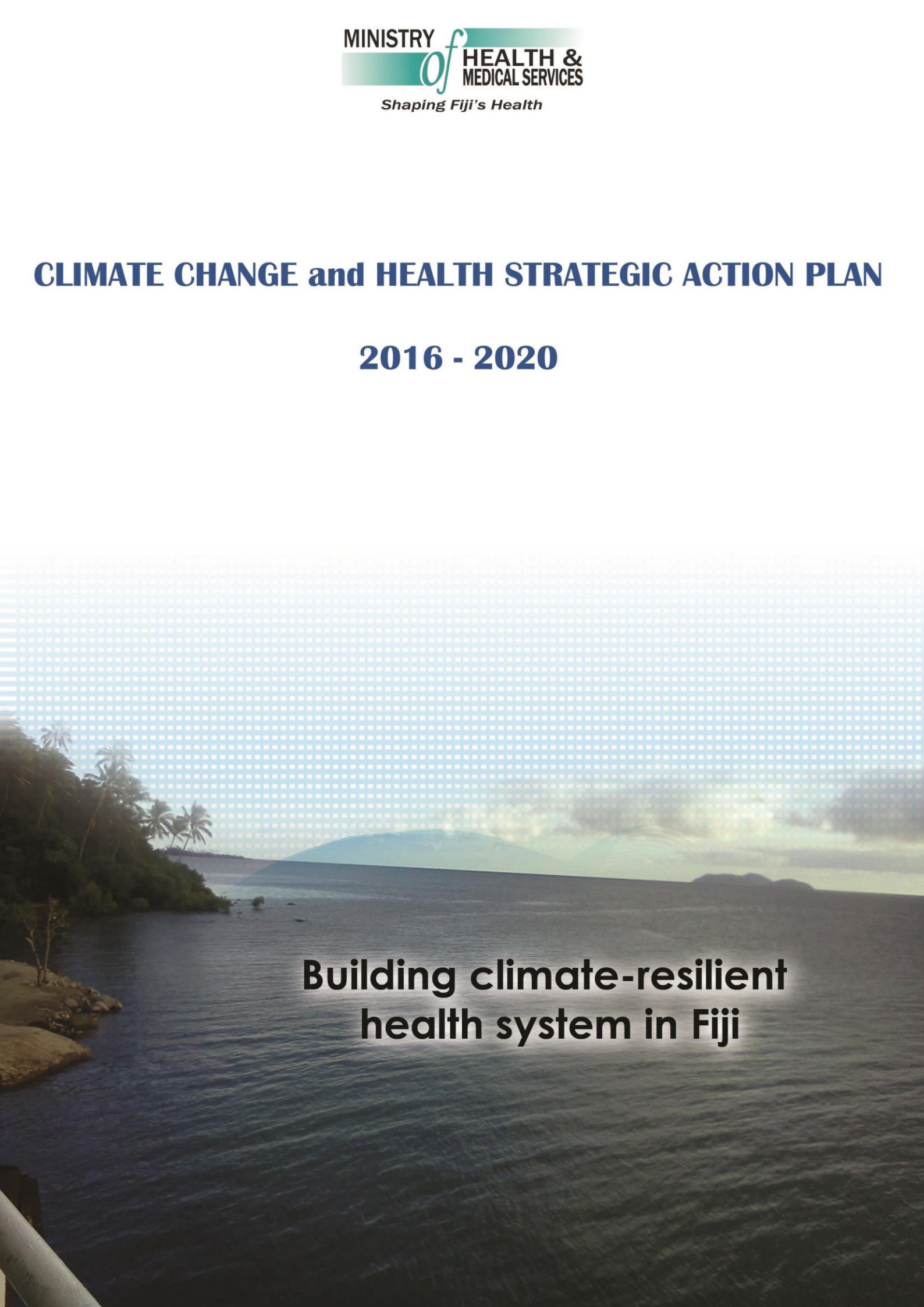


CLIMATE CHANGE and HEALTH STRATEGIC ACTION PLAN

2016 - 2020



**Building climate-resilient
health system in Fiji**







Mission Statement

Building resilience to climate change impacts on health by empowering and assisting the people through an adaptive and sustainable health system in Fiji

Vision Statement

A healthy population in a changing climatic environment

Values

-  Equity
-  Responsiveness
-  Evidence-informed
-  Proactive leadership
-  Multisectoral collaboration
-  Respect for human dignity

“Every century has its own public health challenges; climate change is our century’s challenge. Never has it been more evident that health concerns are at the cornerstone of the changing climate. From heat-waves, floods and droughts to worsening air pollution and changes in vector-borne diseases and plant distribution – directly and indirectly, climate change profoundly affects health.”

Dr Margaret Chan, WHO Director-General

Foreword by THE MINISTER FOR HEALTH AND MEDICAL SERVICES

Climate Change is not something that will affect us in the future. It is affecting us right now.

It is having an impact on the health of our people right now, and its impact will get worse in the years ahead.

Fiji is among the vulnerable island nations that are facing the severe effects of climate change.

Climate change brings with it rising sea levels and more devastating disasters such as cyclones, floods and drought. Natural disasters are becoming more and more intense and destructive and our facilities are suffering more damage. Access to water and food security has been threatened as planting areas get inundated with sea water and the oceans become increasingly acidified.

Climate change has increased intensity of communicable diseases spread by vectors and this is something we have seen in recent years. We have noted also that climate change and natural disasters have a direct impact also on NCDs as our people are forced to resort to processed foods to survive.

Life itself is under threat in Fiji as a result of the impact of climate change. We must take action. We must continue the fight against the forces that led to climate change in the first place. We must also adapt to what has already happened.

We must ensure that we build resilience into our people, into our health system and services and also in our health facilities.

The Climate Change and Health Strategic Action Plan 2016 – 2020 (CCHSAP 2016 – 2020) has been developed to ensure Fiji's health system including our health facilities are protected so that we can continue to serve our people and move towards our vision of a healthy population. The CCHSAP is the tool that will bring collaboration amongst our stakeholders to build resilience through health adaptation processes.

This plan has been developed after extensive consultation. It is absolutely critical and its objectives are achievable. There is no time to lose on this matter and we require collaboration to ensure that we are able to protect our communities and people.

Therefore, I call on our stakeholders and partners for support in the implementation of this plan to ensure the protection of our population's health in the era of climate change.



Hon. Jone Usamate

Minister for Health and Medical Services



Supplementary Foreword by THE MINISTER FOR HEALTH AND MEDICAL SERVICES

It is with pleasure that I contribute to the Climate Change and Health Strategic Action Plan 2016 – 2020 ensuring the health needs of our vulnerable populations are addressed effectively within the challenges of climate change. Vulnerable populations in the remote areas are sometimes forgotten, yet they are the ones whose wellness are compromised as the impacts of climate change creep in on our smaller islands and coastal communities. The impact of increasing temperature and varied rainfall affecting the environment does not spare our in-land populations on the main islands. Whilst the whole populations' wellness is at stake, this plan aims at addressing adaptations that reduces the adverse impacts on human health and health systems.



Climate change impacts on health have been for too long an overlooked concern, and it is with this plan that the Ministry of Health and Medical Services embark on the mission to ensure that health challenges are minimized. The plan considers a scope of health concerns that can be effectively undertaken with collaboration and support from stakeholders in health. I look forward to overseeing the collaborative implementation of this plan.

A handwritten signature in black ink, appearing to read 'Rosy Akbar'. The signature is written in a cursive, flowing style.

Hon. Rosy Akbar

Minister for Health and Medical Services (since September, 2016)

Executive Summary

The Climate Change and Health Strategic Action Plan 2016 – 2020 (CCHSAP 2016 – 2020) supports the enhancement of the mission and vision of the Ministry of Health and Medical Services (MOHMS), in provision of a healthy population and healthy environments during this period of global climate change and waves of natural disaster in Fiji. The plan is based on Fiji's international commitments including the Paris Agreement that was adopted at the 21st Conference of the Parties (or "COP") to the United Nations Framework Convention on Climate Change (UNFCCC) and the 2030 Agenda for sustainable development which includes climate action as a goal; regional commitments under the 2015 Suva Declaration and the 2015 Yanuca Island Declaration of Pacific Health Ministers Meeting (PHMM) and; national commitments under the People's Charter for Change, Peace and Progress (2008), the Roadmap for Democracy and Sustainable Socio-Economic Development (2010-2014), Green Growth Framework (2014) and the National Climate Change Policy (2012).

The plan seeks to support the application of the Health Emergency and Disaster Management Action Plan (HEADMAP) by identifying and addressing health risks related to Climate Change to ensure sustainable developments within and outside of the MOHMS.

This plan is based on the World Health Organization's (WHO) Operational Framework for building climate resilient health systems, which provides guidance for health systems and public health programming to increase their capacity for protecting health in an unstable and changing climate. The World Health Organisation has been our partner in the development of this plan and instrumental in establishing climate change and health in Fiji.

The MOHMS National Health Executive Committee internally reviewed the CCHSAP and the stakeholders of climate change conducted the external review.

