



*PACIFIC ISLANDS FORUM SECRETARIAT*

**WORKING PAPER**

**PACIFIC ICT CAPACITY AND PROSPECTS**

The purpose of this paper is to summarise the findings of ICT developments in the region stemming from national responses to the Pacific ICT Survey 2002. The paper looks at the status of infrastructure, human resources and institutional capacity, networked economies, policy and regulatory frameworks, and constraints to development of the ICT sector in the region.



**Working Paper: Pacific ICT Capacity and Prospects**

**Executive Summary**

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**Background**

2. Forum Communications Ministers met in April 2002, in Suva, Fiji, to discuss and evaluate the status and the ongoing development of information and communication technologies (ICT) in the region, and produced the Forum Communication Action Plan 2002. At the Communications Meeting, Ministers requested accurate, complete and updated data to improve understanding of ICT developments in the region and to enhance decision-making in areas of policy and programme development. Accordingly, the Pacific Islands Forum Secretariat (PIFS) and the Pacific Islands Telecommunications Association (PITA) undertook a comprehensive data collection exercise: the Pacific ICT Survey 2002.

3. This paper is a synthesis of surveys that were submitted as well as references from readily available sources on capacity of the ICT sector in Forum Island Countries (FICs). The survey comprises the following five categories: telecommunications markets, telecommunications infrastructure, human resources, networked economy, and policy and regulatory frameworks.

**Findings – Telecommunications Markets**

4. The telecommunications markets section looks at the telecommunications market structures in the Forum island countries. It looks at the basic infrastructure in the various subsectors- domestic, international, the Internet, and ICT equipment.

5. All Pacific island countries have monopoly service providers in domestic and international telecommunications. Exactly half of these are public-sector monopolies, and half are public/private joint venture monopolies. Only users in Tonga have a choice of carriers for telecommunications.

6. With Internet service providers, only three Pacific countries (Papua New Guinea, Samoa and Tonga) have a choice of Internet Service Providers, while users in

all other countries are served by monopoly ISPs. Two more are believed to have issued multiple licenses for ISPs but have yet to see them begin operations, most likely due to the inability of the new entrants to negotiate acceptable interconnection terms. One country had a second ISP open but then fail.

7. Open markets exist for the supply and provision of ICT equipment and services respectively.

### **Findings – Telecommunications Infrastructure**

8. The telecommunications infrastructure component looks at the status and development of basic infrastructure, namely access to the information infrastructure such as telephones, computers, the Internet, and bandwidths, and equipment and telecommunications service costs, in the Pacific island countries.

9. Issues in the region are consistent across most countries. For many countries, access has improved and some prices have fallen. For others, however, problems remain with limited and unequal access to ICTs, high costs of equipment and services, insufficient telecommunications bandwidth, low investment in networks, and a limited number of Internet Service Providers.

10. Telephone penetration is generally good in urban areas, but generally very poor in rural areas. Average teledensities range from about 20 to 60 per hundred population. Most countries are low by global standards, when household sizes and social patterns are taken into consideration nearly all urban residents have access to telecommunication services. Rural teledensities however range from one half to one tenth of those in urban areas.

11. Mobile phones are increasingly common, but in most countries do not yet approach the levels of usage seen elsewhere. However, the introduction of prepaid cellular has led to an explosion of growth in mobile customers in some countries and in Fiji, mobile subscribers exceeded fixed line subscribers in 2002. Four Pacific countries have digital mobile phone services, the remainder offer only analog, and one country does not offer any mobile services.

12. Approximately 25% of Pacific islanders have regular access to ICTs of which the Internet is primarily accessed through their workplaces, a few secondary and tertiary educational institutions, and a few public centres and Internet cafes. The number of Internet subscribers ranges from about 1 in 5 in Niue (where access is free) to 1 in 1000 in Solomon Islands.

### **Findings – Human resource and institutional capacity**

13. This component of the survey looks at accessibility, particularly within the workplace and educational institutions and the varying skill levels available nationally, and the constraints that limit human resource and institutional development.

14. Despite more Pacific islanders being trained in ICT-related fields, human resources and capacity in the PICs remain limited, a situation that continues to make

progress more difficult. Consequently there is a high reliance on resource persons and experts from outside the region.

15. Women ICT professionals are somewhat lacking in Pacific organisations and in general, women are engaged more in using ICT for administrative purposes (word processing, email, etc) than engaging as ICT professionals (computer engineers, etc).

16. The following have been identified as to why the region has insufficient human resources in the ICT sector:

- ? limited access to information infrastructure for training, such as telephones, computers, and Internet services, for individuals, schools, and organisations;
- ? training is limited to very few persons in both the public and private sector;
- ? budgetary allocations for ICT training and development are inadequate in comparison to other budgetary components in private and public sector budgets;
- ? lack of qualified personnel;
- ? retention problems; and
- ? the high costs involved in IT- for example training, and equipment.

