REVIEW OF THE 2010 FAIDP

**USP**

SECRETARIAT CROP ICT WG

Version 7

# Acknowledgement

This report on the Review of the 2010 FAIDP was prepared by the Secretariat of the CROP ICT WG and the CROP ICT WG under the leadership and guidance of the chairman of the CROP ICT WG and also the Vice-Chancellor of the University of the South Pacific (USP), Professor Rajesh Chandra.

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# Preface/ Message from the Secretariat

The Framework for Action on ICT Development in the Pacific (FAIDP) was formulated in response to calls from Pacific Leaders to support development, strengthen governance and improve the livelihoods of communities in the Pacific region.

At the ICT Ministerial meeting in Noumea in 2011, the meeting agreed for a mid-term Review of the 2010 FAIDP in 2013, however due to the changing of the guards between the Chair of the CROP Working Group from the Secretariat of the Pacific Community to the University of the South Pacific in early 2013, there was a notable delay in conducting the Review of the Framework as appropriate human resources had to be hired to staff the Department that would oversee the process. This has taken almost a year from the date since the required time frame. Following the recruitment of appropriate staff around the end of June, 2014, the CROP Working Group meeting was convened to commence the Review process.

The Review of the FAIDP is coordinated by USP as the Secretariat for the CROP ICT WG, Pacific Island countries and territories (PICTs), together with regional and international development partners, have been actively engaged in the Review of the 2010 FAIDP.

The approach adopted in the Review was through desk research, consultations, surveys and empirical analysis and assessment based on certain identified indicators. The Review will also examine to see whether there has been growth and development that can be linked to the FAIDP.

We note and acknowledge that there have been progress and improvements made in some quarters in the Pacific in the area of ICT. There are however, areas that require stimulus and acceleration. One of the challenges is the absence of clear and reliable metrics to track the development of ICT proliferation in the Pacific. We noted that in the 7 thematic areas identified within the FAIDP, the choice of metrics and indicators adopted needed further work.

# Executive Summary

This paper has been prepared as a response to the call for the Review of the 2010 Framework for Action on ICT Development in Pacific (FAIDP) and to formulate a FAIDP Strategic Action Plan at the ICT Ministers meeting in Noumea, 2011. The purpose of the paper is to examine and review the progress in the implementation of the target indicators as outlined in the 2010 FAIDP.

The 2010 framework outlines seven themes for action aimed at effectively utilising ICT for sustainable development, governance, and improving the livelihood of Pacific communities. The framework will be supported by an implementation plan for the region based on the ‘many partners, one team’ approach and with monitoring and evaluation mechanisms. The framework aims to help guide future actions, inform policy direction, enhance funding decisions and support the implementation of national policies and plans.

The themes are:

* Leadership, governance, coordination and partnerships
* ICT policy, legislation and regulatory frameworks
* ICT human capacity building
* ICT infrastructure and access
* International connectivity
* Cyber security and ICT applications
* Financing, monitoring and evaluation

The approach which the Working Group used to review the FAIDP was to monitor and evaluate the progress of the Targets and Milestones that were defined under the 7 themes. The approach to evaluating this is both quantitative and qualitative.

The approach adopted in the Review was through desk research, consultations, surveys and empirical analysis and assessment based on certain identified indicators. The Review will also examine to see whether there has been growth and development that can be linked to the FAIDP.

The Review of the FAIDP is being carried out by a Sub Working Group of the ICT CROP Working Group which is led by the Secretariat. The University of the South Pacific is the Secretariat of the ICT CROP Working Group on ICT since it took over from the Secretariat of the Pacific Community as Chair of the Working Group.

One of the challenges in the Pacific is that many projects often happen in silos because of the lack of a strong regional governance mechanism or activator core. Noting that the ICT ecosystem is very diverse in that stakeholders have clear and distinct mandates, it is all the more critical that there is strong and effective leadership in this regard. The development of the Pacific Regional ICT Strategic Action Plan that stems from the FAIDP is critical in designing stimuli and growth strategies as well as identifying stakeholders to take ownership of specifically defined action items.

Some of the challenges in the region since 2010 remain the same with lack of a cohesive development pathway which can be attributed to the lack of the Pacific Regional ICT Strategic Action Plan (PRISAP). Notably previous Digital Strategies that were somewhat constrained to certain aspects of ICT leaving out some of the other aspects of ICT which include critical internet resources for instance. In hindsight, one of the advantages of not developing the PRISAP is that the review of the Framework and the creation of a new Framework can lead to a more holistic and expansive consideration of the innovative and inclusive approach to all aspects of ICT, the engagement of multiple stakeholders and diverse functionalities.

The Review found that the FAIDP has made some significant contribution to ICT development in the Pacific region with regards to national ICT policies formulation, Cybersecurity awareness and in assisting member countries in identifying potential service providers to improve connectivity in the region. ICT in Education has shown some very good indicators that it’s making good progress in most of the countries in the region. There is not much progress noted by the Review in the e-Health sector and it’s an important initiative that needs a careful assessment in the next FAIDP. The Review recognised the challenge to build a more industry ready ICT workforce to meet the countries and private sector needs.

The most challenging aspect experienced during the Review was the absence of credible information related to ICT development in the region. The Review acknowledged the absence of proper mechanisms in the countries to collect, store and organize ICT statistic data making it extremely hard to retrieve information when needed. The Review recommends, based on credible information, the formulation and establishment of a regional initiative to establish a regional e-portal to collect and store ICT statistic data in the pacific region.

There are a number of initiatives defined under the 2010 FAIDP that the Review has identified as potential ICT development initiatives and recommends that these initiatives be considered, introduced and incorporated as part of the Action Plan and form the basis of the next FAIDP.

One of the initiative highlighted in the Review is universal access. Universal access relates to providing communities with affordable access to ICT. With the increasing number of service providers entering the Pacific region offering affordable Internet solutions, PICTs and developments partners need to devise pathways to maximize these opportunities.

E-Government initiatives have been well established in some of the Pacific island countries like Fiji transforming government services through ICTs. The Review recognized the importance of e-Government initiatives and recommends e-Government initiatives inclusive of health, education, disaster risk Management to form part of the Action Plan and the next FAIDP.

Cybersecurity is one of the areas that has been widely neglected in the Pacific region both in terms of policy formulation, implementation and practical applications. The Review acknowledged that there is very little awareness amongst PICTs on the importance of security and therefore recommends for security awareness programs to be developed and incorporated as part of the Action Plan.

## Introduction

Information Communication Technologies (ICT) has transformed communities and revolutionized how countries and territories engage in a global borderless world. The development of ICT in the Pacific is quantifiable.

The purpose of this Review is to evaluate and assess whether the 2010 Framework for Action on ICT for Development in the Pacific (FAIDP) has yielded its defined targets. This will also enable and inform planners and strategists to examine strengths and weaknesses and also where to provide the relevant stimuli in order to achieve growth.

## Overview of ICT in the Pacific

The Pacific which has 27 countries and territories that are assigned country code top level domain names[[1]](#footnote-1) are scattered across the world’s largest ocean. Many of the Pacific countries are islands that are scattered and often development is scattered and centered on urban areas where there is usually greater access to services as opposed to rural areas that are often underserved.

Each Pacific country and territory is unique. Countries are distinct in their demographic and geography as well as governance structures which can impact inter alia on ICT development. These Pacific countries have unique challenges and are known to have high accessibility challenges in the world scale.

## Snapshot of the Diversity

In terms of ICT Development in the Pacific, there can be no one size fits all approach as each context is diverse. There are best practices and lessons which countries can engage in and share valuable experiences.

For example, Vanuatu’s last censuses in 2009 shows that 75.56% people live in the rural areas. Tuvalu on the other hand, which has a population of 11, 236 and around 60% living in the capital Funafuti. In this instance, we can see that the majority of Tuvalu’s populations live in the urban area as opposed to Vanuatu.

Another example of the magnitude of the diversity is that Australia which has 23.13 million people is followed closely by Papua New Guinea which has a population of 7.3 million. Whilst Papua New Guinea has the second largest population, its internet penetration rate is still below 10% compared to Australia’s internet penetration rate which is around 80%. Significant contributing factors include the status of competition and liberalization of the market; the number of investments made in the Industry, digital literacy, geography, land conflicts, political stability is factors that could affect ICT proliferation.

At present, the Australian Government has been able to propose figures of AUD 29.5 billion as investment into their National Broadband Networks which is a reflection of an aggressive commitment to bridging the digital divide within Australia even though their penetration rates are already at comfortable high levels compared to the Pacific Island countries and territories.

Solomon Islands, Kiribati, Vanuatu and Timor Leste are examples of countries where prices are above 40 per cent of the Gross National Income per capita[[2]](#footnote-2). Broadband prices in Small Island Developing States are often high due to geographical isolation, small market access and access constraints to international internet access[[3]](#footnote-3).

## Why is having a Regional Strategy Important?

Regional Strategies are critical in informing and aligning stakeholders’ involvement in a collaborative, integrated and systemized manner. The effectiveness of a Strategy can mean the difference between development and regression. Strategies are enablers for development pathways.

