

# ISSUES



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PACIFIC ECONOMIC COOPERATION COUNCIL



**ICTs For Every Pacific Islander:  
Potential, Constraints, and Opportunities**

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#### **About this Issue**

This **ISSUES@PECC** is a paper by Dr Robert Guild based on a paper he presented at the World Summit on Information Society, Asia-Pacific Regional Conference held in Tokyo on 13-15 January 2003.

The paper presents the potential, constraints and opportunities, principles and strategies on the regional framework on the development national ICT policy and governance structures in the Pacific island countries. It emphasizes on the priorities for action in tele-health, human resource development including distance learning and e-learning, universal access through community telecentres and e-government.

The PECC Pacific Island Nations IT Task Force collaborates with the Pacific Island Forum Secretariat on the outcomes of this project in further developing the task force focuses in the work program.

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## ICTs for Every Pacific Islander

Pacific island countries, through a series of regional initiatives and events over the past five years, have thoroughly considered the role of information and communication technologies (ICT) in their social and economic development. The regional vision that has emerged and been endorsed at ministerial level is: ICTs for Every Pacific Islander.

In support of this vision, there are three main messages from Pacific island countries regarding the application of information and communication technologies (ICTs) for social and economic development:

- There is tremendous potential to make rapid advances in the sector, but the region is faced with fundamental constraints to that development
- Pacific island countries have structured an integrated framework for development, including policies, strategies, and action plans at the national and regional level
- The regional development framework has been prioritised, and provides guidance for bilateral and multilateral development assistance

### Potential and constraints

ICTs hold one of the most important keys to creating a better future for the Pacific, and there have been marked improvements in many areas in most countries. In a context of small islands dispersed over vast ocean distances, facing limited natural resources and high transportation costs, better information and more efficient and affordable access are essential to connect island communities to the rest of the world.

However, Pacific island countries face severe constraints to development. The high costs of access and equipment are major barriers to increased use of ICTs, along with limited international bandwidth, outdated regulatory frameworks, unreliable power supplies, and limited human and institutional capacity for sector development. Sector reform is proceeding slowly, but development is not as rapid or as complete as it will be as these constraints are overcome. These constraints are common across the region.

### An integrated planning and policy framework

To complement national initiatives in strategic planning and policy, a set of planning and policy documents developed at the regional level over the past year and a half comprises an integrated framework for future development of the sector. These documents, which are available at [www.forumsec.org.fj](http://www.forumsec.org.fj), include:

- Forum Communication Action Plan: Ministerial decisions about what the region will pursue for development of the ICT sector
- Pacific ICT Policy and Plan (PIIPP): a framework to implement Ministerial decisions by coordinating regional activities and offering guidelines for national activities.
- Pacific I4D Initiative: the Type II partnership initiative developed for the World Summit on Sustainable Development

### Priorities for development

Pacific island countries are well aware of the potential for ICT to accelerate development in many sectors, and are ready to move to



implementation. Their priorities, identified by the most recent Forum Communication Policy Meeting and associated Interagency Planning Meeting in April 2002, are:

- tele-health
- human resources development through distance learning
- development of national policy and regulatory frameworks
- improvements in universal access through community telecentres

Development partners, both bilateral and multilateral, have been very involved and generous supporters of ICT development in the Pacific region. Projects for remote connectivity in tertiary education, national ICT strategy support, and national regulatory framework development continue to make significant differences in the region's development prospects. Although national support is strong, future priority projects will continue to depend on external support for some of their investment requirements.

#### A unique region for special consideration

The Pacific region is unique in two respects. First are the characteristics of Pacific countries themselves, particularly their small scales, large distances, and dispersed economies and societies. Second is the advanced and integrated nature of planning and policy in the region and in each country and in the region. Combined, these aspects make a powerful case for special consideration for regional development.

