

**e-Government in the Pacific Island states:
ICT policy and implementation in small island
developing states**

Cook Islands Country report

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Table of Contents

Overview	5
1. Introduction.....	6
A. The Context.....	6
B. ICTs in the Cook Islands	7
2. The Government Information and Communications Office and the National ICT Policy.....	9
3. Ministry of Finance and Economic Management.....	13
4. Internal Affairs.....	17
5. Education	19
6. Justice	21
7. Health.....	23
A. Health statistics and the HIS	25
8. Environment, Meteorology Service, Climate Change and Emergency management	26
A. The Meteorological Service.....	29
B. SRIC-CC project and the Cook Islands Geo-Portal.....	29
9. Technology’s role in the management of natural resources in the Cook Islands.....	30
10. Parliament and Government archives	31
11. Government portal and agency web sites	31
12. Community initiatives	32
13. Discussion	33
14. Sources	37

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Overview

E-government is widely regarded as 'transformational', increasing efficiency, productivity, accountability, economic growth, and citizen involvement. But while the governments of the Pacific Island states are committed to harnessing ICTs for effective government and economic development, they face major challenges in establishing successful e-government initiatives, through lack of infrastructure, human capacity, ICT literacy, and most importantly, appropriate strategies and policy.¹ This country report is one of a series of reports on e-government in Pacific countries being prepared by a research team from Victoria University of Wellington, New Zealand, assisted by in-country informants and co-researchers, as part of a larger project. The project seeks to understand the barriers and enablers of ICT adoption by the governments of Pacific Island states, focusing in particular on policy frameworks and governance structures that support successful innovation, and to identify best practice across the region.

For this report, the research team visited Rarotonga in September 2014, and conducted interviews with key stakeholders in ministries and other government agencies and in the private sector. The information provided here is drawn from these interviews, agency policies and strategic plans, and other published documents such as reports on the country over the past few years. Where possible, the views of participants are distinguished from factual material, and the views of the research team noted. The format of the report comprises an introduction providing background information, an account of the views and achievements of key agencies and key stakeholders, and an analysis of the major issues that we have identified.

Robert Boase's (2009) report on the UNDP ICT4D project in the Pacific states outlines a number of expected benefits that Pacific Island states can expect from the introduction of ICTs to government. These include:

- More accessible government information and services;
- Faster, smoother transactions with government agencies;
- Increased access to government decision makers and to parliamentarians;
- More local access to government through the internet;
- Increased participation in government by all;
- Increased efficiency in government operations;
- Enhanced opportunities for smart partnerships with civil society and the private sector; and
- Legal recommendation and security over the networks. (Boase, 2009, p2)

These expectations furnish an appropriate framework for investigating the development of e-government in Pacific island states, and provide a set of metrics by which progress towards an effective e-government program can be evaluated.

¹ Waverman L, Meschi M, Fuss M. The impact of telecoms on economic growth in developing countries. The Vodafone Policy Paper Series. 2005; 2(03):10–24. Secretariat of the Pacific. Bridging the digital divide. Report of the 5th Conference of the Pacific Community. Noumea: Secretariat of the Pacific Community; 2007.

1. Introduction

A. The Context

The Cook Islands, named after Pacific Explorer Captain James Cook, who landed on and surveyed a number of the islands between 1773 and 1777, comprise a group of 15 islands in the South Pacific Ocean spread over more than 2 million km² of ocean. The islands themselves, not all of which are inhabited, have a combined landmass of only about 240km², but the Cook Islands Exclusive Economic Zone covers approximately 1.8 million square kilometers of the South Pacific Ocean. The 15 islands are divided into a northern group (Penhryn, Manihiki, Pukapuka, Rakahanga, Suvarrow, and Nassau), which is more remote and dispersed, and a southern group (Palmerston, Rarotonga, Aitutaki, Managaia, Atiu, Mauke, Mitiaro, Manuae, and Takutea). The northern group is believed to have been settled by migrants from the west, from Samoa and Tonga, as early as 800AD, while the southern group are believed to have been settled by migrants from French Polynesia, the Society Islands and the Marquesas in the 13th century.²

English and Tahitian missionaries, sent by the London Missionary Society, began arriving in 1821, and the first to settle for any length of time, Rev John Williams, arrived in 1823. Concern about possible annexation by the French government prompted some of the *ariki* (chiefs) to petition the British government to declare the Cook Islands a protectorate, which finally occurred in 1888, and a federal government uniting the islands for the first time was established. After some pressure from New Zealand, the Cook Islands became a dependent territory of New Zealand when it was annexed in 1901. The federal parliament lasted until 1912, when it lapsed, and “no direct representation at the national level occurred again until 1946, when a Legislative Council was organized.”³ In 1965 the Cook Islands adopted a Constitution which ended that dependent status and today the country is self-governing in free association with New Zealand. Free association is

“a status distinct from that of full independence which allows the Cook Islands to maintain New Zealand citizenship while making its own laws and conducting its own affairs. The most recent codification of the principles underpinning the partnership between New Zealand and the Cook Islands is set out in the Joint Centenary Declaration, signed by the Prime Ministers of both countries in 2001.”⁴

The Cook Islands is therefore a self-governing state, the formal head of state being the British monarch. Although New Zealand is nominally responsible for its defence and external affairs, it is able to enter into treaties as an independent political entity, establish diplomatic relations, and join regional organisations such as the Pacific Islands Forum and the Secretariat of the Pacific Community, and international organisations such as UNESCO and the Asian Development Bank (but not the United Nations.)

² This information is drawn from the *Encyclopedia Britannica Online*, 2015, and *Bateman’s New Zealand Encyclopedia*, 6th ed, 2005.

³ Crocombe, R.G., Crocombe, M.T. and S. Foster. Cook Islands, *Encyclopedia Britannica Online*, 2015

⁴ MFAT web site: <http://www.mfat.govt.nz/Countries/Pacific/Cook-Islands.php>

The majority of the population are now of mixed Polynesian ancestry and speak English and Cook Islands Maori (the two official languages). The administrative centre of the country is Avarua on the island of Rarotonga. The Cook Islands Ministry of Finance and Economic Management estimates the total population of the country at December 2014 to be 20,100, but the resident population to be far less at 12,400⁵ (approximately 6000 of whom live in or near to Avarua.) This is largely because Cook Islanders have New Zealand citizenship, and move freely between Cook Islands and New Zealand. The New Zealand Ministry of Foreign Affairs and Trade estimates that there are more than twice as many people of Cook Island ancestry who live and work in New Zealand. The economy is dominated by the tourism industry, with visitors coming mostly from New Zealand, and revenue from the Cook Island's tax haven status makes finance the next largest earner. Agricultural products (mainly fresh and chilled fish, fresh and canned citrus, pineapples, coffee, cassava and sweet potatoes) small scale manufacturing (clothing and shoes) and cultured also contribute to the economy. The southern islands are part volcanic in origin, and part atoll, surrounded by coral reefs; the northern islands are mainly made up of atolls and sandbanks partly resting on coral reefs. These sparsely populated island dispersed over vast stretches of ocean lie within the tropics, and are subject to tropical cyclones which strike on average once or twice every 10 years, climate change and rising seawater level, and erosion of fertile soils by over-cropping in some areas. Overfishing in Cook Islands territorial waters, lack of mineral resources (although there is potential), and lack of infrastructure all impact negatively on the economy. All these factors make effective ICT use within the country and as part of e-government investments a huge challenge.

B. ICTs in the Cook Islands

Telecom Cook Islands (TCI) is the only telecommunications service provider in Cook Islands, providing fixed line telephone service, as well as broadband, and mobile voice and data services to business and residential customers. At the time of investigation reported here it was 60% owned by Telecom New Zealand (now rebranded Spark New Zealand), and 40% by the Cook Islands government. Spark New Zealand subsequently announced its intention to sell its interests in the Cook Islands, and that sale was completed early in 2015. On 23 February Spark issued a press release announcing that it had concluded the sale of its 60% interest in Telecom Cook Islands (TCI) for approximately NZD23 million (USD17.3 million) to Teleraro Limited. Teleraro is reportedly 75% owned by wireline, broadband and mobile services provider Bluesky Samoa (formerly SamoaTel), with the remaining 25% held in a trust by Bluesky Samoa for local investors to purchase.⁶

Whether this will improve what is generally regarded as an expensive and unresponsive service remains to be seen. Although TCI launched the world's first broadband service using O3b Medium Earth Orbit (MEO) satellites, with greatly reduced latency compared to standard satellites, the Buddecom 2014 report on the Cook Islands notes that although "competition legislation in the Cook Islands has

⁵ <http://www.mfem.gov.ck/population-and-social-statistics/vital-stats-pop-est>. This is less than the 2001 census figure of 14,974 residents.

⁶ See: <https://www.telegeography.com/products/commsupdate/articles/2015/02/23/telecom-cook-islands-sold-to-samoan-group/>

traditionally been problematical due to the country's narrow economic base"⁷ a new Telecommunications Bill opening up the market is waiting to be submitted to parliament.⁸ Under this bill, a Telecommunications Commissioner will promote sustainable and efficient competition in the Cook Islands. Latest telecommunications data cited in the report indicates that in 2013 landline subscriptions numbered 7800, and mobile subscriptions 11,000.

The government has expressed interest in linking the Cook Islands to the proposed Hawaiki submarine cable, and has a strong preference for a cable connection to Rarotonga, to provide a fast and reliable, and cheaper internet connection for business, although satellite would still be needed to reach the outer islands. A feasibility study has been completed by an Australian technical consultant on behalf of Network Strategies and an approach made to ADB for funding.⁹ It is for this reason that the government has signed up to O3b Networks, with the intention of removing barriers to access, and reducing the cost of services. The Minister of Telecommunications¹⁰ sees the role of government as being "to facilitate investment and monitor the regulations". He is looking at the model adopted by New Zealand which involves the separation of government's role as service provider from its policy/regulation role, and, with his industry-wide Telecommunications Advisory Committee, is taking advice on this matter from the IMF and the ADB. The Minister is comfortable with the role of entertainment in driving improvements in telecommunications infrastructure because of the spin-off improving for public service delivery, the ability to connect government agencies, streamlining service delivery, leading to more government services online (such as filing tax returns online, a great advantage where a significant proportion of the population is often 'off-island', and financial services are a major contributor to the economy.) Such advances will also provide benefits in the education and health sectors and in improving disaster responsiveness. Alongside these initiatives is the need to build human capacity among both government servants and citizens.