### History of Regional ICT strategies

* 2002 – Access for EVERY Pacific Islander
* 2005 – Pacific leaders adopted Regional Digital Strategy (2005-2010)
* 2010 – Review of the 2005 -2010 Regional Digital Strategy
* 2011 – Pacific ICT Ministers adopted the 2010 FAIDP (2010-2015)
* 2014 – Review of the 2010-2015 FAIDP

### Brief History About the 2010 FAIDP

The FAIDP was formulated in response to the call by Pacific Leaders[[4]](#footnote-4) at the Cairns [40th Pacific Islands Forum in 2009](http://www.forumsec.org/pages.cfm/newsroom/press-statements/2013/2009/final-communique-of-40th-pacific-islands-forum-cairns.html) for the Pacific Plan Digital Strategy to be reviewed and updated. The Pacific Islands Forum Secretariat ([PIFS](http://www.forumsec.org)) in collaboration with the Secretariat of the Pacific Community ([SPC](http://www.spc.int/)), commissioned a review of the Digital Strategy in early 2010. The Framework resulted from:

* the findings of the Review Process together with input from Pacific Island Countries and Territories;
* the outcome of the International Telecommunications Union (ITU) assessment of Pacific national ICT policies;
* the Council of Regional Organisations in the Pacific (CROP);
* the Pacific ICT Working Group which was chaired by the Secretariat of the Pacific Community;
* Development Partners.

## The 2010 FAIDP as an Instrument for ICT Development

The 2010 Framework for Action on ICT for Development in the Pacific (FAIDP) outlined an approach towards:

* developing and improving ICT services to support sustainable development;
* strengthen governance; and
* improve the livelihoods of communities in the Pacific region.

The FAIDP identified *targets* and various *milestones*. The FAIDP was intended to guide actions, inform policy direction, enhance funding decisions and support the implementation of national policies and plans.

The themes identified within the FAIDP are:

* Leadership, governance, coordination and partnerships
* ICT policy, legislation and regulatory frameworks
* ICT human capacity building
* ICT infrastructure and access
* International connectivity
* Cyber security and ICT applications
* Financing, monitoring and evaluation.

Some prime examples of actions stemming from the FAIDP are the work done by both the World Bank and the Asian Development Bank in ICT infrastructure development (e.g. submarine cables) and improved governance (e.g. formation of the regional centers PacCERT and PIRRC)

# Approach of the Review

The approach which the Working Group used to review the FAIDP was to monitor and evaluate the progress of the Targets and Milestones that were defined under the 7 themes. The approach to evaluating this is both quantitative and qualitative.

The approach adopted in the Review was through desk research, consultations, surveys and empirical analysis and assessment based on certain identified indicators. The Review will also examine to see whether there has been growth and development that can be linked to the FAIDP.

The Review of the FAIDP is being carried out by a Sub Working Group of the ICT CROP Working Group which is led by the Secretariat. The University of the South Pacific is the Secretariat of the ICT CROP Working Group on ICT since it took over from the Secretariat of the Pacific Community as Chair of the Working Group.

# Review

The Review of the Framework was originally scheduled to take place in mid-2013, however due to the changing of the guards between the Chair of the CROP Working Group from the Secretariat of the Pacific Community to the University of the South Pacific in early 2013, there was a notable delay in conducting the Review of the Framework as appropriate human resources had to be hired to staff the Department that would oversee the process. This has taken almost a year from the date since the required time frame. Following the recruitment of appropriate staff around the end of June, 2014, the CROP Working Group meeting was convened to commence the Review process.

The Draft Terms of Reference have since been circulated to various Governments within the Pacific Island Countries to solicit comments and feedback to be factored into the Review process. In hindsight the delay in initiating the Review was a blessing with the finalization of the post 2015 Sustainable Development Goals, Samoa Pathway for Action, the Review of the Hyogo Framework for Action from 2005-2015, the 6th Session of the Pacific Platform for Disaster Risk Management and various other key regional platforms that are currently under transition this year 2014. One notable absence from the 6th Pacific Platform Outcomes document was the absence of explicit mention of ICT in the area of Disaster Risk Reduction and Resilience Development despite calls for inclusion. There is a need for sub structures within the Pacific to gel and integrate more easily with each other where it comes to sectors which may from time to time overlap. This shows that there is room for more advocacy within the Framework or the Digital Strategy that will follow to ensure relevance and practicability.

These are all critical in terms of macro architecture in that it affects planning within the region as ICT is an enabler for wider development pathways in virtually diverse spectrums.

We note and acknowledge that there have been progress and improvements made in some quarters in the Pacific in the area of ICT. There are however, areas that require stimulus and acceleration. One of the challenges is the absence of clear and reliable metrics to track the development of ICT proliferation in the Pacific. We noted that in the 7 thematic areas identified within the FAIDP, the choice of metrics and indicators adopted was wanting.

## Room for Multistakeholders Collaboration and Integration

The ICT Ecosystem is vast and comprises of multiple stakeholders of diverse interests, roles, responsibilities and agendas whose contribution to the vitality of the Ecosystem is critical. The Ecosystem comprises of Infrastructure including but not limited to fibre optic cables, critical internet resources such as domain names and IP addresses, IP Backbone, Telecommunications Networks, Energy grids, Applications, Root Server Mirrors, Anycast Servers, Internet Exchange Points (IXPs) etc. We noted that the FAIDP lacked several metrics or high level indicators that could help progress the development of ICT in the various Pacific countries and territories.

The development of ICT in the Pacific can only progress with clear strategic and coordinated efforts that reflect the reality on the ground, identifies deficiencies and synergistic opportunities for accelerated regional integration, growth and development.

In terms of the monitoring and evaluating the targets prescribed within the FAIDP, we have engaged in assessing whether the Targets were met under the 7 themes and analyzed the results. We have also analyzed the relevance and suitability of the metrics selected under the existing themes.

## 1. Theme 1 - Leadership, governance, coordination and partnerships

### 1.1 Background and Policy Context:

The FAIDP recognizes the need for strong leadership, governance, effective multi‐sectorial coordination and partnerships to fully utilize ICT as a tool for development in the Pacific. One of the strengths of the FAIDP is that it recognizes the importance of appropriate governance mechanisms to ensure that the benefits of ICT are fully realized. The FAIDP is also progressive in recognizing that a better coordination of ICT interventions is needed to ensure that efforts are not duplicated and that limited resources are wisely utilized. The FAIDP recognizes that at regional level, there is room for countries and territories to cooperate and coordinate the implementation of policy and regulatory reform by sharing experiences, practices and lessons learnt. The FAIDP recognizes that key stakeholders need to converge to pool their resources and expertise to effectively implement the Framework.

One of the challenges in the Pacific is that many projects often happen in silos because of the lack of a strong regional governance mechanism or activator core. Noting that the ICT ecosystem is very diverse in that stakeholders have clear and distinct mandates, it is all the more critical that there is strong and effective leadership in this regard. The development of the Pacific Regional ICT Strategic Action Plan that stems from the Digital Strategy is critical in designing stimuli and growth strategies as well as identifying stakeholders to take ownership of specifically defined action items.

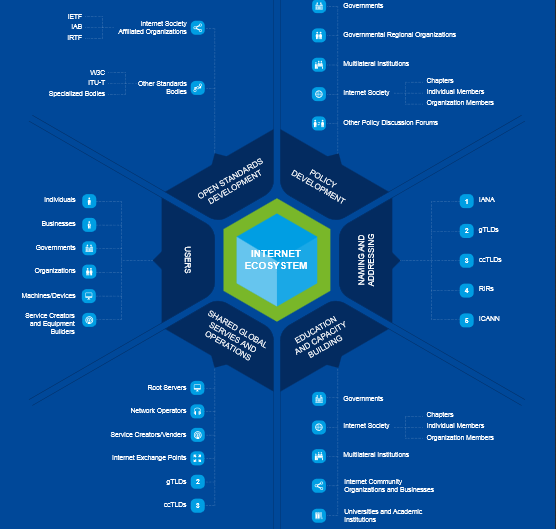
Some of the challenges in the region since 2010 remain the same with lack of a cohesive development pathways which can be attributed to the lack of a Digital Strategy and the Pacific Regional ICT Strategic Action Plan (PRISAP). Notably previous Digital Strategies that were somewhat constrained to certain aspects of ICT leaving out some of the other aspects of ICT which include critical internet resources for instance. In hindsight, one of the advantages of not developing the PRISAP is that the review of the Framework and the creation of a new Digital Strategy can lead to a more holistic and expansive consideration of the innovative and inclusive approach to all aspects of ICT, the engagement of multiple stakeholders and diverse functionalities.

Even within the Ecosystem, people generally have mixed regard for who has control over key ICT matters. To illustrate this point, we would like to highlight a recent [Global Internet Users Survey](http://www.internetsociety.org/sites/default/files/Global_Internet_Report_2014_0.pdf) that was published, see below:



To illustrate the ecosystem, we have made a snapshot of the ICT Ecosystem[[5]](#footnote-5). The Digital Strategy and the PRISAP should clearly identify specific objectives stemming from the Framework to bring about progressive changes to the status of ICT in the Pacific.

