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# ICT for Poverty Alleviation in Pacific Island Nations: Study of ICTs4D in Fiji <sup>1</sup>

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## Abstract

### ICT for Poverty Alleviation in Pacific Island Nations: Study of ICTs4D in Fiji

There has been a vague and little knowledge on the role or potential of Information and Communications Technologies (ICTs) in relation to addressing poverty in Fiji. This may be probably due to the newness of the technology in the South Pacific Region as a whole but also probably due to the fact that only 9.7% of the current Fiji 931,000 populations are internet users (ITC Figures 2011). This paper reports on finding how ICTs is contributing towards poverty alleviation in Fiji. On the basis of reviewed best practices in ICT4D around the World, the paper shows how areas of weaknesses could be developed, and where those with prevailing weaknesses could be strengthened. Several ICT poverty alleviation programmes are analysed to include E-money, Mobile Money, the “People Online” project to address the concern of information exclusion within the rural and remote areas and potential of ICT kiosks in outer islands. Our The findings in this paper indicate that the use of ICTs can no longer be seen as a second choice option before other tools, but rather, ICT should be considered as a priority which has the ability to produce a large multiplying effect on the improved living conditions of the poor.

**Key words:** ICT4D, Poverty Alleviation, ICT for Rural Development, Africa, Fiji, MIS in development, Mobile Money, Mobile Banking, Economic Development, ICTs and Local Cultures, Pacific Region

## 1.0. Introduction

Information and communications technology (ICT) has emerged as a major driving force of the global economy, the developed and the developing countries. Figure 1 below indicates the accessibility of internet in these countries. The three main sectors for ICT development are telecommunications, media and internet industries. These industries will foster greater information sharing and building of knowledge. Peter Drucker in his famous book *The Age of Discontinuity* mentioned about “knowledge based economy”. It refers to the use of knowledge technologies, such as knowledge engineering and knowledge management, to produce economic benefits as well as job creation. Organisation for Economic Cooperation and Development (OECD) also recognizes knowledge as the driver of productivity and economic growth. As a result, there is a new focus on the role of information, technology and learning in their economic performance. More than 50% of Gross Domestic Product (GDP) in

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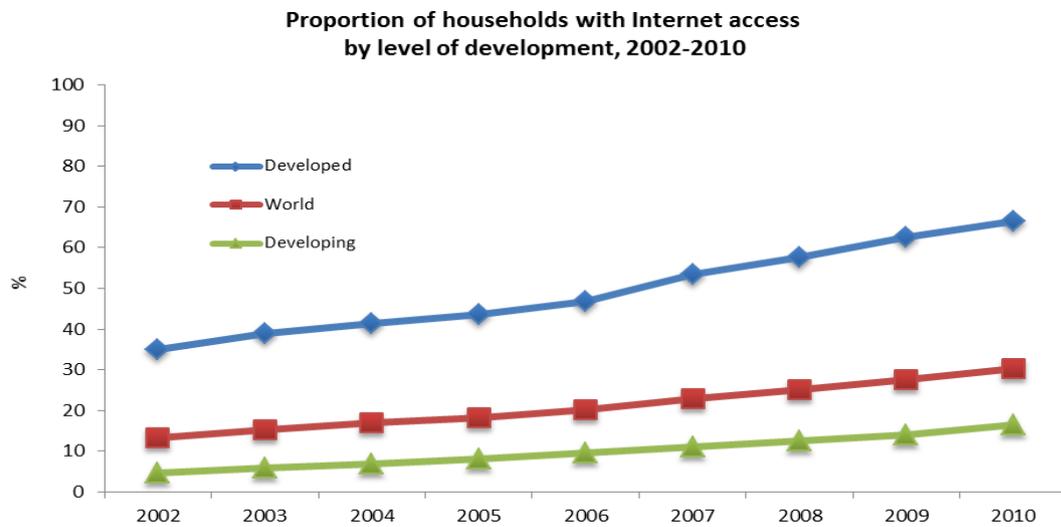
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the major OECD countries is now knowledge based (OECD, 1996). Without knowledge transfer, understanding and usage, gain cannot be realized. The internet and communications infrastructure is a key platform to conduct business, connect people and provide efficient and effective government services.



ITU Statistics (<http://www.itu.int/ict/statistics>)

Figure 1: Proportion of households with Internet access by level of development, 2002-2011\*(projected)

Recent article on BookRags website (BookRags, 2011) mentioned on Drucker’s work on “knowledge based worker”. It emphasized that knowledge based workers use their knowledge to get things done in a dynamic environment. They are high level employees who apply theoretical and analytical knowledge, acquired through formal education, to develop new products or services. In this highly digitized world, the combination of knowledge based economy and knowledge based worker has already begun steering the world into an ever increasing economic development and prosperity. Most prominent of this development is in the case of developing economies, such as Fiji. Table 1 below shows the *approximate* size of internet users in Fiji until 2008 only. The statistics indicate that internet penetration is approximately 9% of the population. Even though this is higher than the GDP growth, but to achieve larger economic growth internet penetration needs to increase. Figure 2 makes this theory clear where China has the second largest ICT penetration and the largest GDP growth today.

**Figure 1: Internet Usage in Fiji**

Description	Data
Total Population	837, 271 (2007 Census)
Internet users	80, 000
Price Basket for Internet	\$22.76 US/ month
GDP Growth (From Fiji Bureau of Stats)	4%

Source: <<http://www.nationmaster.com/red/country/fj-fiji/int-internet&all=1>>

[Accessed 19 December, 2011]

The Fiji Government is aware of new opportunities offered by ICT and has taken a lead role by launching the Information Technology and Development policy directions to encourage, facilitate and support the development and growth of this industry and its people. Also stated in the policy is the contribution ICT will make to Fiji's economy through revenue generation, job creation, social inclusion, conservation of culture and administrative and operational efficiencies. In a report by Fiji Islands Bureau of Statistics (2010, p.18) it revealed that transport and communication sector in Fiji, in the year 2005, contributed to approximately 7% of the total employment in all industries. Hotel industry had the highest employment numbers of approximately 30%. A proactive role by the Government intends to raise the above figures such that Fiji is competent in the e-Globe. However, it must be noted that ICT doesn't only means providing employment in the communications industry. It also means creating jobs in other industries such as manufacturing and education with the use of information systems in manufacturing and service sectors, and greater use of e-learning in the education sector.