Because of its very limited resources, and the difficulty of supporting ministries for all the areas that are important to the Cook Islands, development ministries carry a broad range of responsibilities. The Office of the Prime Minister is responsible for the Cabinet as well as for Central Policy and Planning, ICT, and Emergency Management. The current Prime Minister is also Attorney General, Minister of Energy, Justice, Police, Transport, Foreign Affairs and Immigration, as well as Minerals and Natural Resources. He is also responsible for Parliamentary Services, the Public Service Commission, and the Ombudsman.

The Ministry of Finance and Economic Management includes Treasury, Revenue (which includes customs and border control as well as taxes), Statistics and Development Coordination. Its minister is currently responsible for Finance and Economic Development (and all associated roles such as the Business Trade and Investment Board, the Commerce Commission, the Financial Intelligence Unit and the

⁷ The report notes that despite its small market, Telecom Cook Islands (TCI) makes profits of around \$6 million a year.

⁸ <http://www.budde.com.au/Research/Cook-Islands-Telecoms-Mobile-and-Broadband-Market-Insights-and-Statistics.html>

⁹ Information from interview with Pua Hunter.

¹⁰ Address given by the Minister at the Pacinet Conference, Rarotonga, 24/9/14.

Financial Services Development Authority), as well as Telecommunications. This means that the two offices must work closely together to ensure consistent planning and policy around government ICTs, and the Minister of Telecommunications has some authority with the Office of the Prime Minister.

2. The Government Information and Communications Office and the National ICT Policy

The Government Information and Communications Office, commonly referred to as the ICT Division, is described on the current web site of the Office of the Prime Minister (OPM) as an Output in the OPM tasked to “take overall responsibility of all ICT programmes in the Cook Islands” by promoting ICT developments and supporting ICT needs across the country.¹¹ Given the central planning role of the OPM, and the need for all policy in the Cook Islands to reflect and support the National Sustainable Development Plan (2007)¹² the role of the ICT Division in the OPM as the primary administrative entity for planning, coordinating, implementing, regulating and administering ICT related projects in government was approved by Cabinet in the same year.¹³ The National Sustainable Development Plan covers 2007-2010, but is itself part of a broader vision, *Te Kaveinga Nui* which was developed to guide national development into the future. It is a pathway that sets out a 15 year visionary framework called ‘Living the Cook Islands Vision – A 2020 Challenge.’¹⁴

The ICT Division in the Office of the Prime Minister therefore has both a planning role and a service and support role, being responsible for ICT services in most other agencies, (including acting as helpdesk, with remote access to all the systems it maintains). At times it lacks resources to carry out both roles, and the conflict between the two roles probably diminishes its authority as a planning agency responsible for implementing policy. However, it works closely with the Ministry of Finance and Economic Management (MFEM), which, because of its central financial control can add its authority to the policy of central management of IT. MFEM initiated the establishment of standardised domain names for the government email service (@cook-island.gov.ck.) The current network that the ICT Division manages is a physical network supplemented by laser-beam. Fibre optic is to be trialled in the near future. Ten buildings (each containing several ministries and agencies) are currently linked, and others around the island of Rarotonga are to be brought into the system – including such significant ministries as Health, Education, Agriculture and Infrastructure – so this is an urgent priority. The server in the PMO hosts a shared folder for each agency, which decides how to make use of this server space. There are three backup servers – one at the PMO itself, one at the Public Service Commission and one at MFEM. Long term, cloud computing may be used for data storage, but currently there is no off-island back-up.

Between 2003 and 2007 the Cook Islands government participated in a UNDP-funded project focused on improving the use of ICTs by government as a part of the UNDP’s Multi-country Programme for reducing poverty. The scheme called for maximizing

¹¹ http://www.pmooffice.gov.ck/index.php?option=com_content&view=article&id=5&Itemid=2

¹² <http://www.pmooffice.gov.ck/images/opm/files/NSDPCKI.pdf>

¹³ Cabinet memo CM (07) 483, dated 5 July 2007

¹⁴ <http://www.pmooffice.gov.ck/images/opm/files/NSDPCKI.pdf>

intra-government communications and information sharing, and enhancing infrastructure and HR capacity in order to achieve this. With further funding from NZAid, UNDP and other donors, an e-government project was set up with the goal of establishing a LAN/WAN between government agencies, and more effective ICT-based communications with the outer islands. A common domain name for government agencies (gov.ck), online discussion of policies, improved administration of the outer islands, and access to online information were planned. The primary needs for online information were identified as weather forecasting, public health data collection, marine and fishing information and distance education. This project was developed in context of a set of existing ICT goals and policies, and the first National ICT policy, which was developed through a widely- consultative process, workshopped and adopted in 2004. The e-government project was to be driven by a National ICT Authority (NICTA) and a National ICT Coordinator assisted by a UN Volunteer were to administer the project. In effect, these roles appear to have been absorbed by the ICT Division in the OPM, which fulfills the role of the Government Information and Communications Office.

The original 2004 National ICT Policy was revised to align with the National Sustainable Development Policy when it was adopted in 2010. A subsequent plan, also specifically linked to the NSDP was issued in 2014. This second policy, titled Cook Islands National ICT Policy & Strategic Action Plan, was issued in July 2014 for the period 2014-2019. It includes a series of short, medium and long term goals, built on the six ‘Platforms’ of the earlier policy. Each of these goals is expanded into 2-5 objectives, each of which defined by a set of strategies. These strategies are contextualised and relate to specific local resources, for example, utilising community organisations to host tele-centres, and taking advantage of regional resources such as the USP campus. The accompanying Strategic Action Plan sets very specific actions, time frames and targets, including a time frame for the necessary legislation. This was an ambitious policy with many excellent initiatives outlined. Its main weakness was its failure to prioritise some of these initiatives (not all were achievable in the time frames given) and link them to existing initiatives.

This has now been replaced by the Cook Islands National Information and Communication Technology Policy, July 2015-2020. Like the earlier plans the 2015 Policy is based on the premise that ICTs are an essential tool to facilitate the “socio-economic development of the Cook Islands and to enable Cook Islanders to participate in the local and global economy”, the development of the country despite the disadvantages and vulnerabilities of its size and location, the distances between its many islands and its tropical ocean climate. The vision still reflects the twin goals of development and sustainability. “ICT will be effectively utilized to achieve sustainable improvements in social, economic, cultural and good governance thus improving the quality of life of all Cook Island citizens.”

The 2015 National ICT Policy is based on 4 Guiding Principles: Coordination, collaboration and multi-stakeholder partnership; Universal Service Access; Transparency and Accountability; and Equity and Inclusiveness. It boldly states the expected outcome of the policy – that all citizens will have access to affordable, reliable, secure ICTs, the knowledge and skills to utilize these technologies in areas such as e-learning, tele-medicine and e-commerce; that citizens’ rights will be protected by cyber legislation and regulatory controls; that government will efficiently

utilize ICT for sustainable development outcomes, and that the Cook Islands will be “a fully functioning Knowledge Society”. The Policy is intended to provide a robust strategic framework to coordinate efforts of all stakeholders to achieve its specific policy objectives, inform future national sector policies, legislation, and mid-to-long term strategies that will in turn inform business plans and government appropriations.

The Policy has 5 Policy Objectives. The first, *Universal Service Access* to ICTs, commits to appropriate pricing, policies and regulations to promote universal service access, fair competition in the telecommunications market, and regulatory mechanisms to achieve this. A Regulatory Authority will be established to “ensure ICT sector development is in line with the goals of the National ICT Policy”, and a Universal Service Fund is suggested as an appropriate mechanism to ensure universal service access. This may be applied to support strategies such as shared use of facilities, subsidising ICT equipment and service delivery. Under this first policy objective the government commits to building a networked society, including Pa Enea communities¹⁵ in the outer islands. Within this networked society equitable access to ICTs and to broadband to improve quality of life and equality of opportunity, regardless of economic status, gender, education, or location, are targeted.

The second goal is *Improved Government Access*, is focused on enhancing the efficiency and effectiveness of government organisations and service delivery. It commits the government to develop e-government services, make them accessible to the remote islands, and deliver public information in a timely manner. It also focuses on efficiency in government, better security to protect data, resilience (for disaster risk reduction) through more effective backup, productivity through minimum standards for hardware and applications, and data sharing. ICTs will be used to ensure accountability, transparency and “combat corruption”.

The third goal, headed *Human Resource Development Opportunities* focuses on building human resources capacity through education and skill development to improve delivery, and access and utilization of ICT based services. The Policy highlights that both skilled ICT-professionals and IT literate citizens are needed to fulfil the vision that drives the Policy. Both the need for a stronger ICT component in the school curriculum, and e-learning as a valuable tool for education at school and life-long learning inform this objective. The need for young people in particular to learn to protect themselves from harm in the online environment is also identified as a priority.

The fourth goal is *Sustainable and Green ICT Systems and Infrastructure*. This goal focus on the protection of citizen’s rights through regulatory frameworks (protection from computer and cybercrime, and of vulnerable groups from exploitation), the right to information, and intellectual property rights. Resilience in terms of reliable and secure ICT infrastructure as well as disaster prediction and management are key elements of this part of the Policy. Environmental concerns are addressed by a focus on reducing the impact of e-waste.

The fifth goal, *Leveraging ICT for Sustainable Development* outlines the need for government to work with all stakeholders, including the business community and civil

¹⁵ The term is routinely used to refer to people and communities in the outer islands.

society, to ensure that ICT contributes to the major industries in the Cook Islands, (energy, tourism, transportation, agriculture, aquaculture, and food security), to climate change actions, and to Education and Health services (including telemedicine). The role of ICTs in record-keeping, in particular their ability to preserve local culture, and to facilitate good governance are noted under this policy objective.

The new National ICT Policy covers most of the key elements that are essential to enable the Cook Islands to both harness the potential of ICTs for development, and develop a stronger e-government environment. It is less ambitious than the 2014 Policy and Strategic Action Plan that preceded it because it is not accompanied by an action plan, or any specific timeframes or targets, although some of these will be perhaps picked up from the earlier plan. Certainly some indication of how to operationalise the new Policy, including what legislation needs to be put in place, what the priorities are, is essential, as specifying actions and targets, and setting priorities and a timetable are key drivers in ensuring that e-government is moving forward, and the value of ICTs for development is being harnessed. Another major concern is that the document does not assign ownership of and responsibility for the Policy beyond government itself, and without this may lack the leadership that will be necessary to ensure its success. If this is all to be achieved by the ICT Division in the Office of the Prime Minister, which would mean taking full responsibility as the Government Information and Communications Office to lead the National ICT Policy, that office would need to be expanded, empowered by legislation, and fully staffed at the appropriate levels to allow it to take on a whole of government policy leadership and implementation role as well as an IT service role. The role of Chief Government Information Officer would need to be created, given legislated powers, and appointed.

