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

Vanuatu Country report

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1.   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 Port Vila in February 2013 and May 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 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, which are expressed in various forms in the Government of Vanuatu's policies and strategies, furnish an appropriate framework for the

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[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.

investigation, and provide a set of performance measures by which progress towards an effective e-government program can be evaluated.

2.   Introduction
A.   The context

The Republic of Vanuatu (Ripablik blong Vanuatu) which became an independent state in 1980 after 74 years of joint 'Condominium' rule by Britain and France, is an archipelago of 83 islands of varying size and volcanic origin in the South Pacific, nearly 2000 kilometres off the north east coast of Australia. The indigenous inhabitants, ni-Vanuatu, represent over 98% of the total population, are Melanesian in origin and speak over 100 local languages. English, French, and the local pidgin language Bislama are the official languages. The population of the country at the time of the last census (2009) was 234,023 and was estimated to be approximately 267,000 in July 2014. The urban population, over 45,000 of whom are located in Port Vila on the island of Efate, with a further 13,000 in Luganville on Espiritu Santo, is estimated to be over 25% of the population, and that proportion is increasing. The republic is divided into six provinces: Malampa, Penama, Sanma (which includes the islands of Santo and Malo), Shefa (which includes the island of Efate and the Shepherd Islands), Tafea, and Torba. GDP per capita in 2014 is estimated by the IMF[2] at US$3,126 According to the WHO, traditional economic staples such as copra, cocoa and kava are not likely to sustain economic growth, but nor is the increasing dependence on tourism.

Vanuatu has a tropical climate; it is isolated, and has a geographically dispersed and largely rural population. There are several active volcanoes, and volcanic activity and earthquakes are common, leading on occasion to tsunami. Vanuatu is also affected by tropical cyclones, which cause major disasters on average every 10-15 years. These factors, plus the lack of a clear economic base for growth, mean that Vanuatu has all the classic problems of small island developing states trying to develop ICT infrastructure, and deploy ICT for development.

B.   ICTs in Vanuatu

At the time of independence, the privately owned Telecom Vanuatu Ltd (TVL), established in 1978, was the only telecommunications provider, and held a 20 year exclusive license under franchise from the government from 1992 until 2008, providing analogue, then digital and internet services. In 2007, with the encouragement of international bodies such as the World Bank, WSIS, ITU and InfoDev which had promulgated the goal of universal access and services for developing countries in order to enable them to fully participate in the Information Society, a Telecommunications Policy Statement was established. This sets out four guiding principles for the future of the industry:

   1.   Open and competitive markets;

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[2] IMF World Economic Outlook, 2014.

2. Modern, independent and proportionate regulation;
3. Non-discrimination and technology neutrality; and
4. Optimal use of scarce resources.

The market was deregulated in 2009, when the consolidated Telecommunications Act 2006 was amended to reflect this policy, and the Telecommunications and Radiocommunications Regulation Act 2009 was enacted. This act established the Telecommunications and Radiocommunications Regulator ('the Regulator'), an independent regulatory body that was required to independently 'regulate the sector, with the view of promoting confidence for investors and for the sector at large', and 'to effectively facilitate fair, transparent and equitable regulation, facilitation of effective and sustainable market competition, and provision of telecommunications services to unserved or under-served areas of the country.'[3] In anticipation of the Act, the 2007 Policy established an Interim Regulator, whose chief tasks were to implement the policy, facilitate the settlement agreement between TVL and the Vanuatu government whereby the government exchanged its 33.3% share in TVL, oversee the granting of a license to Digicel Vanuatu and other market entrants, coordinate the open license policy and the necessary interconnection agreement between TVL and Digicel, and assist with the preparation of the new Act. The Annual Report of the Regulator for 2014 notes that significant progress has been made in since 2007 and that the telecommunications sector was now functioning as an "emerging innovative and competitive market", contributing 5.3% to the country's GDP.[4]

Telecom services currently available in Vanuatu are provided by two leading service providers which offer fixed line, mobile broadband and internet services, Telecom Vanuatu Ltd (a subsidiary of Mauritius Telecom Ltd (TVL)), and Digicel Vanuatu Ltd, and a number of smaller companies which offer Internet services along with standard IT services and solutions (Telsat Broadband Ltd, Interchange Ltd, Wantok Network Ltd, Incite, Spim and Global Telecom Pacific Ltd.[5] The telecommunications statistics for 2014 show the success of the policy of deregulation under a strong regulatory regime and pro-active Universal Access Policy (outlined in section 2B below). However, the completion of the Southern Cross fibre optic cable connection with Fiji (also described below) has also had a significant impact on uptake of services, most notably on internet penetration. Previous reports indicate that under satellite connection alone mobile penetration went from less than 18% in 2008 to over 80% in 2011, while internet penetration remained at less than 10% (Cave, 2012). Statistics from a PIPP (2011) survey show that over 99% of households had access to a mobile phone, although only 80.7% (rising to 87.7% in urban areas) owned one, and that less than 5% of the population subscribed to a personal landline. This figure has appeared relatively stable over several years, rising only slightly in 2014.

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[3] Web site of the Vanuatu Telecommunications and Radiocommunications Regulator (TRR) (http://www.trr.vu)

[4] Vanuatu Telecommunications and Radiocommunications Regulator (TRR). Annual report 2014. (http://www.trr.vu/index.php/en/public-register/reports/annual-reports/2014

[5] (http://www.trr.vu)

Mobile subscriptions remain volatile. The most recent figures in the Regulator's 2014 Annual Report show that although in 2010 subscriptions for mobile services peaked at over 160,000, due to high demand in rural areas as services were rolled out, the number of registered mobile subscribers decreased in 2011 followed by a slight increase in 2012, a further drop [to around 125,000] in 2013, and a return in 2014 to a level close to that of 2010. (These fluctuations are described by the Regulator's Annual Report as "the market normalizing as more competition from the incumbent [TVL] occurred to compete against the new entrant [Digicel].")[6] The 2014 statistics however show significant increases in the number of mobile, fixed and internet subscribers compared with the previous year. Mobile subscriptions increased by 25% and fixed subscriptions by 4%, while internet service subscriptions increased by a very significant 84% compared to 2013, an increase directly attributed to the impact of the cable. Internet subscriptions have now reached 72,000 (27% of the population) although the number of people with access to the internet will be greater than this, as this figure includes subscriptions shared by families, communities, and schools.

However, in effect, broadband, and therefore internet access, still remains limited at present to Port Vila and Luganville, and in many remote and rural areas mobile subscribers "must walk to specific locations (into the sea, up hills) and stay there - just to be able to make/receive calls."(Box, 2014). Now that prices have fallen (by over 80% in just over 6 years according to the Government Chief Information Officer), and with the impetus of the Universal Access Policy and efforts to improve access for such communities being vigorously pursued by the Regulator, access to the internet is expected to gradually increase.

A number of Acts provide a supportive legislative framework which have helped in the development of the telecommunications sector, many of which predate the TRR Act, including the Broadcasting and Television Act [Cap 214]; the Copyright and Related Rights Act, the E Business Act (2000) and the E Business (Amendment) Act (2007).

3.   The Office of Government Chief Information Officer (OGCIO) and the Government's Strategic eGovernment Plan

The OGCIO has two main goals. The first is "to encourage the spread of ICTs in society to efficiently and effectively achieve an educated, healthy and wealthy Vanuatu," the second is to lead the iGov initiative, which is focused on world-class egovernment solutions and ICTs, which are intended "to bring better service delivery methods to all ministries and agencies, and ultimately to Vanuatu's citizens and businesses."[7]

The OGCIO was formed in 2011, some years after Vanuatu's first e-Government plan, which was developed in 2008. That first plan was to create a government IP communications network, the Government Broadband Network (GBN) funded

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[6] Vanuatu Telecommunications and Radiocommunications Regulator (TRR). Annual report 2014, p37. (http://www.trr.vu/index.php/en/public-register/reports/annual-reports/2014)
[7] OGCIO web site (http://www.ogcio.gov.vu)

through a low-interest loan from China, which linked government offices in the six provincial centres of Vanuatu, through voice, video and data. This is a private network, which uses fibre optic networks in Port Vila and Luganville (with a fibre optic link between the two, which the OGCIO hopes will extend to other more remote islands in the near future), and towers for transmission in other provincial centres.[8] The network has internet access but this is only available to government offices in order to protect the market for private operators, as part of an agreement negotiated by the Regulator, which resulted in the issuance of an exception licence to the network. (Under this licence potential users must apply for internet access and justify it in terms of their work.) Eventually it is hoped that schools and health centres would be able to join this network.

On completion of the GBN in 2011, a new plan, the Strategic eGovernment Plan (SEGP), frequently referred to as the iGov or integrated government plan, was developed. The plan was based on a number of key objectives that had been identified, within the overall goal of 'good governance', which is specifically defined in terms of effectiveness and efficiency in government operations and service delivery, affordable and convenient access to relevant government services, and full transparency and accountability in the management of public resources. These key objectives were to:

1. Develop systems and processes to ensure transparency, accountability and accessibility of government programs;
2. Optimize the use of the government's human and financial resources through ICT so as to maximize effective delivery of public goods and services and reduce costs;
3. Maximize the availability of public information and services through remote access;
4. Ensure effective balance between manual and automated processes in government systems through the use of ICT;
5. Ensure that all government office employees are trained in the use of ICT and integrate ICT in their daily work;
6. Ensure that all government institutions have ICT policies and programs incorporated into their short and long-term development plans;
7. Maximize the use of ICT to ensure corporate governance, transparency and compliance.

To help achieve these goals and objectives, the Office of the Government Chief Information Officer was created in December 2011, by moving the Chief Information Officer from Finance to the Prime Minister's Office, and establishing its six divisions (Program management, Planning and Policy, e-Government services, Infrastructure and technology, e-Enablement, and ICT Sector development).[9] These divisions were able to focus on a comprehensive applications portfolio that would run over the GBN network, and 2-5 year programme of infrastructure management, and institutional capacity building. In addition, the National ICT Services group, and the Government

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[8] The GBN was initially set up with Chinese equipment, but this is gradually being replaced with standard brands under the SOE scheme (see below). The network is gaining acceptability as this happens, and is more easily supported by local staff.

[9] The TRR was moved to from the Ministry of Infrastructure to the PM's Office at the same time.

ICT Officers Forum provided essential links between the OGCIO and ministries and agencies to ensure a coordinated approach was taken to the development of standards and applications, and to identify what support was needed. Although most ministries, apart from Police and Internal Affairs have their own ICT staff, the GCIO's office can support them at times of overload or in special tasks. It also assists in the creation of content for professional development which is made available via the intranet (e.g. how to access and disseminate market information in agriculture). ICT staff in ministries are required to consult with OGCIO about their projects (as well as comply with the new standard operating environment (or SOE – see below). International assistance (both from contracted advisors, and volunteers, e.g. US Peace Corps), is still welcomed, and is seen as a key part of building capacity. Their main task is to assist various sectors write their ICT Policies.

