DRAFT

A Green Growth Framework for Fiji: Restoring the Balance in Development that is Sustainable for Our Future

This Framework is a "living document". It is intended to support and complement the Peoples Charter for Change, Peace & Progress and the 2010-2014 Roadmap for Democracy and Sustainable Socio-Economic Development and its successor national development documents. As such this Green Growth Framework has the same vision as the Roadmap

Vision: A Better Fiji For All

Ministry of Strategic Planning, National Development and Statistics

Draft for consideration by the Prime Minister's Summit

2nd June 2014

Foreword

(To Be Added After National Summit)

Executive Summary

(To Be Added After National Summit)

Table of Contents

CHAPTER 1: INTRODUCTION

Fiji is a country of over 300 islands many of which are inhabited, with a total population of some 850,000 spread over a very large part of the South Pacific Ocean. The total land area of approximately 18,700 square kilometres is surrounded by a large exclusive economic zone of ocean of approximately 1.3 million square kilometres.

Today in 2014, Fiji remains largely a pristine environment.

Since independence in 1970, there have been many positive achievements in the pursuit of development that is sustainable. In recent years these achievements include the following key examples, one each from the three pillars of sustainable development:

- Environment: To date, the Fiji Locally Managed Marine Areas Network has established locally managed marine areas in 143 of Fiji's 410 *i-qoliqoli* areas with 415 *tabu* (no-take) areas covering over 960 square kilometers;
- Social: From 2014 the introduction of tuition free education at primary and secondary levels and increased support at tertiary level; and
- Economic: The commissioning of the 40 megawatt Nadarivatu renewable hydropower facility in September 2012 has reduced the Fiji Electricity Authority's fossil fuel bill by $40 million annually.

Despite many positive achievements, it cannot be denied that in the period of over four decades since independence the national urge for economic and social development has disturbed and in some instances destroyed the environment. At the same time in recent years the global shocks from the financial, food and fuel crises have had their adverse impacts. Also, Fiji must now build its resilience to the adverse impacts of climate change.

During this period of some four decades, economic growth has declined from a peak of 5.6% in the 1970's to around 2% or less in recent years. At the same time, imports in particular of fossil fuels to "drive the engine room" of growth have increased to more than a billion Fiji dollars/year or over one third of total imports. The social impact of the lifestyle diseases, more commonly referred to as NCDs now account for some 7 out of 10 deaths every year, and are increasingly affecting younger people who are part of the current workforce. Every year tonnes of fertile soil are being lost from the islands leaving behind an impoverished landscape and at the same time increasing flooding of low lying coastal land and reef areas and loss of island and marine biodiversity. Fiji's large exclusive economic zone is being overfished by non-Fiji owned and registered vessels with minimal return into the Fiji economy compared with the true market value of the fish.

Should Fiji continue down this development path driven in large part by changing consumption and production patterns of its people and which are exacerbated by global events, the balance between the three pillars of sustainable development; economic, social and environmental will be lost. It is now not an option but an imperative to put in place a process that over time will lead to ensuring the balance is restored and that future development is both sustainable and can be sustained...and Fiji remains largely pristine.

To ensure this balance is restored the people of Fiji must be at the centre of development. However, it must be understood that the people are not only exposed to risks beyond their control, but also the people through their own actions are the source of many risks. These

risks result in "hot spots"[1] as development progresses, and can become the root cause of development that is not sustainable.

Since the people of Fiji must be at the centre of development, improving livelihoods and at the same time reducing poverty are key. It is therefore everyone's business to play their role in contributing to restoring the balance. For development to be sustainable it is everyone's business to understand as much as practically possible not only of the benefits but also of the costs of development. The risks must be determined, and a decision made as to whether the risks are acceptable or not. If the risks are not acceptable the development must not proceed. If the risks are acceptable, development should plan to avoid or eliminate them. If this cannot be done, the risks must be minimised through mitigation or adaptation actions.

The establishment of this Green Growth Framework is intended to provide an opportunity in which everyone, government, nongovernment, the private sector, faith-based organisations, the media, urban and rural communities and individuals alike can identify the role they must play in the pursuit of restoring the balance in development that is sustainable.

This Green Growth Framework is the first of its kind for Fiji. As such it must be seen as a "living document." Whilst many direct interventions will be obvious, there are many more that are indirect and/or will emerge as people adopt the paradigm shift in thinking and behaviour that the framework encourages.

To be successful it will require national ownership by all, it will require robust communications and advocacy support, and be subject to regular monitoring and review over a timeframe of perhaps 10-20 years. It does not replace but is rather a tool to support and complement the 2010-2014 Roadmap for Democracy and Sustainable Socio-Economic Development and its successor national development documents.

This Green Growth Framework adopts the vision of the Roadmap: **A Better Fiji For All.**

The Green Growth Framework for Fiji

A national assessment report of June 2013 with the theme "Accelerating an Integrated Approach to Sustainable Development" reports that "green growth" will be introduced as a tool to support sustainable development into future development strategies in Fiji. Successful implementation of the Green Growth Framework will require a paradigm shift in thinking that results in change that is transformative, change that over time results in fundamental improvements that can and must be measured and not just change for the sake of change.

Fiji will continue in its commitment towards sustainable development, and recognises that the post-2015 Global Development Agenda will shift international focus from the Millennium Development Goals which have a human/social focus to Sustainable Development Goals which will span the whole of the development agenda.

It is therefore critical that Fiji develops a Green Growth Framework as a tool to support its efforts towards development that is sustainable. It is anticipated that this initiative will assist in securing the essential support of partners.

[1] The use of "hot spot" in this Green Growth Framework is consistent with its use in the in the Report of the UN Secretary General's High Level Panel of Eminent Persons on the Post-2015 Development Agenda "*A New Global Partnership*" (May 2013).