Setting aside future developments, the ICT Division in the Prime Minister's Office is currently in a difficult situation, being responsible for policy development and the management of IT systems throughout the government. Despite the efficiencies that the 'e-ticket' system has brought about, there are still not enough staff to support IT systems in the various agencies and a backlog is building up. A system whereby other agencies could assist, share the workload and skills, would help, in the view of the Director. Progress on the government portal has also stalled due to lack of resources. While the ICT unit in the PMO helps other agencies develop their web sites, it does not have the resources to assist them with updating content once that is done. There were discussions with MFEM a few years ago about setting up a central portal so that when agencies updated information on their own web site it was automatically updated on the portal, but it has not been built, largely because of lack of resources. The existing sites that do represent a kind of collective portal are discussed in section 9 below.

Over the same time period, policy and legislation to support better governance, and core e-government activities have been progressing. Many valuable initiatives are commented on below. In addition, an Official Information Act was passed in 2008 and a Spam Act in 2009. Legislation on Cybercrime is currently being developed by the Crown Law Office. Many other projects are being planned—such as an online Inland Revenue system, seen as a core e-government application. But the major problem is getting government-wide understanding, and a government-wide steering committee to promote, prioritise and lead e-government projects. Such a committee did exist but has not met for some time. This makes the question of approving and implementing the 2014 National ICT Policy a matter of urgency. A strategic approach is essential if

available resources are to be expended on the most relevant and cost-effective projects. Aid agencies are willing to assist, but do not always share the government's priorities. For example, the ADB proposed a national identity project, but the concept was not taken up because in the view of the Director of ICT the country did not have yet have systems that could take advantage of a single national ID system. Capacity and planning are the key issues, and therefore of more value are the training programmes offered by NZAid, undertaken through the Public Service Commission.

3. Ministry of Finance and Economic Management

The Ministry of Finance and Economic Management has four major divisions, Statistics, Treasury, Tax, and Customs and Border Control. As noted above, the Treasury Division, which represents the core function of MFEM, works closely with the OPM and is a major driver of back-end shared services, including the a .gov.ck domain for email. This policy was one of the outcomes of a functional review of the public service conducted in November 2011 with the support of the Asian Development Bank which “helped establish a plan for rapid and effective responses to disasters, and for the development of a 20-year integrated and environmentally sustainable infrastructure master plan that incorporates climate change adaptation.”¹⁶ Given that the size of the entire public service is around 1700, and that the skill-base is limited, this centralised approach to ICT infrastructure (hardware, software, networking and applications) as well as physical infrastructure has obvious advantages despite the difficulties of implementing it, and the fact that it is being driven from two key agencies.

According to the Financial Secretary, the recommendation of the review concerning shared services was timely and aligned well with the Ministry's developing focus on “productivities and efficiencies within government”, and a centralized approach to financial management, payroll, asset management and email because of the small scale of government operations in the country. “It makes no sense to have decentralised units doing it all.”¹⁷ Coming after some years when the Cook Islands were encouraged to follow the Australian and New Zealand examples of financial devolution, it has been a difficult transition to get agencies to recognize the value of centralized financial management in order to be able to produce timely financial reports, control over-spending, and reduce costly duplication of function and effort.

Centralisation of ICT has been a part of this process, and developing a standardised form of email address to replace email addresses based on function, or personal email addresses being used for the workplace. This in itself proved to be a major gain in efficiency despite continuing opposition. Centralising all other ICT services means expertise is shared and staff departures and absences can be covered better, providing a more reliable and expert service. The network system based on wireless technology which is being slowly developed is expected to result in a more robust system, with better backup systems in the event of a sever failure. Productivity gains have also been achieved by computerising payroll, (the Fijian system PayGlobal was selected), instead of staff in MFEM having to manually enter hand written time sheets, and staff

¹⁶ ADB and Cook Islands Fact Sheet, http://www.adb.org/sites/default/files/publication/27759/coo_2.pdf

¹⁷ Interview with Financial Secretary, Richard Neves, 19/9/14.

in other agencies having to visit the Ministry in person to file a leave request, or get a copy of a payslip. At this central level these changes are not part of an overall e-government policy or plan, but are seen as common sense approaches to making government systems more efficient and convenient, and providing greater accountability. Additional benefits include the ability of the Public Service Commission to email all public servants, foster a sense of one entity, and to merge departments and agencies from one ministry to another, or merge ministries when changing roles make this appropriate. This will become increasingly important as the new efficiencies change roles and require redeployment of some public servants.

A centralised Financial Management system will be the next government-wide system to be introduced. At present, as a legacy of the 20-year-old decentralisation policy, more than 85 agencies manage their own finances, using systems ranging from Quicken and MYOB to various Microsoft solutions. Many of them are four years behind in the production of accounts, and cannot advise ministry heads on the state of current expenditure against budget. Affordable technology is now available that can solve these problems. An initial Public Expenditure Framework Analysis (PEFA) was undertaken to identify the current state of the various systems, and produce a roadmap of necessary improvements and a second PEFA is underway to document progress towards these goals. This evidence is essential because a number of aid agencies, ADB, IMF, and NZAid are assisting with funding and expertise. The end result, it is hoped, will be a new legislative for an effective FMIS system across government, with better reporting and greater accountability, checks and balances, without taking away the autonomy of the various agencies.

The Ministry's Revenue Management Division uses Data Torque's Revenue Management System, a system used by other Pacific Island states, as well as many New Zealand agencies and companies, and well supported in the region. This has the capacity for online submission and payments, but the backend systems are not able to support these features so the only online features on the Revenue Management Division's web site are an interactive tax calculator, and downloadable forms. In addition a centralised asset management system being implemented by Cook Islands Investment Corporation with the assistance of ADB allows each agency to effectively manage its own assets, but with economies of scale. A number of SOEs are also keen to take advantage of the economies and efficiencies the system offers. The system, the Ministry believes, is showing benefits already with better maintenance of government buildings, and a more efficient email 'ticket' system for sorting ICT problems using local ICT businesses, a vast improvement on the previous system whereby the ICT Department in the Prime Minister's Office became a "dumping ground for broken pcs". However, getting this system to work effectively to enable good design and maintenance of agency web sites has been more of a challenge as most agencies do not have sufficient capability in this area, and there is no central agency that can handle the workload.

The Ministry does have a division to ensure donor projects are aligned with national priorities, the Development coordination division. But it is hampered by lack of capacity to account for expenditure and to evaluate programmes to the standard required, and does not always know what other ministries are up to, making coordination and alignment of donor funding hard to manage. In relation to the banking system, the Financial Secretary is pressing the banks for an electronic banking system

to replace the ubiquitous chequebook held by most agency heads. The cost of electronic transactions remain exorbitantly high (at \$10), although this is partly driven by the very high internet costs. If these come down (as expected under the new ownership of TCI), government pressure to allow online banking and automatic payments will increase. The Telecom Act and proposed ICT Regulatory Authority are also seen as essential measures to move e-government forward.

The MFEM's own server provides a link for email exchange, using Microsoft Outlook; the southern islands already can access this, and access is being extended to some of outer northern islands. The Ministry acknowledges that there is ongoing resistance to many of the changes it is trying to put in place. Concerns about the security of the LAN/WAN are expressed in many agencies, especially by the ICT Department in the PMO, where the view is expressed that the process has been rushed, and that not enough testing has been done.¹⁸ The counter-argument, that security is even laxer with everyone using gmail or the local email system "Oyster" for work accounts, rather than connecting to the government server system through Microsoft Outlook, is slowly taking hold. It is also clear that capacity building is an urgent need, so that everyone from Ministers and Heads of Ministries down to humble clerks understands both the need for ICTs, and the benefits that they can bring, and undertakes some training in their use.

Overall the Ministry sees its role as being one of the key drivers of e-government, focusing on the operations of government, and providing both expertise and leadership through being a champion, leading by example, and by using the authority of its role. Although it acknowledges the key role of the Prime Minister's Office in advancing e-government policy, it will continue to bring whatever political leadership it can to the necessary next steps, persuasively advocating good policy, standardised systems across government (including standardised security), and getting the necessary legislation in place as soon as it can. To that end it is vigorously promoting a Ministry of Finance Act, justifying the changes as necessary if the Cook Islands is to remain a modern state within the international community, and is to maintain its already strong reputation for good financial management.

The Ministry also manages other key areas of government, such as Customs and Border Control, and Statistics, both of which make use of ICT systems that have been installed on the advice of New Zealand government agencies. Customs and Border Control use a Border Management System based on the CusMod software developed by the New Zealand Customs Service, which is keen to see strong and effective border control throughout the Pacific.¹⁹ An automated customs for processing passengers arriving and departing system has been in operation at the airport for some years, and in late 2013 was extended to support the processing of goods entries. This would enable importers and customs brokers to electronically lodge and clear their goods entries via a secure web site. The system also collects VAT on imports (one of the largest sources of revenue for the CI government) online, and is able to produce weekly updates on visitor arrivals and origins – essential for better management of the tourism industry.

¹⁸ Interview with Pua Hunter, 25/9/15

¹⁹ Interview with staff in the New Zealand Customs Service, 19/5/13

Data from the system is transmitted via satellite to Auckland where it is held on Datacom servers, as part of their level 1 data server environment. New Zealand Customs explain that this solution for data management is more effective than storing data in the Cook Islands because they are better able to solve software problems, and Datacom can maintain the server systems better than in the Pacific. (This is a common solution also used by banks in the Pacific.)

As well as supplying customised software that was designed to be sustainable, and fit with local needs for a ‘best practice’ service without too much complexity, New Zealand Customs has been providing advice on the appropriate legislative framework for border control, technical training to manage the system, and leadership training. Customs New Zealand have also shared their Cruise ship module with the Cook Islands, and are looking to roll out a modified Immigration system module, and then a Quarantine system module. All these being part of the same system, they hope these will encourage collaboration between agencies, help develop a critical core of staff with competency in the system, and enhance access to data.

Cook Islands Statistics Office, one of the four divisions of the Ministry of Finance and Economic Management, is headed by the Government Statistician who also acts as the Chief Electoral Officer. It operates under the authority of the Statistics Act 1966. In July 2013 the Statistics office launched an initiative to formulate a National Strategy for Development of Statistics (with assistance from the SPC and PARIS21²⁰). The purpose of the CINSDS is to provide a vision for where the National Statistical System (NSS) should be in five to ten years, set milestones for getting there, and set out a framework for assessing user needs and priorities for statistics and for building the capacity needed to meet these through harnessing national and international resources. The Strategy will help providers and users understand the data better, and identify how they can use it for planning purposes. This strategy will also help Cook Islands agencies and the Statistics Office to define and classify data according to international standards.