Two key initiatives followed the adoption of the 2011 SEGP and the establishment of the OGCIO: the National ICT Policy (outlined below), which was completed, with the help of international advisors[10] in 2013, and the construction of the submarine cable from Fiji to Vanuatu. Funded through a joint investment from the French telecommunications corporation Alcatel-Lucent and constructed by Interchange Ltd, Vanuatu, the cable was intended to replace the existing narrow bandwidth satellite connection with Hong Kong. Cable laying was complete by the end of 2013, and the system was ready for service in January 2014, providing a broadband internet connection for the GBN and the Vanuatu ICT market in general. The new cable system, which initially was able to carry 20Gps of data transfer, over 200 times Vanuatu's previous capacity, will ultimately be able to carry up to 1280Gps, which the OGCIO regards as more than sufficient for the foreseeable future. The enhanced capacity is expected to underpin rapid developments in areas such as e-healthcare, education, business and commerce, Government communications and tourism, and enable Vanuatu to further cement its position as a strategic multi-lingual e-business hub for the Pacific region.[11]

A key part of the OGCIO's responsibilities was also to set standards for ICT purchase, usage, upgrades, and disposal. This covers all hardware, software, applications, and other ICT-related items based on a standard operating environment (SOE)[12] intended to create a more efficient and integrated set of systems across government. The SOE has been developed alongside a government wide enterprise architecture, which by linking all ministries through the GBN fibre-network supports a virtualisation of server environments in order to maximize capacity. A Technical Advisory Group comprising CIOs in ministries has been involved in developing these standards to ensure that the new standards are compatible with legacy systems. Agencies are also encouraged to ensure that their web sites are compatible with mobile applications as they develop them, in line with the emerging m-Government roadmap (see below). The OGCIO has also identified a set of Public Value elements that will be realized though the SOE, the enterprise architecture and the standards under development. These elements are:

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[10] Notably ICT Policy Advisor Tomas Lamanauskas

[11] http://interchange.vu/benefits---for---vanuatu/

[12] See http://ogcio.gov.vu/ict---standards.html

government operational value, direct user (customer) value, government financial value, strategic/political value, and social (non-direct user/public) value.[13]

Across government, OGCIO staff report there has been a move towards open source software to counter the tendency of projects to stall as software licenses become too expensive to maintain after the end of a donor project. The OGCIO has a small base of programmers developing expertise in php, java script and Joomla (the open source software used for all government web sites which are supported on the OGCIO Windows-based server, although agencies are encouraged to develop the capability to manage their own web site development.) A number of systems critical to government operate effectively across government, e.g. the Finance system, managed by the Department of Finance and Treasury, and described by the GCIO as 'world class', and the Payroll system operated by the Public Service Commission (although this is in need of an upgrade). However, there are also many legacy custom-built systems created in agencies, often as part of aid or volunteer projects which are no longer fully utilized, for a variety of reasons. (An example is a species export monitoring system developed in the Department of Environment and Conservation, developed on the recommendation of an external consultant which never became operational after testing. The expert did not return to Vanuatu, and staff were reluctant to change their existing practice.) The new standards-based approach, with priorities carefully weighed, is intended to reduce the waste of effort such small projects can create. As the OGCIO establishes both its authority and its expertise, donors are more likely to ensure that OGCIO is both aware of and support their efforts within an agency, and has the capacity to support it after the project is completed. A further advantage of the leadership role of the OGCIO is that there is a general acceptance by both government and senior public service that the case for the economic and development benefits of ICT, and the liberalisation of mobile technology has been made and that new projects do not have to make an individual case based on these tenets. Following the principles of Rogers' Diffusion of Innovation theory, the OGCIO will sometimes pursue what the OGCIO described as 'low-hanging coconuts' to be able to demonstrate the benefits of an innovation, how it fits with local needs and practices, and help the message spread.

A. The National Information and Communication Technology Policy[14]

The National ICT Policy, dated December 2013 and launched in May 2014 at the National ICT Day together with the Universal Access Policy and the National Cybersecurity Policy, is strongly grounded in principles established by the United Nations, UNDP, World Bank, and regional agreements.[15] It is also closely aligned with the National Vision of "A Just, Educated, Healthy and Wealthy Vanuatu" to which it is seen as a major contributor.

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[13] Ditto

[14] Available at: http://ogcio.gov.vu/ogcio-policies.html

[15] e.g. the Pacific ICT Minister's Wellington Declaration of 2006, and the Framework for Action on ICT for Development in the Pacific (FAIDP) endorsed by the Pacific Island ICT Ministers' Tonga Declaration of 2010.

The policy identifies a number of priority areas:

- Access to ICTs in Education;
- Access to ICT infrastructure and devices;
- E-government;
- Integration of ICTs into sectoral policies;
- Building trust (mitigating risks and threats related to ICT development);
- Locally relevant content;
- Capacity building;
- Platform for multi-stakeholder and multi-sector coordination and collaboration.

Education is the only specific sector nominated, the rest of the policy focusing on national development. Education is chosen as the fastest way to upskill the entire community, a standalone project without a multitude of stakeholders with competing agendas and different capabilities, which can lead to failure; it also has high externalities, skills learned by students being shared among families.

Implementation of the policy, to commence within 3 months of the launch and be completed in 5 years, is the responsibility of the Prime Minister, who is also the Minister responsible for ICT and Telecommunications. The Prime Minister is supported in this responsibility by a multi-stakeholder National ICT Development Committee (which he chairs), the OGCIO, and the TRR. The priorities established in the policy are the outcome of an extensive survey of ministries and agencies, and consultation that included the private sector, NGOs and civil society. Out of this emerged a number of principles and approaches to ICT development that underpin the policy. These reflect a pragmatic approach which highlights the engagement of citizens and the private sector, embraces locally driven initiatives, fair and effective competition and enhancement of economies of scale (to counter the acknowledged limitations of the "challenging market conditions") that exist in Vanuatu. The pragmatic approach includes an analysis of the current state of technology, potential innovations, and the possibility of M-government (that is, interaction with government that takes advantage of mobile technology).

The policy also seeks to implement sustainable best-practice ICT governance aligned with sustainable development. The private sector is identified as having a role to play in ensuring sustainable investment, (the policy emphasizes the importance of not undermining the market), and extending ICTs to all sectors of society, including civil society, and the government tasks the private sector with adopting a 'long term' approach to value. The policy also has an international focus, embracing the principle of being a responsible member of the international and regional community, providing this does not conflict with the policy. Carefully reasoned and thoroughly referenced discussions support all major planks of the policy, including a section on the policy-making process itself. Discussion of the policy is welcomed as a means of enhancing democratic rule, and the views of all stakeholders are welcomed, notably views expressed via the Internet and on Social media.

Each of the priority areas is further explained in Annex A, and target outcomes and impacts identified in Annex B. Each priority is aligned with a set of (non-exhaustive) Strategies listed in Annex C, which sets out from 6 to over 20 key activities for each priority, noting who is responsible for its achievement and the tasks to be completed within the 5 year time frame of the policy. While the OGCIO and the TRR are primarily responsible for these, other ministries and agencies are frequently named as well. The policy provides a great deal of contextual information which has guided the development of the policy, and outlines challenges facing Vanuatu as well as achievements to date,[16] such as the fact that the use of ICT tools by the local population has been enhanced by the development of Bislama-based ICT tools, including a dictionary and a spelling tool, created as part of community/nongovernmental initiatives. While acknowledging it is not possible to include some important areas such as health, the productive sector and disaster management in the initial list of priority areas, the capacity-building focus of the policy is expected to lead to flow-on benefits for these areas.

The strategies/activities for the *e-Government* priority are mainly focused on the processes and coordination of activities in the sector, including the continuance of the Strategic E-Government Plan which has evolved into a new e-government roadmap, the iGov Technical Advisory Group, building ICT-related capacity in ministries and agencies, the Standard Operating Environment along with the Framework for Coordination of ICT Investments and Procurement, the comprehensive TRR strategy for sector management and meeting its Policy obligations, and an M-Government strategy and roadmap. The ongoing eGovernment strategy and roadmap appears to be largely laid out in the National ICT Policy and OGCIO's PPPM Plan described below. The M-government roadmap (also described below) is as yet only under consideration.

Thus, the areas above not included in the 2013 National ICT Policy are included in the OGCIO's Portfolio, Program and Project Management (PPPM) Plan, August 2013.[17] The PPPM Plan, which sets out to correct "the historic under-investment of the past 30 years",[18] lists both infrastructure and applications projects which are to be funded over the period 2012-17, and outlines the project management principles (based on the PMI) which should be followed. The list of applications comprises: a Web Portal Development project, a Resource Management system, a Lands and Survey Management and GIS, a Content Management Platform, a Tax and Revenue system, a National Citizen Registration system, a Statistics Management System, a Health Information System Platform, an Emergency and Disaster Management Information System and a Foreign Investor Management Information System.

The Vanuatu National Information and Communication Technology Policy has been widely recognised in the Pacific region, and by the Pacific Chapter of the Internet Society as "a model of practice that that will be very helpful to other Pacific nations

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[16] These challenges are common to SIDs in the adoption of ICTs- remoteness, tropical environments, small isolated communities, lack of infrastructure, climate-driven hazards, the high cost of telecommunications and low levels of income, education and ICT literacy.

[17] Available at: http://ogcio.gov.vu/ogcio-policies.html

[18] GCIO web site

who wish to develop their own ICT policies". Although the government of Vanuatu had skilled assistance from international ICT Advisors in the OGCIO, (funded by the World Bank and the Australian Government) whose input is evident, the policy alone would not drive development. The involvement and leadership of successive Prime Ministers[19], demanding that the Directors General of key agencies participate in the ICT policy and planning process, and themselves chairing key meetings, as well as the leadership and energy shown by the GCIO himself, are widely acknowledged as the critical success factors in the development and implementation of the Policy. A deliberate approach of "institutionalizing" the Policy and its strategies through agreements with other ministries and agencies is being used to ensure that the process is independent of specific individuals, and is built into the policy and strategies of individual ministries and agencies. A strength of the system, in the view of the OGCIO (and the Regulator), is the cooperative relationship with the Regulator, and the close working relationship between the OGCIO and the PM, "one of the best governance structures for ICT in the Pacific",[20] and the confidence of industry that the government will 'play fair'. It is hoped that this stable and forward-looking environment will generate business confidence and investment in Vanuatu.

Launched on the same day as the National ICT Policy, the National Cybersecurity Policy and the Universal Access Policy are seen as additional essential elements in the legislative and policy framework necessary to support both e-government and enhanced adoption of ICT by business and citizens. Supported by the Electronic Transactions Act (2000, amended 2010), and the E-Business Act (2000, amended 2007) the Cybersecurity Policy, overseen by a National Cybersecurity Committee, focuses on the development of essential organizational infrastructure for cybersecurity, minimum standards, the appropriate legal framework, capacity building and international cooperation.

The Intellectual Property Office in the Ministry of Trade, Industry, Commerce and Tourism is now revising the country's Intellectual Property legislation, but yet to be addressed are significant issues such as Privacy legislation, standards for data security, and plans for authorisation of online signatures and payments, all of which are also needed to complete the suite of legislation needed for a full e-commerce and e-government environment.

B.   The Universal Access Policy

The Universal Access policy, supported by the Telecommunications and Radiocommunications Regulation Act (2009), and the National ICT Policy, sets out minimum standards for telecommunications services, required levels of access, especially for schools, health facilities, and public offices, the policy around uniform prices, how the Regulator will ensure compliance, and administration of the UAP fund, which is funded through a levy on service providers (following initial seed funding

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[19] Sato Kilman (in office 26 June 2011 – 23 March 2013), Moana Carcasses (23 March 2013 – 15 May 2014) and Joe Natuman (15 May 2014 – to the present).

[20] Check source of this quote.

from the Australian Government). The required level of access is set at 98% of the population.

> "By 1 January 2018, 98 percent of the Vanuatu population shall have (and continue to have after this date), access to the following telecommunications services: voice; narrowband data services including text messaging; broadband internet services that shall enable download speed of at least 21Mbps and upload speed of least 12 Mbps."[21]

This ambitious target, which includes offering the same service to the most remote village as is obtained in Port Vila and Luganville, is considered by the Regulator to be achievable because of a number of factors he lists as: (1) a far-sighted policy, which has itself "created a multi-million dollar investment";[22] (2) a strong regulatory regime; and (3) a vision shared between all the chief stakeholders—the Prime Minister (as Minister of ICTs), the OGCIO and the Regulator. The new fibre network and the Vanuatu exchange point or VIX, to which all major licensees are now connected, are also seen as critical factors in achieving the goals of the UAP.

The Regulator notes that achieving 98% connectivity is essential if the e-government goals of the government are to be achieved, allowing citizens to communicate and transact online with key government agencies, and e-education and e-health initiatives to progress. He has taken steps to ensure that GIS data about where various cell-phone towers have been placed, and data about where populations centres are located, is openly available to help private service providers share the market without competing in some locations and failing to develop services for others. Similarly, he has ensured that the government network stops at the regional offices and that no service is offered to "end-users" at the retail end, and that the government does not attempt to interfere in any way in the very fragile market that the outer islands present. This policy, which is not spelled out in any official document, and the adoption of an open, neutral, transparent, fair and firm approach is seen as the key to securing universal access. It is highly dependent on the maintenance of good relations between the government, the Regulator and the industry, and on the ability of the government to secure the cooperation of industry to achieve national goals. By giving the Office of the Regulator its independence (noting that the TRR and OGCIO work cooperatively but independently of each other) along with broad but unspecified powers, and the authority to negotiate, it is suggested, more can be achieved than by spelling out how the market should operate in great detail (which is then open to challenge.)

Under the UAP, a 'Play or Pay' approach is provided for. There are three 'Players' identified through their UAP submission plans. They are Digicel, TVL, and Telsat. Those licensed telecom service providers that indicated that they wished to 'Pay' and not 'Play', or that failed to submit their UAP deployment plans, or their current rollout plans do not fit with or meet UAP requirements, are considered 'Payers' and have been charged a 4 percent levy. Levy invoices were issued to all 'Payers' for the levy period of 1st July 2014 to 30th June 2015, all levies being payable into the UAP Fund before

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[21] Universal Access Policy. Republic of Vanuatu, 2013.

[22] Interview with the Regulator, 25.5.14.