### The ICT Ecosystem



|  |  |  |
| --- | --- | --- |
| **Targets** | **Status** | **Comments** |
| PRISAP is established in 2011 | Not established | ICT CROP WG were not able to establish this due to transition difficulties |
| A multi‐stakeholder mechanism is established to assist with the implementation of PRISAP | Not established |  |
| A mid‐term review of the Framework for Action on ICT for Development of the Pacific is conducted before mid‐2013 | Review currently in progress |  |
| An ICT officials and ministers meeting is convened after the mid‐term review to consider the findings of the review and the progress of its implementation, with the outcome of this meeting to be tabled for Forum Leaders’ consideration | To be convened in 2015 following the Review process |  |

## 2. Theme 2- ICT policy, legislation and regulatory frameworks

### 2.1 Background and Policy Context

Strengthened ICT policy, planning capacity, and legislative and regulatory frameworks for ICT to provide an enabling environment for sustainable development

### 2.5 Target and Milestone

(i) National ICT policies and implementation plans including M&E frameworks are developed and operational in 14 PICTs by 2015  
(ii) Cybercrime legislation is adopted in at least 14 PICTs by 2015  
(iii) A regional strategy to combat cybercrime is developed by 2011  
(iv) E‐commerce legislation is adopted in at least 10 PICTs by 2015  
(v) Electronic files are admissible in court in all PICTs by 2015  
(vi) Data protection legislation is adopted in 5 PICTs  
(vii) ICT for education policies including M&E frameworks are adopted in 10 PICTs  
(viii) ICT for health policies including M&E frameworks are adopted in 10 PICTs  
(ix) All CROP agencies have ICT Policies by 2011

### 2.6 Evidence Available

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Countries** | **National ICT Policies** | **Cybercrime Legislation** | **Regional Strategy to combat cybercrime** | **Electronic files admissible in court** | **Data protection legislation** | **ICT Education Policy** | **ICT Health Policy** |
| Cook | Y | N | N/A | N/A | N | Y | Y |
| Fiji | Y | Y | N/A | N/A | N | Y | Y |
| FSM | Y | N | N/A | N/A | N | Y | N/A |
| Kiribati | Y | N | N/A | N | N | N | N |
| Marshall | Y | N | Y | N | N | Y | N |
| Nauru | N | N | N/A | N/A | N | Y | N/A |
| New Caledonia | Y | N | N | N | N | Y | Y |
| Niue | N | N | N/A | N/A | N | N | N |
| Palau | Y | N | N/A | Y | N | Y | Y |
| PNG | Y | N | N/A | N/A | N | Y | N/A |
| Samoa | Y | Y | N/A | N/A | N | Y | N/A |
| Solomon | N | N | N/A | N | N | N | N |
| Tonga | Y | Y | N/A | Y | Y | Y | N/A |
| Tuvalu | N | N | N/A | N | N | N | N |
| Vanuatu | Y | Y | N/A | N/A | N | Y | N/A |

##### Table 2.6

## Analysis

Theme 2 of the 2010 FAIDP focus on strengthening ICT policy, planning capacity, and legislative and regulatory frameworks. There are nine target and milestone indicators defined. The first target indicator focus on establishing National ICT policies. Overall, and with a few exceptions, according to table 2.6, most countries have access to National ICT policies which indicates that countries are gradually progressing in this area.

With regulatory framework, PIRRC a regional resource for Pacific island countries has engaged in undertaking reforms of their ICT and telecommunications sectors and performing periodic reviews of sector performance, issues best practice statements on telecommunications regulation, and provides technical support to regulators and policy makers of Pacific Island member countries. The World Bank and the Asian development bank have also contributed to regulatory policies reforms in the Pacific region.

The second target indicator is cybercrime legislation. A large proportion of countries as shown in table 2.6 have not engage in this area and as a result there is not much progress been achieved in this area. Notably, one of the drawbacks in achieving this target indicator is the lack of legislative capacity available in the countries to engage and take ownership of this process.

Among the difficulties that governments face in formulating ICT policies is that policymakers are often unfamiliar with the technologies that they are harnessing for national development. Since one cannot regulate what one does not understand, many policymakers have shied away from ICT policymaking. But leaving ICT policy to technologists is also wrong because often technologists are unaware of the policy implications of the technologies they are developing and using.

The Review acknowledge that there are countries who have participated in the ITU’s Capacity Building and ICT, Regulatory and Legislative Frameworks for Pacific Island Countries (ICB4PAC) project and have made significant progress towards legislation drafting.

The last two target indicators and in particular the Education sector has demonstrated that countries have taken considerable steps over the last few years to establish and formulate policies that reflects ICT for Education in the region. The accelerated adoption of ICT in Education in the region pays tribute to the close collaboration of the Education sectors in the region with various education partners and in particular to the tremendous efforts put in by regional institutes to support and nurture ICT in education initiatives during the initial stage right to the implementation stage.

## E-Health

Information and Communications Technologies hold much potential in terms of improved access to health related knowledge and services. E-health is often viewed as a possible game changer in terms of accelerating the delivery of health services to poor and remote areas.

Pacific countries are very aware of the potential of ICT in tackling health challenges they collectively face. There is also a focus on working together to be most efficient and increase the chances of succeeding. However, there are challenges such as, the low levels of Internet use, technology infrastructure challenges, affordability, appropriateness and the lack of human capacity and training in the use of ICT decelerate the progress of ICT initiatives in the health sector.

The World Health Organisation funded program, Pacific Open Learning Health Net (POLHN) has assisted Vanuatu in the professional development of its health workforce. In 2014, POLHN provided health workers in Vanuatu the ability to enhance their computer skills and use these skills to further develop their professional skills.

## Evaluation

The Review noted that there has been significant efforts by the member countries to progress the development of their National ICT policies plans as reflected in the results in table 2.6. Although some countries are still making slow progress in this area, overall this is a good indication that countries have prioritised the development of their national ICT policy plans and have engaged diligently in the formulation process. These efforts should be commended.

With cybercrime legislation, the lack of legislative capacity within member countries has been identified as one of the main hurdle and its well reflected in the results shown in table 2.6.

There is no evidence to suggest any progress been made on a regional and at the national level to combat cybercrime. PacCERT a regional initiative setup to assist member countries in cyber security issues is currently crippled by the uncertainties surrounding the support from member countries and therefore not able to fulfill its mandate. The Review also acknowledged the lack of linkages and collaboration activities between PacCERT and the law enforcement community in the region.

With regards to ICT in Education, there is credible evidence that confirms the wide adoption of ICT in Education at all levels beginning from primary through to secondary and tertiary schools at the national level. Recently the USPNET project has provided Internet connections to schools in the Marshall Islands, Tonga and in Niue. Creating and supporting a pathway that has transformed the education sector into realizing the benefits of ICT in Education is crucial. During the period of the review, USP also started the Teachers Educational Resources and e-Learning Center (TEREC) as a regional initiative to help Ministries of Education with e-Learning. These regional initiatives presented various opportunities that strengthen the importance of ICT in Education at all levels. Notably the influence of the FAIDP on the results presented in table 2.6 is evident given that many of the countries have made reference to the FAIDP as a reliable resource.

The Review noted that ICT in Health in the Pacific region has made very little progress over the years. A number of regional initiatives such as the [UN-APCICT](http://www.unapcict.org/ecohub/resources/browse-resources/e-health) e-Health program was rolled out in partnership with SPC ICT Outreach program in 14 island countries. The Pacific Open learning health Net (POLHN) is a key program of the World Health Organization in partnership with Pacific Ministries of Health. POLHN aims to improve the quality and standards of practice of health professionals by offering free, online, and blended courses.

POLHN’s thirty-eight learning centres are located in twelve countries: Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, Palau, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu. Each Centre consists of networked computers with internet access, printer, scanner, data projector and educational materials in digital and print form. National Ministries of Health provide the facilities, infrastructure and internet access for the local centres, and POLHN’s Coordinators and focal points work closely with Ministry of Health training committees to ensure POLHN’s courses are relevant and useful to Pacific health professionals.

The results shows very little influence of the FAIDP in progressing ICT development in the Health sector. Another regional initiative is the SPC new web-based interactive map showing current epidemic and emerging disease alerts in the Pacific region. The Review acknowledged that the impact of the FAIDP in progressing ICT in Health initiatives in the Pacific region is very minimal.

## Points for Consideration;

* PICs to consider utilizing multiple sources of legislative drafting capacity that are available in the region. (ITU, CTO, USP, WB and ADB).
* PICs to engage and utilize professional regulatory services offered by regional agencies like PiRRC
* Regional agencies and partners to assist PICs in formulating and refining national ICT policies
* Regional agencies and partners to work closely with PICs to address regulatory issues in the Pacific
* Regional agencies and partners to continue to work collaboratively with PICs in formulating and refining ICT for Education policies to meet country needs, identify opportunities that further progress the development of ICT in Education.

# 3. Theme 3 – ICT Human Capacity Building

### 3.1 Background and Policy Context

Sustainable ICT workforce and an ICT literate populace

### 3.5 Target and Milestone

(i) A joint regional capacity building programme is established

(ii) All PICT secondary schools have access to computers

(iii) 75 per cent of PICT secondary schools have Internet access

(iv) ICT curriculum is included in all PICT teacher training programmes

(v) At tertiary level the students to computer ratio is no more than 10:1

### 3.6 Evidence Available

|  |  |  |  |
| --- | --- | --- | --- |
| **Countries** | **Secondary schools have access to Computers** | **Secondary schools have Internet access** | **ICT curriculum included in Teacher Training** |
| Cook | Y | Y | Y |
| Fiji | Y | Y | Y |
| FSM | Y | Y | N |
| Kiribati | Y | Y | N |
| Marshall | Y | Y | N |
| Nauru | Y | Y | N |
| New Caledonia | Y | Y | Y |
| Niue | Y | Y | N |
| Palau | Y | Y | N |
| PNG | Y | Y | N/A |
| Samoa | Y | Y | N/A |
| Solomon | Y | Y | N |
| Tonga | Y | Y | N/A |
| Tuvalu | Y | Y | N |
| Vanuatu | Y | Y | N |

##### Table 3.6 Evidence Available

# Analysis

## ICT Competencies

Competency can be defined as a “cluster of related knowledge, skills and attitudes that affects a major part of one’s job (a role or responsibility), that correlates with performance on the job, that can be measured against well accepted standards, and that can be improved via training and development[[6]](#footnote-6).

Improving ICT competencies in the Pacific region, requires the quality and nature of training provided by ICT training institutions to undergo significant change. Broad-based training will need to be supplemented with skill-based training such as industry certifications, as well as cognitive and analytical skill development. And given the dynamic nature of the ICT industry and rapid advances in technological development, there is a need for continuous interaction between the ICT employers and ICT trainers.