This Green Growth Framework for Fiji is a tool to accelerate integrated and inclusive sustainable development that inspires action at all levels in the country to build environmental resilience, build social improvement and reduce poverty, build economic growth and build resilience to the anticipated adverse effects of climate change. It is underpinned by the following five i's:

Innovative in finding new transformative solutions to long standing problems through bold and adaptive leadership and fair and transparent consultative processes in advancing the transition to a "people centred green economy in a blue world".

Integrated for a holistic approach to support development that is sustainable and climate resilient.

Inclusive across all sectors and cultures from the village to corporate boardrooms, and create meaningful partnerships to address the root causes of poverty and promote multi-stakeholder solutions for sustainable social, economic and environmental development.

Inspires in promoting respect for creation and empowering all members of the community to make decisions and take action to build a green economy in a blue world supported by the guiding principles of this Green Growth Framework.

Investment in transformational change to align the economy and society with the environment to sustain livelihoods now and for generations to come.

Why Green Growth in Fiji?

For Fiji as with other countries, the impetus for green growth emanates from the need to better harness natural resources, reduce vulnerability to environmental risks and promote socially inclusive development. Population growth, urbanisation, unsustainable consumption and resource use, infrastructure deficits and increasing frequency of natural disasters due to changing climate heighten the risk of food and energy insecurity and threaten economic and social progress. Left unchecked, natural capital will steadily erode due to overexploitation of natural resources; abundance of invasive species; poor waste management and increasing damage.

In particular for Fiji, the degradation of the Pacific Ocean, especially the marine space of Fiji's large exclusive economic zone due to overfishing, pollution, climate change-induced damage to coral reefs, and other factors, are diminishing the productive capacity of the marine environment as a source of income, cultural identity and food security. Additionally, deforestation destroys the capacity of trees to mitigate carbon emissions. Poorly regulated mining activities and marine-based waste disposal further threaten natural capital.

Impacts from climate change will continue to further impede Fiji's efforts to achieve sustainable development. Fiji is particularly vulnerable to increased frequency and intensity of natural disasters and to sea level rise, which will have negative impacts on food security (decline in fresh water availability, crop production and fisheries), coral reef and forest biodiversity, and the spread of certain diseases (especially those spread through contaminated water, lack of safe drinking water and safe sanitation).

The Global and Regional Development Agenda and Green Growth

Green growth first emerged in the international development agenda in May 2006 at the 5th Meeting of Asia and Pacific Environment Ministers in Seoul. The green growth approach sought to harmonise the two imperatives of: (i) economic growth and; (ii) environmental sustainability. The outcomes document entitled "*The Future We Want"* of the Third World Conference on Sustainable Development held in June 2012 emphasises that green growth is a tool to support development that is sustainable. Most recently, in May 2013, the Report of the UN High Level Panel of Eminent Persons on the Post-2015 Development Agenda "*A New Global Partnership*" identifies 'sustainable development' as one of five transformational shifts at the core of the way forward recognising that "no country has yet achieved this".

.....More on the international agenda for Green Growth

In June 2012 Fiji, represented by the Prime Minister accompanied by representatives from government and non government agencies, and the private sector attended the Third World Summit on Sustainable Development in Rio. The outcome document "The Future We Want" describes green growth as a new tool to support sustainable development and the many principles associated with green growth (para 58).

Key amongst the many green growth principles to promote sustained and inclusive economic growth for Fiji and its Pacific SIDS neighbours are the following.

- Respect for national sovereignty over natural resources taking into account national circumstances, objectives, responsibilities, priorities and policy space with regard to the three dimensions of sustainable development.
- Support from an effective national enabling environment and well-functioning institutions at all levels with a leading role for governments and with the participation of all relevant stakeholders, including civil society.
- Strengthened international cooperation, including the provision of financial resources, capacity building and technology transfers.
- Effective avoidance of unwarranted conditionalities on ODA and finance.
- Enhance the welfare of people and their communities, recognising and supporting their identity, culture and interests and avoid endangering their cultural heritage, practices and traditional knowledge.
- Enhance the welfare of women, children, youth, persons with disabilities, smallholder and subsistence farmers, fishers, and those working in small and medium enterprises, and improve the livelihoods and empowerment of the poor and vulnerable groups.
- Mobilise the full potential and ensure equal contribution of both women and men.
- Address the concern about inequalities and promote social inclusion, including social protection floors.
- Promote sustainable consumption and production patterns.

At the regional level the Pacific Preparatory Meeting hosted by Fiji in July 2013 as part of the preparations for the Third World Conference on Small Islands Developing States to be hosted by Samoa in September 2014, the critical importance of a green growth strategy was advocated as a key component of sustainable development, including Public-Private Partnerships as an important element.

On 30th March 2012, Melanesian Spearhead Group (MSG) leaders through the MSG Declaration on Environment and Climate Change agreed on the development of a green growth framework that assists MSG countries in pursuing integrated sustainable development, to restore the balance between the environmental, societal and economic pillars of sustainable development. The objective of a MSG green growth framework was to enhance economic growth and development through the avoidance of loss of biodiversity and unsustainable use of natural resources, and the prevention of environmental degradation with a view to improving society's welfare.

In addition, at the regional level, the Pacific Islands Development Forum (PIDF) in August 2013 hosted by Fiji agreed that the Pacific needs to assert a distinctive Pacific model of "green growth in blue economies" that is aligned to sustainable development principles

recognising that the current economic growth model is flawed. It further recognised the importance of the Pacific Ocean in the region. The PIDF model for the Pacific promised a way forward by offering a system of economic development that ensures both economic growth and long-term viability of human culture and the environment. It recognised that by reformulating the approach to economic growth it is not necessary to sacrifice the natural world or human wellbeing in order to achieve true wealth.

Some Benefits of Green Growth for Fiji

Some of the benefits for Fiji of Green Growth under the three pillars of development are:

Economic benefits

- Increased Gross Domestic Product - production of green goods and services;
- Increased revenue from pricing ecosystem services (or their reduction prevented);
- Economic diversification, including improved management of economic risks and reduced vulnerability;
- Innovation, access and uptake of green technologies.