July 31st 2014. An annual assessment will be made by TRR as to whether a licencee is a Player' or a Payer'.[23]

C. Mobile government

In April 2014 the *Mobile Governance for Vanuatu – Strategy and Implementation Plan*[24] was published, in collaboration with the OGCIO. Based on the UN-based Mobile Governance for Development (MGOV4D) project, and co-funded by the Centre for Electronic Governance at UNU-IIST and the Commonwealth Secretariat, the plan is the final outcome of the project *Developing M-Governance Strategy for Vanuatu and m-Governance toolkit.* The plan includes a number of e-government initiatives, based on smart phones and tablets, and is seen as a blue-print for other Small Island Developing States in the region and elsewhere. A number of principles inform the plan, some of which echo principles set out in the National ICT Policy, e.g. fostering public-private sector partnerships, and some which are intended to address perceived weaknesses in the National ICT Policy, such as the omission of privacy and security standards, and any focus on local content. This is slightly puzzling since local content is one of the priorities noted in the policy, and the value of Bislama-based ICT tools is specifically mentioned in Annex B. Others are more specifically targeted at the capabilities of mobile technology, within the parameters of the National ICT Policy, such as helping farmers gain financial security through investment and savings schemes (presumably through online banking, although as noted elsewhere in this report, this is already being addressed by the financial sector).

As well as outlining policy, infrastructure, and capacity needs for m-government in some detail, the plan (or road-map as the government has begun to think of it) identifies some priority projects in eight so-called sectors (not all correlate to government sectors as used in Vanuatu): health, education, employment, home, civil matters, travel and tourism, social welfare, and transport. Up to 12 or more priorities are identified in each of these areas, many of which assume the existence of government policies, programs, and information systems that do not currently exist. Three projects are described in more detail, with high level business cases provided. The first is a Birth Registration service to provide authentication of a person or institution to register a birth, communication of that data to the Civil Registry system and dispatch of a birth certificate to the registering party. This would address the issue that only 38% of children are registered within one year of their birth, and ensure better compliance with the UN Convention of the Rights of the Child (1989). The second is a public weather service, weather updates, and 4-day forecasts provided to mobile devices twice a day. This is a low cost project that would capitalise on the existing public weather forecasting services of Vanuatu Meteo, extending the reach and improving reliability of access to some of the information already available on its web site. The third project is Collection of Health-related Data, including population data (birth, deaths, still births, suicides etc.) and health services activity such as hospital admissions and treatments, outpatient services, notifiable and other diseases. This would update the

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[23] Further information provided by the Regulator, 25.2.15

[24] T Janowski, International Institute for Software Technology, United Nations University, Macau. Available at: http://www.cto.int/media/research/projects/Strategy and Implementation Plan Report.pdf

process for collecting health data for the Vanuatu Health Information System which is currently collected manually, despite earlier attempts to automate the process. This project would extend the collection of data, provide an electronic platform for its capture and dissemination, and make it publicly available.

4. Central agencies of government

While all government agencies have access to basic office technologies, and are linked to the IFMIS for core accounting and HR functions, we looked for this report for programmes that demonstrated more advanced use of ICTs in government. This investigation was both at the level of core government functions, (such as treasury and finance, revenue, border control, the democratic process, the criminal justice sector, and the collection of national statistics) most of which are both well supported by international aid agencies such as UNDP, the IMF and the World Bank, and well handled, and also the general welfare systems that developing countries struggle with, and are less well supported—health, education, and community development. The central agencies are discussed in the following section.

A. The Ministry of Finance and Treasury

The Ministry of Finance and Treasury (formerly the Ministry of Finance and Economic Management) plays a central role in the administration of the Government of Vanuatu, being responsible for the annual budget, economic planning and reporting, centralised payroll and procurement, and audit of SOEs (such as Air Vanuatu, Airports Vanuatu, Vanuatu Post, Vanuatu Agricultural Development Bank, Vanuatu Tourism Office, and Vanuatu Livestock development) as well as regulatory bodies (including the Reserve Bank and the Telecommunications Regulator), and other institutions such as the Vanuatu National Provident Fund. It employs the financial management information system, Infor Smartstream, which was installed as part of the AusAid *Unfinished Drivers of Change in Vanuatu* project, and the Australian Government continues to support the system and the 24 hour helpdesk provided by Infor, although the Ministry is the owner of the system and its own IT unit is responsible for maintaining and upgrading it. The system is integrated with a number of ancillary modules, including HR/Payroll, and it is used by most government agencies and SOEs, officers in those agencies having direct access to the system for financial management, payroll, revenue, HR, donor and grant information, and project reporting. However, access is tightly controlled for security reasons and because the system is fairly complex and not regarded by staff as user friendly. Its strength rather lies in its use of a common data model across a range of functions, and its comprehensive reporting functions.

The system is not yet integrated with the Vanuatu Budget Management System (run on Excel), but when it is, it is hoped that this will create a virtual integrated financial management information system with an interface with the government's Prioritized Action Agenda (PAA), enabling it to function at a high level as a performance budgeting system allowing analysts to measure progress against national goals. However, feeder systems are used to incorporate summary data from the financial systems used in the Department of Customs and Inland Revenue, ASYCUDA, and the Customs and Taxes System, (CTS) used to administer VAT, as well as the land[lease]

title system, and revenue from various licenses. A recent report by the IMF's Pacific Financial Technical Assistance Centre (PFTAC) noted that the integrated virtual systems put in place by the ministry were compliant with the World Bank and US Joint Financial Management Improvement Plan criteria (consistent data classification, data processing, internal controls, and design). The report commented that "Vanuatu's IFMIS is one of the best PFM systems in the region, perhaps the best overall", and noted that "much of the system's success is owed to the active management of the system [by the ministry.]"[25] It also noted that the system is well-housed, in a well-equipped server centre with dedicated IT staff, and enjoys good support from 'elements' of the original development team. IT security and disaster recovery systems were praised and it was noted that as part of the government's egovernment network project the system would have off-site backup at the new data centre. The e-government plan for a faster more secure network was noted as significant given that the system is accessed by over 300 users at 70 sites via the existing GWAN (Government Wide Area Network). The report also notes that "eGovernment projects, particularly the government-to-government (G2G) components of eGovernment projects, should be viewed by Finance Ministries as opportunities to help guide and shape a Government's ICT infrastructure policies to better support government-wide integrated financial management functions."[26]

B.   Customs and border control

The Department of Customs and Inland Revenue (DCIR) is a standalone department (under the Minister of Finance but independent of the Ministry of Finance and Treasury) whose powers are set out in a number of Acts of Parliament, including *The Import Duties (Consolidation) Act (Cap 91), the Customs Act No.15 of 1999, the Customs Valuation Act No.8 of 1999, the Business License Act No.19, and the Value Added Tax Act No.12 of 1998*. The Department has two main databases: the UNCTAD (United Nations Conference on Trade and Development)'s customs data system ASYCUDA, and Data Torque's Revenue Management System (a robust, user-friendly package developed in Wellington, used in a number of Pacific Island countries), which handles most other revenue, i.e. VAT, as well as road taxes, business taxes, drivers' licenses, bus and taxi licenses, hotel taxes, and liquor licenses. Developed initially with the support of PFTAC, the DCIR has been using Data Torque's RMS since 1997, currently based on servers in Port Vila and Santo, which mutually back up data every 10 minutes. DCIR began an upgrade to RMS7 in 2010, which was originally expected to be completed in 2014. This new system combines tax and transport, using RMS's Transport Management System, and will eventually include a public website content management system, and by the end of the project (now going beyond 2014) online taxpayer systems for registration, tax returns, taxpayer enquiries, accounting, and e-payments. The company has a good relationship with the Vanuatu government, and believes that the system has 'led to significant revenue growth.' DCIR expressed

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[25] Joshi, Suhas and John Moore. IFMIS Systems in Pacific Countries – lessons learned. Pacific Financial Technical Assistance Centre, 2010
http://www.pftac.org/filemanager/files/PFM/IFMIS_PICspdf1.pdf
[26] Ditto

satisfaction with the upgrade and the degree of customisation afforded. The upgrade will commence with the biggest source of revenue, VAT.

ASYCUDA is a computerised customs management system which covers manifests and customs declarations, transit and suspense procedures[27] as well as accounting procedures, and generates trade data that can be used for economic analysis.[28] The system is deployed in over 90 countries. Vanuatu has been using ASYCUDA since 1999, when the implementation, but not the ongoing maintenance and use, was assisted by AusAid. Vanuatu DCIR is currently using the version ASYCUDA ++ (rather than the more recent version ASYCUDA World, deployed by Samoa, PNG and Solomon Islands). ASYCUDA uses all relevant international codes, while supporting customization to local needs, and also provides for electronic data interchange (EDI) between traders and customs, using EDIFACT. The process can be very speedy when necessary, and declarations for produce for export cleared within minutes. The system also takes account of exports and imports from partner countries in the Melanesian Spearhead Group (MSG) where only a small processing fee but no duty is paid.

Data extracted from the system is supplied to the Statistics, Trade, and Finance departments, as well as to any legitimate organisation that requests it. A current project is focused on allowing payment by EFTPOS (by credit card) at the ports (including airports) where most transactions take place, although cashiers in the office would also accept EFTPOS. Servers in Santo and Vila back up customs data every 20 minutes. The DCIR is also considering deploying virtual computing technology to extend the range of their services to users, and in-country cloud computing. The Department believes that it is a leading exponent of ICT in government both within Vanuatu and regionally. It has all necessary forms for its own business on its web site, (along with the forms that allow external parties to request summary data). It is proactive, furthermore, in thinking about how to improve services to business and citizens, with plans for payment at the border by EFTPOS, web-based online payments, and a 'single window' for quarantine and customs clearance - although plans for this last innovation are hampered by the fact that other agencies do not have the same level of ICT, and delays (of up to several days) are currently occurring there.

C.   The Central Bank

The Reserve Bank of Vanuatu, which is the central bank currently uses standard Microsoft Office software for internal management, and a manual system to manage its role as a Clearing House between the commercial banks. It uses the IMF's data system FRED for collecting and analysing the economic and financial data that is posted on its web site. The web site uses Joomla and is managed by a small internal committee. There are currently no plans to transfer this data to the new data centre being constructed. The Reserve Bank has been engaged in financial training since before Independence, and is trying to promote a culture of saving (and avoidance of loan sharks) among the local population. While it has no mandate per se to drive the

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[27] These are where duty is not charged because the goods are in transit or are essential to a manufacturing process destined for export. Either way the goods are not consumed in the country.

[28] ASYCUDA web site: http://www.asycuda.org/aboutas.asp

use of technology in the banking sector in Vanuatu, it is clear that both EFTPOS, and mobile banking (and payment systems) are enablers of financial inclusion, microfinance and microcredit, and the bank is keen to see these deployed in rural communities as well as urban centres. ICT is therefore regarded as a major issue at the Reserve Bank, because of its ability to reduce the constraints of distance both from the rest of the world, and within Vanuatu. The Reserve Bank has been working with the World Bank to secure funding and advice on legislation that would provide an enabling environment for full online banking systems, including bank to bank payments using SWIFT numbers. The commercial banks have already been allowed to introduce mobile banking programmes such as ANZ's goMoney (available since 2013) and the Vanuatu National Bank's EasyMoney.

The bank has also been working with the ADB on a Personal Security Services Act, which will enable small farmers to register movable assets (such as cattle), thus enhancing their ability to secure credit. The ultimate goal of the Financial Inclusion Taskforce is to lift the number of people with a bank account over 50%, and to ensure that financial education and financial literacy is included in the school curriculum. Vanuatu participates in the Pacific Financial Inclusion Project (PFIP) a Pacific-wide programme funded by the United Nations Capital Development Fund (UNCDF), European Union, Australia, New Zealand, and the UNDP. The programme aims to "add one million Pacific Islanders [in particular low-income and 50% women] to the formal financial sector by spearheading policy and regulatory initiatives, facilitating access to appropriate financial services, and delivery channels and by strengthening financial competencies and consumer empowerment." [29] Operating from the UNDP offices in Suva, the programme has provided funds to assist the Vanuatu National Bank improve communications with rural branches to support mobile banking. Vanuatu is represented in the PFIP by the Reserve Bank of Vanuatu, which held a workshop in 2012, following which a Taskforce including all the relevant banks, church representatives, and representatives of youth and women was formed to promote financial services in Vanuatu and increase the number of people with access to financial services, (in 2012 this was only 19% of the population).