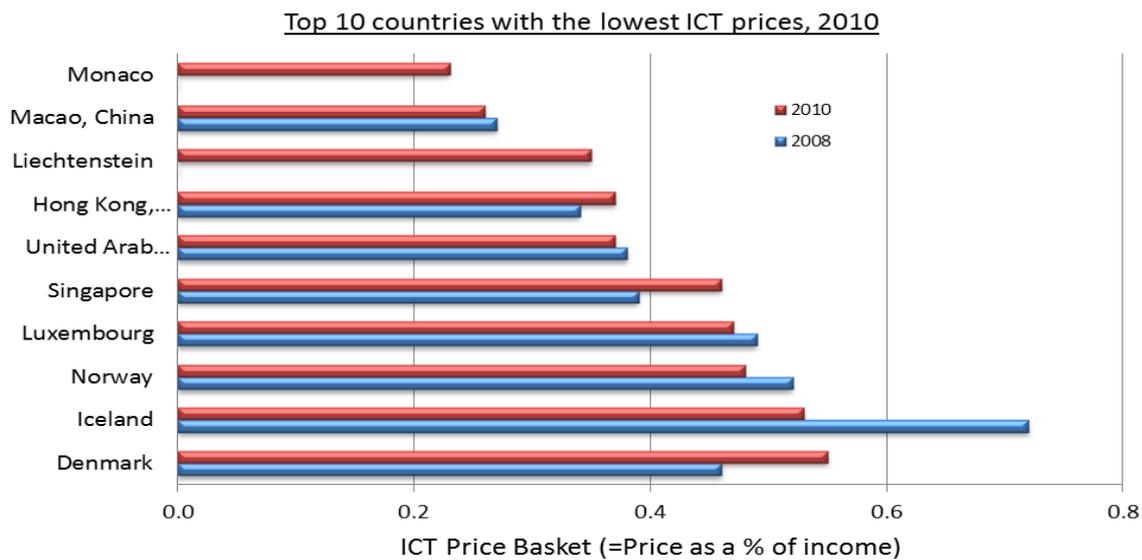
Fiji has international telecommunications connectivity through Southern Cross undersea fiber optic cable. The major players in this industry are Fiji International Telecommunications Limited (FINTEL), Vodafone Fiji Limited and Digicel Fiji Limited. Telecom Fiji Limited was the first leased line providers. Due to deregulation more people now have basic access to voice and data services. In 2010, the International Telecommunications Union (ITU) ranked Fiji 91 out of total of 159 countries in terms of ICT development. On 10<sup>th</sup> October 2011, a National Broadband policy was launched by the Government of Fiji.

The National Broadband Policy forms a major part of the National Information Technology and Development policy described above. Broadband is the high speed access service that provides connection to the internet and to other information services. The policy addresses both supply and demand sides of broadband issues. The framework sets provision of quality and affordable broadband access in Fiji as well as initiatives that will stimulate demand both

from household and business sectors. Probable benefits achieved through the broadband policy would be similar to that achieved through the ICT policy. However, these benefits cannot be achieved in isolation of the global economy.

Information technology has brought the world economy on the same platform where businesses trade freely and demand can be stimulated from any corner of the globe. ITC is everybody's business and no matter what the culture is, we believe that information technology has a positive impact on everybody. Figure 2 below shows the list of ten countries with cheapest ICT rates. Note that China is second in this listing, which complements its fastest growing GDP in the world today. This shows that economic prosperity is directly proportional to the ICT industry.

**Figure 2: World Internet affordability**



Source: ITU Measuring the Information Society 2011

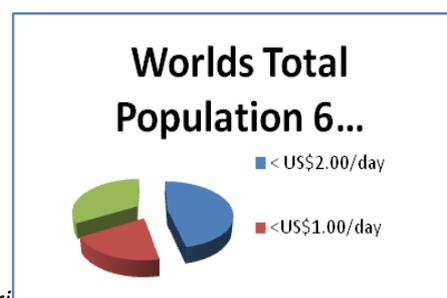
ITU Statistics (<http://www.itu.int/ict/statistics>)

*Figure 2: Top 10 countries with the lowest ICT prices, 2010*

All benefits or costs associated with information technology have to be addressed in terms of global economy and the national economy. This means that poor countries including Fiji, to succeed they will need to think holistically, in terms of what connectivity, ubiquity and affordability represent to the population.

### 1.1 ICT and Alleviation of Poverty

As per World Bank report on poverty out of world's six billion people, 2.8 billion, almost half, live on less than US\$2 a day, and 1.2 billion, a fifth, live on less than US\$1 a day, with 44 percent of them living in South Asia (World Bank, 2002).



How Can MIS&ICTs Alleviate Poverty in Fiji with Emphasis on Agri...

The major aid agencies and donors, as well as many developing country governments, are becoming increasingly enthusiastic about the prospects for improving the effectiveness of their development activities by making Information and Communication Technologies (ICTs) available to poor people. ICTs can be said to refer computers, Internet and taking into consideration the more common technologies also includes the radio, television, telephones, public address systems, and even newspapers, which also carry vast amount of information. For developing countries the radio itself is a major source of development information as it is pervasive within the rural locations in which the vast majority of the poor live.

This literature review discusses various aspects of poverty and examples of how ICTs have been utilised to alleviate the same using various Management Information System strategies, to a greater or lesser extent. Particular focus has been drawn on ICT alleviating poverty based on information and financial exclusion and sector development in terms of agriculture. Best practices of electronic governance and mobile money has also been discussed in brief as examples on how ICT can be utilised for poverty alleviation.

## **1.2 ICT's and Information Exclusion**

Information and knowledge have been said to be an important component of poverty alleviation strategies; ICTs if utilised in the right way can provide easy access to huge amounts of information useful for the poor O'Farrell, (2001). However, to effectively utilise ICT's to alleviate poverty the concept of information exclusion must be addressed. Information exclusion is basically concerned on the disparities between the few people with abundant access to ICTs and the vast numbers of people without any access at all. In 1996, Wresch in his literature review wrote that "the poor are excluded from much of the world's information and no one has even begun to outline a solution to the problem" (1996:58). In his view, one of the biggest issues of the information age was that the rich were getting their information almost free, while the poor had to pay dearly for it, for example the price poor people had to pay to make simple telephone calls.

The ability to access and use ICT and the internet are a critical part of modern society today for everyone. Apart from age, disability and language barriers, the core cause of information exclusion can be said to be the economic status of individuals as everyone cannot afford a computer nor have access to internet connection For those people and groups who have no or limited ICT access and skills, providing them to access ICT and giving them the skills to use it effectively can allow them to Connect with others and participate more fully within their communities, Improve their levels of health and wellbeing, access useful information and services they might otherwise not be aware of, Find pathways to improving their levels of independence and self-reliance and have access to employment and educational opportunities.

Information exclusion can be said to be the result of poverty and not a cause of poverty. In Fiji and indeed the majority of countries who are using ICT for poverty alleviation "ICT4PA" there is a need to have programs and effective strategies in place that provide the support and assistance required so that people most in need are able to readily access and effectively use ICT and take advantage of its many benefits. Moreover, earlier

patterns of adoption and diffusion of technology suggest that ICTs will not achieve their full potential without suitable attention being paid to the wider processes that they are intended to assist and to the context within which they are being implemented.