.....More on the PIDF regional agenda for Green Growth

The PIDF outcome declaration acknowledges ten elements that will contribute to achieving Green-Blue Pacific Economies.

- Leadership that is inclusive at all levels and amongst all stakeholders.
- Recognition of the role of healthy and happy people in sustainable development ensuring a whole of society approach and partnerships..
- Valuation of the Pacific common and collective assets including the development of critical ecological, social, and spiritual/cultural indicators.
- Implement long term financing mechanisms that support communities.
- Rigour in the implementation of key national and regional commitments.
- Reform of financial systems at national, regional and international levels.
- Education and capacity building to ensure people's awareness of sustainability and that national skills mix is sufficient to implement a people-centred green-blue economy
- Sustainable transport that reduces fossil fuel imports and promotes effective services to remote island communities.
- Food and nutrition security by prioritising inclusive and sustainable agricultural and fisheries development.
- Re-energising the Pacific with renewable energy alternatives and improved energy efficiency.

Environmental benefits

- Increased productivity and efficiency of natural resource use;
- Natural capital used within ecological limits;
- Reduced adverse environmental impact and improved natural hazard/risk management especially to future changes in climate.

Social benefits

- Increased livelihood opportunities, income and/or quality of life, notably of the poor;
- Decent jobs that benefit poor people created and sustained;
- Enhanced social, human and knowledge capital;
- Reduced inequality.

The Consultative Process to Develop this Framework

An integrated and inclusive consultative approach was undertaken in the light of Fiji's current development performance and the increasingly competitive global environment.

This Framework and the Forum hosted by the Prime Minister that announced the Framework resulted from the consultations and outcomes of two processes working together: (i) a series of roundtable meetings; and (ii) a number of thematic working group meetings. The Forum was convened over 2 days in late May 2014 and included representation from all national stakeholder groups and regional and international development partners. The purpose of the Forum was to refine and seek consensus for the Framework which will be formally endorsed by Cabinet.

Roundtable Meetings

The series of roundtable consultations involved discussion on the draft Green Growth Framework. As part of the multi-stakeholder approach, the roundtable meetings involved representatives from communities, civil society, private sector, and government. To be cost effective, the roundtable consultations were organised with the Provincial Development Board meetings.

Thematic Working Group Meetings

Ten Thematic Working Groups were established to deliberate on contemporary and emerging development challenges. The Working Groups provided technical insights on each of the thematic areas. The ten Thematic Areas were:

- Building Resilience to Climate Change and Disasters;
- Waste Management;
- Sustainable Island and Ocean Resources;
- Inclusive Social Development;
- Food Security;
- Freshwater Resources and Sanitation Management;
- Energy Security;
- Sustainable Transportation;
- Technology Innovation and Development; and
- Greening Tourism and Manufacturing Industries.

CHAPTER 2: VISION AND GUIDING PRINCIPLES OF THE FRAMEWORK

Vision

In 2008, the adoption of the Peoples Charter for Change, Peace and Progress marked a new course of Fiji's development agenda. The Peoples Charter set very clear guidelines for building a sustainable and efficient development model based on the collective commitment by the people of Fiji. The overarching objective of the Peoples Charter remains key: to rebuild Fiji into a non-racial, culturally vibrant and united, well-governed, truly democratic nation; a nation that seeks progress and prosperity through merit based equality of opportunity and peace.

Built upon the Peoples Charter, the 2010-2014 Roadmap for Democracy and Sustainable Socio-Economic Development set out a strategic framework to achieve sustainable democracy, good and just governance, socio-economic development and national unity. It was compiled in consultation with private sector, civil society and government to take on board the political, social and economic situation, both on the domestic and international fronts.

The objective of the Roadmap was (and still remains) to implement policies to achieve the **Vision of "A Better Fiji for All"** which is consistent with the Peoples Charter. It is logical that the Roadmap Vision is adopted for this Green Growth Framework since the latter is a tool to progress the former.

Guiding Principles

The vision for building a better Fiji for all is guided by the following key principles: equality and dignity of all citizens; respect for the diverse cultural, religious and philosophical beliefs; unity among people driven by a common purpose and citizenship; good and just governance; sustainable economic growth; social and economic justice; equitable access to the benefits of development including access to basic needs and services; merit based equality of opportunities for all; and responsible stewardship of Fiji's ecosystem.

To support this vision and taking into consideration the global and regional developments in green growth, the guiding principles of this Green Growth Framework for Fiji are as follows:

- Reducing carbon footprints at all levels;
- Improving resource productivity (doing more with less);
- Developing a new integrated approach, with all stakeholders collectively working together for the common good. The cross-cutting nature of issues relating to sustainable development requires harmony and synergy in the development strategies;
- Strengthening socio-cultural education of responsible environmental stewardship and civic responsibility;
- Increasing the adoption of comprehensive risk management practices;
- Increasing the adoption of environment auditing on past and planned developments in order to support initiatives that not only provide economic benefits but also improve the environmental situation;
- Enhancing structural reforms for fair competition and efficiency; and
- Incentivising investment in efficient use of natural resources.

CHAPTER 3: BRIEF OVERVIEW OF SOCIO-ECONOMIC AND ENVIRONMENTAL DEVELOPMENT PROGRESS

The Fiji economy has been assessed to have the potential to sustainably grow by 5% per annum. However, the persistence of political instability, low investor confidence, low productivity, land tenure issues, the lack of investment in infrastructure, incompatible and inconsistent policies in some areas, and a weak legal environment for business have suppressed this potential. 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 to 2.6% on average over the past 3 years. As of April 2014, the economy is poised to grow at 3.8 percent on the back of recent reforms and improved domestic business confidence and this augurs well with the recent upgrade from Standard and Poor's rating outlook from stable to positive. The major factors contributing to this growth are expected gains from implementation of Sugar Development Programme, growth in forestry sector, significant capital work expansion in the mining sector, expected positive growth in manufacturing, construction, electricity, transport and storage, accommodation and food service, and information and communication sector.