D.   National statistics

Supported by the Secretariat of the Pacific Community (SPC) and the SPC Statistics for Development Section, the Vanuatu National Statistics Office has been using technology to manage its core business for some time. It collects and publishes data from a range of other core agencies (such as the Ministry of Education, Finance and Treasury, the Reserve Bank, the Health Information Service, the Ministry of Trade, Tourism, Commerce and Industry, and the Ministry of Justice and Social Welfare.) Some of this data is transferred electronically, e.g. imports and exports from the ASYCUDA system, to which the VNSO is linked, some by transfer of a spreadsheet (e.g. Education, Health). By contrast immigration data and departures are entered manually at VSNO (there is no electronic border control system for persons entering or leaving the country). This leads to significant delays in capturing up-to-date immigration data and visitor statistics. A system that will capture readable data (from

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[29] http://www.pfip.org/about/about-pfip/

passports and visas) at the border is proposed, but it is acknowledged that the project will need to be funded by an aid agency and supported by an international advisor. VNSO itself analyses much of the data it receives in order to produce the national statistics, and last year assisted the WHO to conduct a national survey on domestic health (although data had to be entered manually, and the data has not yet appeared online.) The VSNO maintains its own web site, on which much of this data is displayed, along with data from the current and previous censuses.

The last census was conducted in 2009, and the VNSO employed a widely used public domain software package, CSPro to analyse the data. Census data was collected via scannable census forms, and entered into a European database system using optical character recognition (the same company had provided the form). It was noted by the Chief Statistician that a considerable amount of data cleanup was still needed, and that OCR has about the same level of accuracy as manual data entry, but that the whole process was completed in about two years, significantly faster than when using the previous manual system. The data was then exported into CSPro for analysis (although CSPro can handle data collection, entry as well as analysis). Redatum Sp+, developed by the UN Statistics Division, was also used to interrogate large volumes of microdata that uses a hierarchical (geographical) structure down to the enumeration area or village without violating confidentiality. Redatum Sp+ supports excellent spatial data representation, and in the near future VNSO is planning to launch a GIS system using this and other open source software supplied by the SPC, (PopGIS2). This system will be able to produce a series of population maps of the country, as well as maps of education and health data. The VNSO also gets a high level of support from the Pacific Statistical IT Officers meetings, through which IT specialists and some SPC staff are able to assist with training. Vanuatu is considered to be more advanced than other countries in the region in its use of technology in census data collection and analysis, and is happy to assist in advising other Pacific countries.

The VNSO acknowledges that the linkage with other government agencies is now much more reliable and speedy, due to the new fibre network, which greatly improves data collection, and National Statistics Dataset programme (NSDS), developed with the assistance of the SPC Statistics for Development Office, includes plans for access to all Vanuatu civil databases (births and deaths in the Civil Registry, as well as crime, education and health), when all this data is deposited in the National Data Centre. While it is well known that some ministries do not want to share data in this way, the NSDS will only want part of their data for national statistics. The plan, developed with the support of the OGCIO, includes a strategy to get all the main stakeholders together, and the OGCIO's influence may be needed for it success.

E.   Civil Registry Database and other national identity systems

Vanuatu, as a member of the Secretariat of the Pacific Community (SPC), has undertaken to improve the collection of birth and death statistics under the Pacific Vital Statistics Action Plan (2011-2014), supported by partners of the Brisbane Accord Group (BAG). Vanuatu has taken an important step in establishing a national civil registration and vital statistics committee which consists of key stakeholders, including the Civil Registry Office, the Vanuatu National Statistic Office and the Ministry of

Health, to oversee an assessment of the Civil Registration and Vital Statistics system, as well as to develop a national plan in order to improve registration practices, particularly birth and death registration, in Vanuatu.[30] As part of this programme a mobile birth registration system piloted in 2010 resulted in registration of close to 17,000 children in Tafea Province, some 87 per cent of all children 0-18 years. The birth registration system simplifies the process by allowing birth registration information about a newborn baby to be entered into a preprogrammed mobile phone which sends the data to the Civil Registry database. This pilot is now being expanded across the country. However, ensuring that older children and all adults are included in the registry with no duplications presents major problems, and funding for a consultant to assist with this part of the project will be needed. Despite this, all existing records for births, deaths and marriages are now computerized, hospitals can enter births and deaths and citizens can request a birth certificate online.

It is not clear which other agencies might be able to make use of this central dataset. Immigration are planning an online ID system, but have no online information at the border, and send forms completed by incoming travelers directly to Statistics. This can take some months. According to the Electoral Office, plans for e-Voting are on hold until the Civil Registry System is complete. Only then, the Chief Justice has indicated, would it be possible to consider a mobile electronic voting system, and funds would need to be sought for an international advisor for the project. The OGCIO itself will be driving a process for innovation in Immigration. Ideally these should all be pulled together into one system. But a unified personal identity project of this magnitude that would include a National ID, and feed into the electoral system, would need the close cooperation of several agencies. It would need to be supported by funding from an agency such as World Bank, according to the OGCIO. It would also require privacy legislation to be developed and passed, and a good security system would need to be in place. This is a major issue for the OGCIO.

F. Parliament

There has been a consistent attempt to get the business of Parliament online to support democratic process, funded by a number of aid agencies and donors, including the French government. Through the Commonwealth Parliamentary Association a twinning programme has been set up to partner an Australian state parliament or the New Zealand Parliament with a specific Pacific country, the programme being overseen by the two national parliaments. Parliamentary staff from New Zealand and Queensland have, through this programme, been involved in mentoring staff in the Vanuatu Parliament and where appropriate have been helping them apply ICTs to support the business of Parliament and the democratic process.

There is only one Parliamentary ICT staff member, working within the Office of the Clerk of the House, and this one staffer has responsibility for managing both the ICT systems within the Parliament, and building the Parliamentary web site (in Joomla),

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[30] UNHCR: http://www.refworld.org/pdfid/51b829460.pdf

with some support from the OGCIO. The OGCIO is supplying all Members of Parliament with a tablet for use in the House, and the Debating Chamber has wireless internet access during sessions, which gives members access to email, but without a document management system this only provides access to the material on the Parliamentary web site, apart from documents that the individual chooses to collect. MPs also have pcs in their offices and are offered training in ICTs but not all take advantage of this. The OGCIO is planning to seek funds to install a document management system for the Parliament.

The website of the Vanuatu Parliament provides information about the parliament itself, and the Committee system, lists members and their contact information and provides links to key documents such as the Constitution, Standing Orders of Parliament, the Gazette, Bills and Acts. Bills are available online on the web site from 1998 up to 2012, and Acts and Subsidiary Legislation (Regulations and Rules) are normally available from 2007 on (as of July 2015 this site was under construction.) However, Acts (as Sessional Legislation) and Subsidiary Legislation are available from 1980 through to 2014 from the PacLII (the Pacific Islands Legal Information Institute) at the University of the South Pacific's Law Faculty, which is based in Port Vila.[31] Legislation for the previous year is provided at the beginning of each year by the State Law Office. The State Law Office, which includes the Solicitor General's office as well as the Parliamentary Counsel Office drafts Bills and has control over the Acts of the Vanuatu Parliament. It has its own internal database of online legislation, but this is not publicly available, Bills and Acts for the current year being available for purchase in print form only. A link to the PacLII web site is available under External Links on the Parliament web site (although no explanation is given of what this is, and there is no link to PacLII on the top menu tab 'Legislation' on the web site). The PacLII web site also holds electronic versions of historic legislation from the pre-independence era[32] which means that PacLII holds legislation related to and directly passed by Vanuatu from 1884-2014. Much of the legislation from 1980-2014 is also available in French.[33]

The record of the Vanuatu Parliament, Hansard, is a manual process, and only lists of sessions are on the web site. But a significant new development, the live streaming of Parliament, funded by ADECAL (the New Caledonian Economic Development Agency), is available when the House is sitting, and back files are now available on the web site. The quality and speed of the link varies, but the recently completed fibre network has improved this significantly. Statistics of use are kept and analysed by OGCIO; most use appears to be from people working in government offices. Any sessions of Parliament recorded prior to the live streaming system, such as video recordings of special occasions, are held in the Parliamentary Archives as analog audio/video files. A project to digitise these has been discussed but aid funds will be needed for the necessary equipment. Although digitisation of parliamentary systems and publications is inevitable over the next few years, for reasons of speed and

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[31] http://www.paclii.org/databases.html

[32] This includes New Hebrides Joint legislation from1909-1973, and Western Pacific Legislation (made by the Western Pacific High Commission) as it relates to Vanuatu.

[33] Information provided by Lenore Hamilton, PacLII

efficiency, there is no current intention to make material available online which has been traditionally sold as printed volumes (e.g. Hansard, the Journals of the House, and White papers) since these are a source of income. However, digitisation of other official documents related to Parliament is part of the National ICT Plan. The Parliamentary Library is planning to convert its existing online catalogue, currently available only to the librarian, to the open source product Koha to enable access from outside the library.

The Parliament web site focuses on describing the procedures and institutions of the Parliament, lists members (with summaries of their parliamentary careers and parliamentary phone number, but no email address) and lists the membership of the Parliamentary Committees. Bills before Parliament are accessible on the web site, and Acts, but dates when the House is sitting are not listed. Since there is already an aid programme in place to help develop Pacific parliaments, it would be sensible to take advantage of the opportunity to work with the staff of the Parliament of the State of Queensland to greatly enhance public access to Parliament through the web site, and enhance the access of members to information, but this would probably require an additional staff member (or other staff members to take on some additional responsibilities) and some leadership from within the Parliament itself.

G.   The Justice sector

According to its web site

> "The Ministry of Justice and Community Services (MJCS) is responsible for, or provides support to, a number of agencies within the justice system: the courts (Supreme, Magistrates, Island Courts), the tribunals, the correctional centres, child rights, family protection, disability advocacy and services, empowerment of women, and public prosecution and defence services as well as legal advice to government."[34]

All available legal information for Vanuatu is accessible online at the PacLII web site. This includes: Consolidated Legislation of the Republic of Vanuatu (to 2006) and Sessional Legislation from 1980 through to 2014, in both English and French, as noted above; Case reports from the Magistrates Court, the Supreme Court and the Court of Appeal (in English); Case reports from the Island courts in English and Bislama; *Décisions du Tribunal Mixte des Nouvelles Hébrides;* the Constitution (in English and French) and any relevant United Kingdom legislation for Vanuatu that has not yet been repealed. These case reports are indexed by year and by Decision, and are searchable by name. The Supreme Court in particular has in place systems for collation and regular electronic transfer of its own cases and Appeal Court cases, to facilitate access. In addition, the PacLII site has brief descriptions of the Vanuatu court system (including a report on *The Relationship between the Kastom and State Justice Systems*) and rules for various procedures and courts, the Ombudsman's reports for 1996 to 2012, (indexed by title).[35]

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[34] http://www.mjcs.gov.vu

[35] All these are available under the tab 'Other Materials'

The Ministry of Justice and Community Services web site explains that it only lists under Publications information that is not already provided on the PacLII site (although this notice is not very prominent.) The Annual Report of the Ministry for 2013 is the first to report on the sector's progress against government priorities as an integrated justice and community services sector[36] and the first available online. Reports for other aspects of the Ministry's work are also available on the web site, along with more recent policies (e.g. the National Disability Policy and Plan of Action 2008-15, the Mental Health Policy and Plan 2009-15, and the Justice and Community Services Sector Strategy). A library of reports on research undertaken in the sector and other relevant documents is also available on the web site. This includes research on social issues and reports from the Census, the Pacific Institute for Public Policy (PIPP) etc. A database on the appointment to and/or election of women to national and provincial governing bodies (including the Parliament, where there are currently no women members), and statutory bodies is also maintained by the Ministry.

There are a number of other proprietary systems being developed or in place that are expected to enhance the efficiency of the Justice sector in Vanuatu. The Vanuatu Courts Division within the Ministry is currently implementing a Courts Management Systems, supplied by LexisNexis, for the Supreme Courts and Magistrates Courts. Funded by Australia through the Police and Justice Support Program in Vanuatu, the LexisVisualFiles system will replace most existing manual processes including assigning and scheduling cases and producing orders and judgments; it includes a document management repository where users can draft, view and save documents and emails and delivers a wide number of reports including cases, and financial information. Along with the State Law Office, supported by the OGCIO, the Courts Division is working with LexisNexis to develop a customised case management system and templates for documents such as Arrest Warrants and Notices of Conference.