### **1.3 ICT and Financial Exclusion**

Financial exclusion in terms of poverty can be defined as unavailability of proper formal financial services to individual's living in poverty. It is one of the reasons why it is difficult for countries to assist poor people from exiting poverty as they become forced to manage their finances either on cash-only basis or they become vulnerable to alternative sources of financing such as the moneylenders; where they have to pay double the amounts of interest in comparison to the formal financial services offered by various financial institutions.

The concept of financial exclusion has been one of the major concerns in Fiji other than that of the other Pacific Islands. As per studies done by RBF it has been found that approximately 35-40 percent of individuals within the country have access to proper financial services. Further statistics collated UNDP in its Press Release in June 2010 stated that around 109,000 households in Fiji miss out on savings, credit and other financial services. Unexploited savings demand, in the rural areas, stands at least FJD \$70 million dollars and that in credit, mainly present in the urban areas, was at least FJD \$57 million dollars. (UNDP Report, 2010)

In terms of best practices to address financial exclusion Africa can be seen as a good example; financial services were launched into 18 African countries using mobile phones between 2008 and 2011 to assist people who could not be reached with the traditional Banking financial services to have access to proper financial services. This innovative service using the coverage of mobile telephones since then has continued to provide strong growth within the country and has assisted a large portion of the population who are financially excluded or utilise informal financial services (88 percent of the population in Mozambique and 41 percent in Botswana in 2009; (Andrianaivo 2011).

Financial inclusion is normally measured by the number of deposits and loans per head with consideration on the range of financial institutions available such as commercial banks, cooperatives, microfinance institutions, and specialized state financial institutions. Various studies done in Africa on countries based on mobile financial services available such as: Zambia since 2001, South Africa since 2004, and Kenya since 2007, mobile phone diffusion was found to effectively contribute towards economic growth in comparison to countries where these services are yet to be introduced.

### **1.4 ICTs, Financial exclusion and Economic Growth**

Additional studies in ICT [Lee et al. 2005; Rei 2004; Dedrick et al. 2003] have reflected a positive relationship between ICT investment and economic growth in developed countries. Quibria, et al (2002) in their case studies in Asia believes that ICTs do have a potential for developing countries to leapfrog stages of development. In their conclusion they have stated that ICT has a great deal of potential both in the short and long-term to alleviate poverty in developing countries.

Given best practices of African countries for example using Mobile money to minimise financial exclusion, ICT has proven that it can promote economic growth as they tend to encourage capital growth, improve organisational productivity, and facilitate larger and better functioning markets. Moreover, ICT development enables rural and social development. Given ICT's notable development and spread in African countries during these recent years, various economic studies have indicated that there is a strong positive impact of ICT development on economic growth in Africa.

Andrianirina (2011) study on the ICTs in development indicate that, Financial Inclusion and economic growth in Africa; she has indicated that a 10 percentage point increase in the mobile diffusion rate could lead to a 0.7 percentage point increase in real GDP growth, with the marginal impact of mobile telephone development on growth being stronger in countries with low fixed telephone penetration rates.

### **1.5 ICT Infrastructure and the Rural and Poor Urban Communities**

Low-cost access to ICT infrastructure is also a necessary prerequisite for the successful use of ICT by the poor and ICT's potential to reduce poverty through improved access to education, health, government and financial services. Variance between infrastructure available to support ICT in the rural and urban areas is most often examined from the perspective of developing an effective strategy to catch up the rural areas to the more urban areas rather than comparing and contrasting the two or finding policy initiatives that work in tandem with one another.

Talero and Gaudette (1995), in a qualitative article, stated that with the information revolution rural and poor urban communities can be integrated into economic life which can result in higher income levels. A study performed by an ICT Specialist for Rural Development at the UN performed a quantitative analysis on the impact of ICT on the welfare of rural households in Lao. ICT in this study did not include Internet and computers and referred to telephone service only. The dataset used was a short panel dataset of approximately 600 households. Various regressions were run on poor and non-poor to determine whether the impact was the same as measured by rates of consumption. It was found that telephone use has a positive impact on both the total and cash consumption levels of rural households. The impact appears greater among the poor than the non-poor. The author in his conclusion stated that ICT has a great potential for poverty reduction through the use of telephones and encourages national and project level policies promoting accessibility of telephone service to the rural poor (Song, 2005).

### **1.6 ICT and E-Money**

Various developing countries such as Kenya, Uganda, Pakistan, and the Philippines have all incorporated M-Money initiatives within their individual countries to offer financial services to the unbanked, which are mostly poor. M-money has been widely recognized worldwide as an effective tool for alleviating poverty, thus drawing the attention of various donors and private institutions alike. According to former governor of RBF Fiji, Sada Reddy in his presentation to the community on the launching of the e-money project he advised that in some of these developing countries, availability and usage of mobile phone, ranges from 45–60% across the population, which is inclusive of the unbanked users.

In Kenya itself as at January 2010, there were approximately 9 million mobile money users within the country, from which 23% of Kenya's population utilised the M-Pesa services, from with approximately US\$3.6 billion transfers were conducted. In the Philippines, around the same time, there were approximately 9.2 million mobile money users with transaction volumes approximating US\$3.3 billion. Taking into consideration this transfer rate and volume of transfers, mobile-money services can be said to have huge possibilities and positive impacts within any countries economy.

### **1.7 ICT and E-government**

ICT empowers people, as it allows information to be transferred across distances without face to- face contacts, cutting down on costs. Where e-government applications have been used, people can access government services and at the same time spend less time meeting their obligations to government. In a Parliamentary speech, the Finance Minister of Fiji, Ratu Jone Kubuabola argued that the: "Fiji/Chinese E-Government project at the broadest level is to help improve Government functionality, thereby enabling better policy outcomes, improved and more efficient delivery of services and greater interaction with citizens." (Hansad report, December 1 2005). He further mentioned that: "The E-Government project will put Government business on-line, (E-Government) and also make some strategic linkages with the community (E-Community), hopefully empowering communities to access Government services provided on-line. It will also assist business to directly access Government services available on-line" (Hansad report, December 1 2005).

### **1.8 ICT in Agricultural Sector Development**

Agriculture remains the mainstay of Fiji's economy contributing around to 28% to total employment in the formal sector in Fiji. It directly and indirectly employs around 65% of total population. Although agriculture contributes only 8.2% (2010) of the nations GDP with Sugar and Subsistence it still dominates various other sectors contribution despite investment in various programs.