The general goal of the CCHSAP is to plan measures in adapting to climate change for the health system in order to prevent and overcome both existing and future risks. In addition, to respond promptly to the risks associated with people's health and well-being. The action areas of adaptation are incorporated under the ten components of WHO's Operational Framework for building climate resilient health systems:

Component 1: Leadership and governance

Component 2: Health workforce

Component 3: Vulnerability, capacity and adaptation assessment

Component 4: Integrated risk monitoring and early warning

Component 5: Health and climate research

Component 6: Climate resilient and sustainable technologies and infrastructure

Component 7: Management of environmental determinants of health

Component 8: Climate-informed health programs

Component 9: Emergency preparedness and management

Component 10: Climate and health financing

Emphasis on key action areas under the ten components will be addressed within the plan's term.

Under the first component, establishing and empowering a climate change and health unit within MOHMS is prioritized with plans to strengthen partnership and cooperation within the MOHMS and between the relevant ministries and stakeholders. The establishment of the CCH – unit shall be complemented with capacity building to be implemented as strengthening of health workforce under component 2. A well trained health workforce, knowledgeable in climate change and health can create effective public awareness of health problems associated with climate change.

Components 3, 4, 5 within the plan address improvements to the health systems in general with particular focus on using existing data or through profiling to identify communities most vulnerable to climate variability and change and associated health risk exposures against health systems capacity to cope with climate change health risks and mapping for appropriate interventions. Monitoring risks connected with climate change and their influence on people's health is included for food, water, waste disposal and disease vectors such as mosquitoes and rodents. Development and enhancement of integrated risk monitoring would generate accurate information for early warning, thus strengthening health information systems for faster detection of climate-sensitive diseases and risks. The use of environmental health impact assessment tool will assist in the identification and monitoring of the parameters relevant to climate change health risks. Research implementation should improve the health system in its promotion, prevention and timely response to climate change risks.

The sixth component within the plan provides for essential preventive and curative health products such as vaccines for the CSDs and planning climate resilient infrastructure and services as in building health facilities in areas safe from impacts of climate change.

The ensuing three components pertain to health services delivery and emphasise management of environmental determinants of health where standard operating procedures for health impact assessment are developed; consideration of climate risks and vulnerability in health programming and operations where available data and information from epidemiological monitoring and inspection and surveillance of environmental determinants of health are utilized for interventions and adaptation strategies; and finally the use of standard operating procedures and emergency and disaster risk management policies for enhanced preparedness for health systems.

The final component of climate and health financing will involve mobilizing resources to address health risks presented by climate change and includes the preparation of proposals for funding of innovative and appropriate climate change and health adaptation projects.

Health adaptation activities offered as a sample action plan for implementers of this plan is in Appendix 1.

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1.0 Introduction

Climate change and health strategic action plan is an umbrella document aiming to reduce climate impacts on all aspects of health in Fiji. The government of Fiji is committed to addressing the impacts of climate change on health systems including human health through its international commitments under the UN Framework Convention on Climate Change and the implementation of the People's Charter for Change, Peace and Progress (2008), the Roadmap for Democracy and Sustainable Socio-Economic Development (2010-2014), Green Growth Framework (2014) and the National Climate Change Policy (2012).

The Sixty-first World Health Assembly, 2008, mandated Member States to support the work on the protection of human health from risks related to climate change. Subsequent Health Assemblies built on the evidences and resolutions presented in 2008 to empower Member States in contextualizing the regional frameworks for action pertaining to climate change and health.

WHO's Operational framework for building climate resilient health systems considers the process of building resilience to occur in two principle ways namely the reduction of overall vulnerability, and the development of specific system capacities acknowledging that a healthier population and stronger health system will be more resilient to climate change. For reduction in overall vulnerability, WHO recommends continued investments to reduce poverty and inequity and universal access to essential services, such as health, education, clean water and adequate food. In addition, for health system strengthening it is recommended to have an adequate workforce and climate-proofed infrastructure in local facilities to control climate-sensitive diseases and improve response to local emergencies and surveillance systems to monitor population health and environmental exposure with good practices of health governance.

At the 2009 Pacific Health Ministers Meeting (PHMM) in Madang, the Ministers committed to action on climate change and health with recommendations that included each PIC to develop national strategies and action plans for health sector adaptation. These will form parts of national adaptation programmes and national communication reports to the United Nations Framework Convention on Climate Change (UNFCCC) and the Pacific Islands Framework for Action on Climate Change (noting that the national adaptation programmes should be part of national sustainable development strategies). The 2015 Yanuca Island Declaration pursued this further, recognising the real and potential impacts of climate variability on health and health systems as an emerging challenge in the Pacific. The identified high-priority, climate-sensitive health risks common throughout the region include vector-borne, water-borne and food-borne diseases; injuries and deaths from extreme weather events; compromised food security and malnutrition; and the mental health impacts of, among other things, loss of livelihoods and climate change-induced population displacement (World Health Organization, WHO, 2009). In October, 2015, the Pacific Health Ministers commitment to climate change agenda was reinforced with the

signing of the 'KAILA' Pacific Voice for Action on Agenda 2030 to strengthen Climate Change Resilience through Reproductive, Maternal, Newborn, Child and Adolescent Health.

The health ministers of the Pacific noted with concern that the reports of the Intergovernmental Panel on Climate Change (IPCC) on the effects of climate change on human health are already being observed.

Further to international and regional health mandates, there are strong climate change political mandates such as the UNFCCC Paris Agreement and the 2015 Suva Declaration, where the leaders of the Pacific Islands Development Forum called for increased support for adaptation measures that addresses all vulnerable sectors including health, water and sanitation.

The Paris Agreement's explicit references to health represent a milestone in recognizing the health impacts of climate change. Health is mentioned three times in the core text of the agreement, which refers to the "co-benefits" of tackling health and climate change at the same time. There is further requests for the Green Climate Fund (GCF) (established fund under the climate change convention) to expedite support for the developing country Parties in formulation of their national adaptation plans and for subsequent implementation of countries' policies, projects and programmes. The development of suitable health adaptation strategies as projects under this CCHSAP may enhance the likelihood for financial support.

It is established amongst world leaders that global climate change is an established indisputable phenomenon, unequivocally caused by human activities. It is a significant health hazard faced by humankind. The World Health Organization (WHO; 2009a) explained that the changing climate would inevitably affect the basic requirements for maintaining health, which include clean air and water, sufficient food and adequate shelter. The health impacts associated with changes in climatic conditions has three categories. The first category includes those direct impacts caused by weather or climate extremes, which entail injuries and illnesses during or after floods, droughts, windstorms and heat waves. The second category encompasses the impacts of environmental and ecological changes that occur in response to climate change. These include the alterations in the geographical distribution and intensity of communicable diseases that spreads by vectors, rodents, food and/or water. In addition, the capacity of climate change to alter ecological systems has been observed to have the potential in favouring disease transmission and the emergence of diseases in areas where they have been non-existent, for example, malaria in south and eastern Africa. The third category relates to the diverse health impacts like trauma and stress caused by social disruptions to communities, such as loss of homeland or important resources.

Fiji's climate is expected to encounter extremes, dry seasons to become drier, wet seasons becoming wetter and the intensity of tropical cyclones to increase. These will impact on the health sector and threaten the wellness of Fiji's population. Climate variability and change in

Fiji already cause disasters because of droughts, floods and tropical cyclones. A major impact from these disasters is seen in the health sector where there is an observed increase in hospital admissions and treatments from injuries and infectious diseases such as diarrhoea, typhoid, dengue and leptospirosis. There is also an increase in malnutrition and stress related ailments.

With support from WHO, Fiji's MOHMS implemented the "Piloting Climate Change Adaptation to Protect Human Health" (PCCAPHH) project, which aimed at enhancing the capacity of the health sector to respond effectively to climate-sensitive diseases (CSDs). The four-year project funded by the Global Environment Facility (GEF) was implemented in seven countries globally (Barbados, Bhutan, China, Fiji, Jordan, Kenya and Uzbekistan). Fiji was selected to be part of this project because of the sensitivity of communicable diseases, namely typhoid fever, leptospirosis, dengue fever and diarrhoeal illnesses, to periods of water stress during and following hydro-meteorological disasters.

There is an urgent need to develop health adaptation strategies to protect population health and build climate resilient health system in Fiji. Support towards action planning is observed to be a tool utilised successfully internationally and Fiji's MOHMS is supported by WHO to plan out a strategy for Fiji.

2.0 Background

2.1 Country Profile

Fiji is made up of over 300 islands, of which one third are inhabited by about 865,611 total population at the end of 2014 (FBS, 2015). Fiji is located in the South Pacific region with a total land area of approximately 18,700 square kilometres.

Fiji has an oceanic tropical marine climate, which varies through different timescales. The major features steering the variability of Fiji's climate include the El Niño Southern Oscillation (ENSO), the South Pacific Convergence Zone (SPCZ) and the trade winds. Fiji experiences very heavy rainfall during the wet season and heaviest rainfall occurs in the SPCZ. Moderate to strong El Niño events reduce rainfall by about 20-50% as experienced in 1982/83, 1986/87, 1992/93 and 1997/98 resulting in major droughts over most parts of Fiji. From a health protection perspective, it is noted that the 1997/98 severe drought period relating to the El Niño event occurred concurrently with the 1997/98 dengue epidemic, the worst in Fiji with about 24,000 cases, 17,000 hospital admissions and 13 deaths (GRF, 2012).