The State Prosecutor's Department uses a case tracking system built by the OGCIO, which is being adapted for use by the Public Prosecutor's office. The Department of Correctional Services, which was formerly part of the Vanuatu Police Force, has since 2006 been established as a separate, autonomous entity, which also administers probation services. Decisions of the Vanuatu Community Parole Board are available on the PacLII web site from 2012, to enable the Board "to record its decisions in writing, maintain a register of its decisions and to make its decisions available as a matter of public record" as required by the Correctional Services Act 2006 (Section 58(g). The Department of Corrections Services uses a Document Management System (Saperion), already in use at Lands, and the Vanuatu Police Force, and being installed at Finance as part of a Whole of Government DMS solution, although, as noted below, (under Lands), alternative solutions to this are being considered to reduce the cost of using proprietary software.

As part of an overall strengthening project being conducted with the assistance of NZAid and the NZ Department of Corrections, the Vanuatu Department of Correctional Services has also been developing a system for tracking convicted

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[36] http://www.mjcs.gov.vu/images/reporting/Annual_Report_2013.pdf

criminals. It holds basic data on each individual, when they are due for parole, and the terms of parole etc. As Correctional Services develops more community sentencing and rehabilitation programmes it will include data on such initiatives, and this will form the basis of a full reporting system. It is noted that this information system will not necessarily capture data about correctional services and prisons in the provinces, only convictions in town centres, and higher courts.

H.   Lands

The Ministry of Lands and Natural Resources has several sections: Lands (which includes Lands Survey, Lands Management, and the Lands Registry); a Geology and Mines department, which also includes Water Resources and links to the Geohazards Observatory; and the Environment section. Ownership of custom land in Vanuatu is determined by the Namakal, or local council of chiefs, and under the Custom Land Management Act 2013 must be recorded in writing and filed with the National Coordinator in the Customary Land Management Office in the Ministry of Justice. The leasing of land, by which land ceases to be under the control of Custom Owner(s) in rural areas and by the Government in urban areas for a period of 3 to 75 years, is overseen by the Department of Lands. [37] The Land Lease Registry holds official documents that record legal interests over a plot of land, the type of land, names of the lessor(s) and lessee(s), any mortgage on the land or easements, encumbrances or concerns, and any transfer of the lease. It does not list any unleased custom land, and registering land in the Land Lease Register only temporarily removes control from the custom owner for the duration of the lease; in some cases special conditions such as access to the land for hunting, fishing, and sites of customary importance may be noted in the lease. [38] The Register, a repository of scanned documents (including current applications) that supports basic search and tracking functions for documentation, contains more than 7000 leases.

The Land Registry and associated land sector reforms (such as the Custom Land Management Act 2013, the Custom Land Management (Amendment) Act 2014 and the Land Reform (Amendment) Acts of 2013 and 2014) are part of the Australian Government funded Vanuatu Land Program (formerly the Mama Graon Vanuatu Land Program) aimed at improving the administration of both customary and lease land through better information systems. As part of this project a new Title Information System which holds electronic records of all existing leased land titles and an associated Documents Tracking System replace an earlier information system designed by the ICT Unit of the Lands Department; the new system has reduced registration times for new lease applications to two weeks. (Pre-independence land records, in paper format, have been transferred to the new National Archives building.) Other applications and databases established as part of this project include an eValuation system, and a Valuation Rates system (which automatically calculates

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[37] A body which has been criticized for awarding its own members substantial tracts of land with commercial potential (see http://vanuatudaily.wordpress.com/2012/10/17/land---management--and---planning---committee---gives---itself---cheap---land)

[38] Ministry of Lands and Natural Resources website. It should be noted that the transfer of custom lands to the landlease system is still controversial. This paper deals only with the system that records approved leases.

property taxes/municipal rates based on Valuation Zones), an eSurvey system, an ePlanning system, as well as a Saperion Enterprise Content Management System (which digitally archives all of the Department of Land's documents). The former Customary Land Tribunal, which has been moved to the Ministry of Justice as the Customary Land Management Office, also makes use of the Land Register.

Land records are also linked to the Lands Survey Department's GIS system and a cadastral data set jointly created by the Lease Survey Unit (which does not include custom land), the Mapping and Cartography Unit, and the ICT Unit, using a CAD system. The GIS system, which has been developed over about 10 years, uses satellite imagery, and collects data over time, some images being as early as the 1990s. GIS systems are used in a number of agencies, although most develop their systems independently, and data from the various systems, for example, on the number of villages, varies quite a lot. There is a cross agency GIS User Group, to which Lands, Statistics, Forestry, Geology and Mines belong, which could possibly resolve some of this variation, but the User Group is not very active and a view was expressed that it "lacks leadership".

The Ministry of Lands also contributes to mapping projects run by SOPAC (the Applied Geoscience and Technical Division of the SPC). The Ministry works closely with SOPAC, which supplies technical support for GIS and data management, runs regular workshops, keeps partners informed through the STAR network, and maintains a virtual library which members can access.

The Department of Mines, Geology and Water Resources within the Ministry has been collaborating with UNICEF and the global Not-for-profit foundation AVCO to set up a national water, sanitation and hygiene database (WASH), which uses a set of mobile-based data and asset management tools developed by AVCO. The database and data capture tools to map all water systems (water supply and using their GPS coordinates, and then make use of AVCO's FLOW system to monitor and record its status, noting where repairs are needed. AVCO Flow can conduct field surveys in any local language, submit data instantly and make real-time reports available through the Cloud. Data is maintained to the international IATI (Aid Transparency Initiative) XML standard. Training and support is provided by AVCO as part of the aid project; NGOs such as Red Cross are included along with the National Statistics Office, and the Public Works Department, and the baseline data captured so far, which through the FLOW system can be peer-reviewed at source, is considered to be an excellent basis for managing assets within the department, and for ongoing monitoring.[39] As the AVCO staff report, "absence of data is a serious concern in the region", and this new access data brings a new level of accountability about government assets and the management of resources.

I.   Meteorology and Geohazards

The Vanuatu Meteorology and Geo-Hazards Department, part of the Ministry for

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[39] See reports at: http:avko.org/blog/open-data-and-the-aid-boom in-the-Pacific-part-i and http:avko.org/blog/open-data-and-the-aid-boom in-the-Pacific-part-ii

Climate Change Adaptation, Meteorology, Geo-Hazards, Energy, Environment and Disaster Management, at the time of the study, was established in April 2013. Both Meteorological services and the Geohazards Observatory run independent web sites which provide comprehensive information and forecasts/predictions about weather, volcanoes, earthquakes and tsunamis. Both are high tech units, well supported by the international organisations which are essential to the kind of data that is needed for their core tasks, and staffed by ni-Vanuatu and advisors with relevant technical and scientific qualifications. They are among the earlier users of the government network, using it to transmit to and from the regional centres which are crucial to their network, and have been well supported in this endeavor by the OGCIO. This high level two-way connectivity enables emergency warnings to be coordinated and activated from Port Vila, and emergency situations to be well monitored. There is a programme in place to automate as much as possible of this data transmission in the coming year. The department is well-supported by GNS Science in New Zealand, its major partnership, and by the School of Geography, Environment and Earth Sciences at Victoria University of Wellington. GNS has assisted in the training of staff, setting up and maintaining equipment, the observation and transmission of data, and the management and analysis of this data. This collaboration is of immediate benefit in terms of increasing the accuracy of disaster prediction, but is also helping long term with global and regional research into meterology, climate change, and geo-physics.

Vanuatu Meteo's website provides daily forecasts for the 6 provinces (these are updated regularly throughout the day and include maximum and minimum temperatures) and 7-day forecasts for the main centre in each province. Sunrise and sunset timetables are provided for the same main centres, as well as tide timetables for Port Vila. The tropical cyclone outlook is also updated daily, and tsunami warnings (provided by the Geohazards Observatory) are also noted on the site. Marine and Aviation and long term forecasts are also available, along with satellite maps, the rainfall outlook and any necessary flood warning.

Basic climate data is collected from eight operational synoptic sites which collect data from across a wide region simultaneously, and is entered into a database for analysis. The database uses Climsoft, free software provided by the World Meteorological Organisation of which Vanuatu (along with all other PICs) is a member. Compliance with WMO data collection and reporting standards is rigorously maintained. This membership allows Vanuatu to participate in a Regional Basic Synoptic Network which provides data from other systems to increase the accuracy of forecasts. It is also able to participate in a wide range of other WMO programmes, which both build local capacity and enhance regional data collection on a wide range of climate and environmental issues. Climate change data and ENSO (El Niño and La Niña events) is also captured and exchanged with international partners. Vanuatu Meteo is also involved in promoting local awareness of climate and climate change and has educational resources on its web site for download.

The Vanuatu Geohazards Observatory website reports seismic and volcanic activity in the region, based on data gathered from 15 seismic stations and monitoring posts. In partnership with GNS New Zealand, the Hawaii Institute of Geophysics and Planetology, the US Geological Survey and the Pacific Tsunami Warning Center, it

contributes data and shares in global networks of data monitoring seismic and volcanic activity as well as satellite data on volcanic hotspots. Its educational resources available on the website, include posters explaining Vanuatu's geophysical makeup and the science underpinning the work of the unit, and links to useful international web sites with news and information about volcanology, geophysics and other volcanoes.

Dissemination of volcanic and tsunami alerts, and cyclone warnings to some of the communities which most need it has been greatly enhanced by the deregulation of the telecommunications sector, and the UAP, which have advanced the extension of telecommunication services to the distribution of SMS messages to provide warnings even if the full forecasting/early warning system available on the Meteo and Geohazard web sites are not seen. This is discussed further below.

J.   J. National Disaster Management Office

The NDMO is part of the Ministry for Climate Change Adaptation, Meteorology, Geo-Hazards, Energy, Environment and Disaster Management, and is responsible for coordinating Vanuatu's disaster risk management activities, for which the country receives significant international support due to its vulnerability to climate change and natural disasters. It is also part of a number of international agreements such as the Hyogo Framework for Action: Building the Resilience of Nations and Communities to Disasters and the Disaster Risk Reduction and Disaster Management Regional Framework for Action, 2005-2015 which provide guiding principles for developing a holistic, whole-of-country approach to disaster risk reduction and disaster management. The Vanuatu Government has also made a commitment under the Pacific Plan to operationalise the Disaster Risk Reduction and Disaster Management Regional Framework for Action, 2005-2015.[40]

The NDMO co-chairs (with VGMD) the National Advisory Board on Climate Change and Disaster Risk Reduction (NAB), which includes senior level representatives of all relevant government agencies. Its web site is still under construction, but essential alerts are disseminated on the web site of Meteo and the Geohazards Observatory. The best way to reach the largest number of affected populations with emergency warnings is through basic mobile technology, and the DMO has reached agreement, with the assistance of the Regulator, to use the number 166 for two-way SMS messaging. Through an agreement with the telecommunications industry the DMO can get urgent messages out to all mobile phone subscribers in a region about potential hazards, such as the strength and likely path of an approaching cyclone. This is supplemented by radio bulletins but reception in many remote areas is poor, especially during the day, and SMS technology has the potential to reach more people as long as the power lasts and the towers stand. When Cyclone Lusi struck in March 2014 over 21,000 texts were sent, and the NDMO believes that without the system there would have been considerably more loss of life than the 10 who died. This view was reiterated after the even more devastating cyclone Pam in March 2015, when several commentators

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[40] Disaster Risk Reduction And Disaster Management National Action Plan (2006 - 2016): http://ict.sopac.org/VirLib/ER0083.pdf

credited the use of SMS messaging with a major role in keeping the death toll to the unconfirmed figure of 16.[41]

The NDMO has been working with partners within Vanuatu (NGOs, especially the Red Cross, local civil society organisations, and the private sector) to install equipment, and backup systems for emergency situations, and these partners are also assisting with training in remote outposts in order to ensure equipment is properly maintained. This process worked well during the recent cyclones, coordination of electronic (and personal) communication with the Meteorological Service and these outposts using mobile and HF communication was good. There is an ongoing programme of evaluation to identify lessons to be learned, and from this data a database is being created that will help improve coordination of activities even further in future events. For long term programmes for risk management and reduction, especially the National Climate Change Strategy, the NDMO has a number of international sponsors and partners which include UNDP, SOPAC, Australia, the EU, World Bank, USAid, as well as France, NZ and China. As part of its long term programmes, the NDMO is working with key government agencies in a cluster system, (Logistics, Lands, Agriculture, Education, Health Public works and Protection (which involves Law and Justice)) based on the UNDP sector categories. As the lead agency it can call on all these other sectors in both emergencies and to address climate change. The NDMO and the Red Cross are members of all sectors for this purpose.