The agricultural sector has been a critical component of the rural population in terms of the support it provides in their daily livelihood. While its contribution to food security has been enormous over the last 50years, its contribution to the growth of the economy via the commercial sector has been generally subdued. Performance in the past has tendered to fluctuate over time due to inconsistent production, disrupted arrangements, natural disaster (cyclone, flooding) low productivity and poor farm management practices. The sector was once the backbone of Fiji and a major component of economic growth. The declining performance of the sector has now resulted in Tourism being a major contributor to Fiji's economy.

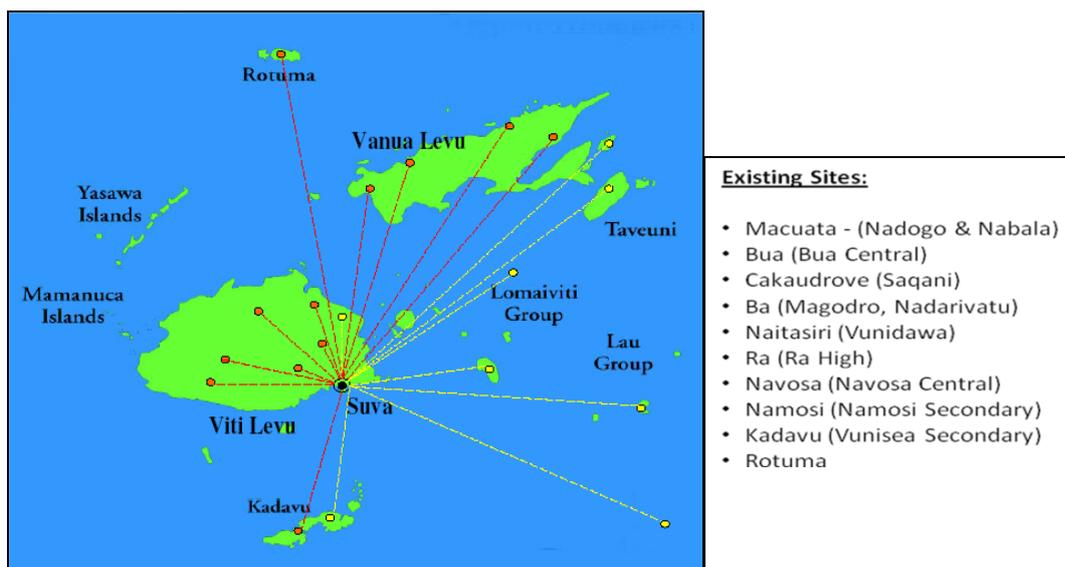
Although there are various methods available in uplifting the performance of agriculture, ICT if used effectively can be utilised as an important tool to uplift the performance of the sector and with it the standards of living amongst the poor. ICTs have been found to be a key player in improving the agricultural production and market information in various developing countries. ICT-based market information systems utilised in various middle income developing countries have reflected vast improvement in rural livelihoods wherever they have been introduced.

As ICT technology advances daily the same can be utilised for provision of accurate, timely, relevant information and services to the farmers, providing an avenue where they can invest in a more remunerative agriculture. ICT however cannot be uniformly applied throughout the agricultural sector as there are differences within the regions in the availability and quality of telecommunications, information and literacy of individuals, public and private organizations, and nature of demand of the farmers in different areas. Within various developing countries wherever ICT has been applied in improving the agricultural sector, there have been both successes and failures. Various lessons have been learned and experience gained to improvise further. Within the rural areas where agriculture is usually common household income provider, common problems that can be faced in adoption of ICT include ICT illiteracy, availability of contents such as handouts in their own languages, easy and affordable accessibility to IT innovations and awareness and willingness for adoption of new technologies among the rural peoples.

In terms of best practices, we have found Africa to be a good example on the use of ICT in agriculture in terms of alleviating poverty. Agriculture in most African countries as per the African development Bank has been found to contribute about 17% to the Gross Domestic Product (GDP), 40% of exports, employment creation and has been said to have great potential in alleviating poverty. Majority of the population in Sub-Saharan Africa live in rural areas and depend on agriculture as a source of income directly or indirectly. Although in terms of GDP growth, service sector and Industry contribute most to the region, the need to improve provision of agricultural services to the poorer sections of the population has been realised. Findings analysis will further discuss on how best practices in Africa using ICT can be utilised within Fiji to improve the agricultural sector production level.

## **2.0 ICT and Poverty Alleviation in Fiji**

Below is the map indicating e-community learning Centres in Fiji, the agricultural contribution to the national gross domestic product (GDP) and the import of agriculture related products.



Source: ICT Department of Agriculture Fiji Annual Report 2010

**Figure 3:** Agricultural Contribution

Agricultural Produce	Total Farms	Total Areas (HA)
Crop	24 688	51 518.62
Livestock	2 251	16 561.88
Mixed	38 094	183 776.90
<b>TOTAL</b>	<b>65 033</b>	<b>251 857.39</b>

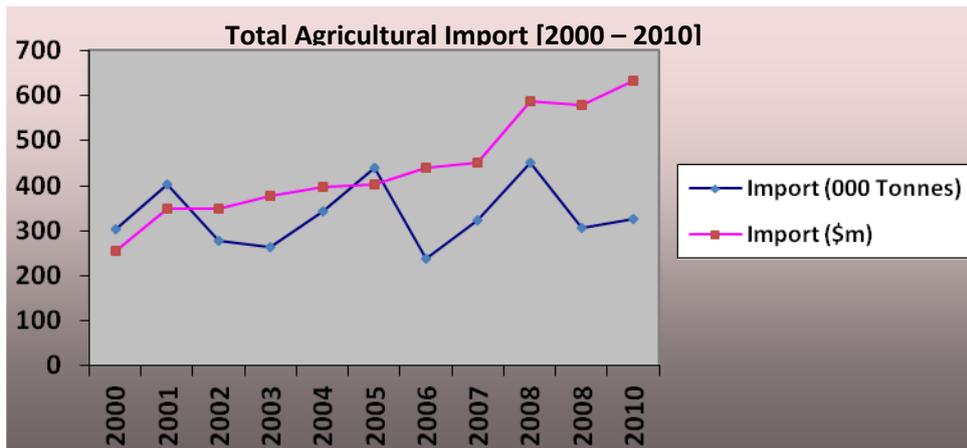
Source: Ministry of Finance

**Figure 4:** Agriculture GDP Contribution

	2005	2006	2007	2008	2009	2010
<b>Agriculture</b>	10.56	10.69	10.37	10.49	9.51	8.2
<b>Subsistence</b>	2.74	2.71	2.73	2.75	2.85	2.78
<b>Crops Livestock &amp; Horticulture</b>	3.15	3.11	4.0	4.05	3.08	3.12
<b>Sugar Cane</b>	3.00	3.39	2.43	2.24	2.17	1.09
<b>Taro</b>	1.66	1.48	1.21	1.45	1.41	1.08