Investment in Fiji, whether private or public, is a pre-requisite for growth. The level of investment over the past decade has hovered between 14-18% of GDP. This is well below the average levels of 22% in the 1970s and 25% in the years before 1987. Inflation in the past 8 years averaged around 4.9%, the price changes were largely due to policy adjustments by government, volatile global food and fuel prices, and trading partner inflation. A large proportion of Fiji's inflation is due to imports, representing around 60% of domestic inflation. In 2014, inflation is forecasted at 3.0%. Unfavourable trade balance has been a concern over the years, averaging around $1.8 billion deficit over the last five years, however, the buoyant growth in tourism earnings in recent years from $607 million in 2007 to $1.2 billion in 2012 has cushioned the impact of this trade deficit on Fiji's balance of payments position.

In recent years, Fiji has been adopting a fiscal expansionary approach in an attempt to stimulate the economy in the wake of low private sector investment and volatility in the global markets. From 2002 to 2006 Government on average operated with a net deficit of 4.4% of GDP. To prudently manage the burgeoning public debt which increased from $2.83 billion in 2004 to $3.68 billion in 2012 (equivalent to 50.9% of GDP), a fiscal consolidation strategy was employed in the succeeding period (2007-2012) to contain the net deficit to 1.7% on average in this period. Excluding 2011, total annual debt repayments have averaged $201.8 million. Debt repayments peaked at $504.5 million in 2011 due to the repayment of the global bond of US$150 million issued in 2006.

Over the past two decades, national assessments on poverty reveal 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 skewed with the rural population assessed to have a much higher incidence than the urban population.

Employment provides the quickest route out of poverty. However, the economy has not been able to generate enough new jobs annually to accommodate the 20,000 school leavers. In a recent survey, unemployment was assessed at 6.9%. Labour force participation rates increased from 38.4% in 1996 to 40% in 2007. While the participation rate of males

increased by 2%, the participation rate of females fell by 30% in the period due to higher unemployment and engagement in subsistence activities. In addition, existing wage rates across industries has not kept pace with the rising cost of living. The first national minimum wage rate was set at $2 per hour in January 2014 to ensure workers can provide for their basic needs. In the recent wage survey, it was found in some areas, especially among small and micro enterprises, the wage was as low as $1.50 per hour. The current national minimum wage rate represents an increase of 33%.

Over the past 20 years, the urban population of Fiji has grown while the rural population has contracted. Today, more people reside in urban areas (51%) than rural areas for the first time in Fiji's history. This has implications on the carrying capacity of the urban infrastructure to accommodate the influx of rural migrants. A combination of factors such as high rural-urban migration, inadequate supply of urban housing stock, inadequate supply of fully-serviced lands, and lack of access to finance and affordable housing are contributing to the increased number of urban squatters. There are close to 78,000 people currently living in 128 squatter settlements in the major urban areas.

The environment and its resources have provided the backbone of the Fiji economy and employment. Historically dominated by agriculture and mining, however in recent decade's forestry, fishing and tourism have become increasingly important. Accompanying this broadening of natural resource use has been the increasing demand on freshwater water resources for both hydropower generation and drinking water. Whether for subsistence consumption or income earning there has been increasing risks to the environment and loss of biodiversity. Change in consumption and production patterns have led to increasing volumes of both solid and liquid waste and associated pollution to the environment. For Fiji, the new millennium has bought change at a rate that is unprecedented and unrelenting particularly to the environment. The change which will have the greatest impact over the medium and long term is that of climate change. Managing the impact of climate change will focus on adaptation and mitigation through building community resilience, strengthening food security, enforcement of standards on buildings and structures, and protecting coastal communities through reinforcement or relocation.

The 2013 Constitution now provides for inclusive socio-economic development and guarantees all citizens the right to a clean and healthy environment, which includes the right to have the natural world protected for the benefit of present and future generations.

CHAPTER 4: DEVELOPING AND STRENGTHENING THE NATIONAL ENABLING ENVIRONMENT

Fiji has over the past decade made progress with developing and strengthening its national enabling environment which is a crucial pre-condition for development that is sustainable. This includes integration of sustainable development principles into its national plans through regular review processes and engagement in multi-stakeholder processes including with donor partners.

To further move forward, a more integrated framework that is people-centred is needed to secure Fiji's future, which combines and strengthens the linkages between environmental sustainability, economic development and social development. This Green Growth Framework for Fiji which is hinged upon ten thematic areas (Chapter 5) is supported and complemented by developing and strengthening the national enabling environment.

Recognising the necessity for pursuing development that is sustainable through a people-centred integrative and innovative approach, and that many aspects of development are cross-cutting in nature, this chapter focuses on the required policy-mix to facilitate the implementation of the time-bound targets developed from the "Challenges and Way Forward" for each thematic area. As such it is consistent with the international development agenda being considered for the post-2015 period.

In 1994, an overarching message in the first paragraph of the Declaration of the Barbados Programme of Action for Sustainable Development of Small Island Developing States (SIDS) asserts "…that human resources and cultural heritage are SIDS most significant assets and the central position of people in sustainable development must be assured". Fiji is party to this declaration.

In 2012 at the Rio+20 Third International Conference on Sustainable Development, important enablers of sustainable development were identified. Availability of finance in accordance with national priorities and needs is important. Private sector development, structural reforms along with a spirit of entrepreneurship and innovation can also be important enablers. Technology transfer and cooperation among countries in research and development is helpful to strengthen national capacities for sustainable development. This not only includes north-south cooperation but also south-south cooperation by Fiji both with island countries within the Pacific and other global developing countries and is complementary to other forms of capacity building such as human resource development, strengthening institutional capacity, including planning, management and monitoring capacity.

For Fiji, in the Peoples Charter, 2010-2014 Roadmap, and the 2013 Constitution, the national enabling environment for sustainable development is aimed at achieving sustainable democracy, good and just governance, inclusive socio-economic development, national unity and healthy environment.

