperation
SIDS	Small Island Developing States
SMS	Short Messaging Service
UNDP	United Nations Development Programme
VSAT	Very Small Aperture Terminal

Annex 3: ICT statistics

	Note	Unit	1995	1996	1997	1998	1999	2000	2001	2002	2003
DEMOGRAPHY, ECONOMY											
Population	1	10x3	245	250	254	259	265	270	275	281	285
Households	2	10x3	35	36	37	38	40	41	42	43	44
Gross domestic product	3	10x6	4'696	5'301	5'982	6'357	6'935	7'348	7'651	8'186	...
Average annual exchange rate per US\$	4		11.77	11.77	11.77	11.77	11.77	11.77	12.24	12.80	...
Consumer price index	4		100	106	114	113	116	115	115	116	...
TELEPHONE NETWORK											
Main telephone lines			13'869	15'268	17'967	19'985	22'179	24'432	27'242	28'651	30'056
Main lines per 100 inh.			5.67	6.12	7.07	7.72	8.37	9.05	9.9	10.2	10.5
% residential main lines		%	61.9	68.3	69.4	65.1	63.4	63	62.6	63.9	...
% main lines in urban areas		%	89	...	...	...	...	...	74	73	73
Public payphones			181	285	397	521	596	629	723	773	918
Waiting list for main lines			261	244	326	315	514	153	265	113	44
MOBILE SERVICES											
GSM mobile subscribers			-	20	1'290	1'606	2'926	7'638	18'894	41'899	66'466
- Cellular prepaid subscribers			-	-	-	-	-	-	7'360	29'625	53'189
Coverage of population		%	-	...	...	...	35	40	40	54	71
Cellular subscribers per 100 inh.			-	0.01	0.51	0.62	1.10	2.83	6.86	14.91	23.3
TRAFFIC (minutes)											
Local telephone		10x3	105'539	107'650	113'813	129'203	137'118	144'229	142'170	112'936	...
National trunk telephone		10x3	29'645	33'773	54'558	62'537	76'841	81'661	80'169	64'544	...
Dial-up Internet		10x3	-	...	...	10'613	20'020	35'947	43'893	51'358	...
Fixed-mobile		10x3	-	...	...	3'000	3'601	19'320	32'097	47'407	...
International out. telephone		10x3	3'086	3'976	4'384	5'067	5'682	5'562	6'900	7'016	...
International inc. telephone		10x3	3'612	4'239	5'057	5'903	6'655	7'212	8'335	10'266	...
Mobile		10x3	-	-	1'376	6'927	8'330	35'603	53'054	81'580	...
STAFF											
Full-time telecommunication			384	445	399	497	550	532	523	519	...
- of which female			...	...	...	124	137	131	127	140	...
QUALITY OF SERVICE											
% Telephone faults cleared by next day		%	...	52	57	45	46	...	...	90	...
Faults per 100 main lines per year		%	36	87.9	76.9	69.6	55.9	55.7	52.3	46.4	...
TARIFFS											
Telephone connection			1'720	1'720	1'720	1'720	1'720	1'720	1'720	1'720	1'720
Telephone monthly subscription			30	30	30	30	30	30	30	30	30
Local call (per minute)			0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
Cellular connection			-	1'000	1'000	1'000	1'000	1'000	500	500	500
Cellular monthly subscription			-	300	300	300	300	300	150	150	150
Cellular - 3-min. local call (peak)			-	7.5	7.5	7.5	7.5	7.5	6.75	6.75	6.75
Cellular - 3-min. local call (economy)			-	6.75	6.75	6.75	6.75	6.75	5.70	5.70	5.40
REVENUE											
Total telecom services		10x6	220	316	399	460	529	624	720	835	...
- Mobile communication		10x6	-	...	...	29	30	100	201	360	...
CAPITAL EXPENDITURE											
Annual telecom investment		10x6	110	176	173	131	100	135	88	102	...
BROADCASTING											
Television equipped households		5	12'000	13'800	15'800	18'100	20'700	23'204	26'010	29'100	...
Home satellite antennas		5	113	280	450	750	1'300	2'094	3'500	5'800	...
INFORMATION TECHNOLOGY											
Personal computers			3'000	4'000	5'000	6'000	7'500	10'000	15'000	20'000	...
Internet subscribers		6	-	-	...	763	939	1'060	1'100	1'067	1'147
- DSL Internet subscribers			-	-	-	-	-	-	-	190	490
Estimated Internet users			-	575	800	1'500	3'000	6'000	10'000	15'000	...
International Internet Bandwidth (Mbps)			-	-	0.64	0.64	2	3	5	9	...

Note: (1) Source: Ministry of Planning and National Development (MPND) mid-year estimates. (2) Source: MPND (1995, 2000); ITU estimates (other years). (3) At market prices. Source: MPND. (4) Source: IMF. (5) 2000 = Census. Other years, ITU estimate. 1995-96: Dhiraagu, 2000: Census, other years: ITU estimate. (6) Not including "pay as you go" users. Source: Dhiraagu, Ministry of Communications, Science and Technology.

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