Source: Department of Agriculture Annual Report 2010, Parliamentary Paper No.11 of 2011, page 9

**Figure 5:** Agricultural GDP Contribution



Source: Department of Agriculture Fiji Annual Report 2010

In the mid 1980s, Fiji’s economic policies were based on import-substitution aiming at maximising economic growth through boosting consumption. With the influence of IMF, Fiji further amended these policies based on trade liberalisation which aimed at export-led growth strategy for economic growth. The above national policy includes welfare policies which are centred on two broad issues: reducing income inequality and poverty and achieving universal primary education. (MDG 2<sup>nd</sup> Report 2010, pg.2)

Fiji government’s commitment to achieve the above national policy was further strengthened when Fiji signed the Millennium Declaration in 2000. One of the eight MDG goals under the Millennium Declaration was the Eradication of Extreme Poverty and Hunger. Under the Fiji’s constitution called the People’s Charter for Change and Peace Progress (PCCPP) it was mandated that Pillar 8 of the PCCPP is “to reduce poverty to a negligible level by 2015”. This reflects well with the MDG goal No.1 “to eradicate extreme poverty and hunger”. Now with the current *Roadmap for Democracy Sustainability and Socio-Economic development* (RDSSSED), the goal is “to reduce the proportion of population below the basic needs poverty line from 35% to less than 15% by 2020” RDSSSED document is a six years Strategic Framework, and acts as Fiji’s roadmap for Democracy and Sustainable Socio-economic development from 2009 - 2014. This framework aims to achieve three broad objectives: good governance, economic development and social-cultural development. Under the Social-cultural Development objective, the reduction of poverty to a negligible level is included as one of its core deliverables. Ten policies were developed to facilitate the achievement of the dictated poverty eradication indicators as outlined under the MDG as stated in appendix 1 Table 1.

## 2.1. Poverty in Fiji

Whilst there is no ‘general or official definition of “poverty”, Fiji has been assessed on poverty with many definitions depending on who conducted the survey. According to the interview with the Prime Minister’s Office officials, poverty standard or report in Fiji should be defined with the definition given by the Bureau of Statistics department who have been mandated to come up with the right definition of poverty that suits Fiji’s context. The definition of poverty as currently adopted by the Bureau of Statistics for Fiji is defined by the percentage of population living below the Basic Needs Poverty Line (BNPL) which has only two components namely the Food Poverty Line and the Non-Food poverty Line. Bureau of

Statistics is yet to come up with a reviewed definition of poverty that clearly or nearly defines the status of poverty in Fiji and also to be comparable to the definition as explained by other researches particularly the NGOs.

### **2.1 Poverty Alleviation Programs**

In 2010 there were altogether sixteen poverty alleviation assistance programs identified as reflected in the 2010 and 2011 budget as per appendix 1 Table 2. Fiji's commitment towards poverty has been shown by the 29.39% increase of budgetary allocation from 2010 to 2011.

However, there are few other government programs coordinated by other government ministries and departments that indirectly contributes to the alleviation of poverty as shown on appendix 1 Table 2.

Several pro-poor policies and programs have been implemented over the years; however, those initiatives have utilised ICT at the minimum which has not been sufficient to reduce poverty. The key issues in inhibiting poverty reduction include the low growth of the economy, a lack of political commitment, political instability, lack of access to economic assets, markets and social services, ineffective coordination, implementation and monitoring, and lack of participation by all stakeholders, government, private sector and civil society. Sustainable economic growth is a necessary condition for income generation, redistribution and poverty reduction.

Poverty reduction is the most difficult challenge facing Fiji and its people and the greatest obstacle to the pursuit of sustainable socio-economic growth. Reducing policy has been a core policy objective of successive Government for years.

### **2.2 Poverty Alleviation Programs in ITC**

As ICT has been identified as one of the tools among other approaches to reduce poverty and assist the marginalised sectors of the society Fiji government has taken the same on board in an attempt to continue to reform and modernize the delivery of government services to citizens in Fiji. Following best practices of various international countries, Government has implemented the E – government program to improvise government communications infrastructure and to give high-priority to government service online. This application of ICT or information communications technology by government agencies is anticipated to enhance and improve public sector delivery and improve levels of communication within and outside of Fiji.

To maximize the benefit of the project to the key stakeholders i.e. the communities, businesses and employees; the ICT initiatives have integrated within its vision, Fiji's 20 year development plan National objectives which apart from fulfilling objectives such as sustainable GDP Growth, reduction in Unemployment, building of Competencies and Maintaining Law & Order contemplate on alleviation of Poverty in Fiji.

The following four strategies have been developed to realise this vision i.e. to develop financially sustainable service models, have Citizen centric services, achieve operational effectiveness & efficiency and ICT Competency. To sustainably achieve the same the e-government initiatives have segmentations of 3 core services I.e. G2b (government to

business), G2C (government to communities) and G2E (government to employees). The first phase of the project has already been completed with the second phase anticipated to complete by year 2014.

Implementation until now in terms of Fiji's e-Government services provision seems to be doing quite well, as almost all ministries and departments have a web site and online presence. All of the websites inform the user about the core functions of the ministry or department, its organisation structure, staff listing, office locations and phone contacts. Almost all of them allow its clients and customers to download electronic versions of application forms in PDF format, however, completed application forms with the relevant documents and accompanying fees still need to be physically submitted to the relevant ministry or department for manual processing. The information provided by many of the websites is quite dynamic in the sense that almost all the information at all levels is provided on the site. A user would not have to physically visit or make a phone call to get any further information.

Government is also making investments in institutions to bring them up to speed as modern government institutions. An American consultant, Qorvis Communications for example has been brought in to assist with training and support for the Ministry of Information—to ensure its operations take into account advances in social media, the Internet and best practices regarding the media. They will also help coordinate external communications, including promotion and packaging of various investment incentives.

### **2.3 Current and Proposed ICT Technology in Fiji**

In this 21<sup>st</sup> century apart from the usual basic needs of food, water and electricity the government has identified a new basic resource for Fiji: the Internet. The Government has moved aggressively to liberalize the telecommunications industry since 2008 to give Fiji citizens expanded access to the Internet. Exclusivities and monopolies had been removed; a transparent regulatory system was put in place; and tariffs on telecommunications accessories and equipment were significantly reduced.

There has also been a national broadband policy launched in Fiji—the first ever for a South Pacific island country. This is a definitive plan for the implementation and prioritization of broadband accessibility. In addition to this there were also three telecentres around Fiji by the government to ensure improved access to information, education that will contribute to creating sustained livelihoods.

Fiji is positioned to be fully digitized within the next two-to-three years. Earlier this year 2011, the Fiji's Spectrum Plan was launched, which has required readjustment and reallocation of radio-frequencies. This has given a possibility for more frequencies to be available for the introduction of 4G—or higher wireless speeds. Funding for the continuation of these initiatives has been provided in the budget.