This chapter considers the regulatory and institutional arrangements needed to further develop and strengthen the national enabling environment in order to support the application of this Green Growth Framework in Fiji, and assure that risks are identified and addressed, and development to be sustainable.

Partnerships
While Government leadership is essential, meaningful participation is needed from all national stakeholders. Genuine partnerships between Government, the private sector, development partners, and communities are key to success. Any adjustments in the institutional framework to support the country's use of this Green Growth Framework to support development that is sustainable must ensure no one is left out.

Established procedures exist for private sector and civil society input into the decision-making machinery through the National Budget; National Peoples Charter Advisory Council; National Environment Council; Provincial and Divisional Development Boards and National Councils operating in the social sector. Any adjustments to the institutional framework will need to create conditions that ensure the Fijian people are at the centre of sustainable development.

Establishment of a High Level Multi-Stakeholder Panel for Sustainable Development will provide opportunities for Government, the private sector, civil society, communities and donor partners to work together to ensure policies are well aligned, better coordinated, and people-focused.

Full participation in regional and global development processes including being party to existing and any new instruments will contribute to ensuring Fiji responds effectively to its obligations.

Informed Decision-Making
In Fiji, as everywhere in the world it is simply not possible to manage what is not measured. As such, the processes for the compilation and analysis of data, to support informed decision-making, needs to be strengthened across the three pillars for sustainable development.

It is essential that informed decision-making for development to be sustainable is supported by analyses of risks and full cost-benefit analyses that not only evaluate the benefits but also identifies and evaluates the costs. For example it needs to be acknowledged that in the past anticipated socio-economic benefits have resulted in costs to the environment being overlooked because of lack of data on the environment. This "data gap" needs to be addressed recognising that many environmental data are variable over time, and are likely to change (become more frequent and intense) as a result of the impacts of climate change.

It must be anticipated that sustainable development goals will need to be identified for Fiji, as is being suggested at the international level to replace the Millennium Development Goals in the post-2015 period. This must be supported by a robust national data gathering and information management initiative. As the global discussions on the post-2015 development agenda suggest, "A Data Revolution" is needed.

As an essential step to developing and strengthening the current national enabling environment, policies and supporting documents must contain a broader set of people-focused goals and indicators and for which necessary data gathering and monitoring capacity, storage and information sharing mechanisms are progressively put in place. A National Information System that is spatial (GIS-based) and at the right scale will necessarily be the preferred data storage and access modality. The knowledge derived over time will then better inform decision-making and facilitate reporting on progress with sustainable development as well as highlight "hot spots" for attention.

Relevant economic, social and environmental data and information need to be incorporated into processes for the National Accounts, the National Budget and relevant National Plans and Policies especially at sector level. Regular public expenditure reviews are necessary to identify programme budget areas that are relevant for sustainable development including identification of spending that may be barriers to growth. This will allow for informed decision-making on possible reallocation of resources and public expenditure.

Human Resources and Capacity Building

Human resource development is needed to ensure sufficient capacity and skills are available. Priorities for human resource development should include: appropriate support for data gathering and analysis; research in engineering, science and technology; re-training for workers through skill enhancement programmes; and increasing awareness and understanding of the principles of sustainable development and the opportunity the application of this Green Growth Framework provides for the future in Fiji. Securing of necessary investment from all potential donor partner sources remains key.

Governance Mechanisms

Internal governance mechanisms need strengthening at all levels. Inadequate legal and institutional frameworks and lack of capacity has hindered planning and implementation of sustainable development strategies. Despite efforts by many, consumption and production have got out of balance and the principle consumers, the people, have not been rightfully placed at the centre of development.

Better coordination and linkages are needed both across and within different agencies and sectors to fully integrate the three pillars of sustainable development (economic, social and environmental). This requires some adjustment to key Government processes and mechanisms for policy formulation and implementation including the National Budget and National Strategic Development Plans.

In support of international governance mechanisms, Fiji must remain a strong advocate for international governance mechanisms that support sustainable development. In particular, international and regional conventions and mechanisms for: green growth; climate change; biodiversity; and the post-2015 Sustainable Development Goals in relation to inclusive social and economic development, environmental management, human rights and poverty reduction.

Good governance is widely regarded as being crucial for sustainable development. Strengthening good governance has been a national development priority for two decades, and is a major component of the Peoples Charter and the Roadmap. The 2013 Constitution guarantees equality for all citizens and inclusive sustainable development. Strong leadership and effective administration of Fiji’s Bill of Rights, accountability and anti-corruption frameworks will lay the foundation for successful transition to green growth.

Regulatory Framework

Well-designed, effective and efficient regulations and compliance mechanisms are needed. Structural reforms have been implemented to realise Fiji's growth potential, improve public service efficiency, reduce vulnerability to shocks, and alleviate poverty. Enhancing the investment climate, increasing land use efficiency, upgrading of infrastructure and

maintaining improved performance of State-Owned Enterprises (SOEs) remain major priorities. Self-regulation and compliance needs to be encouraged.

Technological Innovation and Development
Technology awareness and access, particularly in relation to initial up-front costs, are major challenges for technological innovation and development in Fiji, and remain key to ensuring improved productivity and more efficient use of resources. Support for technology innovation requires identification of Fiji's technology needs in key areas for green growth and providing appropriate incentives to facilitate access.

In particular developments in information and communication technologies (ICTs) are crucial if Fiji is to become a well informed society and the ICT hub for the region. Whilst the benefits are clear the costs (such as for increased speed and access) must be made more affordable.

Strengthening Private Sector Development
A major challenge to sustainably growing the economy has been the low levels of private sector investment in Fiji. Private sector development is crucial to realising Fiji's economic potential particularly in relation to:

- Improving the regulatory environment for starting and operating a business – including appropriate fair trade and weights and measurement standards for consumer protection;
- Creating a more welcoming environment for foreign investment;
- Facilitating contract enforcement;
- Rationalising investment incentives;
- Strengthening infrastructure services; and
- Enhancing access to land, finance and financial services.