While the average temperature sits on 25°C, annual variation shows an average between 20-27°C. The summary of climate predictions for Fiji shows that temperature will continue to rise and by 2030, under a high emissions scenario, this increase in temperature is projected to be in the range of 0.4-1.0°C (annual mean temperature of 0.7°C). The projection for Fiji is more very hot days, warm nights, and a decline in cooler weather. However, drought projections are inconsistent for Fiji. It is generally suggested that there

would be an increase in both the dry season and wet season rainfall and model projections show that extreme rainfall days are likely to occur more often in Fiji. In addition, sea level in Fiji will continue to rise and the acidity level of the seawater will follow a similar trend. Researchers explained that Fiji, a small island developing state, is vulnerable to the impact of climate change and is exposed to extreme events like floods and droughts (ABM & CSIRO, 2011; GRF, 2012).

In 2014, the Ministry of Strategic Planning, National Development and Statistics reported that the Fiji economy has been assessed to have the potential to sustainably grow by 5% per annum. On average, the economy has grown modestly in the past 8 years measured against a base in 2005. However, through the reforms implemented by Government and major investments in infrastructure, the pace of growth has increased by 4.7% in 2013, 5.3% in 2014 and by an estimated 4.2 % in 2015 (ROF 2016). This growth is attributed to the Sugar Development Programme, forestry sector, significant capital works and expansion in the mining sector, expected positive growth in manufacturing, construction, electricity, transport and storage, accommodation and food services to name a few. The level of investment over the past decade has been between 14-18% of GDP, which is well below the average levels of 22% recorded in the 1970s and 25% in the years before 1987. Inflation in the past 8 years averaged around 4.9%. A large proportion of Fiji's inflation is due to imports, representing around 60% of domestic inflation (ROF 2014).

Over the past two decades, national assessments on poverty have revealed a declining incidence. From a level of 37.5% in 1996, the incidence of poverty, as measured against a periodically reviewed basic needs poverty line, was assessed at 35% and 31% from the Household Income and Expenditure Surveys of 2002/03 and 2008/09 respectively. The distribution of poverty is higher with the rural population than the urban population. While employment provides the most appropriate way out of poverty, the economy has not been able to generate sufficient new jobs annually to accommodate the 20,000 school leavers (ROF 2014).

Fiji experiences a rural to urban drift as more people now reside in urban areas (51%) than in rural areas for the first time in Fiji's history. Factors contributing to the increased number of urban squatters include high rural-urban migration, inadequate supply of urban housing stock, inadequate supply of fully serviced lots, and limited access to finance and affordable housing areas. It is estimated that there are close to 78,000 people currently living in 128 squatter settlements in the major urban areas (ROF 2014).

In early 2014, Fiji developed a 'living document' known as the Green Growth Framework for Fiji: Restoring the Balance in Development that is Sustainable for Our Future. This Framework intend to support and complement the Peoples Charter for Change, Peace and Progress and the 2010-2014 Roadmap for Democracy and Sustainable Socio-Economic Development and its successor national development documents with a shared vision: A Better Fiji for All.

The Framework ensures that the balance between the three pillars of sustainable development, namely economic, social and environmental is restored and that future development is both sustainable and can be sustained. Other sectors under the three pillars which are vulnerable to climate change include agriculture, health and social institutions (societies) such as communities, villages and settlements. To support this important process, the Green Growth Framework intends to provide an opportunity in which everyone, government, non-government, the private sector, faith-based organisations, academia, the media, urban and rural communities and individuals alike can identify the role they must each play in the pursuit of restoring the balance in development, which must be sustainable. This Green Growth Framework for Fiji is a tool to accelerate integrated and inclusive sustainable development, which will inspire action at all levels, to strengthen environmental resilience, drive social improvement and reduce poverty, enhance economic growth and also build capacity to withstand and manage the anticipated adverse effects of climate change. Fiji's small size, vulnerability to climate change and climate variability is considered in the Framework, which is included as its first of the ten thematic areas on *Building resilience to climate change and disaster*.

2.2 Health Status of Fiji

Fiji's health system is divided into two main programs: primary and preventive health care services or the public health system and curative health care services or the hospital services. It provides health services throughout Fiji, either free or at minimal cost to Fiji citizens. There are 214 health facilities in Fiji of which 107 are nursing stations, 80 health centres, 19 sub divisional hospitals, 3 divisional hospitals, 2 specialized hospitals and 3 old people's home.

Fiji's life expectancy at birth increased from 66 in 1990 to almost 70 in 2014. Neonatal mortality (per 1000 live births) was reduced from 17 in 1990 to 10 in 2015. The under 5 mortality rate has decreased significantly over the last 5 years with general improvement noted in immunization status of one-year olds. The Maternal Mortality Rate target is still elusive with an increase in the number of maternal deaths noted for 2014. Maternal mortality ratio per 100,000 live births ranged from 27.5 in 2009, 22.6 in 2010, 39.8 in 2011, 59.47 in 2012, and 19.07 in 2013 and increased to 44.4 in 2014.

MOHMS recognises that the main crisis at the moment in terms of the health of this nation is the burden of NCDs with its high mortality and morbidity as reports show the top cause of mortality remains NCD related (79% of top ten causes of mortality) with disease of the circulatory system being the top cause of mortality. Fiji faces a triple burden of disease through NCDs, CDs and climate change. MOHMS continues the battle and notes that the best approach is the wider sector involvement or whole of government approach where all Fijians have the responsibility to advocate for Wellness throughout their lifetime whether individually or family, community or the population at large.

Table 1: Vital Statistics (source – MOHMS 2013/2014AR;* FIBOS 2014 projection)

Health Indicator	Status 2012	2013	2014
Life Expectancy	68.02	68.11	68.4
Infant Mortality Rate/1000 live births	15.86	13.7	13.8
Maternal Mortality ratio/100,000 live births	59.47	19.07	44.4
Crude Death Rate/1000 population	7.52	7.6	8.0*
Dengue Incidence/100,000 population	51.16	105.92(969)	1150.20
Leptospirosis Incidence/100,000 population	44.04	23.62 (216)	20.36
Typhoid	600	492	698
Diarrhoea	25,249	25,805	34,670
Prevalence rate of diabetes/1000 population	25.8	25.6	25.9
Prevalence rate of cancer/100,000 population	127.3	169.8	152.5

2.3 Mission, vision, values and structure of Fiji MHMS

The Ministry of Health and Medical Services of Fiji has a mandate to support every citizen of the nation, irrespective of ethnicity, gender, creed, or socioeconomic status. All Fijians have access to a national health system providing quality health care with respect to accessibility, affordability, efficiency and a strengthened partnership with communities for which this health care is provisioned, to achieve the best possible health and wellbeing, in order to improve the quality of life of the citizens of Fiji.

The Guiding Principles for Ministry of Health and Medical Services are:

Vision: A Healthy population

Mission: To empower people to take ownership of their health; To assist people to achieve their full health potential by providing quality preventive, curative and rehabilitative services through a caring sustainable health system.

Values

The values of the Ministry include;

Equity; Integrity; Respect for Human Dignity; Responsiveness; and Customer Focus.

Figure 1: Ministry of Health and Medical Services Organisational Chart (source – MOHMS AR)

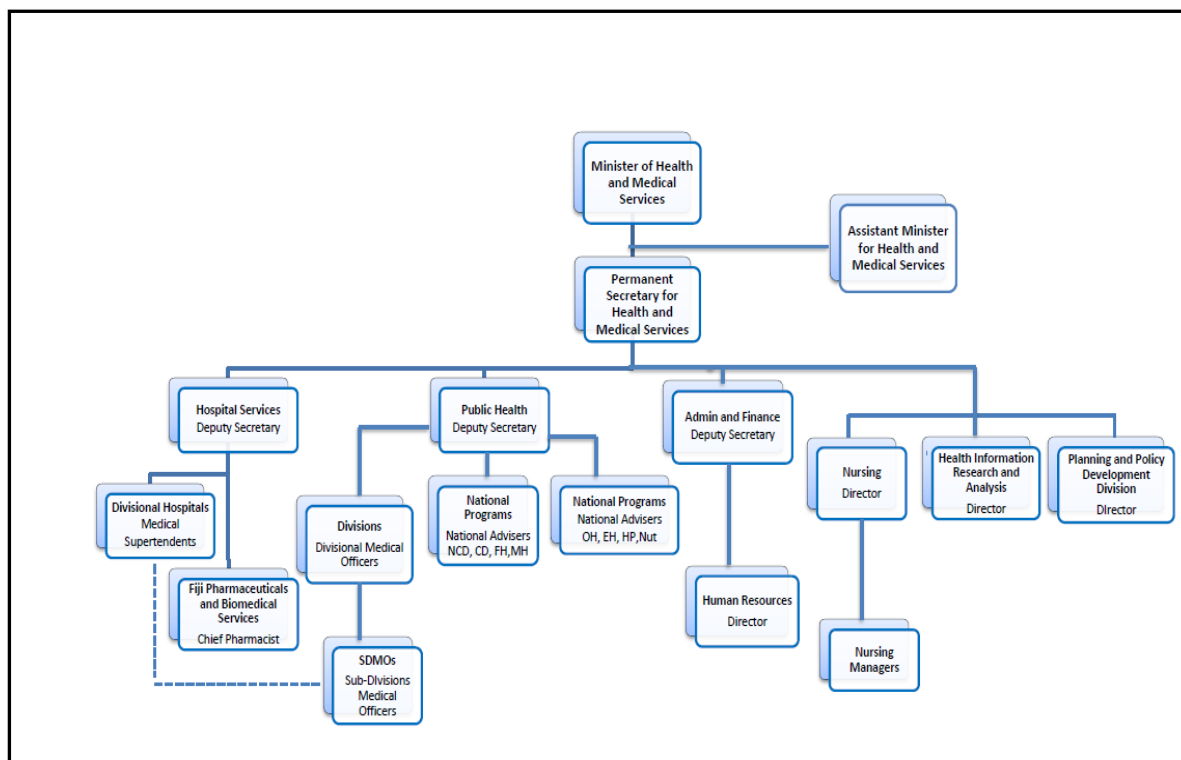


Figure 1: shows the general set up of the MOHMS. The proposed CCH unit shall be placed with the Public Health section under its deputy secretary.