As Fiji is the hub of the South Pacific in respect of information and communications technology, a number of countries in the Pacific are seeking to link up with the Southern Cross submarine cable that lands in Fiji. In 2012, and for the following two year, government will also host a Regional ICT meeting for which funding has been provided in the budget.

To fund many of the growth and capacity building in the ICT sector, a 1 percent levy on all voice bills, including pre-pay cards, will be imposed. The full revenue from the levy

will be used to build capacity to increase Internet penetration and access at affordable prices. Government will also continue to provide a 60 percent investment allowance to Telecom Fiji to facilitate new line installation.

#### **2.4 Private and Public Sector efforts in Financial Exclusion**

In the following debate we will review and discuss different ICT4PA programmes as envisaged by the Fiji Government. It seems to us that the traditional concept of Public Private Partnership (PPP) that is already developed in other sectors has taken on greater recognition in the use of ICT4PA in Fiji. The following various initiatives being collaborated together by the public and private sectors that are underway, have started or are indeed about to start. However the alignment of these initiatives to alleviate poverty is something that is yet to be realised for many as most will interpret as bank competitive measures in attracting more clientele. Different ICT4PA initiatives include:

##### **2.4.1 G2P Government & Westpac Collaboration**

Above collaboration between Westpac and government can be said to be a success story of the e-government implementation. Since January 2011, Westpac Banking Corporation of Australia has been assisting government in the distribution of social welfare benefits across Fiji through its network of branches, ATMs and POS devices in Westpac's merchant network. In the process, they have also provided access to flexible, no-fee accounts to a previously unbanked population including those living in hard-to-reach areas.

Using this form of branchless Banking technology, the government together with Westpac has eliminated the need for formation of depressing long queues of the social welfare recipients outside post offices or district social welfare offices across the country. Also eliminated is the need for 24,000+ recipients to trek many hours from the poorly connected interior each month to pick up or cash their vouchers and spend FJ\$ 10-20 (US\$6 - \$12), or 15-30% of their modest allowance on travel.

##### **2.4.2 E- Money**

Telecommunications Companies Digicel & Vodafone in association with various financial institutions have implemented the e-money project within Fiji with the interest of getting this service out to the rural areas and to low income people. UNPFIP have worked both with Digicel and two other service providers in the Pacific to ensure this product was designed with the low income and rural user in mind. They have also worked very closely with the Reserve Bank in the region to guide the development of the product and the service and make sure that it will be accessible to all. Coverage of this service is not only extended to main regions like Suva, Nausori, Nadi, Lautoka and Labasa but also the remote and outer islands.

Apart from the local mobile money transfer, Vodafone & Digicel have also partnered with various foreign exchange companies to launch cross-border international remittance services in Fiji. International remittances outward as yet is not approved by RBF at this stage but this service will be available down the road. Mobile network providers also support inter-operable mobile money systems. I.e. a client of Vodafone for example can send and receive funds from a Digicel handset without any restrictions. Some mobile service providers are linked up with banks in partnership, hence availing main stream

banking services to all. There will be the possibility of withdrawing and depositing money linked to bank accounts.

#### **2.4.3 WBC & BSP Mobile Phone Banking**

The introduction of SMS mobile banking in the domestic economy by Bank of South Pacific and Westpac Banking Corporation in Fiji has allowed better financial access to the low-income community within the rural and isolated areas who previously had limited or no access to them. The service had not only improved and sped up the payments system but it also has increased the level of financial inclusion within the country. SMS banking allows customers to virtually access their existing bank account using their mobile phone mobile phones 24 hours a day and seven days a week. The service also provides customers the convenience of accessing their bank account whenever or from wherever they are in Fiji. It has added appeal for customers living in remote rural areas, as they no longer have to travel long distances to a branch, agency or ATM to check if their payments have been transmitted into their personal accounts. They are able to save on bank charges, particularly Westpac customers who are not charged for the SMS services apart from texting.

#### **2.5 Current use ICT in Ministry of Agriculture in Fiji**

In terms of ICT usage, minimal use of information technology has been made by the Ministry of Agriculture in improvement of agricultural processes in Fiji to date. Findings on the current usage of IT technology are listed below:

- Computers used within the department are mainly to facilitate work processes.
- Intranet system is currently in the pipeline for implementation.
- Website is stagnant – there are no updates on the current website.
- Means of sending and receiving information is manual eg. Using the Fax machine
- IT specialist - specialist within the department are focused mainly on maintenance of computers.
- Beginning of 2011, 40 laptops and 40 flashnets were issued to extension officers for convenience in sending reports to Head Quarters.
- Social Networking – Facebook webpage has been developed to target school children particularly those students who have interest in agriculture.
- Data backup – is planned to be in four locations which is West, North, HQ and ICT data centre.

### **3.0 Moving Forward- How Can ICTs alleviate Poverty in Fiji?**

#### **3.1 Poverty Alleviation in General**

Based on the literature review, best practices and findings above it can be seen that Fiji has recognised the potential that ICT has in terms of National development and Poverty alleviation and is slowly integrating the same within its strategies and policies to further develop the public and private sector.

Current findings have reflected that we do portray the following improvements in telecommunication reform that support the concept of poverty alleviation beginning at the national level which include:

- A high-level authority, often under the direct control of the head of government
- Telecommunications reform
- Expansion of the physical infrastructure
- Focus on e-government and e-commerce
- Revised regulatory environment and legal framework
- Private sector participation
- Universal service arrangements
- Pilot projects such as G2C and introduction of rural telecenters

### **3.1.1 E – Government and poverty alleviation in the rural & remote areas**

The inclusion of the “People Online” project addresses the concern of information exclusion within the rural and remote areas. The three initiatives included in this project are: Connection of Public libraries to the internet, establishment of rural telecenters and urban supercenters can immensely improve the living standards of the poor people living in the rural area and urban area.

However ICT and E-government developments in Fiji are still in the development stage and there is still a lot of work to be done in order for the poor to reap the benefits. As many MIS and ICT4D initiatives have proven to be, the weakness tends to be the limited consultation and engagement with stakeholders in the design phase of an ICT intervention. It is important that the e-government in Fiji involve public participation within its programme and involve society at the grass-root level through communication and consultation. The government should reflect on the communities concerns and aspirations and treat the poor as ‘partners’ of e-governance and not just ‘receivers’ of national policies and service delivery.

Together with the implementation of telecenters, PFnet is a good system that can be implemented within the rural communities for communication and information inclusion. The same is successfully being utilised within the rural and remote areas within the Solomon Islands and South Africa and has also contributed towards ICT literacy between the young and old. PFnet is a cheaper and more efficient way rural communities can communicate with government departments and other domestic and international organisations. For the telecenters to perform effectively sustainable development of four key components are necessary i.e. sustaining financial viability, sustaining staff capability, sustaining community acceptance and sustaining service delivery.