Finance and Economic Incentives
The success of this Green Growth Framework requires substantive finance and investment in infrastructure, natural resource management, and capacity and skill development. In addition to domestic resource mobilization, other potential sources include Foreign Direct Investment (FDI), Overseas Development Assistance (ODA) and public-private partnerships (PPP) to cover the costs of getting actions started. All finance options need to be considered.

- ***Revenue Policy*** will play an important role in Fiji's transition to green growth. Options include taxing unsustainable behavior and incentives to assist green industries. Particular attention should be given to incentives to encourage renewable energy, recycling, waste management, green production and technological innovation. Tougher penalties for over pollution and waste also warrant consideration.

- ***Expenditure Policy*** can support transition to a green economy through policies like public procurement of green goods and services; possible grants for greening industries and technological innovation similar to support for market access under the National Export Strategy; prioritising green goods and services through the micro, small, and medium enterprise development programme; and shifting any subsidies from brown towards green growth.

- ***Foreign Direct Investment*** is needed to develop industries, technology and practices that directly benefit the environment. Restrictions on foreign ownership, repatriation of profits and high tariffs can be barriers to green FDI and technology transfer. A review of current

investment policies and regulations is needed to identify areas where adjustments can be made to support green FDI particularly to facilitate technology transfer and capacity building.

- ***Public Private Partnerships*** offers a model for using public funds to mitigate risks and attract private investment. This could be particularly useful in sectors where investment is limited by concerns over technology, regulatory and market risks and high financing costs. The regulatory framework needs to be streamlined to facilitate PPP in green infrastructure development and other industries.

- ***Overseas Development Assistance*** is an important source of finance for green investments. Major projects in renewable energy and sustainable agriculture can be financed along with smaller efforts, with strong potential, such as feasibility studies, pilot projects and technical training. A more concerted effort is needed to pursue aid funds pledged to developing countries to support sustainable development and improving coordination for all non-Government stakeholders (private sector, civil society and development partners).

CHAPTER 5: KEY THEMATIC AREAS

The ten Thematic Areas have been identified to stimulate, if not require, the development and/or strengthening of an integrated and cross cutting national enabling environment for future development that is sustainable and can be sustained in Fiji. This contrasts with the traditional sector focused approach which has increasingly been referred to as "working in silos".

This approach highlights the opportunity the Green Growth Framework provides for Fiji to do business differently. At the same time it encourages people to think outside the box. Furthermore, it is an approach that accepts that business as usual is no longer an option for Fiji.

Every attempt has been made to keep the Thematic Areas to a manageable number whilst at the same time leaving nothing or no-one out. In this chapter they are grouped in alignment with the three pillars of sustainable development to emphasise that this Green Growth Framework is a tool to support and complement actions to contribute to development that is sustainable.

Environment Pillar:
- Building Resilience to Climate Change and Disasters;
- Waste Management; and
- Sustainable Island and Ocean Resources.

Social Pillar:
- Inclusive Social Development;
- Food Security; and
- Freshwater Resources and Sanitation Management.

Economic Pillar:
- Energy Security;
- Sustainable Transportation;
- Technology Innovation and Development; and
- Greening Tourism and Manufacturing Industries.

Each of the ten Thematic Areas includes a section on key challenges and a way forward including actions and time-bound indicators. These are intended to support and complement those in the 2010-2014 Roadmap and sucessor national development plans. They are intended to support and not duplicate those described in relevant sectoral policies and plans. Given the intention of the Green Growth Framework to accelerate integrated and inclusive development that is sustainable they necessarily cross-cut to other Thematic Areas.

Thematic Area 1: Building Resilience to Climate Change and Disasters

1. Introduction

The adverse impact of climate change necessitates the need to develop adaptation and mitigations strategies that will build resilience across all aspects of Fiji's development agenda. As with many other Pacific small islands developing states, building resilience to climate change is being closely coordinated with the overarching issue of reducing the risk of disasters.

The harsh impacts anticipated from climate change may further impede efforts to achieve sustainable development. Some of the main climatic challenges facing the Pacific include: sea level rise and intense flooding which threatens water supply, coastal infrastructure and land areas; and climate variability and increased frequency and intensity of natural disasters which could have negative impacts on food security (caused by a decline in freshwater availability, crop production and fisheries), coral reefs and forest biodiversity, and the spread of certain diseases (especially those spread through contaminated water)[2].

Fiji's small size, vulnerability to climate change, manmade and natural hazards and pace of socio-economic development exacerbated by rapid urbanisation resulting in the increase in squatter and informal settlement and increased construction and economic activity in disaster prone and high risk areas requires a more holistic approach in efforts to reduce vulnerability and risk.

Although some form of mitigation and prevention measures to cope with these developments are in place in relevant institutions responsible for regulatory control and public administration, a more integrated and targeted approach is necessary. The greatest challenge is the identification of adaptation strategies that need to be applied to reduce current and future risks.

2. Current Status

(i) Overview of existing policies, legislations and initiatives

Fiji signed the United Nations Framework Convention on Climate Change (UNFCCC) convention in 1992 and ratified it in 1993. Fiji's commitments to this Convention are outlined in the National Climate Change Policy of 2012. The Mauritius Strategy 2005–2015 and the Barbados Plan of Action 1994 which attempt to address the problems of small island developing states (SIDS) have climate change as a significant issue. Fiji will continue to contribute to the implementation of the Mauritius Strategy 2005–2015 and the Barbados Plan of Action through the implementation of the National Climate Change Policy. At the regional level the Pacific Island Framework for Action on Climate Change 2006–2015 (currently under review) is focused on building the resilience of communities to combat the impacts of climate change.