The Statistics Office has prepared a Roadmap to take it towards that goal, which outlines an organisational structure, and national oversight committee drawn from key agencies to oversee the Technical working group developing the National Strategy. This is intended to engage both the producers and users of statistics, and it is proposed that this Oversight Committee is in fact the National Sustainable Development Commission, which has two benefits - it avoids duplication of offer in a very small country with limited resources, and ensure that the new National Strategy is aligned with the National Sustainable Development Strategy.

Although there is little specific reference to ICTs in the Roadmap, only in general terms to ‘systems’, according to the Government Statistician ICT is definitely a part of the new policy. She emphasises that the key to success in improving the collection and dissemination of statistics in the Cook Islands is “e-transfer of information from agencies to the Statistics Office.”²¹ Currently, in most agencies data is entered into an

²⁰ Partnership in Statistics for Development in the 21st Century (<http://www.paris21.org>) is a worldwide network of statisticians, policy makers, and analysts that aims to promote the better use and production of statistics throughout the developing world for effective economic and social development.

²¹ Interview with Government Statistician, 24/9/15.

Excel spreadsheet and emailed to Statistics; a few, e.g. Immigration, extract data from a database and transfer it as a CSV file which can be entered directly into the system used at Statistics. Information is collected where it can be found. The Financial Supervisory Commission provides information on the banking sector, tax records are used to gather business/economic data, and data on immigration and tourism, officially under the aegis of the Ministry of Foreign Affairs and Immigration, comes from the Customs database. Trade statistics, which are now collected online (in a system designed by Statistics New Zealand) are entered directly into an automated system which can transfer data to Statistics. The Ministry of Health has its own statistician who works cooperatively with Statistics transferring what is needed, but some agencies such as Police, Internal Affairs (including Labour and Welfare) do not have adequate systems to produce statistics in electronic form. (Information from periodic surveys of tourists has been collected by outside agencies, such as the New Zealand Tourism Research Institute at the Auckland University of Technology.

The Government Statistician is also responsible for the national census, last run in 2011. Hand completed forms designed by Statistics New Zealand were scanned into a database, with technical assistance from the SPC. Teams travelled to the outer islands by chartered boat, and brought paper records back, although each island has a government office with a PC, which MFEM shares with the Ministries of Education and Health. The report on the Census was published one year after the census was taken, years earlier than previous censuses, and accuracy of the data was also improved.

As noted above, the Government Statistician is also the Chief Electoral Officer. The Electoral Roll, for which the office is also responsible, is designed on an Access database and requires a lot of data from both statistics and immigration to keep it current because of the mobile population. Some data is gathered through the use of tablets and transmitted via telecommunication channels. (Census data is protected and is not used for this purpose.) Consideration has been given to allowing online voter registration, but not online voting at this point. This is partly because many citizens still have multiple identities. Moving to digital systems is a challenge because there is no legislative framework for digital signatures, and both government agencies and citizens have concerns about security and data sharing, so great care must be taken in deciding exactly what data is to be shared and what will be done with it.

Overall the Statistics Office makes good use of ICT, and the Government Statistician believes that systems are adequate. The shortcomings lie in connectivity with other agencies, and she believes that the centralised system, which MFEM has been strongly advocating, will help with this. MFEM and the Statistics Division make good use of ICTs for disseminating statistical information, a deliberate policy of getting away from dissemination by paper. Its web page, Twitter and FaceBook are used to disseminate statistical and census data. It is also linked to the SPC Statistics for Development clearinghouse of statistical information for the region, PRISM.

4. Internal Affairs

The Ministry of Internal Affairs manages a large number of matters which in larger jurisdictions would be handled by separate agencies. Its primary responsibilities are social policy and social welfare, but it also handles employment and labour practices

and laws, fair trade practices, consumer rights, dangerous goods, censorship, maintenance of public spaces and road safety. The Ministry has a staff of around forty, of which thirty are based in Rarotonga, and the remaining nine or so in the outer islands. ICTs are used for internal management within the Ministry in Rarotonga, but it is not possible to support officers working alone on the outer islands so arrangements are made where possible with the local community centre to share accommodation with the intention sharing ICT connections as well, although that has not always eventuated. In the Rarotonga office, the Ministry has up till now maintained its own ICT system, and its own server. Without their own IT specialist, they have had to add ICT skills to the job description of people being employed in other roles. Replacement and upgrading of ICT equipment comes under the depreciation budget managed by MFEM, but the Ministry has found that bids for replacement equipment are rarely successful, so the cost of ICT maintenance usually has to come out of the operational budget. Setting up the server based internal system, managed by a local firm, was also charged to the operations budget.

The Secretary of Internal Affairs is fully committed to the PMO/ MFEM's plan of centralising email, payroll and staff leave functions, and the Ministry is now included in the centralised system, with centralised ICT support. The Secretary of Internal Affairs can see the value of centralised email, with uniform addresses and automatic back-up, and of their entire system being linked to the central server system for the same reason- back-up and support. The Ministry has been on the centralised system since 2014, and staff are gradually overcoming their concerns about the security of the new system, although some still prefer to keep important documents and data on their own personal computer.

Now that they do not have to maintain their own ICT system, attention is turning to the Ministry's web site. The original web site was set up as part of the earlier government portal project, but rapidly became out of date. Support from the ICT Division in the PMO did not extend to updating content, so the Ministry contracted the work out, and reoriented the web site around user needs, providing information about what programmes or benefits are available, who is eligible and how to apply etc. Information on projects, policies, official reports and news is also available. Application forms are available online for download, but backend systems and an accurate database necessary to manage online applications, and staff to maintain these are not available. A system built by a volunteer some years ago did not have enough flexibility to cope with the changing circumstances of clients, but funds were not forthcoming to replace it – only another volunteer. Although the system has been redesigned it does not produce crucial management information that the Secretary needs- in particular trends, and geographical breakdowns within Rarotonga – and the data is still not reliable. Budgetary constraints affect everything, from ICT systems that are fit for purpose to the ability to travel to the outer islands. In the view of the Secretary, a more streamlined managerial structure, with fewer divisions and some of the non-core tasks (such as censorship) moved to other ministries would help make the best use of the limited budget. But aid money is still essential to supplement the budget, and that will sometimes cover personnel, travel, and technology to get the job done. But, she comments, aid money is project focused, or targeted at the work of NGOs (supervised by the Ministry) rather than simply keeping the work of the Ministry going, and it ends when the project or programme is completed (although when the Ministry is handling a contestable process for programmes to be delivered by NGOs,

it is allowed to charge overheads.) She has observed that it is important for ministries and MFEM to be able to provide the accountability that donor agencies require.

5. Education

The Cook Islands education system is modelled on that of New Zealand, which played a key role in the post-war era, when the New Zealand educational administration took an active part in the administration of schools. The current public school system, administered by the Cook Islands Ministry of Education, is divided into three regions: the main Island of Rarotonga, the Northern group of islands and the Southern group. Education is divided into five stages: Early Childhood Education (ECE) for children younger than school age; Primary Education from Years 1 to 6; Secondary education from years 7 to 13; Tertiary Education (or Vocational Training); and Community Education. The New Zealand National Certificate of Educational Achievement (NCEA) was adopted as the standard qualification in 2003 in order to maintain alignment with New Zealand. According to the Ministry of Education web site, education is mainly provided by the government and there are thirty providers including twenty four ECE Centres (predominantly attached to primary and area schools), thirteen primary schools, four secondary schools and twelve area schools (which provide education from early childhood to secondary on one site.) Church and private schools receive the same funding as government schools, through a separate fund. Latest statistics available (2009) show a total enrolment of 4302 children. Current enrolments are likely to be lower than this.

While education is free and compulsory for students from the age of 5 until 16, education in the Cook Islands faces a number of challenges. According to the International Council of Distance Education (ICDE), many school facilities do not meet a minimum standard, and teaching resources are often in short supply. There are concerns regarding the quality of the education, teacher shortages and student participation rates, particularly in relation to the secondary sector. In addition, the isolation of the outer islands means that part of the Cook Island population has severely reduced access to education services.²² The ICDE also notes that the University of the South Pacific (USP) has a campus on the main island of Rarotonga, and comments that although the 2006 upgrade to the USPNet has broadened the range of technologies in use, the campus is faced with declining demand due to demographic contraction.

The ITC and Media department in the Ministry of Education manages IT services and support within the ministry as well as in schools, although sometimes outside assistance is needed to help with this workload. It is a small unit with a Director of ITC, and five staff plus a number of IT interns (volunteers). Ministry staff are on the new centralised Payroll system, but staff in the schools are not, so their payroll data (on timesheets) is entered by the finance team in the Ministry of Education. The ITC budget for schools is tight, as the Director of ICT notes, “\$54,000 to cover four and a half thousand students in thirty one schools.” This does not even cover replacement of equipment in schools, so the shortfall must be filled by donor funding, or school fundraising activities. School Boards and Parent Teacher Associations are keen to see

²² ICDE. Country profile: Cook Islands, http://www.icde.org/projects/regulatory_frameworks_for_distance_education/country_profiles/cook_islands/

further use of IT in education, but as well as the cost of equipment, maintenance costs are high in a humid salty climate.

The ministry is looking forward to the new National ICT Plan currently under consideration by Cabinet to give some direction to ICT use within the sector, and hopefully a more sustainable funding base. Staff in the ministry have access to the various networks and servers on which school data is kept through a WAN/LAN, enabling the ministry to have centralised oversight of school administration. Schools can also see IT initiatives of other schools on the same network, and are encouraged to share examples of best practice, but the ministry is still the main driver of IT applications in the sector. In one major initiative all teachers were provided with a laptop and training to encourage them to use IT resources in education, but, it is noted, uptake is slow.

Currently, the major focus in the Ministry is on file management to enable compliance with the Official Information Act (2008). Within schools the focus is on training teachers in basic IT competency skills so that they can make the best use of the laptops provided. However, the Internet as a tool is not widely used because of lack of skills and the high costs of downloading. So the Ministry downloads useful materials to add to its educational resources which are freely accessible to teachers across the various educational networks, replicating them periodically to the outer islands. The system, known as EduNet, was launched in 2003. Funded by the European Union, the aim of the project was to connect Cook Islands schools through a wide-area Intranet running on a server managed by the Ministry of Education, in order to provide schools with access to curriculum-related materials.