## 2. OVERVIEW OF THE STATUS OF THE PACIFIC ICT SECTOR

Pacific island countries span the equator and the international dateline, across 30 million square kilometres of ocean, with a total population of less than 8 million. The socio-economic characteristics of these countries vary widely, perhaps more so than in any other region of the world. National populations range from 1,500 in Niue to 5 million in Papua New Guinea, with the proportion of people living in remote rural areas ranging from zero in Nauru to nearly 90% in Solomon Islands. Income levels differ by a factor of ten, with per capita GDP figures ranging from US\$700 in Kiribati to over US\$8,000 in Palau. Variations in these characteristics are typically wider within countries than between countries. (See the Summary Data on ICT Status in the Annex)

National ICT infrastructure is developing rapidly, but lags behind many other parts of the world. Internet access has become available only recently, beginning first in 1995 in Fiji and most recently in 2000 in Tuvalu. Approximately 25% of Pacific islanders have regular access to the Internet. The number of Internet subscribers ranges from about 1 in 5 in Niue (where access is free) to 1 in 1000 in Solomon Islands. Users in only three Pacific counties (Papua New Guinea, Samoa and Tonga) have a choice of Internet Service Providers; while users in all other countries are served by monopoly ISPs.

Telephone penetration is generally good in urban areas, but very poor in rural areas. Urban teledensities range from about 20 to 60 per hundred, whereas rural teledensities range from one half to one tenth of those in urban areas. Mobile phones are increasingly common, but in

most countries do not yet approach the levels of usage seen elsewhere. Other than Fiji and Papua New Guinea which have submarine cable links, all other Pacific island countries rely exclusively on satellites. Only users in Tonga have a choice of carriers for telecommunications, while all other countries are served by monopoly providers for both domestic and international services.

However, difficult rural topography and small populations dispersed on outer islands mean that few people outside of national capitals can make a phone call, let alone access the Internet. Furthermore, due to vast distances, small markets, and the lack of economies of scale, improvements are slow and extremely expensive. Those on outer islands and in remote rural areas typically rely on HF radio and in a very few cases on satellite links to their capitals.

In terms of affordability, Pacific islanders typically face connectivity charges that are among the highest in the world. Subscription and usage charges for dial up access to the Internet range from US\$3 to US\$175 per month, with an average of US\$50. On an annual basis this amounts to one quarter to one half of the average annual per capita GDP in many countries and is clearly unaffordable by the majority of people. The price of full-time Internet access via a 64 Kbps leased line varies much more widely than does that of dial-up access, from US\$700 to US\$5000 per month. These prices are on average 5 times higher, and range to as much as 20 times higher, than in APEC developing countries.

The future development of the sector faces similar constraints to those experienced in the wider public and private sectors. Most importantly, there are very limited human and institutional resources in the ICT sector in Pacific island

countries. Training opportunities are limited in nearly all countries. Furthermore, in-country retention of trained personnel is a very serious and increasing problem.

Despite these constraints, however, the most notable fact about the Pacific island countries is not how far they still have to go, but how far they have come in a very short period. Compared to the situation in 1995, when Internet browsing was not even possible in most countries and most government departments still relied on mimeograph machines, the existence by 2000 of well-functioning government LANs, vibrant competition among ISPs in a few countries, and ready access to up-to-date hardware is remarkable. It now remains to extend the benefits of ICTs to social and economic development across all sectors in the region.

### **3. PRINCIPLES AND STRATEGIES: THE REGIONAL FRAMEWORK**

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 begin from base of outdated legislative and regulatory frameworks combined with monopolistic operating environments.

The development of national ICT policy and governance structures has begun in most Pacific island countries. Through national and regional technical assistance programmes that currently finalising national policies and strategies, progress has been rapid over the 2001-2002 period. 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 to strengthen government ministries to enable them to more effectively develop national policies for telecommunications development.

At the national level, those are the aims of the Pacific Governance Project (PGP). 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.

Pacific island countries are also currently developing national strategies under the e-Pacifika programme financed by Japan and implemented by UNOPS. The programme has three goals: raising awareness among leaders and decision-makers about the effectiveness of ICTs to cope with the emerging global issues such as environmental conservation, education, and health management, formulating national ICT strategies, and assisting countries to develop programmes and projects based on their strategies. The project web site contains further details and includes reports from country planning workshops ([www.undp.org.fj/RAS-99-064.htm](http://www.undp.org.fj/RAS-99-064.htm)).