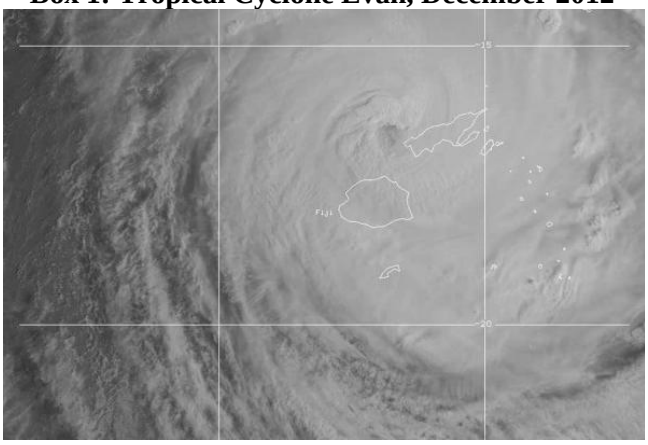
The National Climate Change Policy provides the framework which guides government's strategic direction on issues relating to climate change, climate variability and sea level rise. The policy has eight policy objectives which are focused on mainstreaming, data collection,

[2] Secretariat of the Regional Environment Programme (SPREP), Factsheet Pacific Climate Change, http://archive.iwlearn.net/www.sprep.org/factsheets/pdfs/pacificclimate.pdf, 2008.
World Wide Fund for Nature (WWF), Report on 'State of the Planet, 2010.

storage and sharing, awareness raising, education and training, adaptation, mitigation and financing.

In relation to Disaster Risk Management, Fiji endorsed the Hyogo Framework for Action 2005 – 2015 and the Pacific Disaster Risk Reduction and Disaster Management Framework for Action 2005 – 2015 (currently under review). The global and regional policy instruments advocate for further action to strengthen the resilience and safety of communities in relation to natural and other hazards.

Box 1: Tropical Cyclone Evan, December 2012



On December 16-17, 2012, Tropical Cyclone Evan (a category 4 cyclone) ravaged northern Vanua Levu and western Viti Levu. No lives were lost due to a well coordinated and proactive response by Government and the community. Damages and losses of close to $195 million were estimated to have been incurred, particularly in tourism, housing and agriculture. The impact of the cyclone compounded the damage experienced by communities in western Viti Levu from widespread flooding in January and March the same year. Total recovery and reconstruction costs for cyclone Evan were estimated at $134 million. Over the last 40 years, Fiji has experienced tropical cyclone events almost every 1-2 years. ***Photo courtesy of Fiji Meteoroloaical Services***

Fiji national disaster management arrangements are covered under the Natural Disaster Management Act 1998 and the National Disaster Management Plan of 1995. There is greater recognition and acceptance that in order to adequately respond to and manage disasters there must be a comprehensive approach to the management of risks associated with them. In this connection a draft National Disaster Risk Management Arrangements was developed in 2006 which attempted to synchronise efforts to respond to disasters and provide a mechanism for an all-hazard approach to disaster management.

The current regional policy context for climate change and disaster risk management is undergoing a rapid change across the Pacific. At the regional level a new initiative is underway to develop a "Strategy for Climate and Disaster Resilient Development for the Pacific" which will succeed the existing and separate regional policy frameworks[3].

Fiji, much like its neighbouring small island developing states, is keen to develop an integrated approach to address risk, beginning work in 2006 to develop a national strategy for all hazard risk management[4]. With the increased momentum provided by the development of the regional Strategy for Climate and Disaster Resilient Development, Government is committed to integrate climate change and disaster risk management into the national planning and budgeting process and the current Climate Finance Readiness Programme and Climate Public and Institutional Review is expected to propose a way forward.

In support of integration, consideration needs to be given to the development of a national level Strategic Plan for Climate and Disaster Resilience to ensure that the actions recommended by related strategies are implemented in an integrated manner, thus minimising

[3] Pacific Islands Framework for Action on Climate Change 2006 - 2015
[4] Government of Fiji 2006. Fiji National Disaster Risk Management Arrangements: Building the resilience of Fiji's communities to natural and human-caused hazards. October. (Unpublished).

waste of resources and promoting efficiencies in vulnerability reduction. The development and implementation of such a plan will provide a stronger contextual basis for revising governance and institutional arrangements for disaster risk management and climate change. It will allow Fiji to bring about a more coordinated approach to dealing with issues of vulnerability and risk and most importantly it will help to facilitate the mainstreaming of climate change and disaster risk considerations within the national and sub national development planning and resource allocation mechanisms.

(ii) Review of performance in the context of sustainable development

Historically, Fiji experiences one to two tropical cyclone-related disasters annually, plus at least one major flood. In the 30-year period over 1983-2012, Fiji reported 106 natural hazard-related disasters including 49 disasters caused by tropical cyclones, 38 by floods, plus numerous additional severe storms, landslides and droughts[5]. Based on existing data[2], only 70 per cent of these disasters were costed to any degree. The total assessed cost of disasters reported over the 30-year period was US$ 1.2 billion[6], with an average disaster cost of US$ 11.7 million, although average costs are likely to be higher, given that 30 per cent of events were not costed at all and most assessments did not take into account the value of economic losses. As outlined in Box 1, the most recent devastating cyclone to impact Fiji was Tropical Cyclone Evan in December 2012 and caused estimated damage and loss valued at $195 million.

Box 2: Vunidogoloa Village Relocation, 2013

Vunidogoloa Village in the *tikina* of Koroalau, Cakaudrove Province on Vanua Levu was the first village in Fiji to be relocated due to rising sea level. Vulnerability assessments have identified 676 communities around the country threatened in some way by loss of coastal land or infrastructure, flooding and from storm surges. Of these, 42 communities have been identified for potential relocation.

Photo courtesy of Fiji Government Online Portal www.fiji.gov.fj

Natural disasters have a debilitating impact on the socio-economic development of Fiji. At a social level, a recent assessment demonstrated that disasters make communities in Fiji poorer and that poverty exacerbates the scale of national disasters[7]. At an economic level, disasters drain resources that could have otherwise been used to support national development. For example, the cost of damage by natural disasters[8] in 2012 alone was estimated at approximately $208 million. This required an investment of around $43 million for rehabilitation and recovery of key sectors within Government. This rehabilitation cost does not take into account those personal costs incurred by the individuals and the private sectors. Majority of the economic losses arising from disaster events such as floods are incurred by industries and business located within the ambit of vulnerable municipalities. This calls for the need to build safer cities and towns for long term sustainability.