### **Findings – Networked Economy**

17. Networked economy covers network exercises, government initiatives and e-commerce and trade.

18. FICs have yet to establish well developed networked economies, in that e-governance and e-commerce are still fairly new initiatives. National governments in the region are undertaking initiatives in providing and servicing administrative information electronically but this is most basic and to a very small degree. For example, only one country has made available online legal case studies/texts. Most of the FICs have online a local/national calendar of events but as yet do not provide other services such as local area networks for Ministries, payments online, or lodging applications online. But these services are being considered and proposed.

19. Electronic commerce is coming into being in Pacific island countries, but at a slower pace than elsewhere. The number of operational electronic commerce activities remains small in the Pacific due to the limited scale of most economies, the relative lack of access among potential customers, a lack of familiarity and trust of electronic transactions, and the high costs of connectivity. However, early implementers of electronic strategies are showing positive signs. EFTPOS service and ATMs are emerging through various banking groups operating in the region.

20. As a major component of many Pacific economies, tourism is one of the leading implementers of ecommerce approaches. All major resorts and an increasing number of small-scale resorts and tour operators now have on-line promotion and booking web sites. There are also tourism portals, for example the visitor's bureau of the Federated States of Micronesia ([www.visit-fsm.org](http://www.visit-fsm.org)). At the retail level, individual manufacturers such as Sandollars Fiji ([www.purefiji.com](http://www.purefiji.com)) have started on direct online sales.

21. Several Pacific island countries (most notably the Cook Islands, Fiji, Samoa, and Solomon Islands) are planning initiatives to make government information freely available via their web sites, but none have yet reached the operational stage. Although many Pacific island governments operate wide area networks, public access to anything beyond basic information (such as directories) is not common. But this is changing.

### **Findings – Policy and regulatory frameworks**

22. The policy and regulatory framework looked at national structures pertaining to ICT policy, planning and development.

23. Regulatory frameworks at the national level have not kept up with the pace of technological development and are outdated and incomplete. Policies and legislation are still being deliberated and discussed but their implementation and enactment is slow and time consuming. But this is changing as progressive reforms are taking place.

24. There has been positive and rapid movement with FICs working to developing final national ICT policies and strategies, and regulatory frameworks. These are been supported by International agencies, like the UNDP (Fiji Office), and the ITU Regional Office for Asia and the Pacific, with the national governments.

25. In terms of independent regulation, this concept is new to most Pacific island countries. Only Papua New Guinea has an independent regulator whereas most other countries regulate via a Department of Communication within an appropriate ministry. Several Pacific island countries have no regulator, and rely on the incumbent telecommunications company as a combined operator, regulator, and policy maker.

26. The main difficulty with liberalisation in the Pacific lies in the existing monopoly licenses. Efforts to open the market for Internet services must first remove these statutory barriers and overcome the advantages enjoyed by entrenched monopoly providers. It is unclear if Internet services fall under legislation that was originally intended to cover telecommunications. Therefore an urgent need exists in many countries to examine existing regulations and legislation with respect to the Internet, and to consider a liberal interpretation of their scope.



## **Working Paper: Pacific ICT Capacity and Prospects**

### **Purpose**

The purpose of this paper is to summarise the findings of ICT developments in the region stemming from national responses to the Pacific ICT Survey 2002. The paper looks at the status of infrastructure, human resources and institutional capacity, networked economies, policy and regulatory frameworks, and constraints to development of the ICT sector in the region.

### **Background**

2. Forum Communications Ministers met in April 2002, in Suva, Fiji, to discuss and evaluate the status and ongoing development of information and communication technologies (ICT) in the region, and produced the Forum Communication Action Plan 2002. At the Communications Meeting, Ministers requested accurate, complete and updated data to improve understanding of ICT developments in the region and to enhance decision-making in areas of policy and programme development. Accordingly, Ministers agreed that the Pacific Islands Forum Secretariat and the Pacific Islands Telecommunications Association should undertake the comprehensive data collection exercise. This resulted in the <sup>1</sup>Pacific ICT Survey 2002.

3. The survey was sent out to the fourteen Forum island countries in September 2002, of which the Secretariat received twelve country responses. This paper is a synthesis of information from the surveys and references from readily available sources on capacity of the ICT sector in Forum Island Countries (FICs). Additional references are listed at the end of the paper.

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<sup>1</sup> A copy of the Pacific ICT Survey 2002 is available upon request.

## Findings

### Telecommunications Market and Infrastructure

4. All the Forum island countries (FICs) do have some means of access to information and communication technologies through telephone, facsimile, or computer, however, none are considered sufficient. Table 1 below shows some basic country information and Table 2 shows the basic market infrastructure/infrastructure information of the various subsectors.