At the regional level the ICT Working Group of the Council of Regional Organisations of the

Pacific, chaired by the Pacific Islands Forum Secretariat, has led the development of the Pacific Islands Information and Communications Technologies Policy and Strategic Plan (PIIPP). The PIIPP is a regional approach to planning and co-ordination that complements national strategies through detailed goals, objectives, and implementation activities. The PIIPP serves as both a regional policy, in areas where international co-operation is required, and as a guide for national action, in areas for domestic implementation. It received Ministerial level endorsement in April 2002.

Policy and regulatory development processes in the Pacific will necessarily be different from experiences in more development countries. It is clear that what works in larger economies will not necessarily work in smaller economies. Policy objectives need to be realistic and well understood. Consultation needs to be tailored to local circumstances as it is essential that general consensus for reform is achieved. Although there is considerable external help being provided by several multilateral organisations to the region in formulating policy options, it is essential that the reform process continue to be driven locally.

#### 4. PRIORITIES FOR ACTION

Putting plans into action are the aims of the Forum Communication Action Plan, which contains Ministerial level decisions regarding the overall strategic direction for ICT development, and the Pacific I4D Initiative, which is the Pacific region's umbrella mechanism for co-ordinating external assistance to ICT for sustainable development.

At the Interagency Programming Meeting organised by the Asia Pacific Telecommunity and

the ICT Working Group of the Council of Regional Organisations of the Pacific, held in April 2002, Pacific island countries prioritised four main areas for immediate action. These were tele-health, human resources development, universal access through community telecentres, and continued development of regulatory frameworks. In addition, e-government is rapidly becoming a key initiative for many countries.

#### Tele-health

The need for modern health care from anywhere in the Pacific is an obvious application for the Internet, which is changing the health sector through access to global information resources, distance education, and remote consultation. The Pilot Telehealth Project (PTP), co-ordinated by the Fiji School of Medicine and the Pacific Islands Telecommunications Association, will offer remote consultation and diagnosis, community health information, and continuing professional education to doctors, nurses, and patients anywhere in the Pacific. Using this technology a primary healthcare provider in a remote setting is able to transfer clinical information and images to specialist providers in an urban setting. The specialists then review this material and render an opinion, perhaps after requesting additional information via email or through a web-based platform. In this way a dialog can be established between a remotely placed provider and specialist providers regarding particularly challenging cases.

In addition to interactive applications for consultation and diagnosis, there are many email discussion lists in the region. A prominent example is the Pacific Public Health Surveillance Network run by the Secretariat of the Pacific

Community (SPC) to co-ordinate communications and provide access to resources through email and a web site ([www.spc.int/phs/PPHSN](http://www.spc.int/phs/PPHSN)).

#### Human resource development

One of the most tangible benefits for developing countries from ICT has been in education and distance learning. The advantages of distance learning in the Pacific are obvious, given the remote locations and small populations of most countries. Now, the Internet has the potential to make available first-class educational resources to people at any location at any time.

The University of the South Pacific has been engaged in distance education since 1974, first through post and radio communications, and later through telephone conferencing and email. In the year 2000, a wide-area network called USPNet was created that offers real-time lectures, online collaboration, access to resources, and videoconferencing via satellite between USP centres in 12 countries and partner institutions in the United States, Japan, Australia, and many other potential destinations.

Distance learning at tertiary level is further advanced in the US-affiliated islands of the north Pacific through the efforts of PEACESAT and Pacific Resources for Education and Learning (PREL), through videoconferencing and data networks. Countries throughout the region are looking closely at these successful implementations of satellite access for their own adaptation.

E-learning at levels below tertiary is mostly limited to urban students in better-off areas. Some secondary schools, but few primary schools,

have computer labs with limited Internet access but they are not common. Proactive approaches to encourage greater uptake include an offer by the telecommunications company in Vanuatu for free Internet access to any school that is able to provide its own hardware and the successful creation of school labs by the education department in the state of Yap in the Federated States of Micronesia that provide Internet access to students during the day and the wider community after hours.

#### Universal access through community telecentres

Telecommunication infrastructure is regarded as one of the fundamental factors for economic development, but in the Pacific environment it takes on an even more crucial role. Communications are a lifeline for scattered Pacific island nations and they are committed to extending telecommunication and ICT services to under-served and remote areas. As a result, the concept of universal access to several forms of ICTs in addition to telephone calls is becoming increasingly accepted.