5. Social and welfare government agencies
A. Education

Education in Vanuatu is nominally 'free', and compulsory for children aged from 6 12, but school attendance is reported to be among the lowest in the Pacific. Primary and secondary schools charge fees for tuition, textbooks, boarding and other services, and widespread rural poverty, physical isolation, and the need for children to contribute to family income can prevent many children from attending school. Although secondary education provided by both the state and church groups is available in all provinces and in Port Vila, only 25% of children progress from primary to secondary school, and only 73% complete primary school. Despite relatively high levels of expenditure on education by world standards (28% of government expenditure in 2008) poor teacher quality, lack of training and absenteeism impact on educational outcomes.[42] The current Minister of Education is committed to better use of ICTs in education, and the initiatives which are part of the National ICT plan.

The ICT Unit at the Ministry of Education is responsible for the Vanuatu Education Management Information System (VEMIS), which contains information from the paper-based Annual School Census, distributed and collected by Provincial Education Offices, and returned to the Ministry for entry into the system. VEMIS covers every

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[41] http://www.abc.net.au/news/2015-04-01/explainer3a-why-was-the-vanuatu-death-toll-from-cyclonepam-so/6363970

[42] ICDE. Country profiles. Vanuatu.
(http://www.icde.org/projects/regulatory_frameworks_for_distance_education/country_profiles/vanuatu/education_system/)

Early Childhood Education centre, every primary school and every secondary school in Vanuatu, and more recently has included examination results and post-secondary education and training. VEMIS also contains financial information from schools and work is on-going to improve the quality and coverage of this information to align school income, (including that allocated to primary schools through the school grants scheme), with expenditure. The Vanuatu Standardised Test of Achievement (VANSTA) examination results are also incorporated into VEMIS. The statistical information from VEMIS is reported in detail in the Ministry's Annual Statistical Report, and used to measure progress against the Vanuatu Education Roadmap (VERM) which sets targets for school enrolment and progression.

Schools in Port Vila and other urban centres where incomes are higher can often have quite good access to ICTs; parents familiar with computer technology, and often educated overseas expect such facilities. Parents contribute funds and expertise to ICT programmes in such schools although even this can be an unreliable resource when children move on and no teacher carries on the ICT initiative begun by their parent. In rural areas where internet access and even electricity may be unavailable the educational benefits of ICT are not accessible. So, as in many other Pacific island countries, consistent use of ICTs in education, and the inclusion of training in the use of ICTs, has not been part of the educational programme, even at secondary or tertiary level. A 2005 report by the ICT Capacity Building at USP Project on the use of ICTs in education in the Pacific noted that while the Vanuatu Ministry of Education had ICT standards, computers in schools were used mainly for administrative purposes, only one school taught basic computing, and that concerns about cost, maintenance, support and overall lack of capacity were inhibiting any growth in ICT use in schools.

But change was coming, albeit slowly. Vanuatu has been participating in a number of ICT in education projects, including the SPC/ITU One Laptop per Pacific Child programme, and was included in a Commonwealth of Learning project *Classrooms without Walls*, which uses mobile technology which does not require internet access. In this project a tablet is used as a server, supplemented with a compact wireless router and a battery pack. This enables the tablet, capable of hosting apps and interactive learning materials, [43] to broadcast to its own local network, no internet connection or electricity being required. A further pilot project has been trialing interactive whiteboards which can transmit what is written to a pc or printer. Other Commonwealth of Learning resources, available on their web site are found useful for teacher training and classroom resources.

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[43] See Commonwealth of Learning at: http://www.col.org/blog/Lists/Posts/Post.aspx?ID=169   With these devices learners can interact with educational content hosted on the server's Moodle, WordPress or Canvas applications using their own tablets or tablets supplied. With the cost of tablets dropping dramatically, COL reports, a configuration consisting of a tablet, wireless router and battery pack can be bundled for just under US$150, bringing low-end laptops within the reach of masses of learners and a new paradigm in IT that can support learning for development among the most marginalised and disconnected communities.

To capitalise on these pilot programmes, and prompted by a desire to see more equity in the education system, the Ministry successfully lobbied the OGCIO to prioritise ICT for education in the National ICT plan, such that education is now a priority ICT project for the government and the one sector that was included (and indeed headed) the national ICT priorities, meeting critical criteria such as 'giving impetus to socioeconomic development that would not be available otherwise', and producing a significant impact on socio-economic development.' As the National ICT Policy notes "Importantly, virtually all relevant stakeholders, including the Ministry of Education, school administrations, provincial education officers and community representatives, are in a broad agreement that schools are well placed to serve community needs for access to ICTs by becoming Community Learning, Information and Communication Centres. In recognition of the importance of ICTs in the education sector and a role that this sector could play in serving ICT needs of the population, the OGCIO and the Ministry of Education signed a Memorandum of Understanding, outlining a comprehensive framework for collaboration in this regard."

In 2013, the TRR, in partnership with the Ministry of Education organized a series of public debates on ICTs in education, designed to promote awareness of the potential of ICTs among students and the general public. The TRR also managed the successful telecentre pilot project, a launched at Rensarie on Malekula in November 2011 as part of the government's Universal Access Project to implement access to telecommunications services in areas not adequately served by existing service providers. The Rensarie Telecentre, comprising an Australian funded small solar powered building housing ICT computers with internet access, printers and audio visual equipment, is monitored and managed by TRR which gave a licence exception to Rensarie College allowing it to provide public access to the facility. The centre has successfully provided an internet connection to the local health centre, opportunities for schools, and ICT training to over 100 people from the local community, including the agricultural sector. Now that the project has been concluded, the licence exception has been extended, provided that the College does not offer telecommunication services beyond the agreed and existing connections - to the health centre, schools, and the immediate Rensarie community. This type of pilot will not be utilized again but much experience has been gained and is shaping the way TRR is now implementing UAP though new pilot projects. The National ICT Policy describes the outcomes for the school as "remarkable", noting that "a 55% increase in students' pass rate from year 12 to year 13 was reported in Rensarie following provision of the Internet to Rensarie College."

Following a nationwide process and call for applications, 22 schools have been selected from over 300 applicants to receive computer equipment under a new UAP implementation approach, funded by the Australian Government's Governance for Growth programme. The programme, administered by the TRR as part of implementation of the government's Universal Access Program (UAP) will reach schools and communities in all six provinces, as a first step towards the governments' goal of ensuring that 98% of the population will have access to broadband internet by the beginning of 2018. Fifteen schools will receive Computer Labs and Community Centres with Internet Access (the CLICC program building on the success of the Rensarie project); seven schools will receive tablets in a pilot program designed to

pioneer the use of low-power, low-cost computer tablets in rural and remote schools; and three rural communities will be provided with Internet services as part the Internet Café Support, or ICS program which provides grants to private sector operators who want to provide commercial internet access to their local community. All three programs will be managed by the TRR. Training of school principals has begun.

ICT training is not yet included in the school curriculum, or in teacher training programmes. Most in-country technical training is provided by CNS (Computer and Network Services), a private company founded in 1995 by a ni-Vanuatu, with an international staff and offices in Port Vila and Luganville. Programmes offered by CNS (through its subsidiary Edwards Computer Foundation) include short introductory courses on standard MS Office software, course on advanced MS products, and more technical courses in hardware and network engineering. The company also offers a suite of courses available to primary and secondary schools, as well as out of school training for children, and online courses for all education levels. Qualifications offered include Certificates, Diplomas and Advance Diplomas, but the company does not seem to be affiliated with any accredited educational institution.[44] A number of young people in Vanuatu are funded by Aid agencies and the governments of Australia, New Zealand and France to undertake computing programmes overseas, but many informants reported that there is still a capacity gap that is holding back development.

B.   Health

The Vanuatu Health System faces a number of challenges: it lacks money (its share of the government budget is usually around 3%), the Ministry is considered highly politicized, and there is a shortage of medicines and trained personnel, and the standard of health facilities in both the referral and regional hospitals and in clinics and aid posts is below acceptable standards, even for a small developing country. However, in the past decade there has been an improvement in health outcomes. Between 1990 and 2011 the under-5 mortality rate dropped by almost two-thirds, from 39 to 17 per 1000 live births; and malaria cases have dropped by 80% since 2003 with no deaths from malaria being recorded since 2011.[45] Yet the same report notes that substantial service delivery challenges and equity issues remain, pointing to low immunisation rates and poor maternal health services in the more remote provinces.

The Ministry of Health in Vanuatu is not a significant user of ICTs and although 'Policy and strategy for enhancing the delivery of health services with ICT' is included in priorities in Annex A to the National ICT Policy, it is evidently not a high priority within the sector. This is partly because of the unreliability of power outside Port Vila and Santo, and partly because there are so many other higher priorities. That said, the five operational hospitals in the country[45] do have computers, despite the irregularity

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[44] Somewhat bizarrely, the Quality Management System statement on the site appears to be an exact copy that of the University of Notre Dame, in Western Australia, and refers to "statutory obligations and regulatory requirements in higher education", a "clear alignment with the University's strategic directions and priority", and "the communities served by the University". [45] http://aid.dfat.gov.au/countries/pacific/vanuatu/Pages/saving-lives.aspx

[45] There is a 6th hospital recently constructed by Japanese aid funds which has not yet become operational.

of the power supply, and the hospital in Port Vila has a stand-by generator that ensures a 24/7 power supply. In some areas laptops (and increasingly tablets) can be used when there is a power outage. Solar power can also be used when necessary, for example in a major Australian-funded Malaria programme solar power is used to supply critical equipment (such as microscopes and sterilisers) during power outages.

While most aid money goes directly into health care (for basic medical care, malaria control or personnel development) a recent Australian aid project was set up to develop an electronic health infrastructure in Vanuatu that would link all health facilities, including approximately 30 or more clinics, 100 dispensaries and over 230 aid posts. These would then have access to email, continuing medical education on the POHLN web site,[46] and would be able to capture health data on a health information form, and email this back through the system to the Health Information Service. But the project has been foundering because of the difficulty of getting computers to all health facilities let alone maintain them and ensure connectivity. A further barrier is lack of interest from health workers. While younger nurses trained in Port Vila who have had access to ICT have expectations of using technology in the work place and have their own laptops and smart phones, the majority of the work force, which is in rural clinics, dispensaries and aid posts, is both older and untrained, and at times unpaid. POHLN and the Public Service Commission do run courses on computing in health, and some health workers attend these if they can. Doctors also generally have good basic computing skills, particularly those from overseas paid by donor agencies, but these skills are not always applied to professional purposes, and most are not skilled at seeking clinical information to inform practice. There are no programmes to link doctors, or encourage them to share knowledge, although some do seek advice from local or overseas specialists.

The perception has been growing in the sector that mobile technology has the potential to overcome some of the problems encountered in trying to maintain a physical network to provincial health centres through the original Chinese fibre network, (hospitals were reported to be better off because they have usually retained an independent telephone landline system). Mobile phones using solar chargers have the capacity to reach aid posts in rural villages. In a recent pilot project health workers in four villages were given phones and chargers with a certain amount of credit on them to allow them to maintain communication with the provincial health centre by texting requests for supplies as well as sending in data on disease and treatments provided, and notifying cases of scabies and malaria. Mobile phones can also be used by clinics and aid posts to send public health messages, and reminders of appointments or clinics being held. Save the Children Australia is a strong supporter of these rural health SMS projects. But as the GCIO observed, where there is good access to a mobile system, where a nurse is provided with credit on her phone, and there is a process in place to ensure that a doctor can be approached in this way, such initiatives can be very successful. However, not all regions have adequate connectivity to support such projects, and not all projects are well enough set up to ensure sustainability. Where they are, benefits to both the patient (avoiding unnecessary and time-consuming trips

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[46] See http://courses.polhncourses.org. POHLN is a WHO programme running online professional development courses for health workers in the Pacific region.

to a larger centre), and to the health service, (avoiding the need to treat complications that could have been avoided) have been observed.

Another significant use of ICTs in the health sector is the creation of datasets in the Health Information Service. The HIS sits under the Director of Public Health along with four other divisions: Family health services; Health promotion; Malaria and vector borne diseases; and Environmental Health. The Director of Public Health reports directly to the Director General of the Ministry of Health, together with the Directors of the Northern Health group and the Southern Health group, which oversee the provincial health services, and regional hospitals (including the referral (or tertiary) hospitals in Luganville and Port Vila. The Health Information Service was established with two AusAid programmes in the decade leading up to 2005, and was set up to operate through links with the six provinces, and the five operational hospitals. Provincial centres would enter data from paper-based records collected from regional clinics, dispensaries and aid posts in each province directly into the system. But earthquakes and the failure of computing equipment common in SIDs (and, some suggest, reluctance to connect to the government WAN) has disrupted this system, so most records are physically shipped, entered manually into a standalone pc, and printed reports stored in the Divisions of the Ministry and sent back to the provinces and other health centres. On some occasions, data is entered into an electronic file and emailed to the Health Information Service but the system is functionally paper-based at present although the transport of packages of records is expensive and unreliable, and often data does not arrive. Data from the Public Health Service is similarly paper-based and subject to the same problems.