2.3 Evidence for Action

Sustained efforts need to be focused on the evaluation of current and future health vulnerability, in order to identify the interventions and adaptation strategies, which will contribute towards reducing the impacts of climate change. Early planning and preparation of the health system is essential for reducing and eliminating both short term and long-term effects of climate change on public health.

Further assistance will be required in the development of policies to ensure data sharing with relevant stakeholders such as the Water Authority of Fiji/Rural water supply and the Fiji Meteorology Services so as to support the health sectors early warning system. The PCCAPHH project focused on communicable diseases and preliminary studies are underway in ascertaining correlations with non-communicable diseases in Fiji.

Initial work under the PCCAPHH project provided a way forward in trialing a climate-based early warning system (EWS) for the four climate sensitive diseases (CSDs) in Fiji. Some correlations were observed between monthly temperature, rainfall, humidity and extreme weather events and monthly cases of leptospirosis, typhoid fever, dengue fever and diarrhoeal disease in several regions of Fiji (McIver *et al*, 2012). Progresses were made within the PCCAPHH project including training on data management tools, development of awareness and community advocacy materials, establishment of the baseline sensitivity of CSDs in Fiji and establishment of novel linkages and partnerships, for example, with the Fiji

Meteorological Service and Fiji Red Cross. In addition, progress towards the future activities include strengthening CD data reporting and control mechanisms, supporting the emergency health programme and further development of climate-based early warning systems for health. The PCCAPHH project has also generated nation-wide momentum towards a more comprehensive strategy to address climate impacts on health, with the MOHMS as the lead agency.

Climate sensitivity analysis with the four focal diseases is on-going to develop a competent and suitable early warning system for our health sector and vulnerable communities. Training and piloting of improved reporting systems are being implemented at the health facilities in the project sites as part of health system adaptation.

Support from higher levels of government and non- governmental organizations are called to strategically oversee the protection of human health from climate variability and change impacts through appropriate adaptation processes.

The activities connected with raising public awareness and the preparation of promotional materials may represent a joint action on behalf of the government and nongovernment sector (Wellness unit, FRCS, WHO, UNICEF).

Regional frameworks and other country climate change and health work plans contributed to the Operational Framework for climate resilient health systems of the World Health Organisation (2015) on which Fiji's CCHSAP is built. This plan utilises the 10 components for building climate resilience considering both direct and indirect health impacts specific to Fiji.

3.0 CCHSAP 2016 - 2020

The CCHSAP 2016 – 2020 is built on the identified six elements/building blocks of health system and follows the ten components used by WHO (2015) in its operational framework on building climate resilient health systems:

(1) Leadership and governance

Component 1: Leadership and governance

(2) Health workforce

Component 2: Health workforce

(3) Health information systems.

Component 3: Vulnerability, capacity and adaptation assessment

Component 4: Integrated risk monitoring and early warning

Component 5: Health and climate research

(4) Essential medical products and technologies

Component 6: Climate resilient and sustainable technologies and infrastructure

(5) Service delivery

Component 7: Management of environmental determinants of health

Component 8: Climate-informed health programs

Component 9: Emergency preparedness and management

(6) Financing

Component 10: Climate and health financing

Figure 2: The ten components from WHO's operational framework for building climate resilient health systems showing connections to the building blocks of health systems (source: World Health Organization, 2015)



The ten components framework is used in this plan as a guide in the efforts to mainstream climate change health impacts into MOHMS structure. Since it is being used as a guide, a flexible approach should be practiced by the implementers of the plan, particularly in its initial phase of implementation.

The CCHSAP 2016 - 2020 supports Fiji's MOHMS efforts to operationalize the components of WHO's (2015) operational framework on building climate resilient health systems. It is the tool to ensure that the health risks from impacts of climate and natural disasters are adequately minimized to protect Fiji's population health in a changing climate. The plan recognizes that Fiji has identified four climate sensitive diseases that are considered in this plan. In addition, the plan calls for continued research into other health risks including NCDS

and mental health. The use of ‘vulnerable’ in this context mainly refers to vulnerability to the combination of climatic impacts and health risks, particularly diseases.

3.1 Element 1 of Health Systems: Leadership and governance

3.1.1 Component 1 of the Operational Framework - Leadership and governance

a. Objective:

This component offers strategic consideration and management of the climate sensitive risks, stress and shocks to the health systems and their inclusion in health policy-making and planning.

The specific objectives of implementing leadership and governance are to:

- i. Designate responsible and accountable authority and mechanism for climate change and health within the MOHMS;
- ii. Ensure climate variability and change implications are included in health policies and programs;
- iii. Strengthen cross-sectoral collaboration and maximizing synergies; and
- iv. Ensure decisions made within and out of MOHMS protect and promote health in the changing climate perspective.

b. Activities:

- i. Establish and empower the Climate Change and Health Unit (CCHU) within the MOHMS with sufficient human resources and clear mandates to implement the CCHSAP 2016 – 2020 and other relevant national, regional and international plans, policies, agreements and conventions.
- ii. Formalize the Climate Change and Health Steering Committee (CCHSC) chaired by the Permanent Secretary for Health and Medical Services with pertinent terms of reference (TOR) to hold regular meetings of stakeholders (such as Fiji Meteorological Service) and support the National Climate Change Coordinating Committee (NCCCC) through the membership of CCHSC chair in the NCCCC.
- iii. Develop policies that reflect health protection from climate risks particularly in Health Protection Regulation and other relevant climate regulations and protocols.
- iv. Strengthen partnership and cooperation within the MOHMS and between the relevant ministries and stakeholders for the effective and efficient use of the available resources and information towards climate change interventions relating to health system.

c. Expected results

c. 1 Output

- i. CCHU and CCHSC established within MOHMS by the end of 2016.
- ii. CCHU works in close collaboration with other health programs particularly the environmental health and communicable disease units.

- iii. Functional cooperation and coordination with all relevant stakeholders/partners in terms of effective and efficient use of the available resources through the CCHSC, chaired by the Permanent Secretary for Health and Medical Services.
- iv. Memorandum of Understanding/Agreement (MOU or MOA) developed between MOHMS and other main stakeholders in relation to protecting health from climate change (e.g. FMS, WAF, DoE, and CCD-Ministry of Economy).
- v. Active participation of MOHMS CCHU and CCHSC in main climate change processes at national, regional and global forums.

c. 2 Outcome

- i. Climate change adaptation and resilience building are mainstreamed in the policies, strategies and programs of MOHMS.
- ii. The visibility, influence and leadership of MOHMS are strengthened within the national process of building resilience to climate risks and natural disasters.
- iii. Climate change and health in all policies and included in all of the government approach to resilience building.

3.2 Element 2 of Health Systems: Health workforce

3.2.1 Component 2 of the Operational Framework - Health workforce.

a. Objective:

This component refers to strengthening of technical and professional capacity of health personnel and the organizational capacity to collaborate with other sectors.

The specific objectives of implementing activities relating to health workers are to:

- i. Ensure there are sufficient number of health workers with the required technical capacity available to deal with the health risks posed by climate variability and change;
- ii. Facilitate processes that support effective and efficient use of resources and information considering additional risks associated with climate change;
- iii. To improve health care infrastructure and capacity of health personnel to cope with surges of climate sensitive diseases (typhoid, dengue, diarrheal diseases and leptospirosis); and
- iv. Facilitate better awareness about climate change and its effect and response on health to the public and all stakeholders (policy makers, senior officers, communities and the media).

b. Activities:

- i. Training for EH officers, laboratory technicians, record keepers and other health workers on identifying risks and response related to climate change.
- ii. Preparation of climate change and health curriculum/programs at the Fiji National University.