The ICDE notes that the main purpose to which EduNet has been put is improving the efficiency and effectiveness in school administration and communication. It claims that EduNet became an ICT project rather than a serious attempt to provide e-learning in the Cook Islands. In retrospect, ICDE comments “this development is not altogether surprising. Effective e-learning requires very significant investments of time by trained personnel and specialised technical resources. These resources were simply not available in the Cook Islands at the time.”²³ This is a view that the Director of ICT in the Ministry would not disagree with, expressing the same disappointment about the use of ICT in the sector. It seems that no champion of e-learning has yet emerged.

However, the ICDE report also notes that “increasing access to the Internet has changed the way in which secondary students in the outer islands can participate in distance education.” Where formerly, completed student work was posted back to the Correspondence School in Wellington nowadays student work is either scanned onto CD and sent to Rarotonga for emailing direct to teachers at the School, or emailed direct. Marks and teachers’ comments are now returned by email to students. These steps have greatly reduced turn-around times, allowing students to derive increased benefit from their teachers’ comments. So although the use of the NZ Correspondence School is not regarded by everyone as the best model for Cook Islands students, new delivery modes and methods using ICTs will make the learning process more effective.

²³ Country profile – Cook Islands:

http://www.icde.org/projects/regulatory_frameworks_for_distance_education/country_profiles/cook_islands/

The value of ICTs in Education, for delivery and as part of the curriculum is also noted by a 2012 OECD report for the NZ Ministry of Foreign Affairs and Trade. However, the report notes, this will “require further teachers to be identified and skilled to work with clusters of students in multiple locations. Improved technology infrastructure; power supplies, fast broadband, telecommunications services are all essential to the further development of these initiatives.”²⁴ The same report, which praises the Education Master Plan (EMP) for its alignment with the National Sustainable Development Plan, also notes the increasing alignment between donors and the Cook Islands government to meet the goals of the EMP.

The Cook Islands also participated in the OLPC initiative in 2008, when 70 XO laptops were sent by the Secretariat of the Pacific Community in New Caledonia to the Cook Islands for distribution to Mitiaro school students as part of a pilot project. The distribution finally took place in 2010, and the laptops were used by students in a range of learning activities.²⁵ The initial pilot project seems to have been a success, and although the OLPC wiki does not record any subsequent trials in the Cook Islands, the Ministry of Education has continued to support ongoing pilot programmes making use of tablets and pcs, using prepared ICT-based learning materials.²⁶ The major barrier to online learning is the cost and reliability of Internet connections, which means that the education sector is unable to take advantage of the close relationship of the Cook Islands with New Zealand and the availability of resources from sponsors such as Enabling e-Learning in New Zealand. It remains to be seen whether deregulation of the telecommunications market, which is expected to bring prices down, and new forms of connectivity, e.g. through O3B, which is interested in providing educational access to the Internet, will help or whether the issue is lack of training and the lack of an e-learning champion.

6. Justice

As well as managing the Courts system, the Ministry of Justice holds such crucial records as Births, Deaths and Marriages, the Company Register, the Register of Incorporated Societies, and Land records, most of which it has to manage using freely available generic software, or systems developed in-house. The Births, Deaths and Marriages register, built in-house in Visual Basic 6 in 2005 needs review and redesign. Similarly the Courts system was built in-house in 2004, and while the data has since been transferred into a system written in Java, it too needs updating and redesigning. The Lands Register was in process of being redesigned, but that has come to a halt due to lack of staff and disputes over titles.

The Lands Register dates back to the annexation of the Cook Islands by New Zealand in 1901, when a Land Court (now a Division of the High Court) was set up to assign title and ownership (generally a village, its chief and villagers) to customary land. The Land Court system enabled leases of customary land to be granted to Cook Islanders from a different region, or to foreigners, to enable investment in non-agricultural businesses, there being no free-hold land as such. The system, which involves very

²⁴ OECD. Evaluation report of the Cook Islands Education Sector partnership commissioned by NZ MFAT, 29/3/20: <http://www.oecd.org/derec/newzealand/newzealandreport.pdf>

²⁵ http://wiki.laptop.org/go/OLPC_Cook_Islands

²⁶ Interview with William Tuivaga, 24/9/14.

complex patterns of ownership, is still in use today. Land titles are frequently disputed by descendants due to issues such as land being partitioned upon the decease of an owner, occupation rights being dictated by succession, as well as joint ownership practices, and gender issues. Leases are usually purchasable for 30 years for commercial purposes and 60 years residential, and much of the work of the Ministry of Justice is taken up with Occupation and Succession rights, and notifying applications to the Leases Applications Tribunal (an activity which dominates the Ministry of Justice web site). The Land Trust Section of the Ministry manages a leases database created by the information provided by the Land Titles Section and the High Court Land Division concerning the outcome of applications for leases, and the resolution of disputes over ownership. But Land Titles themselves are not digitised, and are not available to Cook Islanders living in the outer islands or in Australia and New Zealand (who must file claims through approved agents in Rarotonga). This is a matter that the Ministry of Finance and Economic Management believes should be urgently addressed²⁷ but there are concerns about the quality of some records that this would reveal, and digitisation would clearly be a major project that would need extensive donor funding.

Within the court system, criminal cases are entered into a case system, which holds case data and the decision. Every case is recorded but not every case is transcribed, cases being prioritised in terms of value to case law; two stenographers also take records of cases. This data is available only to court officials and rarely makes it into case law databases. The Courts Division of the Ministry has strong links with the New Zealand courts; staff may be sent on attachment to a New Zealand court, and judges sitting in Cook Islands courts are all New Zealand judges and lawyers qualified to serve at the same level in the New Zealand court system. These visiting judges bring expectations about the level of IT service available, and frequently bring tablets, mobile phones, dictaphones and other technology that must be ‘plugged in’ to the Cook Islands system. Some also like access to the systems (legal databases, court judgements etc) that they are accustomed to in New Zealand. A wifi system has been set up in the courts to service visiting judges; it was financed by Ministry of Finance and Economic Management, and set up by the team in the Prime Minister’s Office. This puts the IT Unit in Justice under great pressure, because although Justice is supposed to use the newly established ‘ticketing system’ for IT service requests, that system is not up to handling the number of requests it gets, and cannot meet the urgent demands for service that arise from the critical tasks and urgent deadlines that are part of judges’ routines. But having lost access to its own user directory through centralisation, the IT Unit is not able to sort all problems that arise in a timely fashion. The lack of staff in the PMO is seen as the crux of the problem.

Donor aid is urgently needed to resolve this issue, or possibly a partner company which would help set up a trust to upgrade the justice system – which would be seen as a benefit because of the role of the Cook Islands in offering international financial services, and the need for legislative protection for these.²⁸ Identifying benefits to the international community, and the close link with New Zealand, can often result in upgrades of software. For example, there is an existing project to upgrade the Company registration system that the New Zealand government has supplied, and a former New

²⁷ Interview Richard Neves, 26/1/15

²⁸ See FDSA web site

Zealand Police commissioner helped install software to manage licenses and registrations for a number of agencies including some of the many Crown agencies and SOEs²⁹

Universal access to Cook Islands legislation is available through the Pacific Islands Legal Information Institute (PacLII).³⁰ The Ministry of Justice web site describes the court system and notifies applications to the Land Court and dates of sittings, but little more. The web site of the Parliament of the Cook Islands lists statutes for sale, but the PACLII Databases provide web access to the Cook Islands Constitution, as well as Cook Islands Legislation, including Sessional Legislation up to 2014, Subsidiary legislation (Regulations) and relevant NZ and UK Legislation. It also makes available Judgements of the High Court, the Land Division of the High Court, the Court of Appeal, and decisions of the UK Privy Council affecting the Cook Islands. Collected Judgements from 1976-1996 are also online on the site. An index to Cook Islands legislation that brought earlier indexes up to date until 2012 was published in 2013 by the Faculty of Law at Victoria University of Wellington (compiled by Professor A H Angelo and Nicola Stephens) and legislation comprising Court Rules (High Court and Court of Appeal) is listed (in chronological order. The lack of consolidated legislation since 1996 is becoming a problem, but this responsibility has not been picked up by any agency, including Parliament. Hence the Crown Law Office (presumably along with judges and lawyers) have to make use of PacLII for access to Cook Islands statutes, although they do have access to standard legal databases, which cover international case law and may include significant Cook Islands cases. Legislation is drafted in a template created by the New Zealand Parliament's Parliamentary Counsel Office, who also do much of the drafting (some is done by consultants working on a specific issue, e.g. climate change.) Some legislation that is passed is sent to PacLII by the Crown Law Office, but there is no routine process in place for this.

The Minister of Justice (the Prime Minister is also the Minister of Police), but there appear to be few links between the two agencies. The Police use Jade Investigator, a Case Management and Intelligence system created by the Jade software company in Christchurch. This was initially created as a Domestic Violence database for the Pacific Prevention of Domestic Violence programme, an initiative of the New Zealand Aid Programme, New Zealand Police (NZPOL) and the Pacific Islands Chiefs of Police (PICP). The system uses Jade software from the Pacific Trans-national Crime Network, and the Cook Islands Police Service has since extended this system to cover all offence and incidence reporting.

7. Health

The Ministry of Health in the Cook Islands (Te Marae Ora) has a staff of around 290 employed within three directorates:

²⁹ A list of these is available from the web site of the Public Service Commission at: http://www.psc.gov.ck/?page_id=3092

³⁰ PacLII, at <http://www.pacii.org> is an initiative of the University of the South Pacific School of Law with assistance from AustLII which collects and publishes legal materials from 20 Pacific Island countries with the aim of providing free access to their legal information. Completeness of the content is dependent on how regularly the law agency in each country forwards the necessary information.

1. Community Health Services, which focus on primary health care public health services for all age groups, the promotion of healthy living, as well as antenatal and basic maternity, dental, and mental health services.
2. Hospital services, which provide primary, secondary, tertiary, rehabilitative and palliative care within fairly limited capabilities, along with outpatient services, and clinical support services such as basic radiology, pharmaceutical, pathology and biomedical services, and physiotherapy.
3. Funding and planning, which includes the core administrative team, HR, Finance, Monitoring and Evaluation and ICT.³¹

Health services are provided through a system of child health/welfare clinics, dental clinics, health centres, and one general hospital on the main island of Rarotonga (there is a second basic hospital on the island of Aitutaki). Pa Enea services on the outer islands are generally confined to community services.