**Table 1: Country Profile**

	<b>Population (estimates at 2002)</b>	<b>Gross Domestic Product per capita (USD)</b>	<b>Key Economic Sectors</b>
Cook Islands	12,400	4,950	Tourism, Pearls
Federated States of Micronesia	118,100	2,157	Fish, Tourism
Fiji	880,000	2,680	Sugar, Tourism, Garments
Kiribati	84,494	420	Copra, Fish
Nauru	11,500	3,900	Phosphate
Niue	1,900	3,710	Government
Palau	19,200	8,030	Tourism
Papua New Guinea	4,790,800	1,200	Petroleum, Fish, Timber, Mining
Republic of the Marshall Islands	51,800	2,210	Fish, Copra
Samoa	176,848	2,000	Fish, Tourism, Garments
Solomon Islands	447,900	340	Timber, Fish, Palm, Copra
Tonga	110,000	1,400	Tourism, Agriculture
Tuvalu	9,900	1,160	Government
Vanuatu	199,800	1,230	Copra, Tourism, Agriculture

**Sources:** PIFS(2002), *Pacific ICT Survey 2002 – Country responses*; SPC(2001), *Pacific ICT Needs Assessment and Strategy Planning Workshop*, Noumea; World Bank (2002) *Pacific Islands Economic Regional Report*, Washington.

5. Telecommunications subsectors (international, domestic, and mobile) are served by monopoly providers in all but a few cases. The main exceptions are ISPs and mobile services in Samoa and PNG, and fixed line services in Tonga.

6. All Pacific island countries have monopoly service providers in domestic and international telecommunications. Exactly half of these are public-sector monopolies, and half are public/private joint venture monopolies.

**Table 2: Telecommunications Infrastructure**

	<b>Market structure</b>	<b>International Bandwidth for Internet</b>
Cook Islands	Monopoly - Telecom Cook Islands (until 2006)	(in) 2M; (out) 256 k
FSM	Monopoly – FSM Telecom	(in) 4M; (out)2M
Fiji	Monopoly – sectoral monopoly.	8M
Kiribati	Telecom Services Kiribati Limited	512k
Nauru	Department of Communications	64k/256 voice
Niue	Monopoly – Telecom Niue	64k
Palau	Palau National Communications Corporation	2M/3M
PNG	Monopoly – Telkom PNG	6M
Marshall Islands	Monopoly – Marshall Islands National Telecommunications Authority (MINTA)	256k/2M
Samoa	Monopoly – Samoa Communications Limited (SCL). 10-year exclusive monopoly.	2M
Solomon Islands	Monopoly – Solomon Telekom Company Limited	256/512k
Tonga	Tonga Communications Corporation (TCC) Shoreline Limited (tonfon)	2M
Tuvalu	Monopoly – Tuvalu Communications Corporation	128kbps
Vanuatu	Monopoly – Telecom Vanuatu Limited (TVL)	2M

Source: UNESCO( 1999), *Electronic Connectedness in Pacific Island Countries*; PIFS (2002)

7. The issue for Pacific island countries has remained the same for the past three years- no/limited access to telephones, high costs and charges, poor supply of skilled ICT persons, outdated legislations, and limited financial support in ICT. Table 3 below indicates teledensity figures in the region, showing how relatively poor access to telephones is in rural areas but better in urban areas given the population numbers.

**Table 3: Teledensities in the Region**

<b>Teledensities - Number of lines per 100 inhabitants</b>	<b>National</b>	<b>Urban</b>	<b>Rural</b>
Cook Islands	45	55	1
FSM	10	-	1.5
Fiji	12	20	0.8
Kiribati	30	1	< 1
Niue	69.4	66	25
Palau	90	80	-
PNG	1.3	-	< 1
Republic of the Marshall Islands	15	-	-
Samoa	50.2	17	2
Solomon Islands	2	1.5	0.3
Tonga	8	23	3
Tuvalu	8.6	13	3
Vanuatu	5	25	1

Sources: PIFS (2002), *Country responses – Pacific ICT Survey 2002*

8. With respect to Internet services, only three countries have more than one Internet service provider in operation. Two more are believed to have issued multiple licenses for ISPs but have yet to see them begin operations, most likely due to the inability of the new entrants to negotiate acceptable interconnection terms. One country had a second ISP open but then fail.

9. Almost all the FICs have just one Internet Service Provider (ISPs). This is still relatively new in many FICs, partly due to the outdated regulations and legislations but is expected to grow rapidly within the next few years. In any case, Internet customers are slowly increasing. Table 4 shows the number of ISPs in each country and the approximate number of subscribers to date.