- iii. Training for doctors, nurses, pharmacists and other practitioners on climate impacts on appropriate health and adaptation measures.
- iv. Development and update of technical guidelines for diagnosis, detection, control, prevention and treatment of diseases (dengue, diarrhea, typhoid, leptospirosis), injuries and other food and fish poisoning (ciguatera) illness arising from climate change;
- v. Development of short and long term additional action plan for improved health infrastructure, staffing and capacity to cope with vector-borne and water/food borne diseases in the context of climate change.
- vi. Preparation, printing and distribution of information brochures combined with TV and radio shows about the impact of climate change and appropriate response on health and protection measures during high/low temperatures, in conditions of flood/drought and other measures to prevent occurrence of CSDs with specific attention at vulnerable population groups (the elderly, children, in high risk areas to CD outbreaks).
- vii. Work with the disaster management unit ensuring contingency plans and protocols address health personnel deployment during extreme disasters.

c. Expected results

c. 1 Output

- i. Trained people in institutions and champions identified to guide operational activities as it arises and are equipped with relevant resources.
- ii. Standard operating procedures and guidelines for health personnel involved in CSDs diagnosis, reporting and investigation.
- iii. Contingency plans and protocols that address health personnel deployment during extreme disasters.
- iv. Introduction of climate-change and health-related modules into graduate and postgraduate curricula at FNU's CMNHS.
- v. Plan of action to address climate-related health issues at vulnerable sites.

c. 2 Outcome

- i. The capabilities of health workforce are adequate to provide services to deal with the health impact of climate change.
- ii. The public are well aware of health problems associated with climate change.

3.3 Element 3 of Health Systems: Health information systems

3.3.1 Component 3 of the Operational Framework - Vulnerability, capacity and adaptation assessment.

a. Objective:

This component refers to the range of assessments that can be used to generate evidence on the scale and nature of health risks for informed decisions, and the identification of the most vulnerable populations, while taking into account the local climatic and health circumstances.

The specific objectives of implementing vulnerability, capacity and adaptation assessment are to:

- i. Ensure there is sound understanding of the main health risks posed by climate change and of the most vulnerable population groups in the country;
- ii. Ensure baseline information on capacities and gaps within the health system to face the challenges associated with climate change is collected for analysis and appropriate adaptation plans;
- iii. Ensure status of communities/population's well-being post extreme climate events/disaster;
- iv. Provision of appropriate health services for population affected by re-location processes;
- v. Collate information on the main adaptation options available, including their comparative advantages, potential costs and efficiency, available for selection by health system decision makers.

b. Activities:

- i. Identification of communities most vulnerable to climate variability and change and associated health risk exposures through profiling or use of existing data.
- ii. Assess capacity of the health system to cope with climate change health risks and mapped for appropriate intervention (e.g. diagnostic and treatment capacities, laboratory and clinical practice).
- iii. Assessment of health care infrastructure at all levels (especially in the disaster prone areas) in response to CSDs (dengue, diarrhea, typhoid, leptospirosis).
- iv. Conduct post extreme climate event/disaster assessment and outreach for affected population considering CSDs and mental health.
- v. Engage health personnel in all processes of relocating communities and institutions to 'safer' sites.
- vi. Develop proposals, recommendations and plans for adaptation strategies to address identified gaps.
- vii. Synthesize climate, disease and other relevant data/parameters (exposure, adaptive capacity).
- viii. Build capacity through Intervention with adaptive measures in identified vulnerable communities.
- ix. Evaluation of all reports and recommendations of adaptive measures for improvement in resilience.

c. Expected results

c. 1 Output

- i. Vulnerability Reduction Index/score (immediate/medium and long)
- ii. Up dated information (matrix) of health risks posed by climate change in Fiji

c. 2 Outcome

- i. Vulnerable communities listed, prioritized and mapped (GIS).
- ii. Inventory of health system climate vulnerable areas (listed and mapped).
- iii. Proposals and plans prepared for adaptation with recommendations progressed for implementation.

- iv. Mapped vulnerable communities with adaptation capacities (GIS)
- v. Reduced CSD incidence

3.3.2 Component 4 of the Operational Framework - Integrated risk monitoring and early warning

a. Objective:

This component refers to the generation of a holistic perspective of health risks with reliable, accurate information that can be utilized to design health early warning systems to anticipate and alert the public and health professionals that a rapid-onset emergency, such as an extreme weather event or climate associated disease outbreak is anticipated.

The specific objectives of implementing integrated risk monitoring and early warning are to ensure:

- i. Continuous collection, analysis and interpretation of information and data on climate-sensitive environmental risks and epidemiological trends, to promote timely response to risks;
- ii. Collation and dissemination of information on climate change impacts, vulnerability, response capacity and emergency preparedness capacity;
- iii. Communication of timely warnings to leaders in health, media and the public for effective action to prevent negative health outcomes due to impacts of climate conditions;
- iv. Strengthened health information systems for faster detection of climate-sensitive diseases and risks and early implementation of interventions.

b. Activities:

- i. Data analysis of selected parameters (max. temperatures, rainfall, and state of the watercourses and morbidity and mortality from climate sensitive diseases) in relation to CDs and vector indices (EHIA) and other identified risk factors.
- ii. Develop and pilot a web based reporting system for clinical, laboratory, environmental health and decision making teams for basic climate sensitive diseases.
- iii. Actively provide support for epidemiological surveillance, reporting, monitoring and analysis of vector borne intervention and mitigation for efforts.
- iv. Provide active support for entomological surveillance, reporting, monitoring and analysis of mosquito vectors and rodents.
- v. Pursue EWS for dengue outbreak with use of mosquito vector and climate data.

c. Expected results

c. 1 Output

- i. Continuous monitoring of the risks connected with climate change and their influence on health, and upgrading the health system's capacities for prevention and mitigation.
- ii. Interpretations of analyzed data reporting for execution of decisions.

c. 2 Outcome

- i. Strengthened health information systems for faster detection of climate-sensitive diseases and risks and early implementation of interventions.
- ii. Established monitoring and evaluation guideline.
- iii. A pilot but executable, climate based early warning system for dengue outbreaks.
- iv. Controlled vector-borne communicable diseases associated with climate conditions.

3.3.3 Component 5 of the Operational Framework - Health and climate research

a. Objective:

The fifth component sits on the basis that building climate resilience calls for both basic and applied research in order to validate how local conditions may be affected by the impacts of climate change, and also to gain insight into local solutions and capacities, and build evidence based decision-making.

The specific objectives of implementing Health and climate research are to:

- i. Enhance application of surveillance data for understanding of vulnerability of human health to climate change;
- ii. Ensure multidisciplinary research on climate change and health is defined and endorsed by stakeholders and CCH steering committee;
- iii. Research findings are used by policy makers and health leaders for decision making pertaining to climate change and health.

b. Activities:

- i. Undertake on-going research with relevant experts to determine the sensitivity of health determinants including water, sanitation and hygiene (WASH); NCDs, including psycho-social illnesses to climate variability and change.
- ii. Explore partnership for research within multidisciplinary networks making available financial resources and creating training opportunities.
- iii. Evaluative research of educational measures effectiveness.

c. Expected results

c. 1 Output

- i. Training and awareness packages are used effectively as a result of research based improvements.

c. 2 Outcome

- i. Information on vulnerability of health determinants including water, sanitation and hygiene (WASH); NCDs, including psycho-social illnesses to climate change is based on evidence from research for decision and policy makers.

- ii. Research programs receive financial support inclusive of post graduate training at the training institutions.

3.4 Element 4 of Health Systems: Essential medical products and technologies

3.4.1 Component 6 of the Operational Framework - Climate resilient and sustainable technologies and infrastructure

a. Objective:

The sixth component discusses that in building climate resilient health system, it is also vital to provide essential preventive and curative health products such as vaccines for the CSDs; provide climate resilient infrastructure and services; provide new technologies and approaches for efficient and effective interventions so as to reduce vulnerability to climate risks within and outside the health sector.

The specific objectives of implementing climate resilient and sustainable technologies and infrastructure are to:

- i. Provide climate resilient health infrastructure and services considering siting of buildings and application of regulations account for climate risks (current and future), climate resilience of essential environmental services to health facilities, such as water and sanitation services which may be compromised by flood or drought;
- ii. Enhance use of new technology and approaches for improved health interventions particularly with the use of information technology;
- iii. Explore medical technologies and products with lower environment footprint.

b. Activities:

- i. Regular maintenance of health facilities, retrofitting or renovating to ensure back-up water supply, electricity, communication, supplies and medicines and equipment are available.
- ii. New health facilities to be located in areas not vulnerable to the impacts of climate change and are accessible to the public.
- iii. Explore prospects of developing Green Health Facilities and Safe and Smart hospitals.

c. Expected results

c. 1 Output

- i. Standard operating procedures (SOP) with specifications for siting and construction of health facilities, and energy, water and sanitation provisions developed in line with identified or projected climate risks.
- ii. Project proposals for Green Health Facility and Smart and Safe Hospitals progressed within and out of the MOHMS.

c. 2 Outcome

- i. Inventories of health facilities' back-up water supply, electricity, communication, supplies and equipment established.

3.5 Element 5 of Health Systems: Service delivery

3.5.1 Component 7 of the Operational Framework - Management of environmental determinants of health

a. Objective:

This component refers to indications that the main impact of climate change on health will be an increase in environment related illnesses and deaths and provision of primary health care, and actions to improve the environmental and social determinants of health, ranging from access to clean water and sanitation to enhancing the community well-being is vital.