Human capacity development needs to be more than just training in the formal education sector and should include industry, technical and professional communities (e.g. NOG Operators, ISPs etc.) and the general community, (especially in rural areas)

Developing skills for lifelong learning using ICTs is critical. All ICT training programs should keep up to date with new ICT developments and standards, e.g. Net Centric and mobile, but still provide practical experience in supporting Pacific deployments.

Results shown in table 3.6 indicates that Pacific Island countries should be looking at developing 21st century skills in their teachers and students through the use of ICTs with the goal of producing knowledge workers for all sectors. Providing access and training in the use of ICTs is insufficient in today’s world. Any ICT program should include improving teaching and learning through the use of ICTs. Developing e-Learning policies and programs, including the training of teachers is necessary to meet these goals.

## Evaluation

The Review finds no evidence of a joint regional capacity building programme been established to assist in the development of ICT skills that are relevant to satisfying the private sector and country needs.

The Review acknowledged and commended the effort by member countries and regional agencies to equip schools with computer equipment and for providing Internet access. There is evidence of the close linkages between the activities defined under the FAIDP with the efforts by member countries to improve school access to ICT.

The recent introduction of the Pacific Islands Research and Education Network PIRREN is welcomed and the connection of RMI and Tonga to the 100Mb/s service through USP Net is commended

The Review also noted that there is a reflection from member countries for the need for human capacity building initiatives in the region to focus more than just on training in the formal education sector and should include industry, technical and professional communities. A good example is the Pacific Network Operators Group (PacNOG) managed by Pacific Island Telecommunication Association (PITA) that focuses on the development of a skilled technical workforce for Telco’s in the Pacific region. Few of these activities are highlighted and encouraged in the FAIDP as noted by the Review.

The Review also noted that there has been very little progress in the inclusion of ICT in teachers training in the region as reflected in table 3.6. Teachers require extensive, on-going exposure to ICTs to be able to evaluate and select the most appropriate resources. The development of appropriate ICT enabled pedagogical practices is seen as more important that technical mastery of ICTs.

## Points for Consideration;

* Regional agencies and partners to work in collaboration with PICs to design programmes that will help create a workforce with specialist ICT competencies
* To encourage regional training institutes to develop coursework based on the majority of the country needs
* Regional agencies and partners to work collaboratively with PICs to form partnership with the multistakeholders community to formulate ICT skill-based training to supplement broad based training.
* Regional agencies and partners to work collaboratively with PICs to promote ICT education at primary through to secondary school and increase content on basic ICT in school curriculum
* Regional agencies and partners to work collaboratively with PICs to include ICT in teachers training curriculum
* Regional agencies and partners to offer fellowship to PICs to participate in the training workshops on offer e.g. PacNOG
* Regional agencies and partners to offer priority to applicants from the PICs to ICT roles in their organizations

# 4. Theme 4 – ICT Infrastructure and Access

### 4.1 Background and Policy Context

Improved domestic connectivity and ICT access

### 4.5 Target and Milestone

(i) Broadband rollout plans are adopted in 14 PICTs

(ii) A regional E‐environment programme (including e‐waste) established

(iii) Communication providers in PICTs have contingency/business continuity plans

(iv) Early warning and disaster management systems established in all PICTs

(v) PKI established in PICTs

(vi) A regional mechanism is established to collaborate with the energy sector

### 4.6 Evidence Available

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Countries** | **Broadband Rollout Plans** | **e-Environment Programme** | **PICT Providers have contingency and continuity plans** | **Early warning and disaster management system** | **Public Key Infrastructure Establishment** | **Regional Collaboration with Energy Sector** |
| Cook | Y | Y | Y | Y | Y | Y |
| Fiji | Y | Y | Y | Y | N | N/A |
| FSM | Y | N/A | Y | N/A | N | N/A |
| Kiribati | Y | Y | Y | N | N | N |
| Marshall | Y | Y | Y | N | N | Y |
| Nauru | Y | N | Y | N | N | N/A |
| N.C | Y | N | Y | Y | N | N |
| Niue | Y | N | Y | N | N | N |
| Palau | Y | N/A | Y | N/A | N | N/A |
| PNG | Y | N | Y | Y | N | N/A |
| Samoa | Y | Y | Y | Y | N | N/A |
| Solomon | Y | N/A | Y | Y | N | N/A |
| Tonga | Y | N/A | Y | Y | N | N/A |
| Tuvalu | Y | N | Y | N | N | Y |
| Vanuatu | Y | N/A | y | Y | N | N/A |

##### Table 4.6 Evidence Available

## Analysis

Connectivity should remain the first priority for PICs and solutions should be fit for purpose of the country needs. Ensuring access for all through bridging the digital divide remains an important regional priority. There is an estimate of 40% unconnected rural population of the whole Pacific Island countries.

10 Pacific Island countries are already benefitting from high speed and capacity International Connectivity via submarine cables-Others are still using satellite only

* Increasing fixed or mobile broadband traffic requires all countries to expand both coverage and capacity on their national network
* Telecom operator’s business viability may suffer from high CAPEX and OPEX increase to respond to the exponentially growing national bandwidth needs
* However new solutions are emerging from Technologies and international competition
* Real challenges and opportunities exists for Pacific Islands countries to enable national key players to deliver quality and affordable ICT services and applications beyond submarine cables.
* Despite progress being accomplished for international connectivity, major challenges still remains to extend the communications networks beyond connected urban centers
* Pacific Island countries are all relying on satellite and submarine cables to provide connectivity both for International and domestic

|  |  |  |
| --- | --- | --- |
| **Countries** | **Connectivity option**  🟓 submarine cable  🟓 Satellite | |
|  | **International** | **domestic** | |
| American Samoa | 🟓🟓 | 🟓 | |
| Cooks Islands | 🟓 | 🟓 | |
| Federated States of Micronesia | 🟓 | 🟓 | |
| Fiji | 🟓🟓 | 🟓 | |
| French Polynesia | 🟓🟓 | 🟓🟓 | |
| Kiribati | 🟓 | 🟓 | |
| Marshall islands | 🟓 | 🟓 | |
| Nauru | 🟓 | - | |
| New Caledonia | 🟓 | 🟓 | |
| Niue | 🟓 | - | |
| Norfolk Island | 🟓 | - | |
| Palau | 🟓 | 🟓🟓 | |
| Papua New Guinea | 🟓🟓 | 🟓 | |
| Samoa | 🟓🟓 | 🟓 | |
| Solomon islands | 🟓 | 🟓 | |
| Tokelau | 🟓 | 🟓 | |
| Tonga | 🟓 | 🟓 | |
| Tuvalu | 🟓 | 🟓 | |
| Vanuatu | 🟓 | 🟓 | |
| Wallis & Futuna | 🟓 | 🟓 | |

## Submarine cable Connectivity

The arrival of the submarine fibre to countries like FSM, Palau, RMI, Tonga and Vanuatu has not only ease connectivity woes but change the infrastructure footprint that now presents network and service providers with the opportunity to extend their network coverage to a much wider geographic area with improved bandwidth capacities. The efforts from ADB and WDB in providing technical and financial assistance and in realizing the opportunity to improve the development of ICT infrastructure in the Pacific region is very important and is highly commended.

The Review acknowledge that several countries are to be connected via submarine cable in the next few years:

|  |  |
| --- | --- |
| **Country** | **point of connection** |
| Solomon | Australia (SOCC) and PNG – Vanuatu (Interchange 2) |
| Palau | Guam |
| Yap FSM | Guam |
| Samoa | Fiji |

A few countries already having submarine cable are;

ESCAP has undertaken collaborative research with the ITU to map the fiber optic connectivity backbone in the region. This information could enrich the report by providing additional specificity on the infrastructure development issue. The map has been particularly valuable in identifying the connectivity gaps which will drive future infrastructure growth and integration in the region as we seek to close the digital divide and provide access to infrastructure which is sustainable, inclusive and resilient. The Review acknowledge and highly commend the collaborative efforts by ESCAP and ITU to engage in a research to map out the fiber optic connectivity backbone in the Pacific region.

## Satellite Connectivity

In 2005, the South Pacific was at high risk of having a single satellite having full coverage East-West; by 2017, 7 satellite operators will have new or improved coverage over the region (ABS satellite, Eutelsat, Intelsat, JSAT, Kacific, SES, 03B.

New satellite operators like O3B (2014) and Kacific (2017) are entering the Pacific with affordable broadband satellite solutions. In a co-operation program with ITU, it is expected that 11 Island countries will benefit from the service of Kacific and up to 55 rural/remote community e-centres will be established by 2017 to enable applications in the health, education and agriculture sector[[7]](#footnote-7).

The challenge to provide enhanced domestic connectivity should be made easier for players in regards to other advanced networks technologies;

* 4G/LTE is getting more scalable even for small population
* Radio microwave transmission reach over 1 Gbs and more affordable
* Submarine Cable technology will soon allow 200-400 Gbs per wave length
* A single satellite today can offer over 150 Gbs

Last mile solutions will be able to match the international bandwidth available submarine cable and each Pacific Islands can benefit of these new developments with positive e impact on expansion of accessible and affordable services nationwide.

In the Pacific region today, the estimated total demand for bandwidth is 44Gbps, only 18% is currently being supplied[[8]](#footnote-8) and the demand for more bandwidth would evolve given the impact of smart ICT technologies that have influence the development of our social and economic environments.