**Table 4: Internet and Cellular Services**

Country	Number of Internet Service Providers (ISPs)	Internet Customers	Cellphone Customers
Cook Islands	One	1,201	1,499
FSM	One	2,076	1,750
Fiji	One	8,000	90,000
Kiribati	One	521	-
Nauru	One	-	-
Niue	One	200	88
Palau	One	1,700	2,000
PNG	Five	24,600	7,700
RMI	One	668	582
Samoa	Three	1,320	3,300
Solomon Islands	One	900	650
Tonga	One	1200	4,000
Tuvalu	One	250	No services offered
Vanuatu	One	2,000	5,000

**Sources:** PIFS (2002), *Pacific ICT Survey 2002 - Country responses*.

10. With the exception of one country, all others have cellular mobile services and these are offered digitally in some countries whilst others are analogue services. Cellular phones are popular given the mobility of the them and immediate access as opposed to fixed lines which have long waiting periods. Table 4 shows the number of cellphone customers in the various FICs.

11. Less than 25% of the population of most Pacific island countries has access to the Internet. For the majority of individuals who have access to computers, it is purely for word processing and emailing means. Utilising the Internet is limited to the few that have access to the service, which is mainly from the workplace. Having no access to telephone lines and the high Internet access charges are major contributing factors to this.

12. Table 5 below, shows the Internet access in the region. Less than 25% of the population of primary and secondary schools have Internet access, except for Niue where Internet is free. Vanuatu offers free Internet access to those schools that purchase their own computers and other equipment.

13. Public access areas such as city libraries and Internet cafes are emerging in major centres. In most countries, Internet access from homes does not exceed 25%, with the exception of Palau. The workplace, on the other hand, sees some countries have 50% to 75% of the population accessing the Internet from work.

**Table 5: Internet Access in the region**

Internet Access	Homes	Primary Schools	Secondary Schools	Work place	Public Access Areas
Cook Islands	↓	-	↓	↓	↓
FSM	↓	-	↓	↓↓	↓
Fiji	↓	-	↓	↓↓	↓
Kiribati	↓	Nil	↓	↓	↓
Nauru	-	-	-	-	-
Niue	-	↓↓↓↓	↓↓↓↓	-	↓↓↓↓
Palau	↓↓	-	↓	-	↓
PNG	↓	-	↓	↓	↓
RMI	↓		↓	↓	↓
Samoa	↓	-	↓	↓↓	↓
Solomon Islands	↓	-	↓	↓	↓
Tonga	↓		↓	↓↓	↓
Tuvalu	↓			↓	↓
Vanuatu	↓		↓	↓	↓

source: UNESCO (2001), *Internet Infrastructure and e-Governance in Pacific Island Countries*.

↓ less than 25% population

↓↓ 25-50% population

↓↓↓ 50 – 75% population

↓↓↓↓ more than 75% population

14. Those persons that do have frequent or regular access to computers and the Internet are those at the workplace, mainly in Government and private sector organisations. On the other hand, whilst an organisation may have computers and Internet service, not all employees would be able to access this or utilise it or be familiar with such uses.

#### Human Resources and Institutional Capacity

15. There are limited human and institutional resources in the ICT sector in the FICs. This has been identified as one of the focus areas that needs to be redressed to ensure that the region can begin to catch up with the rest of the world. Human resources in this instance are not limited to IT personnel and professionals, but also to any person utilising such infrastructure or intending to. Table 6 shows the availability of skills and expertise available, given the specific areas identified in ICT.

**Table 6 : Satisfactory level of ICT Capability (of Professions)**

*Profession	Visionaries	Knowledgeable public servants	Knowledgeable private sector executives	Education & training professionals	Web designers	Content writers, editors & providers.	Graphic artists	Basic programmers	Senior programmers	Data base specialists	Security specialists	Standards experts	Project Managers
Cook Islands													
FSM													
Fiji													
Samoa													
Tonga													
Vanuatu													

Source: ESCAP (2002), *Trade & Investment Promotion in the Pacific Islands through effective use of ICT.*

| less than 25%  
in \*Profession

|| 25-50%  
in \*Profession

||| 50 – 75%  
in \*Profession

|||| more than 75%  
in \*Profession

16. Training, because it relies heavily on finances, is determined by the budgetary allocations directed to ICT in an organisation, be it in the public or private sector. ICT training budgets are considerably lower in proportion to other training and budgetary allocations. Therefore, full utilisation of the capacity to utilise human resource is limited because training has been limited accordingly and again this limits the number of persons who can access training facilities. Types of training offered varies from hardware maintenance to web use, and programming to network administration.