### **3.1.2 M– Money and poverty alleviation within the rural & remote areas**

The implementation of the mobile money concept in Fiji is still in its introductory phase and the effect it has had on the poor within the rural and remote areas is yet to be realised. As per the literature review the mobile money concept has been vastly successful within the rural and remote communities within the African countries. Apart

from financial exclusion diversification of mobile phones within communities in general has provided rural households with fast and easy modes of communication. Poverty has been minimised through mobile phones in a number of ways such as expansion of the rural social network, increased people's capability to deal with emergencies, it has enabled rural people to cut down travel costs, maximize outcomes of necessary journeys, increase efficiency of activities, and send and receive money. Mobile phones are also assisting rural farmers to secure better markets and prices; save time and money; and promptly communicate business-related information.

### **3.1.3 Training on ICT use**

Adoption of MIS systems by communities can be said to be based on various factors. The level of literacy and capacity to use ICT system is one of the major factors that influence adoption. Implementing IT innovations within the rural community without proper training can have adverse results. Improvements using information systems should be made with consideration to the current ICT literacy in place and the level of acceptance within the community. With proper training conveyed to all stakeholders, the rate and speed of adoption can be relatively successful. Therefore, it is important to consider training as an essential ingredient of ICT systems in the rural perspective and the need to integrate training into the system so that all stakeholders can benefit effectively.

## **3.2 Poverty Alleviation using MIS in Agriculture**

### **3.2.1 ICT and Climate Change**

While MIS usage is very minimal in the Agriculture Sector, it can be foreseen that the proper utilisation of information technology can greatly improve the results in this very important sector with reduction of the Ministry's operational cost. Having said this, it would be fair if the salient facts for agriculture are stated and also the possible stakeholders for agriculture are identified.

### **3.2.2 Salient Facts for Agriculture in Fiji**

As a result of the research that was done, these were some of the facts which were identified that will boost the agriculture performance if ICT is integrated in the system.

- **Inadequate number of extension technical advisers compared to the number of national farmers** (40/65,033) will result in poor technical information sharing which may contribute to lower farm yields and also leave subsistence farmers with no option but to continue with the traditional method of farming. These technical details shall include the types of crops suitable for each location, land preparations, preparations of seedlings, planting or cultivation techniques, types of fertilisers, market price and available markets, and also research information on other suitable varieties of crops. Having these technical details uploaded in the department of agriculture's websites will allow farmers to readily access this important information from their Rural ITC Community centre close to their locations.

- **Higher Agriculture Import Rate** signifies that the local farmers produce and also the quality cannot cater for the local demand. However, as stated above implementation of MIS in providing technical guides to farmers will result in positive contribution from all farmers (Commercial and Subsistence) in ensuring that targets are achieved.
- All **Indigenous Fijians (Itaukei) have their** lands allocations and all they needed is the technical information that will drive them to well utilise their resources and accessing information through websites will be the most effective means of getting these information.

### 3.2.3 Farming Stakeholders

Stakeholders belonging to the Agriculture sector include the following:

- Farmers (Commercial & Subsistence farmers)
- Department of Agriculture (Government)
- Research Department (Government)
- Businesses and Markets

For the agriculture sector to thrive, these major stakeholders must be communicating effectively and the most transparent means of communications and understanding is through the use of website.

## 4.3. Key Lessons for International Best Practices

Finally, with the above discussion of the findings based on how ICT assist in alleviating poverty through agriculture, a review of best practices coupled with the review of evidences and progress on ICT4D research. Below we summarised essential requirements and ingredients for a successful intervention in countries such as Fiji and indeed others who wish to introduce similar solutions:

**Figure 6: Lessons for ICT4PA**

Type	Description	Key Informational Requirements
G2F	Information from Government to Farmers  (Farmers – includes dairy farmers, vegetable, root crops fish, etc....)	<ul style="list-style-type: none"> <li>• Provision of Technical Information</li> <li>• Provision of Farming Assistance</li> <li>• Agricultural Updates/development</li> <li>• Marketing Information</li> <li>• Demand information</li> <li>• Relevant government policies</li> </ul>
G2B	Information from Government to Business  (Business – includes market and suppliers of farming items such as tools, fertilisers, weed	<ul style="list-style-type: none"> <li>• New markets and business supports</li> <li>• Availability of resources</li> <li>• Extension of e-services</li> <li>• Policy boundaries</li> <li>• Marketing Research updates</li> </ul>

	killers etc)	
F2G	Information from Farmers to Government	<ul style="list-style-type: none"> <li>• Farming updates</li> <li>• Farming Assistance requests</li> <li>• Information about government Schemes, Subsidies and Financing</li> </ul>
F2B	Information from Farmers to Business	<ul style="list-style-type: none"> <li>• New Products and Markets</li> <li>• Communication of extension requirements</li> <li>• Problems and Challenges faced</li> <li>• Virtual markets</li> </ul>
B2G	Information from Business to Government	<ul style="list-style-type: none"> <li>• Licence application</li> <li>• Support requirements in terms of products and markets</li> <li>• Participation in policy planning</li> <li>• Advocacy concerns-issues of concerns to business sectors</li> </ul>
B2F	Information from Business to Farmers	<ul style="list-style-type: none"> <li>• Agricultural products in terms of – nature of agricultural demand</li> <li>• Price information on products in the market</li> <li>• Information of quality requirements of products</li> </ul>

Furthermore, some specific lessons can be drawn from this study. In addition to essential elements of an ICT for poverty Alleviation (ICT4PA) identified above, the following list need to exist in a country which is trying to introduce an ICT4PA intervention (this list is not exhaustive):

- Government to ensure that all registered commercial farmers have access to relevant ITC devices for ease access of information e.g. mobile phones, telecentres, live show radio and other interactive media.
- Government department leading this intervention has interactive website as well as an appropriate technology for data warehouse,
- Train or facilitate ICT training to relevant stakeholders including farmers
- Ensure that critical agricultural information is timely updated in the website
- Have a Risk Management and Contingency Plans in place like proper data system back up.
- Start small, benefit from network effects, scope and scale up
- Create rural service providers for Internet,
- Promote rural-urban cooperation for enhanced and sustainable development

- Support rural access with appropriate policy. The absence of policy framework become a prevalent weakness in many countries;

The following indicative list of issues that need review before and during the ICT4PA concept and project:

- Recognise that there may be technology but that the speed at which change takes place will lead to a slow adaptation and switching of technologies-which has several negative impact such as disinteresting less informed and technophobe users
- Many regulatory barriers to rural services may hamper or indeed slow positive initiatives that are conceived or being implemented
- Lack of review of best practices such as those reviewed in this paper can increase costs, allow room for avoidable errors, and indeed discourage a culture of excellence;
- A prevalent lack of systematic way to build local capacity will, overtime, make the initiative unsustainable and lead to communities' lack sense of ownership
- The market and supply chain integration means that several areas of interventions may not yield desired result.