## Fixed Telephone Lines

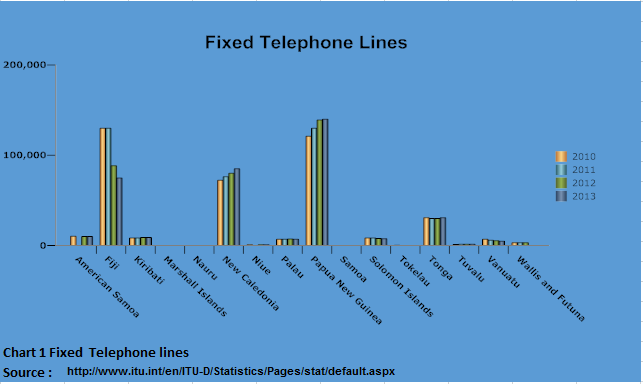


Chart 1 Fixed Telephone lines[[9]](#footnote-9)

In line with the recent developments over a five year period, there is a clear indication (Chart 1) that fixed telephony is on the decline in most of the countries in the Pacific region. There are a few countries in particular PNG where fixed-telephone uptake has actually increased over the past years.

The decline in fixed-telephone subscriptions over the years was accompanied by a strong growth in the mobile-cellular market and it is likely to continue on this path given the increase in the mobile-cellular growth rates due to the improvement to the infrastructure footprint expanding the mobile-cellular coverage to a wide demographic area.

The Review acknowledge the decline in fixed telephone lines subscriptions in Fiji as a direct outcome of the liberation of the telecom market and in the increase in the types of service plans offered at the national market and their uptake by individuals.

## Mobile-Cellular Telephone Subscriptions

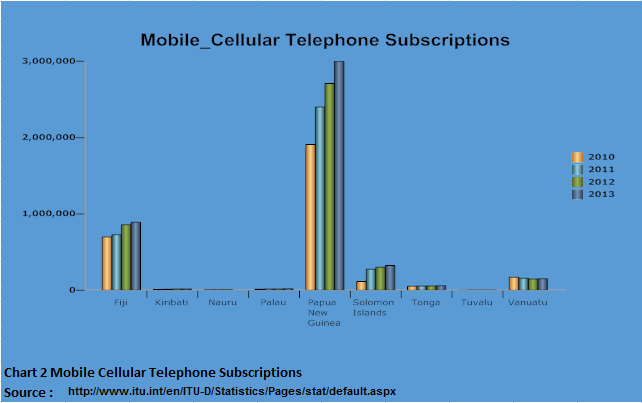


Chart 2 Mobile Cellular Telephone Subscriptions[[10]](#footnote-10)

Chart 2 reflects that the mobile-cellular uptake continues to grow at a vast rate in most of the countries. This trend is accompanied by a slowdown in fixed telephone lines subscriptions as highlighted in chart 1. The increase does not imply that every person owns or is using a phone but rather an indication that there is a shift towards having access to more affordable and reliable mobile-cellular telephone services.

Papua New Guinea and Fiji according to chart 2 have made significant progress in the mobile cellular area. Some of the contributing factors to the increase relates to the large size of the population living within reach of a mobile-cellular signal and, at least have access to a mobile communication devices and the deliberate and aggressive efforts to invest on infrastructure development in telecommunication and ICT. The mobile-cellular telephone subscriptions per 100 inhabitant (table 1) for Papua New Guinea in 2013 was 41% compared to the 101% for Fiji.

The Review recognize that there is also a convincing trend in the mobile-cellular telephone subscriptions within small island countries. This has been a direct result of countries continuing their efforts to grow and enhance their national backbone capacities and the drive to introduce more affordable services.

## Fixed (Wired) Broadband Subscriptions

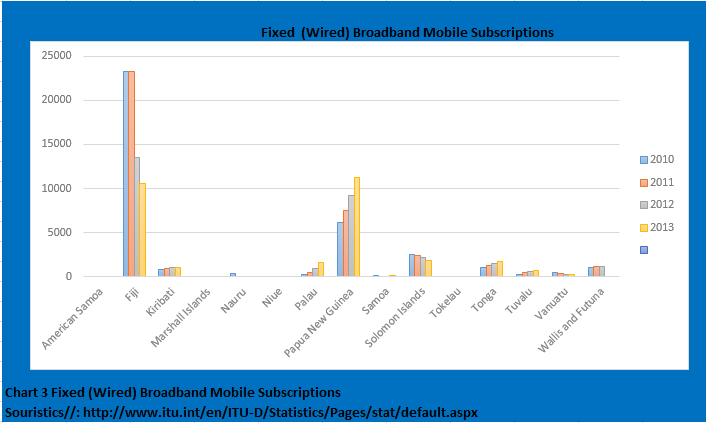


Chart 3 Fixed (Wired) Broadband Mobile Subscription[[11]](#footnote-11)

The Review acknowledge that infrastructure deployment providing access to broadband Internet continues to be a priority for telecommunication service providers and Governments in most countries. This is reflected in the continuous growth in the number of mobile and fixed-broadband subscriptions as highlighted in chart 3.

However, there is a decline in fixed broadband mobile subscription noted in chart 3 for Fiji. In 2010, the fixed broadband mobile subscription for Fiji was over 20,000 compared to just over 10,000 in 2013. This slowdown in/low growth of fixed-broadband subscriptions, coincides with a strong growth in mobile-broadband subscriptions. The mobile broadband subscription per 100 inhabitant (table 1) for Fiji in 2013 was 53.5%, the highest in the Pacific region.

As more countries continued to vie to employ more reliable and affordable means of connectivity, the demand for mobile broadband will continue to rise given the increasing availability of online content, much of which is user-created through social media applications and platforms (e.g. Twitter, YouTube, WhatsApp) while the slowdown in fixed-broadband subscription will continue to plummet as experienced in the Fiji market.

## Percentage of Individuals using the Internet

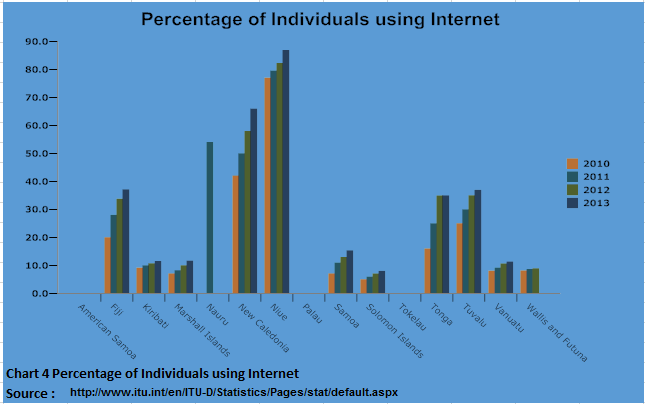


Chart 4 Percentage of Individual using Internet[[12]](#footnote-12)

From Chart 4, there is an upward trend in Internet usage in the Pacific. The increase in Internet usage in the Pacific is consistent with the increasing availability of online content, much of which is user-created through social media applications and platforms (e.g. Twitter, YouTube, WhatsApp).

With more and more applications now available through mobile platforms (mobile apps), and the strong growth in mobile Internet uptake, an increasing number of people are joining, and participating actively in, the information society.

Looking towards the future, the growth potential for Internet usage in the Pacific looks promising, as more and more countries upgrade their infrastructure, accompanied by the continuous growth in national backbone capacities and international Internet bandwidth.

## ICT Indicators per Country - 2013

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Countries** | **Fixed-telephone subscriptions per 100 inhabitants** | **Mobile-cellular subscriptions per 100 inhabitants** | **Fixed (wired)-broadband subscriptions per 100**  **inhabitants** | **Mobile-broadband subscriptions per 100 inhabitants** | **Households with a computer (%)** | **Households with Internet access at home (%)** | **Individuals using the Internet (%)** |
| Fiji | **8.5** | **101.1** | **1.2** | **53.5** | **34.2** | **26.7** | **37.1** |
| FSM | **9.7** | **30.3** | **2** | **0** | **N/A** | **N/A** | **27.8** |
| Kiribati | **8.8** | **16.6** | **1.1** | **0** | **6** | **2.5** | **11.5** |
| RMI | **10.6** | **1.3** | **0** | **0** | **N/A** | **N/A** | **11.7** |
| Nauru | **0** | **67.8** | **0** | **10** | **18** | **28** | **54** |
| New Caledonia | **26.5** | **91.8** | **19.3** | **9.1** | **72** | **53.4** | **67** |
| Niue | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** |
| Palau | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** |
| PNG | **1.9** | **41** | **0.2** | **0** | **3.4** | **2.9** | **6.5** |
| Samoa | **10.8** | **47.2** | **0.1** | **0** | **N/A** | **N/A** | **15.3** |
| Solomon | **1.4** | **57.6** | **0.3** | **8** | **5.5** | **4.2** | **8** |
| Tokelau | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** | **N/A** |
| Tonga | **29.4** | **54.6** | **1.6** | **0.1** | **15.5** | **12** | **35** |
| Tuvalu | **14.7** | **34.4** | **7.1** | **0** | **23.4** | **19.7** | **37** |
| Vanuatu | **2** | **59.3** | **0.1** | **7.4** | **11.2** | **3.5** | **11.3** |

Table 1 ICT Indicators per Country[[13]](#footnote-13)

## ICT in Disaster Risk Management

Asia and the Pacific are well known for its fast growing economies and rich cultural diversity. But many parts of the region have seen their economic and social development stalled, or even reversed by natural disasters. Early warning system and sharing of risk information require close cooperation across countries and sectors.

In Tonga, March 2014, an e-disaster early warning siren system for tsunami using ICT was commissioned. The system is a pilot project in the Pacific designed to mitigate risk against natural disasters in rural communities and strengthen capabilities of disaster risk management to be more effective and efficient using ICT in order to improve national public safety. It is a multi-purpose early warning loud speakers system for dissemination of information to residents in vulnerable and high risk areas, using Internet Protocol radio link broadband circuits and optic fibre communications e-disaster network infrastructure.