17. Retention of trained personnel is also a major problem. Pacific island states see their skilled/qualified IT persons leaving for overseas. The difficulty in retaining such persons can be attributed to the following: lower remuneration (as opposed to Australia and New Zealand, for instance); dated and limited access to new innovations; and limited challenges in the job scope given the small market size in the region.

18. Women ICT professionals are somewhat lacking in Pacific organisations, and because of the unavailability of detailed gender analyses issues of access, application and participation is not well known. In general, women are engaged more in using ICT for administrative purposes (word processing, email, etc) then engaging as ICT professionals (computer engineers, etc). However, it is widely recognised that additional resources, education, and capacity building will need to take place simultaneously across schools, non-formal community programmes, formal education and training institutions, and workplaces to increase gender equity.

19. A survey in the <sup>2</sup>Solomon Islands showed that about one third of the users of the public Internet café are women, and about one quarter are youths of school age. USP statistics (2001) indicate a much lower participation of girls in some science subjects. Female participation in Computer Science and Mathematics is 37%

<sup>2</sup> PFnet (2002), *Presentation - Overview of PFnet*, PITA/APT Regional ICT Workshop, 11–13 November 2002, Nadi, Fiji.

(including internal and external). External female students have a higher participation rate of 46% indicating female preference for distance education and their likely access and use of ICT to undertake their study.

20. Because of the growing awareness of the need to ensure men and women, girls and boys, are included in the development and use of ICTs to prevent social and economic exclusion and facilitate universal access for every Pacific islander, educational institutions now fully comprehend the need to provide ICT access in schools. This realisation, however, is being hindered by costs- for equipment, development and training, and access to services.

21. The following have been identified as to why the region has insufficient human resources in the ICT sector:

- ? limited access to information infrastructure for training, such as telephones, computers, and Internet services, for individuals, schools, and organisations;
- ? training is limited to very few persons in both the public and private sector;
- ? budgetary allocations for ICT training and development are inadequate in comparison to other budgetary components in private and public sector budgets;
- ? lack of qualified personnel;
- ? retention problems; and
- ? the high costs involved in IT- for example training, and equipment.

22. Pacific island countries are developing countries facing both financial limits and shortages of skilled personnel in the ICT sector. Most have benefited from support provided by aid programs, in some case supplemented by the hiring of expatriate experts when available funds have permitted. All have therefore developed varying levels of knowledge and experience that collectively represent a regional pool of expertise.

23. To somewhat combat the identified problems and to assist with capacity building of human resources, the following are noted as required means of assistance:

- ? technical assistance in ICT;
- ? staff training and development;
- ? practical attachments;
- ? organisational policy reviews; and
- ? increased budgetary allocations for ICT training and development.

### Networked Economy

24. The FICs have yet to establish well developed networked economies, in that e-Governance and e-commerce are still fairly new initiatives. National governments in the region are undertaking initiatives in providing and servicing administrative information electronically but this is most basic and to a very small degree. For example, only one country has made available online legal case studies/texts. Most of the FICs have online a local/national calendar of events but as yet do not provide other services such as local area networks for Ministries, payments online, or lodging applications online. But these services are being considered and proposed.

25. Globally, there is almost no sector that is not being transformed through exposure and access to the Internet. The same is true in the Pacific islands, but the

transformation is not as fast or as deep, primarily due to resource constraints, limited access, lack of qualified personnel, and high costs. Although the majority of people in the region lack the necessary access and therefore the opportunity to participate, Pacific island countries have achieved some notable successes in online services.

26. There are five aspects of networked economy produced within the Pacific region that are available on-line. Most common are news sites, including daily newspapers, broadcasting companies, and on-line magazines such as Fiji Live ([www.fijilive.com](http://www.fijilive.com)). Also common are portal sites and directories, which attempt to be the one-stop shop for information on a country, such as the general Planet Tonga ([www.planet-tonga.com](http://www.planet-tonga.com)) and the more business-oriented Papua New Guinea Business Directory and Tourism Guide ([www.pngwebdirectory.com](http://www.pngwebdirectory.com)). There are many government sites, typically containing directories and official documents. There is a growing on-line presence of electronic retailers and electronic transactions of traditional activities. Finally, there are regional sites, often but not always run by intergovernmental organisations such as the Secretariat of the Pacific Community ([www.spc.int](http://www.spc.int)), that contain a wide range of information including documentation of development projects in many sectors and links to regional resources and contacts.

27. Many of the news, portal, and directory sites are targeted at, and supported by, the large Pacific islands diaspora. For example, there are large groups from all islands in New Zealand, Los Angeles, Honolulu who keep in touch with family and friends back home through the daily news. Email is also rapidly gaining popularity among all age and social groups, providing an important source of business for the growing number of telecentres.