The establishment of community telecentres to bridge the digital divide within countries has been identified as a top regional priority. A partnership approach led by the ITU will establish and operate multi-purpose community telecentres on remote islands and in under-served urban areas. These centres will operate on a self-sustaining basis and allow access to Internet information in rural areas, establishment of e-mail centres, and access to education links throughout the Pacific islands.

Connectivity for civil society has driven one of the most innovative email applications. In Solomon Islands, electronic mail is being offered

to people in some of the most remote and challenging conditions in the Pacific. The People First Network is an email service and Internet support infrastructure that facilitates communications and information for remote provinces and outer islands. The network features low-tech email via HF radio run by volunteers, an Internet Café in the capital, and a portal web site ([www.peoplefirst.net.sb](http://www.peoplefirst.net.sb)).

#### e-government

The Internet was originally created for the distribution of official information, and this 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 islands are planning initiatives to make government information freely available via their web sites, but none have yet reached the operational stage. Most e-government proposals have in common an emphasis on the need for a complete transformation of processes to improve service delivery, and for complete Internet compatibility for public access, based on existing government WANs.

## 5. CONCLUSION

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. 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.

These developments will only take place provided the right environment is created and the necessary resources are mobilised. Major constraints include high access costs, physical challenges to network development, and human and institutional capacity to plan, implement, and manage change.

It is important to note, however, that Internet promotion and use in the Pacific island countries over the near to medium term will continue to be driven by national development plans in addition to commercial objectives. As a result, the public sector will remain the most important stakeholder, but will become much more proactive in involving the private sector and civil society in ensuring that the needs of communities are identified and met through the most appropriate form of technology.

## ANNEX: SUMMARY DATA ON ICT STATUS

	Cook Islands	Federated States of Micronesia	Fiji	Kiribati	Nauru	Niue	Palau
Country Code Top Level Domain (ccTLD)	ck	fm	fj	ki	nr	nu	.pw
National population	14,300	118,100	824,700	90,700	11,500	1,900	19,100
Rural population, % of national	41	63	54	63	0	65	29
Gross domestic product per capita (US\$)	4,950	2,070	2,680	700	3,900	3,710	8,030
Computer ownership per 100 inhabitants			5.5				
Telephone lines per 100 inhabitants: national	45	10	10	-	-	-	39
Telephone lines per 100 inhabitants: urban	55	-	20	8	-	66	-
Telephone lines per 100 inhabitants: rural	35	-	-	4	-	25	-
Internet hosts per 10,000 inhabitants	1	1.4	6.6				
Internet subscribers	1,100	1,800	6,000	510		200	1,700
Cell phone subscribers per 100 inhabitants	9.5		9.7				10
National bandwidth to/from the country	2 M / 256 K		8 Mb	512 K		64 K	2 M / 3 M
	Papua New Guinea	Republic of the Marshall Islands	Samoa	Solomon Islands	Tonga	Tuvalu	Vanuatu
Country Code Top Level Domain (ccTLD)	pg	mh	ws	sb	to	tv	vu
National population	4,790,800	51,800	169,200	447,900	100,200	9,900	199,800
Rural population, % of national	85	35	79	87	68	58	79
Gross domestic product per capita	1,200	2,210	1,060	340	1,870	1,160	1,230
Computer ownership per 100 inhabitants			0.6	4.6			
Telephone lines per 100 inhabitants: national	12	15	6.8	1.5	8	8.6	3
Telephone lines per 100 inhabitants: urban	-	-	17	10.8	23	13	12
Telephone lines per 100 inhabitants: rural	-	-	2	0.2	3	3	-
Internet hosts per 10,000 inhabitants	0.9			8.5			
Internet subscribers	24,600		3,000	600	1,200	250	2,000
Cell phone subscribers per 100 inhabitants	0.2		1.9	0.3	0.2	n.a.	0.2
National bandwidth to/from the country	2 M		2 M	320 / 512		128 K	

Notes: Data on population, GDP, economic sectors, and literacy from World Bank (2002), *Pacific Islands Regional Economic Report*, 2002 and Secretariat of the Pacific Community ([www.spc.int](http://www.spc.int)). All other data from Pacific Islands Forum Secretariat unpublished surveys. Data are presented on 14 independent and self-governing countries only, but a total of 22 Pacific island countries and territories make up the Pacific island region.