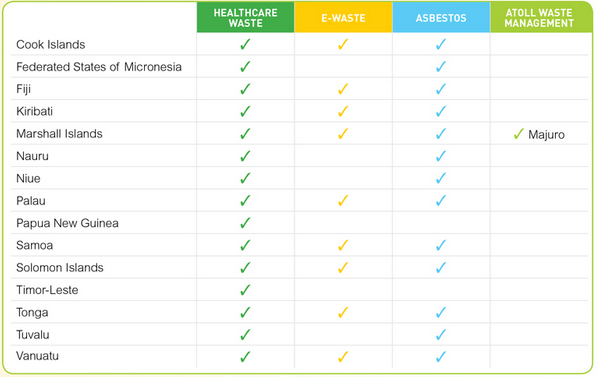
ICT can play a catalytic role in reducing disaster risk now, together and differently. ICTs are important tools for lessening the risks brought on by disasters through early warning, coordinating and tracking relief activities and resources, recording and disseminating knowledge and experiences and raising awareness.

The challenge in Pacific Island countries is gaining commitment to incorporate ICT tools effectively in disaster risk reduction, and providing favourable political, social and economic conditions for identifying and applying an appropriate mix of ICTs to address vulnerabilities in the different contexts throughout the Pacific region.

## E-Waste and the Pacific

E-waste refers to discarded electrical and electronic equipment that is at the “end of its life” or is no longer suitable for use. The rapidly increasing use of electrical and electronic equipment in the Pacific results in an increase in the volume of waste as it is discarded. Electrical and end of life electronic items contain many recoverable and valuable components such as copper, steel and gold that can be re-used. Most components used in electronic and electrical equipment (including computing equipment) can be eventually reused or recovered and made into new products.

E-waste contains a range of hazardous materials including heavy metals, brominated flame retardants and other toxic substances. If left to accumulate in landfills, E-waste will in time release these toxic substances and contaminate the environment. Currently, there are E-waste stockpiles in a number of Pacific island countries. Efforts to manage E-waste effectively in the region are varied and pose economical, logistical and technical challenges due to limited access to disposal points, recycling markets and the high costs in transporting E-waste out of the region.



Participating Countries on the PacWaste programme[[14]](#footnote-14)

## Climate Change in the Pacific

Small island developing countries are among the most vulnerable to climate change. These countries are increasingly facing threats to sustainable development from the impacts of climate change. Sectors which are likely to be most affected include human health, infrastructure, coastal resources, disaster management, fresh water availability, agriculture, fisheries, forestry, marine ecosystems and tourism.

Climate change is already disproportionally affecting the islands of the Pacific. Although islanders have done little to contribute to the cause – less than 0.03% of current global greenhouse gas emissions – they are among the first to be affected. Most islands are experiencing climate change impacts on communities, infrastructure, water supply, coastal and forest ecosystems, fisheries, agriculture, and human health. The consequences of sea level rise, sea temperature increases, ocean acidification, altered rainfall patterns, and overall temperature rise will be increasingly felt.

## Evaluation

The Review commended the efforts from countries like Cook Islands, Kiribati, Niue, Tuvalu and Solomon Islands for the proactive approach they made in securing the services of service providers like ABS Satellite. Kacific and O3B to provide affordable satellite solutions to their countries not excluding other satellite operators bringing enhanced coverage relying on new technologies (Eutelsat, Intelsat, JSAT, SES)

The Review also acknowledged the tremendous effort dispatched to the Pacific region through the World Bank, ITU and the ADB in implementing projects that have improved international connectivity in the Pacific region. The **recent** landing of the fibre submarine cable both in Vanuatu (Jan 2014) and Tonga (Aug 2013) has brought remarkable changes to their infrastructure footprint giving birth to new innovations and transformed valuable ideas that deemed impractical to new opportunities.

The Review recognised and affirmed the results reflected in table 4.6 as a significant contribution by the member countries in realizing the importance of improving domestic connectivity and ICT access as defined under the FAIDP through the formulation and adoption of broadband plans in the Pacific region.

Although the Review recognized the effort of a number of countries in progressing this initiative, the results shown in table 4.6 reflects that there is a need to evaluate the importance of this initiative at the national level.

The tsunami that devastated Samoa in 2009 should serve as a monument to the vulnerable environment we live in the Pacific. The Review acknowledged the collaboration between UN-APCICT and the SPC ICT Outreach programme over the years in disseminating disaster awareness in 14 island countries through its ICT for disaster risk management program.

The Review recognised with concerns the results shown in table 4.6 given the small number of early warning systems installed in the Pacific region. The effectiveness of the FAIDP to influence the establishment of early warning systems defined under the FAIDP is very minimal. However, the joint efforts by the Government of Tonga and JICA to install an early warning system in Nukualofa is fully applauded by the Review and encourage more of these collaboration approaches to be initiated and implemented around the Pacific region.

Regional collaboration with the Energy sector is very crucial in progressing ICT development in the Pacific region. The Review acknowledged the results shown in table 4.6 as an indication that there is very little effort both in the ICT and Energy sector to coordinate and work collaboratively at the regional level affecting the best opportunities for both sectors to complement each other at the national level.

The Review was not able to register any evidence that suggest the wider adoption of the e-Environment initiative defined under the 2010 FAIDP at the national level. However the Review commend the European Union (EU) for the financial support in establishing the PacWaste programme and Secretariat of the Pacific Regional Environment Program (SPREP) the implementing agency for putting in together a regional initiative to improve regional hazardous waste management across the Pacific in the priority areas of asbestos, healthcare waste, E-waste and integrated atoll solid waste management. This programme has enabled participating countries to engage, prioritize and focus on improving E-waste waste management to better protect their environments and communities.

The Review commend AusAID for funding the Pacific Climate Change Science Program (PCCSP) which became a valuable resource in providing critical climate scientific research and commenced important steps in capacity building in Pacific Island countries. The Review also recognised the support from AusAID and Department of Environment (DOE), the Australian Bureau of Meteorology and the CSIRO in continuing to work with 15 partner countries to help generate scientific insight into the state of climate change in the Pacific now and in the future, under the Pacific-Australia Climate Change Science Adaptation Planning program (PACCSAP).

The Review also recognised and commend SPREP for its efforts in supporting Members in planning and implementing national adaptation strategies, and integrating climate change considerations into national planning and development processes and for taking the lead role in the coordination of regional climate change policies and programmes through the Pacific Climate Change Roundtable, the Pacific Islands Framework for Action on Climate Change and the CROP CEOs Working Group on Climate Change.

## Points for Consideration;

* Regional agencies and partners to work closely with PICs to improve ICT access in primary, secondary and tertiary schools.
* Regional agencies and partners to work closely with PICs to improve ICT access in health centres and hospitals
* Regional agencies and partners to work closely with PICs to support e-Government initiatives and to utilize local expertise available in PICs with well-established e-Government initiatives
* Regional agencies and partners to work closely with PICs in supporting Infrastructure development and to utilize local expertise available in PICs with well-established e-Government initiatives.
* Regional agencies and partners to work closely with PICs in establishing early warning and disaster management systems.
* Regional agencies and partners to work closely with PICs in strengthening the e-Waste initiative and to include other countries not covered under the current PacWaste programme.
* Regional agencies and partners to work closely with PICs in strengthening Climate Change initiatives and adaptation strategies.
* The ICT sector to foster regional collaboration with the energy sector
* Regional agencies and partners to intensify awareness among Pacific Islands regulators
* International organisation may consider directing increased funding resources to domestic networks relying on all technologies to address the current remaining 40% unconnected Pacific Island population
* Regional agencies and partners to consider development plans with a “combined International and Domestic approach” in order to avoid “the connectivity gap”

# 5. Theme 5 – International Connectivity

### 5.1 Background and Policy Context:

Reliable, higher capacity, and affordable international connectivity

### 5.5 Target and Milestone

(i) PICTs have IPv6 transition plan by 2012

(ii) Collaborative regional projects implemented

(iii) A mechanism is established to monitor international bandwidth, Internet and phone charges in PICTs

### 5.6 Evidence Available

|  |  |  |  |
| --- | --- | --- | --- |
| **Countries** | **IPV6 Transition Plan** | **Collaborative Regional Project Implementation** | **A mechanism established to monitor bandwidth, internet connectivity, phone charges** |
| Cook | Y | Y | Y |
| Fiji | Y | Y | Y |
| FSM | Y | Y | Y |
| Kiribati | Y | Y | Y |
| Marshall | Y | Y | Y |
| Nauru | N | Y | Y |
| New Caledonia | Y | Y | Y |
| Niue | N | Y | Y |
| Palau | N | Y | Y |
| PNG | N | Y | Y |
| Samoa | Y | Y | Y |
| Solomon | N | Y | Y |
| Tonga | Y | Y | Y |
| Tuvalu | N | Y | Y |
| Vanuatu | Y | Y | Y |

##### Table 5.6 Evidence Available

# Analysis

## International Connectivity in the Pacific

Whilst the procurement of global submarine cables may be deemed as an immediate cost effective alternative to the procurement of a brand new submarine cable. This should be carefully reconsidered to ensure that it does not place countries at greater risks nor limits their expansion capacities in the future due as their lifespans are shorter and often can operate at half their capacity as opposed to new submarine cables.

Despite the arrival of undersea cable on many islands, the situation has not really improved over the last decade. Access continues to being the main issue. The expensive maintenance of the cable and the cost of distributing its connectivity to most islanders remains a challenge. Broadband prices have continued keeping connectivity beyond the reach of many residents. In many places, undersea cable only provides affordable, quality bandwidth within 5km of city centers; residents living beyond this coverage are often able to access only expensive and slow packages[[15]](#footnote-15)

New satellite providers like O3B has already rolled out its services in a number of Pacific Island countries, and another operator Kacific has already signed up with countries like Cook Islands, Kiribati, Niue, Solomon Islands and Tuvalu to commence operation in 2017. There is a glimpse of hope that come 2017, a large number of island communities currently not covered by either satellite or fibre would be fully connected and form an integral part of the wider O3B and Kacific network.