28. The Internet which was originally created for the distribution of official information, is still one of its more important functions. People and organisations in all sectors use it daily for news, individual and group communication, distribution of documents, and access to government services. Several Pacific island countries (most notably the Cook Islands, Fiji, Samoa, and Solomon Islands) are planning initiatives to make government information freely available via their web sites, but none have yet reached the operational stage. Although many Pacific island governments operate wide area networks, public access to anything beyond basic information (such as directories) is not common. But this is changing fast.

29. For example, the Fiji e-government proposal, which stresses the need for a complete transformation of processes to improve service delivery, and for complete Internet compatibility for public access, based on the existing government WAN. In the Cook Islands, discussions have begun about ways to put Customs on line, to streamline tax and duty procedures and clearance of imports. And a number of Pacific counties are studying the implementation of electronic port manifests to expedite ship-borne exports.

30. Electronic commerce is perhaps the most widely promoted Internet application for economic development. The uses for e-commerce range from direct buying and selling of products and materials, to promotion of tourism destinations, to coordination of business services for entire industries such as airlines. The impacts that are being realised in other parts of the world include more readily available goods at lower cost for consumers, better pricing information for producers, and the creation of business clusters and synergies in many industrial sectors. In recent studies,

business users have been found to be replacing much of their traditional promotion, advertising, recruitment, and management communications activities with an Internet strategy.

31. The same processes are beginning in Pacific island countries, but at a slower pace than elsewhere. The number of operational electronic commerce activities remains small in the Pacific due to the limited scale of most economies, the relative lack of access among potential customers, a lack of familiarity and trust of electronic transactions, and the high costs of connectivity. However, early implementers of electronic strategies are showing positive signs. EFTPOS service and ATMs are emerging through various banking groups operating in the region.

32. As a major component of many Pacific economies, tourism is one of the leading implementers of ecommerce approaches. All major resorts and an increasing number of small-scale resorts and tour operators now have on-line promotion and booking web sites. There are also tourism portals, for example the visitor's bureau of the Federated States of Micronesia ([www.visit-fsm.org](http://www.visit-fsm.org)).

33. At the retail level, individual manufacturers such as Sandollars Fiji ([www.purefiji.com](http://www.purefiji.com)) have begun online direct sales, and a few "virtual shops" such as Melanesian Handcrafts ([www.melanesianhandcraft.com.sb](http://www.melanesianhandcraft.com.sb)) consolidate and promote a range of products through online catalogues of local products. Online banking has also recently become available in some countries through companies such as the ANZ bank ([www.anz.com.fj](http://www.anz.com.fj)).

34. At the level of business and investment promotion, a number of countries have established an Internet presence. The Solomon Islands Ministry of Commerce has established an online business directory ([www.commerce.gov.sb/Business\\_Directories/](http://www.commerce.gov.sb/Business_Directories/)). Many countries have established an electronic "one stop shop" for inward investment, such as the Cook Islands Development Investment Board ([www.cookislands-invest.com](http://www.cookislands-invest.com)), the Samoa Investment Promotion unit ([www.tradeinvestsamoa.ws](http://www.tradeinvestsamoa.ws)), and the Papua New Guinea Investment Promotion Authority ([www.ipa.gov.pg](http://www.ipa.gov.pg)). At the regional level, each of the Pacific Islands Trade and Investment Commission overseas offices has a web site for promotion of both exports and inward investments from all Pacific countries: Auckland ([www.pitic.org.nz](http://www.pitic.org.nz)), Beijing ([www.pifto.org.cn](http://www.pifto.org.cn)), Sydney ([www.pitic.org.au](http://www.pitic.org.au)), and Tokyo ([www.pic.or.jp](http://www.pic.or.jp)).

#### Policy and Regulatory Framework

35. The absence of finalised/adopted strategic plans, budgets, and regulations and legislations for both sectoral organisations and national governments is a contributing factor to why the development of ICT is slower than national governments may desire. But this is changing fast. Most PICs are well advanced with their national strategies and policies.

36. ICT legislation is outdated and the absence of final ICT policies and strategies in most, if not all FICs is evident despite the rapid technological innovations taking place globally, especially concerning privacy and consumer protection, and Internet use.

37. The last year however has seen a positive and rapid movement with FICs working to developing national ICT policies and strategies, and regulatory frameworks. These are been supported by International agencies, like the United Nations Development Programme (Fiji Office), and the ITU Regional Office for Asia and the Pacific, with the national governments. Considerable external help is being provided in formulating policy options, but it is essential that the reform process continue to be driven locally.

38. At the national level, those are the aims of the Pacific Governance Project (PGP), which is assisting Pacific island countries to catch up to the sweeping technological changes that have taken place in recent years. The PGP, which is being implemented by the ITU Regional Office for Asia and the Pacific, is providing expert services to develop national policies and regulatory frameworks for each of the fourteen participating countries. Project resources include an Internet portal for regulators ([www.itu.or.th/governance03](http://www.itu.or.th/governance03)) and online materials for continuing professional education in the areas of telecommunication policy, regulation and legislation.