Health services in Cook Islands are closely tied to the New Zealand Health Service, as part of a special arrangement, and some secondary and tertiary services are provided by New Zealand, either by referral to services in New Zealand hospitals or through the Health Specialist Visits programme.³² The patient management system Medtech32 is used in the hospital system,³³ in the Health Centres, and Child Health Clinics, including centres in most of the outer islands. These are all linked to the MedTechserver in the hospital in Rarotonga, through the efforts of TCI and the Ministry of Health. This means that the Cook Islands has a centralised patient record system (which includes dental records), the only country in the region (including New Zealand and Australia) to have achieved this.

There are significant benefits in the centralised system since it brings patient records together from primary and secondary care. But there also shortcomings. It is a primary care system, not designed for secondary and tertiary care and it does not currently integrate with Toniq, the system used in the hospital dispensary, which is the major supplier of pharmaceuticals in the country. MedTech's lack of integration with other software, and its level of security are regarded as significant weaknesses, but donor funding would be needed to upgrade to a different software, and software developed by WHO is regarded as not suitable, since its focus is more on gathering statistics, and monitoring public health programmes, than patient records.³⁴

Other standard technologies are also used in the health sector. The hospital has wifi and some clinicians have been provided with tablets to enable them to access information to assist in clinical decision-making (and contact other clinicians.) The very popular clinical decision support system Up-to-Date is provided to clinical staff via the Ministry's web site, along with access to the New Zealand poisons information site TOXINZ, and this kind of technology is an encouragement to registrars in training, especially New Zealanders, to do some part of their advanced training in the Cook Islands. Video-conferencing is also used to link health professionals in Rarotonga, the outer islands, and Australia and New Zealand to provide additional professional

³¹ The Ministry also has responsibility for water and sanitation as public health issues.

³² The referral service is free to Cook Islanders who are New Zealand citizens, and as a fee-paying services to CI residents who are NZ citizens. There are approximately 150 referrals per year.

³³ MedTech has been used since 2004.

³⁴ Discussion with Secretary of Health and staff.

support and training opportunities, although connections with the outer islands are slow. Skype is also used to connect staff between islands and with New Zealand, and is used where possible to enhance services in Rarotonga (e.g. the ministry has been looking for a radiologist in a New Zealand hospital who would read x-rays when needed, since there was, at the time of interview, no radiologist in Rarotonga). Social media, especially sms messaging is used for the promotion of public health messages.

The ministry itself (along with hospital administration) uses standard software Microsoft Office suite and Intuit's Quickbooks (a system for small businesses) for managing finance. Laptops and other necessary equipment must be funded out of its capital budget, along with repairs and maintenance. The ministry has been watching with interest the new ICT department in the PMO, and considered joining the network and email system, but at present do not find the responsiveness adequate for the more urgent needs of the health sector. Clinical staff need access to patient records to function, and if the system is down, that means both risk to patients, and the need to enter information later. Payroll is managed centrally, though, and that has been a success, but the leave system has some teething problems.

A. Health statistics and the HIS

Data for national statistics is collected from MedTech, which now covers most of the country, and the system is adequate for that. One system that is working well is the regional Pacific Public Health Surveillance Network, run by the Public Health Division of the Secretariat of the Pacific Community with the assistance of the WHO and UNICEF. The network collects data and reports regionally (and to the WHO and subsidiaries) through the PacNet system (which links countries in the Pacific); the PicNet system (which notifies infectious diseases); and the Syndromic Surveillance scheme which helps alerts countries to spreading epidemics by highlighting statistics which are outside normal ranges. In areas where diseases such as Malaria, Dengue Fever, and other mosquito borne diseases can be rife, these Internet-based early warning systems are very valuable aids in dealing with outbreaks.

Health statistics, which are extracted every six months from routine monthly reports from Medtech (currently for three islands) are published in an Annual Statistical Bulletin, produced by the Medical Records Unit. That has recently been relocated in the Planning Unit, to enable better use of the statistics. But lack of a national ID system makes it difficult to ensure the accuracy of the data, given that patients may use more than one name, and several people may have the same name. There is an intention at some time in the future to assign a unique ID number at birth, which will help maintain accurate health records, and this is recognized by all agencies as a necessary. But currently the right to residence in New Zealand, with Cook Islands citizens moving freely between their own country, and New Zealand and Australia, sometimes under different names, complicates the ability of all government agencies to know what population and which citizens they are dealing with.

The health statistics produced cover basic population statistics, broken down by gender, and age, and the overall health status of the population. This covers births, by region, island and maternal age; morbidity, which includes notifiable diseases, a significantly different list from New Zealand, which includes chicken pox, influenza, otitis media and scabies, as well as Dengue fever but not other tropical diseases, the

main Non-Communicable diseases (cardiovascular and pulmonary conditions, diabetes, and cancer), accident statistics and mortality statistics (including underlying cause). These statistics, as noted above, are mostly drawn from MedTech32 (with some manual input in the outer islands). Statistics on health facilities in all regions, hospital beds, outpatient clinics, child health and general health service centres (but not usage), referrals to clinics and hospitals overseas, and from outer islands to Rarotonga, and uptake of family planning services are also included.

The Ministry makes good use of its regional networks, and also participates in the Pacific Health Information Network (PHIN) which was created in 2006 to provide a mechanism for networking, support, information sharing and training for people working as health information professionals in the region. PHIN has a strong affiliation with the Health Information Management Association of Australia (HIMAA and its Secretariat is currently located at the Health Information Systems (HIS) Knowledge Hub, based at the University of Queensland, Brisbane, Australia.) Access to the POLHN web site³⁵ is also readily available to staff on the ministry's web site; it provides online training opportunities to help upskill staff working in the health sector throughout the region.

The health statistics do not include data on the Health Specialist Visits programme, although this is a significant part of the health service. The Medical/Health Specialists Visits programme was set up to provide access to high-level secondary and tertiary services not otherwise available on island. The programme, which brings teams of medical specialists from New Zealand, Australia and the wider Pacific to Rarotonga and some outer islands (mainly Aitutaki), also provides support and mentoring to local clinical staff. The Ministry of Health is responsible for setting priorities and scheduling, monitoring and evaluating these visits, in accordance with its own National Health Strategy 2012-2016, the Health Workforce Development Plan, and the National Sustainable Development Plan. The scheme is funded through tri-partite arrangements between NZAid, the Cook Islands Ministry of Health, and the Ministry of Finance and Economic Management. A report to the New Zealand Ministry of Foreign Affairs and Trade in 2011³⁶ lists visits to Rarotonga and the outer islands for the previous 6-7 years. Some data for the report is drawn from the six-monthly MedTech reports, and some extracted from records provided by the Coordinator of the scheme. The nature of the clinic and the medical specialty is noted where possible, but numbers of patients seen does not appear to be recorded, although that must be available in MedTech.

8. Environment, Meteorology Service, Climate Change and Emergency management

Responsibility for this group of key issues for the Cook Islands is shared between the Prime Minister's Office and the Ministry of Finance and Economic Management's Development Coordination Division, reporting to the National Sustainable Development Commission. The National Environment Service is a State Owned Enterprise, or independent agency, with responsibility for protecting, managing and

³⁵ Pacific Online Learning Health Network (<http://pohln.org>)

³⁶ Sonja Easterbrook-Smith and Vaine Wichman. Report of the Evaluation of the Cook Island Medical/Health Specialist Visits Scheme. Wellington: New Zealand Aid Programme, MFAT, 2011

conserving the environment primarily by ensuring compliance with the Cook Islands Environment Act 2003, and any international treaties entered into, and by monitoring environmental impacts. Its Island Futures Division has responsibility for climate change adaptation and mitigation, and is the lead agency for cooperating with the many international agencies working in this area.

The Prime Minister's Office has responsibility for emergency management; its Emergency Management Cook Island (EMCI) division is responsible for developing and implementing the Disaster Risk Management (DRM) plan and managing the Disaster Risk Management Council (NDRC). The EMCI maintains a database of emergency management information which includes hazard maps, vulnerability assessments reports and maps, training information, disaster management resources and emergency contact details. It operates a National Emergency Operations Centre which provides the training. EMCI works closely with its partners, which include SOPAC, UNDP, USAid, NZAid, NZ Civil Defense Management and the Red Cross. It operates within the Hyogo and the Madang Framework, which requires participating countries to, among other initiatives, establish effective emergency communications systems. It also participates in the regional (Asia-Pacific) DRR Portal.³⁷ As part of this activity, and with the support of regional agencies such as SOPAC, it has developed a detailed, costed National Action Plan for Disaster Risk Management which includes some issues related to Climate Change adaptation, within the broader context of the risks to which the country is exposed (including over-exploitation of fisheries resources, and bio-security), calling for greater alignment of these two government initiatives. The Ministry for Finance and Economic management shares some responsibility for climate change policy and initiatives, and promotes the work of the EMCI on its web site.

Systems set in place for disaster response rely heavily on ICT, including web sites, SMS messaging, and social media (Facebook), although the effectiveness of all these system is impacted by the fact that not all outer islands have mobile or internet connections. A Climate Early Warning System (CEWS) and CEWS Information System have been set up, with the assistance of the United Nations Development Program's [Climate] Adaptation Fund. Local assistance from SPREP³⁸ which helps coordinate such programmes across the Pacific, provides resources for education in schools and communities and supports and climate data exchange between Pacific countries. The Cook Islands Meteorological Service now administers the Climate Early Warning System, using data transmitted to its weather station at Rarotonga Airport by other countries in the region, and automated weather stations on the outer islands.³⁹ This data plus additional data from other agencies forms a Climate Early Warning Information System which is maintained by EMCI. Once the CEWS and CEWIS system have sent the alert, alarms are remotely triggered. But effective response is dependent on planning and coordination, and the cooperation of all key stakeholders, especially the telecommunications provider. It also depends on training, and education, so teaching resources are created within EMCI, and shipped out to Pa

³⁷ <http://www.drrprojects.net> (which is in turn a member of the DRR Gateway at <http://www.drrgateway.net>)

³⁸ Secretariat of the Pacific Environmental program, based in Apia.

³⁹ See the section on the Meteorology Service below

Enua communities in the outer islands.