The specific objectives of implementing Management of environmental determinants of health are to:

- i. Facilitate scaling up of multi-sectoral public health prevention programs through health related policies in other sectors such as environment, municipalities, occupational health, transport, water supply and housing;
- ii. Ensure there is joint monitoring of environmental exposures using regulatory standards and management of health risks;
- iii. Facilitate active coordination and inter-sectoral planning and information sharing for management of environmental health (EH) determinants.

b. Activities:

- i. Conduct multi sectoral collaboration to strengthen monitoring and enforcement of regulations on key environmental health determinants to reflect expected climatic conditions.
- ii. Prepare SOP and priority processes for Health Impact Assessment (HIA).

c. Expected results

c. 1 Output

- i. Integrated management of environmental risks through policies and regulations.
- ii. HIA reports are utilized for decision and policy making.

c. 2 Outcome

- i. Impacts of environmental determinants of health on epidemiological status pre, during and post weather extreme events in identified vulnerable areas is verified and controlled considering climatic risks.

3.5.2 Component 8 of the Operational Framework - Climate-informed health programs

a. Objective:

This component outlines that health programming and operations should consider climate risks and vulnerability which can lead to climate-resilient health programs.

The specific objectives of implementing climate-informed health programs are to:

- i. Strengthen reporting and coordination between data sources for climate sensitive risks and diseases for effective and timely intervention;
- ii. Introduction and development of good laboratory and clinical practice and environmental health diagnosis to improve the treatment of climate sensitive infectious diseases.

b. Activities:

- i. Utilize information and data available from epidemiological monitoring and inspection and surveillance of environmental determinants of health, pre, during and post weather extreme events in identified vulnerable areas for joint monitoring of climate-sensitive environmental risks. Such environmental health determinants include:
 - o water supply sources and systems
 - o where and how food is produced, stored, distributed and circulated
 - o disposal of communal solid waste and waste waters in identified vulnerable areas
 - o mosquito vector breeding grounds and entomological data
- ii. Utilize information from other components such as component 4 to plan intervention/adaptation measures
- iii. Incorporate climate information into health planning and information systems, especially WASH, emergencies, nutrition and CDs.

c. Expected results

c. 1 Output

- i. Risk maps and analysis of seasonal trends in diseases used to target resources and preventive measures for those most at risk in identified vulnerable areas.
- ii. Contingency plans for healthcare provision in extreme weather events, or delivery of interventions to control outbreaks of infectious diseases in new locations, developed and tested.
- iii. Health plans and information systems with climate information utilized.

c. 2 Outcome

- i. Improved detection and response to CSDs preventing severe outbreaks.

3.5.3 Component 9 of the Operational Framework - Emergency preparedness and management

a. Objective:

This component refers to climate-informed preparedness plans, emergency systems, and community-based disaster and emergency management as essential for building climate resilience.

The specific objectives of implementing Emergency preparedness and management programs are to:

- i. Ensure health systems and communities strengthen holistic management of overall public health risks and emphasize preparedness in addition to the usual focus on response capacity;
- ii. Enhance capacity at health operations level and community level to manage the health risks associated with emergencies and disasters as triggered by climate variability;
- iii. Ensure current and projected climatic conditions are included in emergency and disaster risk management protocols and policies.

b. Activities:

- i. Develop SOP through collaboration with MOHMS sectors such as National Health Emergency Coordinator, Asset Management Unit for better preparedness to address increasing population, service delivery demands, increase in emergency response and sustained operation under diverse environmental conditions.
- ii. Utilize information and data available from components 3 and 4 to address actual adaptation needs of the vulnerable communities and capacities and gaps within the health system towards preparedness for emergencies.

c. Expected results

c. 1 Output

- i. Disaster risk management protocols and plans are effectively implemented during emergencies and disasters preventing severe outbreaks of CSDs and saving lives in the process.

c. 2 Outcome

- i. Communities and health systems effectively prevent and respond to the extreme weather events induced health risks.
- ii. Climate sensitive health risks are adequately addressed in emergency and disaster protocols, policies and plans.

3.6 Element 6 of Health Systems: Financing

3.6.1 Component 10 of the Operational Framework - Climate and health financing

a. Objective:

This component infers that effective protection of health from climate change will incur financial costs. Core investments in the health sector, such as providing adequate numbers of trained health personnel and basic health infrastructure and services, which help to address climate change risks requires a comprehensive approach to financing.

The specific objectives of implementing - Climate and health financing are to:

- i. Mobilize resources to address health risks presented by climate change by combining climate change and health considerations in investments in key health determining sectors;
- ii. Facilitation of greater contribution of funds from donor agencies for climate change- and health related program implementation.

b. Activities:

- i. Prepare and disseminate proposals of innovative and appropriate climate change and health adaptation projects to potential donor agencies.
- ii. Prepare SOP and priority processes for funding.

c. Expected results

c. 1 Output

- i. Inventory of funding sources and inventory of innovative and appropriate proposals of adaptation projects.
- ii. Maintain communication with potential donor agencies.

4.0 Program monitoring and evaluation

The implementation of the CCHSAP will be monitored and evaluated regularly in accordance with the specified indicators. The Ministry of Health and Medical Services and the other collaborating institutions will monitor the flow and dynamics of the implementation of the activities. There will be suggestions and recommendations for any necessary changes for achieving the defined goal and objectives.

In conducting the activities in the CCHSAP, continuous monitoring and regular evaluation will be coordinated on an annual basis, by the responsible person from the Ministry of Health and Medical Services, through reports prepared by the relevant ministries and

institutions, according to their jurisdiction. The Steering Committee will continue to be the decision making mechanism for matters pertaining to the climate change unit with quarterly reporting and meetings prepared by the unit. Table 2 contains the key indicators that will be utilized in the monitoring and evaluation processes. The attached matrix of Health Adaptation Options and Activities in Appendix 1 may be utilized as a sample action plan to complement the CCHSAP 2016 -2020.

When necessary, additional surveillance will be undertaken in order to respond to potential risks for the appearance of new diseases that are influenced by climate variability and change (e.g. chikungunya and Zika).

Table 2 - Key Indicators to measure the operational achievements

Component	Key indicators	Verification source
Component 1 - Leadership and governance	<ul style="list-style-type: none"> • Climate change unit established within MOHMS/PH/ EH • Meeting minute • Number of MOUs /MOAs signed •Number of active participation in CCD – NCCC events • Numbers of organized events • Reports published • Number of meetings and workshops and resources given 	<ul style="list-style-type: none"> - EH/DSPH offices/ Chair of CCH-SC/ -NHEDMO - MOHMS quarterly returns <ul style="list-style-type: none"> - Circulated meeting minutes from CCH Steering Committee and CCD – NCCC - Workshop reports - Circulated signed MOU/A
Component 2 - Health workforce	<ul style="list-style-type: none"> •Number of trained people in institutions and champions identified to guide operational activities as it arises •Officers are equipped with relevant resources •Consultation and workshops •Course content completed for adoption by FNU •FNU Program commences •Number of trainings conducted •Number (%) of personnel trained •Brochures produced and distributed to target population •Seasonal bulletins (FMS/MOH) •Number of TV shows and media briefs 	<ul style="list-style-type: none"> - Divisional offices/ MOHMS training unit/ Wellness Centre (Media and graphics officers) <ul style="list-style-type: none"> - Training courses - Training materials - Training and workshop reports - Media reports - Targeted populations
Component 3: Vulnerability, capacity and adaptation assessment	<ul style="list-style-type: none"> •Vulnerable communities listed, prioritized and mapped (GIS) •Inventory of Health system climate vulnerable areas (listed and mapped) •Number of proposals and plans prepared for adaptation •Mapped Vulnerable communities with adaptation capacities (GIS) •Reduced CSD incidence •Vulnerability Reduction Index/score 	<ul style="list-style-type: none"> - GIS department of USP - CCD - Ministry of Finance - Health Information Unit data <ul style="list-style-type: none"> - Copy of inventories with lists of identified vulnerable areas - Copies of communications resulting in