39. In this project, ICT sector governance is approached within a national context that recognises the linkages between policy and regulation *within* the sector as well as *between* sectors (such as general economic regulation, national development planning, and national social objectives).

40. Similarly, ICT taskforces and committees are being established inline with the above mentioned projects.

41. The effects of technology convergence and the evolution of the international operating environment mean that traditional institutional and policy approaches to communications have had to adapt to rapid and sweeping change everywhere in the world. This is even more so in Pacific island countries, which typically begin from base of incomplete and outdated legislative and regulatory frameworks combined with monopolistic operating environments.

42. Historically, telecommunications services in the Pacific (as elsewhere) have been provided by a government department or a government corporation. As such, the same organisation was responsible for operations, policy, and regulation and there was no need to formally separate them. The need for regulatory reform in telecommunications in the Pacific is now becoming apparent as former government departments are corporatised or form partnerships with the private sector, and are thus under less direct public control.

43. Given this history, the concept of independent regulation is new to most Pacific island countries. Only Papua New Guinea has an independent regulator. Most other countries regulate via a Department of Communication within an appropriate ministry. Several Pacific island countries have no regulator, and rely on the incumbent telecommunications company as a combined operator, regulator, and policy maker.

44. The main difficulty with liberalisation in the Pacific lies in the existing monopoly licenses. Efforts to open the market for Internet services must first remove these statutory barriers and overcome the advantages enjoyed by entrenched

monopoly providers. It is unclear if Internet services fall under legislation that was originally intended to cover telecommunications. Therefore an urgent need exists in many countries to examine existing regulations and legislation with respect to the Internet, and to consider a liberal interpretation of their scope.

45. At their meeting in April 2002, Pacific Islands Forum Communications Ministers encouraged the creation of flexible policy and regulatory environments favourable to the development of the Pacific information economy, and also recognised the urgent need in some cases to strengthen government ministries to enable them to more effectively develop national policies for telecommunications development.

46. A regional approach to regulation would be an effective way to leverage the abilities within each country as well as those that may be provided by development partners. Combining many smaller national needs and capabilities into one larger regional activity would create more effective regional capacity. A collaborative mechanism is intended to create economies of scale in analysis and technical assistance, allow joint use and cost sharing of expert resources, provide ready availability of expertise within the region, promote regulatory harmonisation where appropriate, and promote a consistent and unified voice on international issues.

47. Links between regulators already exist in the region and are becoming increasingly active. Following a decision in early 2002, the Pacific Islands Telecommunications Association (PITA) is now establishing a regulators forum to increase the effectiveness of these contacts. It will create a newsletter, establish a web site that would serve as a regulator's portal, create an email list server, and in general act as a clearinghouse.

48. At the international level, regulation of the Domain Name System (DNS) has proven problematic for a number of Pacific island countries. Although the well-known case of the tiny country of Tuvalu cashing in on a fortuitous ccTLD (.tv) generated a great deal of publicity and significant income for that country, several other countries have lost control of their ccTLD and have been fighting re-delegation battles for years without much success. International policy surrounding the management of on-line resources is vital to these countries, not only to ensure the survival of local ICT sectors, but more importantly to ensure the availability and functionality of this resource to as many people and businesses in the region as possible.

#### Use of Information, Communication Technologies - Limitations and Constraints

49. The people of the Pacific face a variety of constraints, for example limited access to infrastructure, limited access to computers and ICT services, and high cost for service use, which limits and hinders the approach in which they utilise and attempt to adopt ICT in their daily and professional lives.

50. It is evident that cost, above all else, is the major constraint in the use of ICTs. Table 7 below, provides an inventory of barriers and constraints that have been identified as most prevalent in the island states. The cost of international telecommunications, domestic/local telecommunication, and/or equipment costs are cited most frequently. Other constraints are those concerning telecommunications

bandwidth, limited financial support, the absence of organisational structure and policies, unreliable power supply, outdated legislation, and the lack of staff knowledge and understanding of ICT use. These constraints cut across the region and have been identified by countries as being significant barriers in the use and development of ICTs.