Within the EMCI, the GeoNode group, funded by UNESCO'S regional development program ESCAP, has developed a GIS-based system of documents and maps to support emergency response.⁴⁰ The system makes use of data from Infrastructure Cook Islands (formerly the Ministry of Works) which undertakes the mapping of soils, geology, topographical data, land use and crop modeling using Geographical Information System (GIS) technology. Infrastructure Cook Islands (ICI) also undertakes surveying and mapping of existing building structures to assess their vulnerability to natural disasters, and is developing an Infrastructure Asset Database. ICI is working towards the development of a Land Use Policy to support Sustainable Land Management decision making. It maintains and services the Geographical Positioning System (GPS) Station in order to service the data needs of the local and global community, but in particular, the COSPPac Project.⁴¹

GeoNode itself is an open source geospatial content management system and web-based application platform for developing geospatial information systems (GIS) and for deploying spatial data infrastructures (SDI). Registered users (registration is free) can create their own maps using data from the collection, overlaying different sets of data. Within the EMCI this GIS is used to plot data about geographical environments, roads, rivers, water quality, and land use, with population data (e.g. house, location, village, owner, house type, whether occupied, number and ages in household, any elderly or disabled, access to water, tank capacity, internet connection or cell phone, etc.). This data has been collected physically from each island, and is shared with other agencies. For disaster management and emergency response which is the main aim of the system, this can then be combined with data from the climate early warning information system CEWIS which uses data forwarded from the Met Service. This GeoNetwork is very reliant on the quality of its metadata, and dependent on cooperation between key stakeholders (the disability sector, the National Environment Service, Internal Affairs and Statistics). Some of these groups have raised concerns about privacy, and security of the data. Access is therefore protected, and even in an emergency, highly restricted.

The GIS data collected by ICI and EMCI is used by many agencies, e.g. the National Environment Service's server maintains the data on land use, water quality, and waste management, and combining this with climate data can help predict drought and other adverse events, and assist with planning where resources should be allocated. Google Earth is another source of land-use data that is being entered into the system; it is also used for presenting data. The Ministry of Health are also interested in participating in the system, and in collecting data that would alert them to the incidence of vector-borne diseases, so the system is now being expected to meet an increasing number of needs. But capacity is an issue, capacity to build the system further, and capacity in other agencies to collect and transmit data, especially on the outer islands. However, the GeoNode group believes that the more the use the system has the more likely it will receive the funding it needs. The data is available through the Cook Islands Geo

⁴⁰ Interview with Mana Etches 24 /8/14

⁴¹ An Australian government funded project to assist Pacific Island countries to manage and mitigate the effects of Climate Change, and communicate risks to governments, businesses and communities. (<http://cosppac.bom.gov.au>)

Portal (see below), and the EMCI's GeoNode web site.

The GeoNode group is well supported regionally by SPC, and participates in regional geodata/GIS systems managed by the SPC and SOPAC which use the same open source system to plot a range of reported data (such as communicable diseases, agricultural pests etc.) aligned with satellite data. GeoNode can also be used as a GIS-based asset management system.

A. The Meteorological Service

The Cook Islands Meteorological Service, which came under the umbrella of the Ministry of Transport⁴² in 2011, is an integral part of this cross-agency system. Its forecasting data is collected from automated weather systems, installed on all islands, which transmit real-time weather data (using the SCOPIC⁴³ system) and climate data, using CLiDE. CLiDE is an open source Climate Data Management System (CDMS) developed as part of the Pacific Climate Change Science Program (PCCSP). It provides each country with a central database for climate records and its own graphical display software. The system was installed by the Australian Bureau of Meteorology, which works with national meteorological services in all Pacific countries, under the Cospac, COMP, CAPs, SCOPIC and Ocean Portal projects to train personnel and share data on weather and climate and develop climate application projects (CAPS) which cover water management, agriculture, renewable energy and health.

B. SRIC-CC project and the Cook Islands Geo-Portal

The process of data collection and dissemination, driven by the EMCI has many facets, as well as many international links. It is given added impetus by the Cook Islands SRIC-CC programme (Strengthening the Resilience of our Island Communities to Climate Change), which is funded and overseen by the Adaptation Fund of the UNDP), and driven by Pa Enea leaders led by Aitutaki. The data collected through the Climate Early Warning System from Pa Enea and elsewhere are converted into usable data as the CEWIS, and made available on the EMCI's GeoPortal. The main focus of the Geoportal is to keep the outer island communities well informed about threats (primarily from cyclones, and climate change), and aware of the individual island Disaster Response Plans, as well as central policies and procedures that have been developed to deal with them. Information about emergency contacts, alerts, and shelters is available on the web site along with real-time weather maps of the region (all islands), and a Teachers Resource Kit. Overall a UNDP report notes:

national-level coordination for CCA is quite well developed in the Cook Islands, under the NCCCT. Water, Agriculture, Health, Energy, Marine Resources, Environment Services, Meteorological Services, Foreign Affairs, and Disaster Management agencies are represented, among others. On some islands Climate Change Community Teams have been established,

⁴² The Ministry of Transport's Maritime Division is responsible for shipping and Liquor Licensing, and has some online forms available for downloading.

⁴³ SCOPIC is the Seasonal Climate Outlooks in the Pacific decision support system which generates seasonal outlooks for temperature, rainfall etc. <http://cosppac.bom.gov.au/products-and-services/seasonal-climate-outlooks-in-pacific-island-countries/>

related to project implementation (in Aitutaki for CBDAMPIC, in Mangaia for PACC).⁴⁴

There is also a substantial collection of information on climate change on the MFEM web pages of the Development Coordination Division, as one of its development programs, highlighting the interconnectivity of agencies on this major project. By contrast, seismic activity is not commented on in any of these programmes, but appears to be monitored by the SOPAC Geonetwork and the New Zealand GNS GeoNet. GNS were also involved in an ADB/World Bank funded SOPAC initiative in 2010 to gather data on buildings and infrastructure to measure vulnerability and risk specifically from earthquakes as well as cyclones in the Southwest Pacific. Data from the investigation was added to the SOPAC regional database to assist in planning for DRR.⁴⁵

9. Technology's role in the management of natural resources in the Cook Islands

The Ministry of Marine Resources, the Ministry of Agriculture and Biosecurity, and the Seabed Minerals Authority, also make use of technology to manage the unique resources of the Cook Islands and its resources, including its 1.8m sq. km Exclusive Economic Zone in the rich waters of the South Pacific Ocean. For example, the Ministry of Marine resources is building a pearl farm GIS system, to assist in the management of this burgeoning industry, and the newly established Seabed Minerals Authority is working with international partners and SOPAC to exploit new technologies that can identify and extract manganese from the seabed at depths previously not possible. The introduction of deep seabed mining requires not only advanced new technologies but also a sound policy and legislative framework, which is underway, in order to ensure that the resource is sustainably managed, and continues to benefit future generations of Cook Islanders as well as its international partners. Fisheries also require careful management of environmental issues, and both the Inshore and Offshore Fisheries Divisions of the Ministry of Marine resources are focused on the management of resources within the over-arching National Sustainable Development Plan. Information systems are key to this, data and regional cooperation, and international networks (within the umbrella of the pan-Pacific Te Vaka Moana (the South Pacific Fisheries Cooperation programme) playing a key role. This is another key grouping of agencies which work together with international partners.

The Ministry of Agriculture (which also has a strong interest in climate change) has a number of database projects underway. The major one is a market information system supported by the European Union through the Pacific Agriculture Policy Project based in the SPC Land Resources Division), the Technical Centre for Agricultural and Rural Cooperation (CTA) for which a Request for proposal is out. Another high tech project the ministry is engaged in is its participation in the FAO biodiversity project Global Plan of Action for Animal Genetic Resources (AnGr) to help preserve unique species. It is agreed with the SPC community that this will require a regional information

⁴⁴ UNDP. Adaptation Fund. [Cook Islands] Project/Programme proposal)
http://www.ws.undp.org/content/dam/samoa/docs/prodocs/UNDP_WS_SRIC%20AF_ProDoc_pg143.pdf

⁴⁵ GNS. (<http://www.gns.cri.nz/Home/News-and-Events/Media-Releases/NZ-scientists-gather-information-for-disaster-preparedness>)

system built from local databases in each country to keep a record of the indigenous/exotic breeds they have. Donor funding may be required for this project.

10. Parliament and Government archives

The Cook Islands Parliament, which has 24 members elected from constituencies in Rarotonga, the southern group of islands and the northern group of islands, is modelled on the New Zealand Parliament and follows many of its procedures. It receives considerable support and training from the New Zealand parliamentary staff in parliamentary procedure, but is not yet in a position to use the same technology. Rules of debate differ since all speeches of MPs must be translated into Cook Islands Maori for simultaneous broadcast, and speakers must pause to allow the translation to be heard. The record of the debates, Hansard, is only available in print, and can only be read at Parliament House. The web site for the Parliament of the Cook Islands also contains mainly static information. Members and their parties are listed, along with membership of Select Committees; the only contact information provided is the address, a phone number, and the email address of the Clerk of the House. The Cook Islands Constitution and Standing orders are available for download, but Acts and Regulations are only listed, along with the cost of paper copies (which are available for purchase from Parliament House. Members have access to standard office technology and the internet in their offices and wifi access in the debating chamber. Otherwise the house operates largely on a paper-based system.

Well maintained government archives are a core part of the democratic process. The National Archives of the Cook Islands (NACI) was first established in 1974 and has been a division of the Ministry of Cultural Development (MOCD) since 1991. The tiny National Library, which is a basic lending library with some Cook Islands publications is also a Division of the MOCD. It is charged with responsibility for the collection and safe storage of government records, cultural artefacts, and oral traditions of the country. The Public Records Act of 1984 conferred statutory responsibilities on NACI and empowers the Archivist to collect and store government archives, along with other materials owned by groups and individuals by contract, bequest and the like for safe keeping. National Archives has been engaged in a project funded by UNESCO to digitize Cook Islands photographs dating back to the 1920s. These are not yet available online. NACI have been working with PARBICA on a National Good Records Management Policy for the Cook Islands, and using the PARBICA Recordkeeping for Good Governance Toolkit.

11. Government portal and agency web sites

There are a number of web sites which might claim to be the main Cook Islands government web site. The web site of the Prime Minister's Office ⁴⁶ is one of the most useful central sites, listing all agencies and linking to some ministries (although not all links are working. The official portal is the Cook Islands Government Search Engine,⁴⁷ a site which has a fairly random collection of official notices, news and events, orders in Council, visits of medical specialists, and some historical information. It links to a

⁴⁶ <http://www.pmooffice.gov.ck>

⁴⁷ <http://cook-islands.gov.ck>

news portal⁴⁸ which is maintained by the Prime Minister’s Office, and carries the Cook Islands Government coat of arms. It is also linked to the Cook Islands Government Facebook Page, Information for Visitors, a blog (with some entries which should clearly not be there), job vacancies and the government procurement site. In addition there are a number of informal sites providing information that appear to have some official status, for example the site which describes itself as “the definitive Cook Islands web site”⁴⁹ links to a set of pages with comprehensive information about the Cook Islands. Clicking on the tab Govt takes the user to a set of pages labeled “Government of the Cook Islands” which carry the official coat of arms and which have some constitutional information. By clicking on the second part of the heading Government - Structure, Personnel the user can access a list of government ministers, ministries they are responsible for, names and contacts for Heads of Departments and Cook Islands consulates overseas.⁵⁰ The page invites phone contact with the Prime Minister’s Office. This ‘informal portal’ also has a moderated Discussion Board for citizens and visitors to post notices, comments and queries. The Public Service Commission web site⁵¹ also lists all ministries and Heads of Departments (but not ministers responsible.) However, using the official search engine, although searching for a particular minister is not usually successful, most ministries and departments within ministries can be found, if they have a web presence (although not all crown agencies are so easily located).