The main HIS data set is the Vanuatu Hospital Morbidity Database, supplemented by the Provincial HIS (VanPHIS), both of which use MS Access. Health records are also kept by regional health centres (or clinics) and dispensaries, which include: a register of children under five; records of stillbirths, deliveries, births, deaths and suicides; maternity and antenatal services; pharmacy orders; outpatients; transfers to other services; and school and home visits. Limited data from these records is sent on to provincial centres, (mainly births and deaths, and certain notifiable diseases) in the required monthly reports from clinics, dispensaries and aid posts. This monthly report also includes some public health data, but reporting required of nurses and health workers is a complex WHO-mandated process, poorly documented, inconsistent and confusing.[47] The international standard for classifying diseases, ICD10, is only used at Vila Hospital, and its use cannot be extended because of its complexity and the cost of training; it is, even with training, possibly beyond the capability of staff in the smaller hospitals. Health data in Vanuatu is therefore regarded as unreliable.

Much of this is documented internationally. The University of Queensland's AsiaPacific Health Information Services Knowledge Hub has in the past rated the quality of health data, and data management in Vanuatu as 'inadequate' and 'dysfunctional'.[48] Manual collection of data, the need for forms to be copied and sent

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[47] See Lum On, M, V Bennett and M. Whittaker. Health Information systems in the Pacific: a case study of Vanuatu. (www.uq.edu/hishub)

[48] See report at: http://www.uq.edu.au/hishub/docs/vanuatu.pdf

to various places, poor data definition, and poorly trained health workers all confound the quality of the data. But already the new fibre network is starting to improve connectivity between the Ministry and provincial services, and the HIS's own awareness of the problems it has with data collection and data management will help drive progress and capacity building. These developments, plus the close link between the HIS and the World Health Organisation, and Vanuatu's participation in WHO programmes such as the Integrated Management of Childhood Illnesses programme, will all help improve the quality of health data and therefor health services planning.

However, at present health remains the 'poor cousin' in government ICTs in Vanuatu, and while the Health Sector Strategy (2010 – 2016) is focused on improving health status, equitable access to services, better quality services, effective/efficient management of resources, the data to help achieve this must be regarded as inadequate for planning purposes. The goal outlined in the National ICT Plan of "a strengthened evidence-based public health and promotional approach aimed at reducing risk factors for conditions associated with use of substances, lifestyles, poor environments and other determinants of health" remains a challenge. More reliable data is often collected through surveys, including the recent survey conducted by the Vanuatu National Statistics Office, and Census data is regarded more reliable than health data currently collected. The new procedures for registering birth data are also expected to have some impact. Mobile government has considerable potential to enhance both the quality of health services, not least through the training of provincial and rural health workers, and the quality of data collection, as identified in the m-Government report of 2014.

C.   Agriculture

Agriculture is essential to the Vanuatu economy, representing approximately 20% of GDP (by comparison, tourism accounts for as much as 70%). According to the Ministry of Agriculture, Livestock, Forestry, Fisheries, and Biosecurity, agriculture is more critical to economic growth than in any other Pacific economy since Vanuatu lacks the mineral resources of Papua New Guinea or Solomon Islands, the manufacturing base of Fiji, or the remittances of Polynesia. The most important agricultural product, in terms of cash production in the villages and in terms of export, is copra, produced by individual households and on large-scale plantations. Cocoa, kava, and coconut oil as well as beef, beer (or barley) are the other major exports.[49] Food crops, including taro, yams, kumara, bananas, coconut, and a variety of fruit and vegetables are grown for the domestic market.

Information is seen by both the Minister and the Director General as critical to the work of the ministry and its clients—the rural famers, fishers and forest managers of Vanuatu. All channels are used to get information to where it is needed, print, radio, TV, and the internet where it is available, but the main channel remains the ministry's extension service, and the extension officers who physically visit rural communities. The recently formed Vanuatu National Farmers' Association is seen as a critical element in improved information dissemination and as a source of information from the sector. Agriculture has been nominated as a key element in developing the Vanuatu

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[49] http://faostat.fao.org/desktopdefault.aspx?pageid=342&lang=en&country=155

economy, and will receive a considerable budget increase to facilitate this. The Ministry's goal is therefore to embrace technology, and to work with the OGCIO and the Regulator to ensure that telecommunication reaches the farthest outpost as soon as possible, to ensure that communication flows rapidly from the ministry to the sector and from the sector back to the ministry. The Minister's vision is "to be able to deliver quick, efficient information and communicate effectively with all farmers in Vanuatu."

Working closely with the OGCIO and the Vanuatu Cultural College the ministry has been involved in setting up various pilot projects. One such, set up by CertLink,[50] is an online tool to enable smallholders to easily and cheaply access and manage multiple certification systems (Organic, Fair Trade, Rainforest Alliance, UTZ etc.) to increase their market opportunities in the cocoa and coconut markets. As the progamme has developed it has expanded into an agricultural management system, with applicability across a range of business types and organisations, and functionality in data gathering, analytics, reporting, price sharing and content management, with the capacity to affect significant change in the lives of Vanuatu smallholders.[51] The Ministry's long term intention is to use SMS messaging to reach all farmers in Vanuatu, to make use of the planned community telecentres as an information 'hub' for the rural sector, and to be able to provide information on prices and market opportunities, along with information on new crops, diseases, and disease-management through the Ministry web site. The Ministry would also like to see more content relevant to the agricultural (and fisheries and forestry) sectors included in the curriculum and delivered using ICT in rural schools.

In addition, GIS systems are already used in the Ministry to identify locations and land use although at present most information is gathered manually and entered into the system for the purposes of collecting national statistics.

D.   The Vanuatu Cultural Centre

The Vanuatu Cultural Centre is a statutory body whose primary function is "to support, encourage and make provisions for the preservation, protection and development of various aspects of the cultural heritage of Vanuatu". It is the umbrella body for the Vanuatu National Archives, National Library, National Museum, as well as for the regional cultural centres. Included as one of the core functions of the VCC is the Vanuatu National Sound, Audiovisual and Photography Sound Unit. This unit reflects a very different use of ICTs but one that is essential to the cultural wellbeing of the country. The audiovisual unit and its large number of volunteers document and record (in audio and video formats) the culture and cultural history of Vanuatu, "remembered histories and traditions (legends), details of ritual practices, classification systems and languages, details of cultural landscapes, sites of cultural significance, and records of contemporary events of historical and cultural significance."[52] Some of this material

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[50] A multi-stakeholder initiative, established by VASABI - the Vanuatu Sustainable Agri-Business Initiative (http://www.certlink.org)

[51] Certlink web site

[52] http://vanuatuculturalcentre.vu/about-us/

is available on the free to air Television Blong Vanuatu, owned by the state broadcaster Vanuatu Broadcasting and Television Corporation.

E.   National Archives

The Vanuatu National Archives are housed in a purpose-built National Library and Archives building within the Vanuatu Cultural Centre Complex which was funded by AusAid and completed in 2013. This has prompted a number of government agencies to move their backlog of physical archives to the facility, although a limited staff of two is hard pressed to list and store these. The National Archivist is a member of PARBICA (the Pacific Branch of the International Council of Archivists) and relies on the PARBICA Records Management Toolkit to help develop policy around the collection and storage of electronic records. But although Vanuatu passed an amendment to the Electronic Transactions Act 2000 in 2010 to give legal recognition to electronic records, the validity of electronic contracts and e-signatures, and provide for encryption and data protection, it is a harder task to secure compliance from government agencies around electronic records and to archive them adequately. Currently the National Archives receives hard copies of documents and correspondence from agencies, including the PM's office, which go into the archives files. But it has been difficult to obtain cooperation from agencies about the electronic transfer of such material, and there are no current plans to retain electronic records in their original format, or manage email correspondence, for long-term preservation.

The National Archivist participates in the Right to Information Committee, which is a participant in the UNDP Right to Information (RTI) programme. A Right to Information Policy requiring government agencies to release information to the public unless it would breach security or privacy, was approved in 2013. The policy foreshadows empowering legislation, and the Vanuatu State Law Office has drawn up a Right to Information Bill going into Parliament, although this has not yet been passed.

6.   Other aspects of ICT use in government and NGOs
A.   The government portal and individual agency web sites

The government portal at **https://governmentofvanuatu.gov.vu** is still under development and has yet to develop a clear focus. (This is somewhat in contrast to the clear identification of different audiences and the information they might be seeking, along with the current information provided, evident on the OGCIO site.) Although the government portal was initiated as part of the first e-government project in Vanuatu, it seems to have languished through lack of support, and lack of interest from ministries to contribute information to the portal even when they do not have their own web site, and could use the portal to communicate significant information. The home page has a prominent changing banner that implies that it displays significant current events in the capital and concerning the government, but only one of the items relates to 2014, the remainder are news items from 2012. There is a link to the Constitution, with recommendations to read it and to 'know the Laws of your country', and 'know your rights', as well as a link to the statutes on the PACLII web site. There is a link to the Parliament website and the Reserve Bank as well as the web sites of the two

regulators (the Telecommunications and Radiocommunications Regulator and the Utilities Regulatory Authority). There is also a useful list of public holidays. But the items headed 'Immediate Public Information' are all dated 2012, and even the item headed 'Latest in-country development', and items under the tab 'Latest News', are also all dated 2012.

Customs and Inland Revenue, Tourism, and the Vanuatu National Provident Fund all have links, with explanations of what will be found there, but there is no clear reason why these particular sites are drawn to our attention. Other government agencies are linked or described under the first main tab Government, which has a pull-down menu listing all ministries. This menu links directly to those ministries which have their own web sites. For those that do not a number of pages of information is provided (again dated 2011-12) explaining their vision, mission and values, and strategic goals, and in some cases, further information about their activities and achievements. Unfortunately, because this information also is not updated, ministries which have been restructured and departments which have shifted from one ministry to another are not recorded. Since Customs does not appear in this menu (it is part of the Ministry of Internal Affairs) there is some logic to its separate listing on the main web site, since it might be sought by those seeking information about the country. But this is less of a justification for the prominent links to the two regulators. In all, the government portal is a very basic site, with much outdated material and active links only to some of those agencies which have their own site. It is badly in need of a redesign, and some strategic thinking about its purpose and content and how to keep it up-to-date. Fortunately, a revitalisation of the Web portal project is noted as a high priority in the OGCIO's Portfolio, Program and Project Management (PPPM) Plan, August 2013.

Individual ministries, however, and key departments within them, are encouraged by the OGCIO to develop and maintain their own web sites if possible, using the open source software Joomla, which is supported by the OGCIO, and for which they can get assistance. Agencies which have done so include several non-ministerial agencies such as the Vanuatu National Provident Fund, the two regulatory bodies (TRR and the Utilities Regulatory Authority), the Vanuatu Law Commission Office, the Vanuatu Tourism Office, the Vanuatu Investment Promotion Agency, and the Vanuatu Financial Commission. Some of these agencies have clearly done so because their potential audience is external to Vanuatu as well as internal, and in order to assert their independence from government.

This need to reach an international audience may also apply to some of the larger ministries and departments which have their own web pages, such as Customs and Inland Revenue, Finance and Treasury, the Ministry of Agriculture, Livestock, Forestry, Fisheries and Biosecurity, and the National Statistics Office. These all have fairly detailed pages, which contain essential information for those in the industry or citizens, including contact information and live email addresses, sub-pages for key divisions, publications, links to their empowering Acts, and in some cases, online forms for downloading. Other agencies such as the Parliament, Ministry of Lands, the Ministry of Justice and Community services (which includes the courts, Correctional services, Women's Affairs, the Customary Land Management office, and the Ombudsman Office), have more basic web sites, with an explanation of their mission,

and contact information, sometimes with more detailed and proactive secondary sites for key departments within the ministry. A subset of essential ministries - Education, Health, Trade Tourism, Commerce and Industry do not appear to have web sites (none could be found), and there is only limited information about them on the government portal. One exception is the Ministry of Health, about which there are five pages of information and summary health data on the government portal, although the date of this information is given as 2010.

The standout web site is that of the Department of Customs and Inland Revenue, which contains current and relevant information, including official notices, up-to-date statistics, useful information about systems, and processes, prohibited imports and exports, and online email links for VAT enquiries, etc. Forms for license applications, for customs and border regulations, and taxes are all available online as well as legislation relevant to all the activities covered by the agency (this includes legislation of other countries, and international bodies relevant to trans-border activity.) Other agency web sites that show some awareness of the potential of the web for effective communication with citizens are the OGCIO web site, which has given some thought to the role and needs of the person accessing the web site (information being directed at citizens, business, government agencies, the media, researchers etc. and IT contractors) and that of the Regulator. The OGCIO also invites comment on its policies and initiatives (through an email address) and staff reported that they do get several emails a day from interested citizens. The OGCIO web site links to the TRR, Meteo, Reserve Bank and the Government portal, which have clearly been identified as carrying relevant information (perhaps the portal is included because it links to a range of other agency sites.)