	•Number of recommendations progressed for implementation	information for mapping
Component 4: Integrated risk monitoring and early warning	<ul style="list-style-type: none"> •Number of analysed climate and disease data •Number of CSDs reported weekly (reduction) •Number of timely and effective interventions • Natural disaster warnings 	<ul style="list-style-type: none"> - FCCDC – Mataika House - NVCU – EH <ul style="list-style-type: none"> - Dengue and vector reports - Analysis report climate, disease and vector data - NHEDMO <ul style="list-style-type: none"> - EWSreports
Component 5: Health and climate research	<ul style="list-style-type: none"> •Number of researches undertaken •Outcome of research tabulated and recommendations implemented •Evaluation research reports of communication strategies and recommendations accepted and complied 	<ul style="list-style-type: none"> - National Health and Research Office <ul style="list-style-type: none"> - Copies of research reports - Copies of evaluation reports
Component 6: Climate resilient and sustainable technologies and infrastructure	<ul style="list-style-type: none"> •Annual Assessment reports •EHIA reports from EHOs •Annual Assessment reports •Assessment Reports •Safe health facilities with back up infrastructure and services •Assessment Reports •Project proposals for developing Green Health Facilities (GHF) and Safe and Smart Hospitals (SSH) 	<ul style="list-style-type: none"> - EH/DSPH//NHEDMO <ul style="list-style-type: none"> - Copies of documents (EIA, Annual Assessment reports for infrastructure, project proposals)
Component 7: Management of environmental determinants of health	<ul style="list-style-type: none"> • Multi-sectoral meetings and policies progress • HIA reports 	<ul style="list-style-type: none"> - EH//NHEDMO - CCH Unit files and reports
Component 8: Climate-informed health programs	<ul style="list-style-type: none"> •Number of inspection visits during the vulnerable or high risk periods • Analysed reports of epidemiological data and CSDs or health risks • Number of health plans with climate information • Reduced CSDs 	<ul style="list-style-type: none"> - EH/DSPH offices/ NHEDMO - CCH Unit files and reports
Component 9: Emergency preparedness and management	<ul style="list-style-type: none"> • Emergency and disaster protocols, policies, plans with mention of climate sensitive health risks • SOPs are utilized effectively utilized during emergencies and disasters 	<ul style="list-style-type: none"> - EH/DSPH/NHEDMO <ul style="list-style-type: none"> - SOPs - Reports of activities during emergencies and disasters
Component 10: Climate and health financing	<ul style="list-style-type: none"> • Number of proposals prepared and disseminated • Updated matrix of donor agencies distributed for health adaptation potential projects 	<ul style="list-style-type: none"> - EH/DSPH/NHEDMO <ul style="list-style-type: none"> - CCH unit reports

5.0 Conclusion

The general goal of the CCHSAP is to plan measures in adapting to climate change for the health system in order to prevent and overcome both existing and future risks. The use of the ten components in the plan ensures inclusivity of the health sector and its operational basis in health systems to systematically and effectively address the challenges increasingly presented by climate variability and change.

The implementation of this strategic action plan depends on financial sources identified by the ministry. Regional cooperation and intergovernmental support are also encouraged.

It is essential to pursue implementation of the activities in this strategic action plan in the short and medium term to generate products and direction for the long termed plans. In addition, the plan, when implemented, will empower the health system to address climate change issues and protect public health in Fiji. The action plan sample in Appendix 1 is a tool the new unit can utilise in its initial phase of implementation. Many people and organizations contributed to this effort and their continued support and involvement is critical to the plan's implementation and long-term sustainability. The successes and lessons learnt from the PCCAPHH project strengthen the connectivity between the health systems adaptation strategies as it prepared public health infrastructure to adapt to climate change.

While there is evidence of impacts of climate variables on health, there exists the risk of over emphasizing climate change and variability as having impacts on health systems particularly on human health. There is a need to have the knowledge and understanding on the causal-effect relationship of climate variables with health impacts since health outcomes are the functions of both climate and non-climate factors. It is recommended that in all activities outlined and implemented, non – climatic factors should be considered. Factors such as public health surveillance, vector control, attitude, behaviour and changes in economy and public awareness may also contribute to the health outcome.

Climate change impacts on health is well established through research and available data, thus, the significance of ensuring the completion and implementation of the CCHSAP should remain the obligation of the Ministry of Health and Medical Services and its stakeholders.

Appendix 1 – Table shows matrix of Health Adaptation Options and Activities to complement the strategic plan.

Goal/ Vision: Health and well-being in Fiji are resilient against the impacts of climate change.						
Objectives/ Desired Outcome	Strategies/ Outputs	Activities	Timeline	Responsible Units	Budget	Indicators
1. Establish, maintain and sustain a collaborative approach between the sectors within the MOHMS and relevant stakeholders for the effective and efficient use of the available resources and information towards climate change interventions relating to CSDs (Networking, awareness, coordination)	1.1 Strengthened organizational capacity within MOHMS to adopt and operationalize/ functions of the climate change and health adaptation unit	1.1.1 Formalise positions/unit with clear structures and roles and responsibilities to progress strategies of the Climate Change unit (refer also 3.3)	Q4 2016	<ul style="list-style-type: none"> • PS HMS • climate change officer/advisor of the MOHMS 	\$600,000.00 (\$120,000/yr 1 principal advisor HW01; 1 senior technical officer HW 02 and 2 technical officer HW 04)	<ul style="list-style-type: none"> • climate change unit established within MOHMS/PH/ EH
	1.2 Functional cooperation and coordination in terms of effective and efficient use of the available resources through the CCH Steering Committee for climate change and health adaptation UNIT (all relevant stakeholders/partners)	1.2.1 CCH Steering committee (TOR) to hold regular meetings and keep stakeholders informed. 1.2.2 CCH Steering Committee supports NCCCC through meetings and updates	Continuously for each quarter	MOHMS, Climate Change Division (MOF), FNU, other central Government ministries, Local Government agencies, WAF, FMS	\$20,000.00 (meetings, collaborations - \$4,000.00/yr)	<ul style="list-style-type: none"> • Meeting minute • Number of MOUs /MOAs signed • Number of active participation in CCD –NCCCC events

	1.3 Strengthened partnership and cooperation between the educational institutions for educational programs	1.3.1 Involve active participation with educational institution for research and knowledge appraisal	Continuously		\$50,000 (\$10,000.00/yr)	<ul style="list-style-type: none"> • Numbers of organised events • reports published
2.0 Facilitate better awareness about climate change and its effect and response on health to the public and all stakeholders.	2.1 Education of and provision of regular information to the public on climate-change-induced health problems.	2.1.1 Preparation, printing and distribution of information brochures combined with TV and radio shows about the impact of climate change and appropriate response on health and protection measures during high/low temperatures, in conditions of flood/drought, etc and other measures to prevent occurrence of CSDs with specific attention at vulnerable population groups (the elderly, children, in high risk areas to CD	Quarterly 2016 - 2018	MOHMS (Health Promotion, EH-CCH), Fiji Red Cross, UNDP, WHO, UNICEF, FMS	\$60,000.00 (\$20,000/yr)	<ul style="list-style-type: none"> • Brochures produced and distributed to target population • Seasonal bulletins (FMS/MOH) • Number of TV shows • Number of media briefs

		outbreaks etc.)				
	2.2 Enhanced training and research for community awareness and advocacy through human resource capacity building`	2. 2. 1 Training for health workers on identifying risks and response related to climate change 2.2.2 Evaluative research of educational measures effectiveness	Quarterly 2016 - 2018	MOHMS	\$30,000 (\$10,000/yr)	<ul style="list-style-type: none"> • Number of trained people in institutions and champions identified to guide operational activities as it arises • Officers are equipped with relevant resources • Evaluation research reports and recommendations accepted and complied
	2.3 Pursue efforts for Introduction of climate-change and health -related modules into graduate and postgraduate curricula at FNU's CMNHS.	2.3.1 Preparation of climate change and health curriculum/ Programmes at FNU	2016 - 2018	MOHMS /FNU	\$10,000	<ul style="list-style-type: none"> • Consultation and workshops • Course content completed for adoption by FNU • Programme commences

3.0 Protection from climate-change-related diseases. (To reduce the burden of climate-sensitive diseases (CSDs) in Fiji).	3.1: Enhanced application of surveillance data understanding of vulnerability of human health to climate change.	3.1.1: Undertake on-going research with relevant experts to determine the sensitivity of CSDs including water, sanitation and hygiene (WASH); NCDs, including psycho-social illnesses due to climate variability and change.	2017 – 2019 on-going	FNU, Fiji Red Cross, UNDP, WHO, UNICEF, SPC relevant training institutions and Govt departments according to objectives	\$100,000	<ul style="list-style-type: none"> • Number of researches undertaken • Outcome of research tabulated and recommendations implemented
		3.1.2: Identification of communities most vulnerable to climate variability and change and associated health risk exposures through profiling or use of existing data	2016-2018	MOHMS (CCH-EH) USP, Fiji Red Cross, UNDP, WHO, UNICEF, SPC, DOE, MOF (CCD)	\$40,000	<ul style="list-style-type: none"> • Vulnerable communities listed prioritised and mapped (GIS)
	3.2: Continuous monitoring of the risks connected with climate change	3.2.1 Data analysis of selected Parameters (max temperatures,	Quarterly	MOHMS (EH-CCHU, HIU, Wellness Centre), FNU, international	\$30,000	<ul style="list-style-type: none"> • Number of assessment reports

	and their influence on health, and upgrading the health system's capacities for prevention and mitigation	rainfall, the state of the watercourses; morbidity and mortality from climate sensitive diseases) In relation to CDs and vector indices (EHIA) and other identified risk factors		academic institutions FMS		<ul style="list-style-type: none"> • Number of analysed data • Interpretations of analysed data reporting for execution of decisions
3.3: Build the institutional and <u>human resource capacity</u> to enable the MoHMS to adapt to the impacts of climate change on human health.		3.3.1: Incorporate climate information into health planning and information systems, especially WASH, emergencies, nutrition, CDs.	2016 - 2019	MOHMS (EH-CCHU, HIU, PPDU), Fiji Red Cross, UNDP, WHO, FMS	\$25,000	<ul style="list-style-type: none"> • Number of health plans with climate information
		3.3.2: Training for all health practitioners on climate impacts on appropriate health and adaptation measures.	2016-2018 (2 trainings/year)	FNU, WHO	\$90,000 (\$30,000/year)	<ul style="list-style-type: none"> • Number of trainings conducted • Number (%) of personnel trained
		3.3.3: Include relevant legislative support	2016 - 2019	MOHMS (EH-CCHU), WHO	Build into existing structures	<ul style="list-style-type: none"> • Number of meetings and workshops and resources given
3.4: Strengthened health		3.4.1: Developing and piloting of a web based	2016 - 2019	MOHMS (CD, EH, CCHU, HIU)	\$100,000	<ul style="list-style-type: none"> • Number of CSDs reported weekly