All major agencies have their own web site which fairly consistently provide basic information about their purpose, policies, administrative structure, reports, contacts, and key information that citizens and visitors need to know (for example, Agriculture has information about biosecurity, Internal Affairs about benefits, labour and employment, and consumer affairs). Most have downloadable forms where appropriate, and a few have links to their empowering Acts and other relevant acts of parliament (these seem to come from various sources). Larger ministries which are well resourced, such as MFEM, have well managed web sites, rich in resources and with considerable depth of structure. Other agencies are clearly severely constrained by both resources and capacity in their use of the web.

12. Community initiatives

There are a number of community development programmes that make use of ICTs, or help train citizens in taking advantage of ICTs for social and public health programmes. A number of these are initiated by the Cook Islands Internet Action Group (CIIAG). CIIAG members are also member of the Pacific Island Internet Society (PiciSoc), which is registered as an At-Large Structure of the international Internet governance body ICANN, and share PiciSoc’s vision of universal access to the Internet in the Pacific for all, especially women, the elderly and those with disabilities. ICCAG projects range from specialized training programmes for seniors to the establishment of tele-centres in the outer islands for better connection with the elderly and disabled, and research on the role of the Internet in providing opportunities for women. Projects such as these involve many organisations and both TCI and USP

⁴⁸ <http://portal.cook-islands.gov.ck>

⁴⁹ <http://www.ck>

⁵⁰ <http://www.ck/govt2.htm>

⁵¹ <http://www.psc.gov.ck>

have been major supporters. A grant from the NZAid funded Cook Islands Social Impact Fund was secured for the establishment of a Tele-centre as part of the Mangaia Community Centre, the first in the Cook Islands when it opened on December 2013. A second project is directed at the establishment of a Cook Islands Social Services website, an online directory service of voluntary social service providers. These two projects are also aligned with CIIAG objective to assist communities as well as interested service providers to promote themselves on their own websites and Facebook pages. The Voices of Mangaia project, a Facebook page set up 5 years ago to share community news and comment allows family and friend in Rarotonga and New Zealand to stay in touch with events on the island, without requiring contributors to master web based software. Another notable project that CIIAG has helped bring to fruition is the ISIF–Asia funding also enabled the creation a Maori language database, available at <http://maori.org.ck> and a mobile application that makes this available to users via the Apple app store and Google Play store for the android app, both linked to the web site above.

13. Discussion

Clearly the main challenge faced by the Cook Islands in utilising ICTs for more effective government is the small population, and a small government. With a cabinet of six including the Prime Minister most ministers have multiple responsibilities for both ministries and other crown agencies, and limited administrative support. The essential functions of government such as finance, infrastructure, border control, management of the environment, police and a criminal justice system, disaster management, democratic process, health, welfare and education must all be taken care of, not to mention the demands of participating in regional and international bodies. The tension between the constraints of extremely limited government income, the need to staff these core functions of government, coupled with a lack of human capacity make effective government a major challenge. Everything must be done within an extremely limited budget and the wonder is that so much is in fact achieved.

One solution to lack of resources that is often advocated is the use of Free and open source software. This is endorsed in the National ICT Policy, and is often seen in developing countries where at the end of an aid project, a license for proprietary software can no longer be afforded, leading to project failure. This did not seem to be a common occurrence in Cook Islands agencies. Instead, good use of reputable open source software widely used internationally is seen in the GeoNode, CEW, CEWIS and other related projects. This could be a solution to the uneven web presence of agencies. Solutions to the lack of capacity in some agencies to maintain a web presence, a factor that will continue to inhibit good communications between government and business, and government and citizens, may lie in wider use of open source software, and the involvement of volunteers in setting up and maintaining web sites. The development of a government portal is another matter. Once seen as the holy grail of e-government, portals have been to some extent superceded by the rapidly advancing capacities of general web search engines. A central authoritative site which lists agencies and links to them may be all that is needed. What is important, however, is that what appears on a government web site is professional in content and presentation. Relevant accurate and authoritative information on government sites, targeted at the needs of citizens is essential, and in some agencies web sites clearly need to be given a higher priority. There is certainly no room for spurious content on

an official government web site as was found in this study, and closer monitoring is needed. Web development is therefore an issue which the enhanced Government Communications and Information Office referred to below will need to take greater responsibility for.

Another unavoidable factor that risks hampering e-government development is the crossover of roles and responsibilities between ministers and agencies that makes coherent planning and implementation difficult. At the same time, this is an opportunity to achieve a level of coordination between agencies and programmes that larger jurisdictions would envy. A leading example is the high level of cooperation and data sharing between the Emergency Management Cook Islands (EMCI) unit of the Prime Minister's Office, Infrastructure Cook Islands (ICI), the Meteorological Service and other agencies (such as MFEM), in the area of disaster risk reduction, climate change, environmental management, and the use of GIS systems is exemplary, even though it would benefit from additional funding. A notable feature of these interconnected programmes is their involvement with and the support they receive from regional and international organisations. In areas where this need for a regional approach is not driving collaboration, there is less pressure for agencies to cooperate in the same way, and it has clearly been difficult for the government to take a whole-of-government approach to the use of ICTs, to impose standardisation of hardware, software, and applications, or adopt a unified e-government approach.

The role of international pressure and support has had a beneficial impact on some core aspects of government operations. It is a common phenomenon in developing countries to see strong pressure from neighbouring states and international organisations such as the IMF and the World Bank to ensure that functions which might impact on other countries meet international standards through the adoption of more advanced IT systems. Customs and border control is one such area, and in the Cook Islands New Zealand has intervened to assist in installing a customised its own integrated system. (Other countries in the Pacific use various [version] of the UNDP software ASYCUDA, which is made widely available and well-supported in developing countries.) Similarly, the Revenue Division in MFEM uses Data Torque software that is used in a number of other Pacific Island countries, and the Ministry is working with IMF and ADB on a cross government finance system. The use of ICTs in the collection of statistics (including health statistics) is also supported by international interests. But outside these core areas of government, ICT applications are lagging behind. Education would be one area that has found it difficult to full advantage of new technologies despite its close relationship with New Zealand. This may change as the impact of the national ICT Policy and Strategy Action Plan is felt. Health is another area where more international aid would be helpful although again New Zealand's input has been a major catalyst for effective ICT use, and Medtech is probably more than adequate for the size of the population.

However, the basic issue of bringing effective e-government to a tiny population dispersed over a vast area of ocean affects all areas of government. Critical to solutions to this problem is the proposed Universal Service Access objective in the new National ICT Policy, the intention to appoint a regulatory authority, and the role of the one telecom company, TCI. The impact of the sale of the 60% of shares in TCI which were owned by Spark (formerly TelecomNZ) in February 2015 to the newly formed Teleraro on the provision of telecommunications services to the outer islands remains

to be seen. The major shareholder in Teleraro, BlueSky Samoa is already familiar with working within a Universal Access Policy in Samoa, and the constraints that accompany that, and it may be unlikely to be expecting the excessive profits that TCI has made in the past. But Samoa does not have Cook Islands problems of such large ocean territory and so many islands with small populations. A lot will depend on the mechanisms set out in the National ICT Strategic Plan, the way the Universal Access Policy is structured, how soon it can be enacted, what powers the proposed regulator will have, whether the proposed public-private partnerships to deliver last-mile (or in this case last 1000-mile) connectivity, and whether tax relief for ICT for Pa Enea and health and education sectors will deliver the services expected.

Capacity remains a key issue, and it is good to see this highlighted in the National ICT Policy and the focus on both ICT education for citizens and communities, and training in ICT use for IT professionals. Cook Islands has other advantages in dealing with HR capacity issues. Although staff of long standing may not have the necessary skills and interest in pursuing an e-government agenda, many senior staff and some politicians returning with experience in Australia or New Zealand (especially in government) have higher expectations of the systems they are using, and the performance of their staff, and are slowly bringing changes. This capacity has the potential to be further exploited.

Good policy and well-targeted aid would appear to be the keys to successful adoption of ICTs in general and specifically in government. A strength of the Cook Islands current policy is the way everything is aligned to the National Policy for Sustainable Development, and the involvement of key cabinet members in the National Sustainable Development Commission. This ensures that all policy, and development projects take into account the fragile environment of the Cook Islands, and are aligned with the NSDP. It is a policy of vision, but at the same time realistic, with a sober assessment of challenges and a clear set of pathways forward.

The 2015 National ICT Policy has tried to maintain that key link with the NSDP, but does not really have the NSDP's clarity, vision and ownership. Its objectives are still very general, and the e-government component very basic. There is no sense of a 'pathway' by which objectives and strategies become prioritized and operationalised, and where aid funding should be sought. The Policy appears to assume responsibility for implementation of the Policy will lie with the ICT Division in the PMO without giving it a leadership role or acknowledging that much of the activity to date has been driven by the Ministry for Finance and Economic Management. What is needed is for a fully functional Government Communications and Information Office to be established that is resourced and staffed at a level to enable it to provide the vision and leadership necessary to take Cook Islands into the digital future with confidence and success. No e-government policy has been successfully implemented in any country, let alone in the Pacific, without this level of commitment. This will require a champion, either in government, or leading the GCIO, who understands both the potential and the challenges of e-government for Cook Islands, and has the determination to bring this transformation to the country. A Chief Government CIO is urgently required.

Returning to the expectations of the benefits of e-government articulated by Boase, cited at the beginning of this report,

- Increased access to government decision makers and to parliamentarians;

eGovernment – Cook Islands

- More local access to government through the internet;
- Increased participation in government by all;
- Increased efficiency in government operations;
- Enhanced opportunities for smart partnerships with civil society and the private sector;
- Legal recommendation and security over the networks. (Boase, 2009, p2)

These principles are all, to some extent reflected in the NICT Policy & Strategic Action Plan. In some agencies they are being realized. But these places are too few and the activity too uncoordinated. But that is largely where they remain at present — aspirations. The leadership of a Chief Government Communications and Information Officer will be essential to ensuring that these benefits are realized.

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Advisor, member of Telecommunications Advisory Committee)
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