B.   Community organisations and participation in ICTs

VANGO (the Vanuatu Association of NGOs) represents a number of international NGOs active in Vanuatu as well as local church welfare groups and other ad hoc community groups. Their representatives indicated that they are well aware of both the benefits and the risks attached to increased use of ICTs. The rapid introduction of both computing and mobile technology, and even more dramatic reduction in the cost of these technologies due to deregulation has brought them within the reach of the average person in the urban areas. They report that communities are aware of similar developments in other Pacific countries and have been pleased to see affordable ICTs come to Vanuatu. This has brought benefits to ordinary citizens, even in quite remote places, but also to the work of the NGOs since it is now easier to communicate with branch organisations and individuals around the country. There is still some unease about the dominance of the power company UNELCO in past years, but with the focus on renewable energy (solar and wind) and new companies entering the market, VANGO believes that there is a realistic hope of getting ICTs into the most remote villages. This means that a range of ICTs, computers, photocopiers etc (which have been purchased with AusAid) can be deployed in schools and community centres. Even so, they comment, here is a capacity problem with village people not always having the skills to care for and maintain this equipment.

But the question on the minds of many VANGO members is, does this increased connectivity enable people to have better communication with government? Organisations under the VANGO umbrella have a clear sense of what government information their clients need, mainly around education and health – access to school timetables and results, transport schedules, and better health services, although it was acknowledged that traditional remedies would still be peoples' first option for treatment of routine health conditions. But it is clear that being unused to having much connection with government, a closer connection with most government agencies is not identified as a need for local communities. On the other hand, information about agricultural markets and when the local produce will be picked up is actively sought. People also want up-to-date information about schedules—for example, when applications for certain training courses close. But there is no great faith that these benefits can be delivered, and a general lack of awareness of the capabilities of smart phones to access the Internet.

VANGO itself uses technology to manage its operations, and operates an email network, with a "tree structure" for disseminating information. Some members who can see the benefits that the organisation has gained from technology believe the Internet can help children expand their educational horizons. That said, there is some resentment that the internet connections to be provided by the government under its new education ICT projects will only extend as far as regional offices and not be available to the general population. In addition, the disparity between urban schools and rural schools in terms of resources, connectivity etc. and even between schools within an urban area remains a concern. More equality of opportunity is sought, and a more in-depth curriculum for ICTs—not just computer basics, but more awareness of what resources and information and services are available via the Internet. Without this knowledge, it was felt, students are likely to see the internet just as a source for music and pornography, not as something that could change their lives for the better. For this reason members wished to see the ICT curriculum more focused on information literacy than basic technology. But there was no trust that this would happen, and the view was expressed that this should start with better teacher training, which it was agreed is a major lack right now.

Some groups connected with VANGO are working with Digicel to create spaces on the internet for resources for youth, especially around contraception and STDs, to help reduce teenage pregnancies. These would be spaces where young people could discuss concerns in private. Other groups have innovative ideas about web sites for their particular social endeavours, but do not have the knowledge themselves to make this happen, or how to design them for simple smart phones. They want more relevant content in Bislama, e.g. relating global issues such as climate change to Vanuatu, and more local content to engage youth and create resources young people would access. This concern is exacerbated by the fact that many villages now have satellite TV and access to global services, which means access to content that conflicts with a lot of traditional 'kastom' values. Concern about this issue adds to concern about inappropriate content on the internet, and in many villages these issues are raised by the local pastors. This increases suspicion of ICTs in general, and their value for education, health and development. The groups represented by VANGO expressed the view that the Vanuatu Consumer Affairs Department has some role to play here, in

monitoring access to satellite television and the internet and advising parents on how to protect their young people from inappropriate content.

Despite these concerns, the group believed that social media also has a role to play in encouraging the uptake of ICTs in Vanuatu and facilitating the work of civil society. This view is encouraged by some members of the government, notably the Minister for Lands Ralph Regenvanu who uses FaceBook and local blogs to communicate and discuss political issues directly with the public. He was invited to speak at the National ICT Day in Port Vila, May 5 2014 on the role of social media in relation to government, and reported that at that time there were estimated to be approximately 37,000 ni-Vanuatu and ex-pat residents subscribing to FaceBook in the country. He also noted that there were 14,000 subscribers to the public discussion board Yumi Toktok Stret, which he uses to educate people about various issues, and hear their responses. This is partly, he suggested, because young people, especially, have no voice in Vanuatu kastom, but on Yumi Toktok Stret they can voice their opinions, and participate in political and social debate. As an advocate of Freedom of Speech and Freedom of Access to Information in Vanuatu and a campaigner against corruption, the presence of Ralph Regenvanu to advocate for the use of social media for political expression for all ni-Vanuatu at the National ICT Day represents a powerful signal of how the OGCIO sees the role of ICTs in strengthening democracy in Vanuatu.

TRR also has a range of telecommunications/ICT consumer awareness raising programs in place and recently launched its Community Consumer Champions programme inviting community groups to work with TRR, and under its guidance and management to promote awareness at the community level on the benefits and potential difficulties of using ICT as an enabler for consumers' daily needs.[53]

7.   Discussion

From the above, it is clear that the real gains from the use of ICTs in government for Vanuatu have to date been in the very core aspects of government in the 21st century, i.e. the management of the economy, collection of revenue, management of crossborder trade, allocation of government funds, management of the bureaucracy, and supporting a money-based economy. In the context of vulnerable small island developing states this core group of government activities also includes disaster preparedness and disaster management. These systems keep the country functioning. They are well managed in Vanuatu, employ relatively sophisticated ICT applications, and are well supported internationally by global agencies which have an interest in seeing effective ICT systems in place to keep the country functioning and participating in the global economy.

Outside this inner core are other key tasks, the collection of national statistics to support planning and for the purposes of international reporting, an impartial police and criminal justice system to maintain law and order, and a parliamentary system which can be seen to reflect the values of democracy and global citizenship. The use of ICT in these areas is patchier. Although some ICT systems are used across this group of

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[53] Communication from the TRR, 17.2.15

activities, and possibly encouraged by the presence of PacLII at the USP campus in Port Vila, the country makes good use of the PacLII web site and services to ensure access to essential information to support democracy and the rule of law, the application of ICTs in these second tier activities is inconsistent. It is less developed, more ad hoc and dependent on specific aid grants or the interests of donors. It is not systemic across an agency or sector the way it is in the core group of agencies. A third outer shell represents areas of government where traditional practice is far more prevalent; these sectors are further from the centre of government and the use of ICTs in these sectors has not been recognized until recently as contributing to the economy, or essential to the well-being of the people and the protection of their rights. Areas such as education, agriculture and health are in this third shell, along with preservation of the indigenous culture and the records of government.

What is interesting is that the National ICT Policy, without articulating the issue in this way this, pragmatically addresses the areas in need of attention, and its embedded e-government policy starts to turns the focus from "effective and efficient use of ICTs in government operations" [54] to the "integration of ICTs into sectoral policies in order to "harness the transforming potential of ICTs ... in such key areas as the education, health, the productive sectors, transport (especially maritime), ... gender equality, social equity, democratic participation, protection and preservation of local culture ... etc." The third shell, that is, the areas noted in the report above as having great needs for effective deployment of ICTs, and which have not seen much investment to date, are now on the government's agenda. The social dimension is now ready for transformation and that transformation is urgently needed.

The Introduction to this report began with a statement about the transformational power of e-government, or the use of ICTs in government, and a list of the benefits that e-government can be expected to bring to developing countries, and to some extent to all countries (Boase, 2009). In Vanuatu many of these benefits can already be seen. What can also be seen from the account above of the use of ICTs in government, is that a combination of factors have ensured some of these benefits to the country, and that strategies for achieving more of them are well integrated into Vanuatu's e-government policies. The group of policies that constitute Vanuatu's egovernment policy, outlined in sections 1 and 2 above, are thorough, targeted, and practical, and, if the Policy and associated plans stay on track, likely to succeed. The question is what factors have produced strong and effective policy in areas where other countries have struggled to succeed, and can we identify the factors that must be nurtured to continue this record of success?

One of the most important factors that emerges from the accounts given above is leadership—the structure of the OGCIO, with adequate capacity to both develop policy and ensure it is implemented, its position in the Office of the Prime Minister which gives it central authority, and the personal leadership of the GCIO himself as well as commitment from government can be seen as critical success factors in making Vanuatu one of the star e-government performers among Pacific SIDs. Secondly, the OGCIO, and some other agencies such as the Ministry of Finance and Treasury, and

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[54] Priority 3, in the National ICT Policy, p24

the Department of Customs and Inland Revenue have been able to develop highly functional relationships with a number of IT companies, and technical advisors. They have been well-served by a number of those who have come to work in the country, but in addition to being well advised, have shown an outstanding ability to identify when good advice is given, and turn this advice into good practice.

Thirdly, there is a depth to the policy process emanating from the OGCIO that possibly predates the OGCIO itself and that is part of its success. Policy development has been consistent for over a decade, slowly drilling down to practicalities. As a result, the National ICT Policy is embedded in a suite of policies and programmes covering infrastructure development and capacity building, the setting of standards for ICT procurement, the focus on a government-wide architecture that supports data integrity and data sharing, the OGCIO's PPPM Plan, the UAP and the Cyber-security Policy that reflect a considered and sustainable whole-of-government approach to the use of ICTs in government. It is unusual to see this level of consistent and focused detailed policy development in a small island developing state.

Fourthly, the cooperative and very effective working arrangement with TRR, even though both offices work independently, is ensuring successful implementation of the Government's ICT Polices, particularly its National ICT Policy and the UAP.

But securing the benefits enumerated in Boase's report on the UNDP ICT4D project in the Pacific (Boase 2009, p2) is a challenging task, and success is dependent on more than just good policy. Some of these benefits, notably *more accessible government*, *faster transactions*, *more local access to government through the internet*, and *increased efficiency in government* can already be seen in some agencies, and are likely outcomes for other agencies of the policies set in place in Vanuatu in recent years. Overall, the directions are set and the impetus is towards delivery of the desired outcomes. The final principle, *Legal recommendation and security over the networks*, is also being addressed.

However, other benefits, such as *increased access to government decision-makers and parliamentarians* [through ICT], and *increased participation in government* are more difficult goals, and demand a change in culture in a society that is still working out how to blend 21st century democratic practice with traditional forms of governance and land tenure. Live streaming of parliament and access to statutes will not on their own effect this change. While they are goals that governments around the world are grappling with in the 21st century, they are not the simple concepts that they appear.

But they may be enhanced by strengthening the relationship between government and civil society and the private sector through *smart partnerships*. The opportunities for smart partnerships have certainly been recognized by the Government of Vanuatu, the OGCIO, and the Office of the Telecommunications Regulator, not least in the recognition that markets in developing countries must operate differently, and the collaborative cooperative approach taken by these key stakeholders. It is also shown in a healthy partnership with global aid agencies such as the Asian Development Bank, and the ITU which, along with Australia, are assisting with egovernment programme, and the Universal Access Policy. Genuine collaboration at this level ensures that

priorities set and programmes funded are based on the basis of needs as assessed by the Government of Vanuatu

This open collaborative approach, and the recognition of the need to embed ICT in all sectoral strategic plans, is working well to ensure sustainability of e-government programmes, and to ensure that programmes do not become overly dependent on one champion, but are championed by the united commitment and effort of a particular agency or a sector. The focus on partnerships helps foster the high level of commitment seen in Vanuatu in all stakeholders, in both the government and private sector. If the government and the OGCIO can bring civil society on board much more can be achieved.

One final aspect of the cooperative collaborative approach that distinguishes egovernment in Vanuatu must be noted, and that is the role that regional and international organisations have played. These organisations which include SOPAC and a number of its sub-units, PFTAC, SPREP, PIFS, and global organisations such as UNDP work across the Pacific in all member countries in the region. But not all countries show the same evidence of being able to work so cooperatively, and, as a consequence, of being able to take advantage of the expertise that regional and international organisations have to offer.

In summary, much has been achieved in the applications of ICTs to the operations of government in Vanuatu, and although there is much still to do, strong policy, strong leadership, and commitment across government have produced some real benefits to the country. Those who have witnessed this progress have high expectations for the next phase of e-government implementation in Vanuatu, and the benefits it will bring to the country and its citizens.

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