**Table 7: Barriers and Constraints for Utilisation of ICT**

	Equipment Costs	Technical Support	Unreliable power supply	Access to telephone network	ISPs	Telecommunications bandwidth	Staff knowledge of equipment	Staff knowledge of value of use	Online resource material	Cost of domestic communications	Cost of int'l communications	Organisational structure	Land issues
Cook Islands	∴				∴	∴							
FSM		∴				∴					∴		
Fiji	∴				∴	∴				∴	∴		
Kiribati	∴	∴											
Marshall Islands													
Nauru								∴					
Niue	∴	∴	∴			∴				∴			
Palau										∴			
PNG	∴					∴							∴
Samoa	∴					∴							∴
Solomon Islands	∴				∴						∴		∴
Tonga	∴									∴			
Tuvalu	∴					∴				∴	∴		
Vanuatu	∴									∴	∴		

source: UNESCO (2001), *Internet Infrastructure and e-Governance in Pacific Island Countries*.

51. ICT usage and application in the workplace, be it the private or public sector, is hindered by various barriers. Apart from the cross-cutting constraints of costs and infrastructure, the most notable limitations include, the lack of understanding of the value of ICT use; the inadequate or no backup support in the organisation once equipment is in place; employee knowledge of equipment and its use; and training.

52. Similarly for educational institutions, the equipment and telecommunication costs, and limited human resources are major stumbling blocks for ICT use and application, which impedes learning and development given the realisations that ICT tools are most beneficial. Proactive approaches by two countries have encouraged a greater uptake. For example, the telecommunications company in Vanuatu offers free Internet access to any school that is able to provide its own hardware. In another example, the state of Yap in the Federated States of Micronesia has created a wide area network called YapSEED that links schools and administrations on outer islands. The computer centres provide Internet access to students during the day and the wider community after hours

53. In addition to the cost and human resource constraints, other barriers for educational institutions are limited teacher knowledge of equipment and value of usage; limited online resource material especially local content; and concerns OF authorities of damage to equipment (which entails generated costs).

54. The monopolistic situation in the FICs and the limited number of Internet Service Providers means that the public is bound by sole providers, which in turn affects service delivery and pricing. In cases where there is more than one ISP, or carrier in the case of Tonga, prices and service packages do vary and will vary.

## **Conclusion**

55. Pacific states, in their drive to embrace ICT, face a significant number of constraints which result in the average citizen not being fully equipped to access/ utilise ICT services. While there has been marked improvements in some areas of ICT, overall the issues still remain the same – no/limited access to telephones, high costs and charges, poor supply of skilled persons, outdated legislations and limited financial support in ICT.

56. Access to the Internet by government, public, and business is essential for economic development. A rapidly increasing proportion of information and services is being provided electronically in the region and around the world, and full participation in many sectors is impossible without reliable and affordable access.

57. Although this is obvious in all developing countries, it is particularly relevant to Pacific island countries that face extremes of high costs, vast distances, and small scales spurred on by more barriers such as limited access to networks, small number of Internet service providers, and availability and cost of telecommunications bandwidth. The monopolistic nature of the telecommunications infrastructure limits the development especially in terms of Internet Service Providers and pricing.

58. Telephone penetration is good in the urban centres but relatively poor in the rural and outer lying areas, and this is the reflection of the telecommunications infrastructure of the countries. Cellular phones are popular and in cases like Fiji, have grown exponentially. Connectivity is generally more expensive in the Pacific region than anywhere else, particularly in comparison to average incomes.

59. Human resource and institutional capacity building is further hindered by the limited access to information infrastructure for training, such as telephones, computers, and Internet services, for individuals, schools, and organisations; training is limited to very few persons in both the public and private sector; the limited number of skilled persons in ICT and retention issues; levels of training and budgetary allocations for ICT training and development are inadequate in comparison to other budgetary components in private and public sector budgets; and the lack of awareness and understanding on the value of ICT use and applications.

60. Policy and regulatory frameworks are outdated and lag behind the rest of the developing world. However, this is being addressed through reforms, with assistance from international agencies. It is important to note, that despite the overwhelming limitations to ICT development in the region, steps and slow reforms are taking place to address these issues. And moreso, that it is being driven by countries themselves.

## References

1. PIFS(2002), *Country responses to Pacific ICT Survey 2000*, Pacific Islands Forum Secretariat, Suva
2. UNESCAP(2002), *Trade and Investment Promotion in the Pacific Islands through effective use of Information Technology*
3. World Bank(2002), *Pacific Islands Regional Economic Report*, Washington: World Bank East Asia and Pacific Region Office.
4. PITA(2001), *The Asia and Pacific Regional Preparatory Meeting for the World Telecommunication Development Conference – Pacific Report*, Pacific Islands Telecommunications, Suva
5. SPC(2001), *Pacific ICT Needs Assessment and Strategy Planning Workshop*, Secretariat of the Pacific Community, Noumea.
6. UNESCO(2001), *Internet Infrastructure and e-Governance in Pacific Islands Countries – A Survey on the Development and Use of the Internet*
7. UNESCO(1999), *Electronic Connectedness in Pacific Islands Countries – A Survey on the use of computers, e-mail and the Internet in education, culture and communication.*