Kacific projected connectivity coverage in the Pacific[[16]](#footnote-16)

The Review also acknowledge the efforts by Kacific Broadband Satellites and the International Telecommunication Union (ITU) for the development of satellite communications capacity and emergency communications solutions for the Pacific region.

The project will establish 55 fully equipped e-centers to service communities in remote islands or rural areas in Kiribati, Micronesia, Samoa, Solomon Islands, Fiji, Marshall Islands, Tuvalu, Vanuatu, Papua New Guinea, Nauru and Tonga. The e-centres will all have satellite connectivity for development and emergency telecommunication[[17]](#footnote-17)

Existing satellite operators such as Eutelsat, Intelsat and JSAT already providing services over the Pacific are planning to deploy robust and high capacity satellites by 2017

## Transition to IPV6

The almost depleted pool of public IPv4 addresses available for global distribution means it will be difficult for network operators and ISPs in the region to receive further IPv4 addresses from APNIC the regional internet registry for Asia Pacific if they are to grow their networks. Base on this scarcity, there is a global call for network operators to implement IPv6 addresses to support their business operations now and into the future.

Although operators in the Pacific Island countries are well aware of the exhaustion of the pool of IPv4 addresses, there is no sign of urgency from countries to engage in formulating IPv6 transition or implementation plans. There is an element of fear and concern that the cost of the transition outweighs the benefits and compatibilities issues with existing hardware and software.

## Regional Cooperation

Improved regional coordination and cooperation on ICT issues would benefit ongoing and future developments. Most development partners have operated on a country by country and project by project basis. Increasingly projects must combine policy support, improved institutions and regulation, as well as capacity building. At the regional level, the experience and lessons in ICT should be focused in facilitating greater regulatory integration, improving collaborative service delivery, achieving greater resource-use efficiency and improving data collection, storage and use. A regional approach would promote a more integrated and comprehensive strategy to address fragmentation, lack of coordination and leveraging of additional resources.

## Evaluation

The Review acknowledged that international connectivity still remains a challenge to many Pacific island countries where local service providers are often given little choice but to overload thin pipes of connectivity with large numbers of users, leading to slow access.

The Review also recognised that end users are often unable to consume services or content that are increasingly geared towards first-world high-speed broadband connections. The bottom line is that few islanders can access bandwidth-hungry content and benefit from advances in online health, education, social and emergency services delivery.

The Review welcomed the announcement of new service providers like O3B and Kacific to operate in the Pacific region and commend Vanuatu and Tonga for their recent acquisition of the submarine fibre cable providing the much needed bandwidth to ease the pressure on the already stretched thin pipes of connectivity. The Review also recognised the contributions from development partners like the World Bank, ADB and ITU in providing technical and financial assistance enabling pathways for improving connectivity in the Pacific region.

The Review acknowledged the concerns raised with the exhaustion of IPv4 address pool at APNIC. It’s clearly reflected under the FAIDP, the importance for Pacific island countries to have access to IPv6 transition plans. There is evidence to suggest that countries have welcomed the various IPv6 awareness programs initiated both at the regional and national level. The Review noted and commends APNIC, PITA, USP, UN-APCIC, PACNOG, and PICISOC for their roles in facilitating awareness programs that support the implementation to IPv6 in the Pacific region.

## Points for Consideration;

* Regional agencies and partners to work closely with PICs to identify low cost, reliable, diverse satellite communications capacity for the socio economic development of the Pacific Island region utilizing potential un‐used satellite capacity
* Regional agencies and partners to work closely with PICs and support national and regional ICT projects
* Regional agencies and partners to work closely with PICs to negotiate on behalf of the PICs a mechanism for bulk purchase of both undersea cable and satellite services.
* Regional agencies and partners to work closely with PICs to formulate and support the establishment of IPv6 transition plans and implementation

# 6. Theme 6 – Cyber Security and ICT Applications

### 6.1 Background and Policy Context

A safe and secure ICT environment and improved e‐services in priority sectors

### 6.5 Target and Milestone

(i) Sustainable PacCERT established

(ii) National CERTs established in 7 PICTs

(iii) Increased awareness on cyber safety and security

|  |  |  |
| --- | --- | --- |
| **Targets** | **Status** | **Comments** |
| Sustainable PacCERT established | No | PacCERT is not a sustainable operation |
| National CERTs established in 7 PICTs | Nil |  |
| Increased awareness on cyber safety and security | Yes | Hands on training at PacNOG for network operators, ICANN LEA security training |

### 6.5.1 Evidence Available

|  |  |  |
| --- | --- | --- |
| **Countries** | **National CERT Established** | **Cyber Safety and Security Awareness** |
| Cook | N | Y |
| Fiji | Planning | Y |
| FSM | N | Y |
| Kiribati | N | Y |
| Marshall | N | Y |
| Nauru | N | Y |
| New Caledonia | N | Y |
| Niue | N | Y |
| Palau | N | Y |
| PNG | N | Y |
| Samoa | Planning | Y |
| Solomon | N | Y |
| Tonga | Planning | Y |
| Tuvalu | N | Y |
| Vanuatu | Planning | Y |

##### Table 6.5.1 Evidence Available

## Analysis

PacCERT is the premier Computer Emergency Response Team (CERT) for Pacific Island countries. PacCERT operates within a worldwide network of information security experts to provide computer incident prevention, response and mitigation strategies for members and assistance to affected parties in the Pacific region. As a not-for-profit, self-funded organisation based at the University of the South Pacific (USP) relies on member countries subscription to cover its operating costs. The Review also acknowledged the World Bank and Asian Development Bank for their assistance in setting up PacCERT.

There have been several challenges in operating PacCERT in terms of operating sustainably.

In terms of National CERTs, Fiji’s Cabinet has mandated the establishment of a Fiji CERT and it is working its way to establishing a National CERT.

There has been considerable awareness in the region in terms of Cyber Security from a Regional perspective with various initiatives such as ITU’s ICB4PAC Project in 2013 which served the Republic of Marshall Islands, Niue, Cook Islands etc. This involved national and public consultations and the development of legislative draft Bills.

Cyber Safety Pasifika Initiative facilitated by the Pacific Islands Chiefs of Police Secretariat which reached out to 5 Pacific countries in 2013.

The University of the South Pacific has also been facilitating cyber security training for professionals and mid-level professionals such as Red Hat Trainings, CISCO Academy, etc. The Pacific Network Operators Group has also been facilitating Network security and DNSSEC trainings for over several years. There are countries that have active cyber security awareness outreach programmes that involve civic awareness. Countries like Fiji which has National Cyber Security Working Group which is commissioned to develop Country National Strategies, and relevant laws in this space. In 2015 ICANN started its capability building initiative training law enforcement in Tonga, Kiribati and Fiji on Internet identifiers abuses and mitigation handling. They hope to broaden this initiative to cover other PICs LEA. To support local Internet resiliency and resolutions, ICANN has partnered with local network operators who are now hosting their local anycast copies of L-root servers. ICANN has also provided updates at regional fora regarding the new generic top level domains initiative and calling for participation from the region in ICANN. 90% of the countries in the Pacific are now members of the Governmental Advisory Committee of ICANN, ensuring country representatives are appraised on topical issues around ICANN and the Internet space.

Recent developments in information and communication technologies (ICTs) such as high speed broadband, mobile phones, social media and cloud computing have potential to spawn economic, social and political changes in Pacific Island countries. Many local banks have started offering online services. New services such as mobile banking have potential to transform traditional ways of living. However, a potential downside of the rapid digitization is that these economies are becoming attractive for cybercrime activities in terms of perpetration, instrument, and victimization.

Pacific Island countries have become victims and targets of almost all types of cybercrimes .Some Pacific countries over the years have attracted global attention by occupying the position as major sources and facilitators of various forms of cyber-offences and malware. ICT infrastructures of some island countries have been used as instruments for committing international cybercrimes. The situation is likely to worsen with more island countries now opting for fibre connection, increasing the penetration and speed of broadband.

## Evaluation

The Review acknowledged that PacCERT current operation is not functional because of the current business model and the lack of support from member countries. The lack of collaboration from PacCERT stakeholders has affected the efficiency of PacCERT operation as noted by the Review.

There has been a lot of cyber safety and awareness programs that have been conducted over the years by various organisations like UN-APCICT, APT at the regional and national level in informing and strengthening civil society’s knowledge and skills on cyber security. The Review acknowledged that the FAIDP has been successful in disseminating cyber security awareness programs at the regional and national level. However there is no evidence to strongly suggest the impact of these cyber security awareness programs at the regional and national level given the number of countries without Cyber security plans.

The Review identified the lack of skilled and trained cyber security professionals in the region as a challenge and also recognised this challenge as a major drawback to the success of the FAIDP. A number of countries have shown interest in establishing their own national CERTs, an initiative welcomed and supported by the Review.

The Review identified the need for a broader framework for regional collaboration in this space as stakeholders are interspersed in doing their own thing but there is room for synergy and maximization of resources.

The Review acknowledge the need to strengthen better coordination between Regional organizations and developments partners (UN-APCICT, APT, Cyber Safety Pasifika, etc) for awareness to ensure National sectors (ICT, Police, Law Society, etc) work together in the delivery of awareness to the community, the development of necessary policies, regulations and legislations and ongoing training for enforcement officers/agencies.

Points for Consideration;

* Regional agencies and partners to work closely with PICs to assess the possibility of establishing national CERTs
* Regional agencies and partners to assist PICs in formulating national cybercrime legislation
* Regional agencies and partners to design a good business model for PacCERT and encourage collaboration with PICs to support the operation of PacCERT.