#### **4.0 Conclusion**

Agriculture is the mainstay of Fiji's economy providing 28% of the total employment in the formal sector, and it directly and indirectly employs 65% of the total population. It is a major stronghold of Fiji's economy. Agriculture therefore poses a great potential for employment generation and contribution towards Fiji economy. It is expected and proven that the consistent and sustainability of economy growth in any given country addresses the issue of poverty at an acceptable level. From research review, the use of ITC within the Agriculture sector has strongly revealed that ICT4PA can be the most effective tool to enhance performance in the agriculture sector thus contributing to the nation's economy, which ultimately contributes to the alleviation of poverty.

Fiji has acknowledged the capability of ICT in the agricultural sector as a means of addressing poverty even though this is yet to be proven on the ground. But with the best practices learned from Africa and beyond, this has guaranteed that this ITC endeavour would address the performance gap of the agricultural industry hence positively contributing to Fiji's economy thus alleviates poverty in Fiji. Considering the surplus ICT devices Fiji has exposed to, this is an added advantage to the implementation of ICT within the agriculture processes which in doubt addresses the rural poor who are mainly exposed to "agriculture".

But success does not come easily; those governments introducing ICT4PA need to make sure that all forms of ICTs are available and supportable to spearhead the competitively priced communications, supporting both the ICT-based solutions and the other social aspects of poverty alleviation. A typical country using ICT4PA programs need to ensure affordability of the technology, Accessibility (in terms of physical resource, and skills capacity) at the same time advocating an ICT industry capable to utilize the most modern and sophistications of ICTs ensuring its

compatibility and complementary. Although basic ICTs may be recommended at an initial stage, it should be understood that there will be cases where the most sophisticated technology is the only choice (for example the business intelligence, supply chain systems and customer relationship management systems).

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**Appendix1: Data related to Poverty Alleviation in Fiji**

**Table 1: Appendix 1.MDG Goals Poverty Alleviation**

<b>MDG Goal No.1 – Eradicate extreme poverty and hunger</b>	
<b>MDG Indicating Variables</b>	<b>Fiji National Policies</b>
<ul style="list-style-type: none"> <li>• Proportion of population below \$1 per day (PPF values)</li> <li>• Poverty Gap ratio</li> <li>• Share of poorest quintile in national consumption</li> <li>• Growth rate of GDP per person employed</li> <li>• Employment to – population ratio</li> <li>• Proportion of employed people living below \$1 (PPP) per day.</li> <li>• Proportion of own – account and contributing family workers in total employment</li> <li>• Prevalence of underweight children (under 5years of age)</li> <li>• Proportion of population of minimum level of dietary energy consumption</li> </ul>	<ul style="list-style-type: none"> <li>• Reducing poverty to a negligible level, making Fiji knowledge based society, improving health service delivery and developing a common National identity and building social cohesion.</li> <li>• Review and develop poverty targeted policies and implement appropriate programs in housing, national insurance and social security and National Integrated Poverty Eradication Framework.</li> <li>• Empower communities through education programs for self sufficiency, self reliance, and self esteem.</li> <li>• To ensure the provision of minimum and affordable basic needs to all categories of the poor.</li> <li>• To encourage traditional support mechanisms for the disadvantaged and provide adequate welfare support to the destitute.</li> <li>• To provide a social safety net to those in a severe state of deprivation.</li> <li>• To formalise and strengthen the government and civil society partnership in alleviating poverty.</li> <li>• The creation of more sustainable, secure employment opportunities with better wages in the long term mechanisms for moving people, out of poverty.</li> <li>• To ensure the compilation and timely analysis of statistics on poverty</li> <li>• To ensure food and income security for rural and outer island dwellers.</li> </ul>

Source: Millennium Development Goals Handbook

**Table 2** Government assistance for Poverty Alleviation: 2010 - 2011

	<b>2010 REVISED (\$M)</b>	<b>2011 BUDGET (\$M)</b>
<b>Local Government, Urban Development and Housing</b>		
Squatter upgrading and Resettlement Programme	1.5	1.5
HART	1.0	1.0
<b>Strategic Planning, national Development &amp; Statistics</b>		
Northern Development Programme	1.0	1.0
<b>Public Service Commission</b>		
Multi-Ethnic Scholarships	5.5	5.5
<b>Education</b>		
Bus fare Subsidy	13.0	12.0
<b>Social Welfare</b>		
Food Voucher Program	7.4	11.0
Welfare Graduation program	0.6	0.6
Capital grant to Voluntary organisation	0.4	0.2
Family Assistance Scheme	15.0	15.0
Care and Protection Allowance	4.4	4.4
Women's Plan of Action	0.3	0.3
<b>Miscellaneous</b>		
Housing Assistance	-	10.0
FDB – Subsidy Grants to All Citizens	2.5	2.5
Students Loan Scheme	1.0	1.0
FDB – interest Subsidy (Northern Division Projects)	0.5	0.5
FEA Subsidy	-	3.5
<b>TOTAL</b>	<b>54.1</b>	<b>70</b>

Source: Ministry of Finance

**Table 3.**PAP Rural and Outer Island Development Programs: 2010-2011

	<b>2010 REVISED( \$M)</b>	<b>2011 BUDGET( \$M)</b>
Grant to CATD	0.90	0.50
Extension Agriculture	0.20	0.20
Maintenance of completed Irrigation Services	0.30	0.30
Land Drainage & Flood Protection	12.70	4.00
Watershed Management	0.90	0.30
Grant to Self-help Projects	3.00	1.00
Divisional Development Projects	1.50	5.60
Rural Housing Assistance	1.00	1.00
Upgrading of Rural Roads	1.00	3.60
Upgrading of existing Cane Access Roads	1.80	1.80

Fiji Groundwater Assessment & Development	0.30	0.20
Dental Equipment for Sub-Divisional Hospital	0.40	0.30
Fiji Road Upgrading Project (FRUP)	30.60	39.00
Shipping Franchise Scheme	1.50	1.50
Upgrade of Government Shipping Vehicles	1.40	0.40
Other Rural Water Supply	2.40	2.40
Upgrading of Rural Airstrips	3.80	4.70
Rural Postal Services	0.30	0.10
Banking Services for Non-Economical Rural Areas	0.10	0.10
<b>TOTAL</b>	<b>64.10</b>	<b>67.00</b>

*Source: Ministry of Finance*

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