	information systems for faster detection of climate-sensitive diseases and risks and early implementation of interventions.	reporting system for clinical, laboratory, environmental health and decision making teams				<ul style="list-style-type: none"> • Number of CS-risks detected • Number of timely interventions
3.5: Controlling communicable diseases through adaptive actions	3.5.1 Epidemiological monitoring, sanitary hygiene and inspection surveillance of water supply sources and systems pre, during and post weather extreme events in identified vulnerable areas.	Continuous	MOHMS (EH-CCHU), WAF	Build into existing structures	<ul style="list-style-type: none"> • Numbers of hygiene-epidemiological inspection • Number of water samples 	
	3.5.2 Reporting, monitoring, analysis and active epidemiological surveillance of <u>enteric diseases</u> in identified vulnerable areas.	Continuous	MOHMS (HIU, EH-CCHU)	Build into existing structures	Weekly reports to NNDSS	
	3.5.3 Epidemiological monitoring, sanitary hygiene and inspection	Continuous	MOHMS (EH-CCHU) MLGUDHE	Build into existing structures	<ul style="list-style-type: none"> • Numbers of hygiene-epidemiological 	

		surveillance of installations where food is produced, stored, distributed and circulated pre, during and post weather extreme events in identified vulnerable areas particularly in health, educational and social institutions.				inspection <ul style="list-style-type: none"> • Number of water /food samples
		3.5.4 Safe disposal of communal solid waste and waste waters in identified vulnerable areas	Continuous	MOHMS (EH-CCHU) MLGUDHE	Build into existing structures	<ul style="list-style-type: none"> • Number of inspection visits during the vulnerable or high risk periods
		3.5.5: Conducting regular disinfection (if necessary) and extermination of rats and insects in HRAs. (climate change vulnerable communities)	Continuous (annually)	MOHMS (EH-CCHU)	Build into existing structures	<ul style="list-style-type: none"> • Disinfection and extermination of insects and rats carried out in all health, educational and social institutions of HRAs
		3.5.6: Control of surface waters (streams and rivers). 3.5.6.1 Increasing the number		MOHMS (EH-CCHU) MLGUDHE	Build into existing structures	<ul style="list-style-type: none"> • Number of surface water samples from HRAreas (test depends on the

		of samples taken for analysing the quality of surface waters and for recommending measures in HRAs				priority CSD for the HRA)
3.6: Controlling vector-borne communicable diseases	3.6.1 Epidemiological surveillance, reporting, monitoring and analysis of vector borne intervention and mitigation efforts	Continuous (from NNDSS)	MOHMS (EH- VCU, CCHU)	Build into existing structures	<ul style="list-style-type: none"> Weekly reports to NNDSS to advise proper control and mitigation strategies 	
	3.6.2 Entomological surveillance, reporting, monitoring and analysis of mosquito vectors 3.6.2.1 Pursue EWS for dengue outbreak with use of mosquito vector and climate data	Continuous (from NVCU)	MOHMS (EH- VCU, CCHU)	Build into existing structures	<ul style="list-style-type: none"> Monthly reports from NVCU and FMS utilised to develop dengue outbreak risk 	
	3.6.3 Rat surveillance, reporting, monitoring and analysis	Continuous (from NVCU)		Build into existing structures	<ul style="list-style-type: none"> Monthly reports from NVCU 	
3.7: Introduction and development of good laboratory and clinical practice and	3.7.1 Assessment of the need to upgrade the diagnostic and treatment capacities for CSDs (HRAs)	2017	MOHMS (EH, CCHU, CD), FNU	\$50,000.00	<ul style="list-style-type: none"> Laboratory report (quality manager) 	

	environmental health diagnosis to improve the treatment of climate sensitive infectious diseases	3.7.2 Development and realization of plan to upgrade and resource laboratory (esp in HRAs)	2017 - 2018	MOHMS (EH- CCHU, AMU, CD)	\$50,000.00	<ul style="list-style-type: none"> Laboratory report (quality manager)
	3.8: PCCAPHH project concept is replicated in all vulnerable communities in Fiji	3.8.1 Synthesis of climate, disease and other relevant data/parameters (exposure, adaptive capacity) and Implementation of recommendations in the last PCCAPHH report	2016	MOHMS (EH- CCHU)/USP/FNU	\$100,000.00	<ul style="list-style-type: none"> Mapped Vulnerable communities with adaptation capacities (GIS)
		3.8.2 Build capacity through Intervention with adaptive measures in identified vulnerable communities	2018	MOHMS (EH- CCHU)	\$500,000.00	<ul style="list-style-type: none"> Reduced CSD incidence
	3.9: Established Monitoring and Evaluation guideline	3.9.1 Evaluation of all reports and recommendations of adaptive measures for improvement in resilience	Midterm (2018) End term (2020)	MOHMS /WHO (EH- CCHU)	\$10,000.00	<ul style="list-style-type: none"> Vulnerability Reduction Index/score Number of recommendations progressed for implementation

4.0 Climate-proof health infrastructure to maintain delivery of services at all times	4.1: Improved resilience of health facilities to climate change.	4.1.1: Regular maintenance of health facilities.	Annual assessments	MOHMS (EH- CCHU, AMU, NHEDMO)	\$500,000.00	<ul style="list-style-type: none"> • Annual Assessment reports
		4.1.2: New health facilities to be located in areas not vulnerable to the impacts of climate change and are accessible to the public.	During proposed sites selection HIA to be conducted prior to all new developments Annual assessments.	MOHMS (EH- CCHU, AMU, NHEDMO)	\$250,000.00	<ul style="list-style-type: none"> • EHIA reports from EHOs • Annual Assessment reports
		4.1.3: Retrofitting or renovating existing health facilities to ensure back-up water supply, electricity, communication, supplies and equipment is available.	2017 - 2020	MOHMS (EH- CCHU, AMU, NHEDMO)	\$400,000.00	<ul style="list-style-type: none"> • Assessment Reports • Safe health facilities with back up infrastructure and services
		4.1.4: Explore prospects of developing Green Health Facilities and Safe and Smart	2016 - 2019	MOHMS (EH- CCHU, AMU)	\$100,000.00	<ul style="list-style-type: none"> • Assessment Reports • Project proposals for developing GHF and SSH

		hospitals.				
5.0 Resource Mobilisation to support adaptive measures	5.1 Facilitation of greater contribution of funds from donor agencies for climate change- and health related programme implementation	5.1.1 Explore funding sources through continued preparation and dissemination of innovative and appropriate adaptation projects to potential donor agencies	2017 - 2019	MOHMS (EH- CCHU, NHEDMO, CD, AMU)	Build into existing structures (new CCH unit)	<ul style="list-style-type: none"> • Number of proposals prepared and disseminated
		5.1.2 Maintain communication with potential donor agencies	2017 - 2019	MOHMS (EH- CCHU NHEDMO)	Build into existing structures (new CCH unit)	<ul style="list-style-type: none"> • updated matrix of donor agencies distributed for health adaptation potential projects

Acronyms

ABM & CSIRO	Australian Bureau of Meteorology
CCHSAP	Climate Change and Health strategic Action Plan
CMNHS	College of Medicine, Nursing and Health Sciences
CCD	Climate Change division
“COP”	Conference of the Parties
CSD	Climate sensitive Diseases
DOE	Department of Environment
EH	Environment Health
EHIA	Environment Health Impact Assessment
EHOs	Environmental Health Officers
FBS	Fiji Bureau of Statistics
FMS	Fiji Meteorology Service
FNU	Fiji National University
GRF	Government of the Republic of Fiji
GOF	Government of Fiji
HIA	Health Impact Assessment
HRA	High Risk Areas
MLGUDHE	Ministry of Local Government, Urban Development, Housing and Environment
MOHMS	Ministry of Health and Medical Services
MOF or MOE	Ministry of Finance or Ministry of Economy
MOFA	Ministry of Foreign Affairs
NCCCC	National Climate Change Coordinating Committee
NHEDMO	National Health Emergency and Disaster Management Office
NNDSS	National Notifiable Diseases Surveillance System
NVCU	National Vector Control Unit
NHEC	National Health Executive Committee
PCCAPHH	Piloting Climate Change Adaptation to Protect Human Health
PHM	Pacific Health Ministers
SPC	Secretariat of the Pacific Community
SOP	Standard Operating Procedures
UNDP	United Nations Development Program
UNICEF	United Nations Children’s Fund
UNFCCC	United Nations Framework Convention on Climate Change
USP	University of the South Pacific
WHO	World Health Organization

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