### 6.5.2 Target and Milestone

(i) All PICTs have an e‐government plans by 2015

(ii) All PICTs ministries have interactive websites/portals

(iii) E‐services are established in PICTs

(iv) Programmes are established to digitalise historical records

(v) Programmes are established to capture traditional knowledge

### 6.5.2 Evidence Available

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Countries** | **e-Government Plans** | **Ministries have websites/Portal** | **e-Services Established** | **Programmes established digitalize historical records** | **Programme established capture traditional knowledge** |
| Cook | N | Y | Y | N/A | Y |
| Fiji | Y | Y | Y | Y | Y |
| FSM | N | Y | N/A | N/A | N/A |
| Kiribati | N | Y | Y | N | N |
| Marshall | N | Y | Y | Y | Y |
| Nauru | N | Y | N | N | N |
| New Caledonia | Y | Y | Y | Y | Y |
| Niue | N | Y | N | Y | Y |
| Palau | N | Y | N/A | N/A | N/A |
| PNG | Y | Y | Y | Y | N/A |
| Samoa | Y | Y | Y | Y | N/A |
| Solomon | N | Y | N | N | N |
| Tonga | N | Y | Y | N/A | Y |
| Tuvalu | N | Y | N | N | N |
| Vanuatu | Y | Y | Y | y | Y |

##### Table 6.5.2 Evidence Available

##### Analysis

E-Government can be broadly defined as the application of information and communication technologies (ICTs) to enhance the performance of traditional government functions and services. More specifically, e-Government is the use of digital technologies to transform government operations in order to improve effectiveness, efficiency and service delivery.

The purpose of e-Government is more effective delivery of government services to citizens. Generally, the more services are available online and the more widespread of these services, the greater will be the impact of e-Government. A good example of e-Government initiative in the Pacific is the Government of Fiji e-portal that provides online services like online birth, marriage and deaths registration to its citizens.

Developments in e-Government will be important but have to parallel a strengthening of the Information Society/Knowledge Economy, cope with the ongoing use of obsolete equipment, inefficient policies and legacy systems that if not addressed will reduce the effectiveness of accessibility initiatives.

The target and milestone for theme 6, encourage using ICTs in conserving and disseminating public knowledge that form part of the recorded heritage of island nations and their national archives. Access to national archives can be useful for a wide range of applications, including in historic and genealogic studies, as well as legal, medical, land management or meteorological purposes. Unfortunately there are no existing data sources for these indicators, and very few countries reported data for them as reflected in table 6.5.2.

## Evaluation

The Review acknowledged the results shown in table 6.5.2 as an indication that member countries are not yet ready to engage in realizing the potential of e-Government initiatives to improve the delivery of online services in the region. The Review commend a number of countries like Fiji for instance for exploiting e-Government initiatives to further improve the access of information and online services to Fiji citizens made available through the Government e-portal.

Government web presence is well noted by the Review as reflected in the results shown in table 6.5.2. The Review remains positive that government will continue to progress this initiative in future.

The Review acknowledged that countries like Fiji, PNG and Samoa who have access to larger bandwidth pipes have progressed aggressively in this e-service space creating more opportunities for government and commercial institutes to established new e-service initiatives.

Digitizing and archiving of historical information and traditional knowledge is a very good initiative that the Review acknowledged as a way of maintaining and realizing the different cultures and values in existence in the pacific region. The Review recognised that some countries have taken progressive steps to ensure that ICT tools are utilized to maintain these traditional knowledge and values.

## Points for Consideration (ICT Application)

* Regional agencies and partners to work closely with PICs to promote the use of Free open source software (FOSS) for application development
* Regional agencies and partners to work closely with PICs to support and formulate e-Government plans and infrastructure
* Regional agencies and partners to work closely with PICs to support web presence for Government Ministries

# 7. Theme 7 – Financing, Monitoring and Evaluation

### 7.1 Background and Policy Context

A financing plan that captures all funds flowing into the region’s ICT sector by funding source and implementation arrangements, supported by a comprehensive monitoring and evaluation framework

### 7.2 Target and Milestone

(i) A regional coordination/collaborative framework is established in 2011

(ii) Additional regional support is provided to implement national policies and plans

(iii) National (and regional) financial plans are developed to address priorities identifies in national policies and plans (and in this framework)

(iv) Better ICT indicators are developed for PICTs

(v) Minimum performance indicators are developed by 2010

### 7.3 Evidence Available

There is no evidence of any regional coordination/collaborative framework been established and no metrics available at the time of this Review that suggest additional regional support has been provided to implement national policies and plans.

# Monitoring and Evaluation

The ICT Minister’s meeting in Noumea endorsed the PRISAP concept in principle and requested for an implementation action plan. The formulation of the PRISAP could have been the perfect tool for monitoring and evaluating the development of ICT in the Pacific based on the targets and milestone defined under the 2010 FAIDP. PRISAP never materialized due to the difficulties in the transition of the functions of the ICT program from SPC to USP. The team for the Review of the 2010 FAIDP experienced a lot of difficulties while trying to obtain;

* Information on the nature and outcomes of many of the Target and Milestone defined under the 2010 FAIDP.
* Quantitative and qualitative analysis of progress in ICT access and usage
* ICT access and usage statistics for households and business
* Proper procedures and systems for capturing ICT statistics are employed in most PICs.
* Information on Infrastructure developments
* Reliable information, often there is conflicting data from different sources

# Theme 7- Financing, Monitoring and Evaluation

## Points for Consideration

* Regional agencies and partners to work closely with PICs in establishing proper mechanisms for collecting and storing of ICT data
* Regional agencies, partners to work closely with national statistics office to establish a regional e-portal for collecting and storing of ICT statistic data.

Appendix



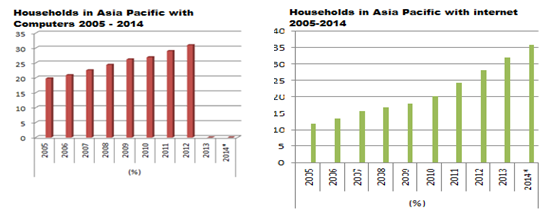


Chart 5 [[18]](#footnote-18)

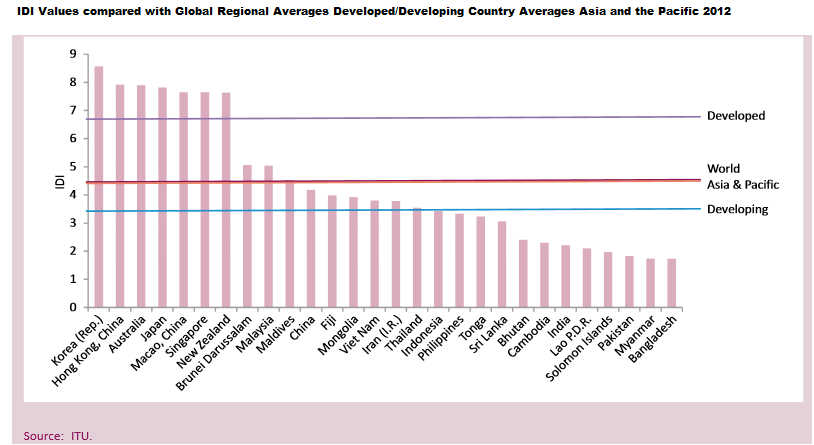


Chart 6[[19]](#footnote-19)

## Abbreviations

ADB Asian Development Bank

APNIC Asia Pacific Network Information Centre

CERT Computer Emergency Response Team

CROP Council of Regional Organisation of the Pacific

ESCAP Economic and Social Commission for Asia and the Pacific

FAIDP Framework for Action for ICT development in the Pacific

ITU International Telecommunication Union

PacCERT Pacific Computer Emergency Response Team

PICT Pacific Island Countries and Territories

PICISOC Pacific Island Chapter of the Internet Society

PIFS Pacific Island Forum Secretariat

PITA Pacific Island Telecommunication Association

PRISAP Pacific Regional ICT Strategic Action Plan

SPC Secretariat of the Pacific Community

UN-APCICT UN-Asia Pacific Information and Communication Technology

USP University of the South Pacific

World Bank

1. http://www.pasifikanexus.nu/wp-content/uploads/2012/12/ICANN-in-Oceania-Information-Paper-Version-1.1.pdf [↑](#footnote-ref-1)
2. http://www.itu.int/en/ITU-D/Statistics/Documents/publications/mis2013/MIS2013\_without\_Annex\_4.pdf [↑](#footnote-ref-2)
3. ibid [↑](#footnote-ref-3)
4. Annexure of Final Communique of 40th Pacific Islands Forum, Cairns. [↑](#footnote-ref-4)
5. Internet Society Global Internet Report 2014 [↑](#footnote-ref-5)
6. http://www.unapcict.org/ecohub/ict-human-capacity-building-for-development-3 [↑](#footnote-ref-6)
7. Kacific Presentation at the NGN Conference, Suva, Fiji, October, 2014 [↑](#footnote-ref-7)
8. World Bank Report [↑](#footnote-ref-8)
9. http://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx [↑](#footnote-ref-9)
10. http://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx [↑](#footnote-ref-10)
11. http://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx [↑](#footnote-ref-11)
12. http://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx [↑](#footnote-ref-12)
13. http://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx [↑](#footnote-ref-13)
14. www.sprep.org [↑](#footnote-ref-14)
15. Refer to section 4.6 for connectivity current situation [↑](#footnote-ref-15)
16. Kacific Pita NGN presentation [↑](#footnote-ref-16)
17. http://kacific.com/news/ [↑](#footnote-ref-17)
18. http://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx [↑](#footnote-ref-18)
19. http://www.itu.int/en/ITU-D/Statistics/Pages/stat/default.aspx [↑](#footnote-ref-19)