[5] Pacific Damage and Loss Database – www.pdalo.net.
[6] Calculated based on Pacific Damage and Loss Database records.
[7] Lal, P., Singh, R. and Holland, P. 2009, Relationship between Natural Disasters and Poverty: A Fiji Case Study, SOPAC Miscellaneous Report 678 April, Fiji.
[8] 2 Flash Floods (January and March) consolidated damage $100million and Tropical Cyclone Evan $108million.

This situation may worsen with climate change. The World Bank estimates that the cost of adapting to climate change will range from $75 billion to $100 billion per year for a temperature rise of 2 to 4 degrees, with Asia and the Pacific likely to bear the brunt of the burden[9]. In light of these economic impacts, Fiji is under pressure to develop the necessary resilience measures for long term sustainability.

Some progress has already been made towards building resilience. Government has commenced with the conducting of rapid vulnerability and adaptation assessment, invested in improving early warning systems, dredging of river mouths, construction of inland retention dams and the construction of cyclone proof homes in the most affected areas. Rehabilitation plans are focused on the principals of "building back" better especially for rural housing and infrastructure such as roads, water and energy. In the agriculture sector, the planting of traditional tree and roots crops is being undertaken to minimise soil erosion and land degradation and desertification. The planting of mangroves, construction of seawalls and the relocation of communities are part of ongoing adaptation initiatives against the continuous rise in sea level. As outlined in Box 2, the first climate change related village relocation occurred in 2013 when the village of Vunidogoloa in Cakaudrove Province of Vanua Levu was relocated due to rising sea level.

Given the ongoing focus on building resilience, Government has seen it fit to consider tapping the disaster insurance market as a potential means of building up capacity and contingencies for post-disaster financing. Preliminary consultations have been undertaken with the World Bank on a potential financing mix and appropriate modality. Having an insurance cover could increase our financial resilience against natural disasters by improving our financial capacity to meet post-disaster funding needs.

(iii) Assessment of key indicators and trends

Annual Temperature

The annual maximum and minimum temperatures have increased in both Suva and Nadi since 1950. In addition, historical changes in sea surface temperature and sea level rise around Fiji are consistent with the broad scale changes in the region. There has been a rapid warming of sea surface temperature of approximately 0.07°C per decade between 1970 till today in addition to 6 mm per year of sea level rise. The Fijian maritime area has also seen a decline in aragonite saturation from about 4.5 in the late 18th century to an observed value of about 3.9± 0.1 by the year 2000. Aragonite saturation state of above 4 is optimal for coral growth and reef ecosystem development.

Sea Level Rise Projections

Projections for all emissions scenarios indicate that the annual average air temperature and sea surface temperature will increase to be in the range of 0.4-1.0 degree centigrade by 2030. On the current global greenhouse gas emission scenario, the additional sea level rise may be as great as 80 centimetres by 2100, in addition to the 20 centimetres of sea level rise experienced in the last decade[10].

Frequency of Disaster Events

[9] World Bank, Economics of Adaptation to Climate Change (Washington, World Bank, 2010)
footnote:
[10]International Panel on Climate Change Assessment Report 5 Working Group 1 (IPCC AR5 WG1), www.climarechange2013.org.

During the period 1983 – 2012 Fiji experienced a total of 106 natural hazard-related disasters including 49 tropical cyclones and 38 floods. According to the Climate Change in the Pacific Report, projections indicate that while there may be a decrease in the number of tropical cyclones, the average maximum wind speed of cyclones will increase between 2 to 11%. 20% rainfall intensity within 100 km of the cyclone center is also projected.

3. Key Challenges and Proposed Way Forward

The key challenges and proposed way forward for this Thematic Area should be considered in light of the introductory paragraphs to Chapter 5.

Key Challenges	Proposed Way Forward, Actions and Timebound Indicators
(i) There is a need to develop an integrated approach and policy and operational level to effectively address climate change and disaster management.	***Short Term (up to 2 years)*** • Establish a National Platform for Climate Change and Disaster Risk Management by 2015. • Develop a National Strategic Plan for Climate Change and Disaster Resilience by 2015. • Review the Fiji National Disaster Management Arrangements to include Climate Change by 2016.
(ii) There is a need to ensure that buildings constructed in urban and rural areas are cyclone proof.	***Short Term (up to 2 years)*** • Review the National Building Code by end of 2016. ***Medium Term (3 to 5 years)*** • Provide incentives to support compliance with new building standards by 2017.
(iii) There is a need to strengthen the role of local governments in building resilience.	***Short Term (up to 2 years)*** • Development of a Local Government Self-Assessment Tool for Disaster Resilience by 2016. • Review the town plan regulations to facilitate the enforcement of zoning and buffer zones for coastal areas, rivers banks, high risk areas and mangrove areas. Review to be completed by 2016.
(iv) Need for greater understanding of the impact of climate change and disasters in order to better plan for recovery and long term development.	***Short Term (up to 2 years)*** • Develop a comprehensive assessment framework, including adoption of the damage and loss assessment methodology by 2015. ***Medium Term (3 to 5 years)*** • Institutionalise a mechanism to collect and analyse hazard, vulnerability and exposure data by 2017. • Mainstream cost-benefit analysis into decision making process in mitigation and preparedness measures by 2017. • Encourage collaboration with development partners and tertiary institutions in conducting research on priority areas with climate change and disaster risk reduction by 2017. ***Long Term (over 5 years)*** • Develop hazard maps and models for all potential hazards (including sea level raise, storm surge, flood and tsunami) by 2020.
(v) The need to ensure climate change mitigation and adaptation, and disaster risk management become a	***Short Term (up to 2 years)*** • Integrate the climate change and disaster risk reduction into the National Development Plan by 2015.

part of the national and sub national development planning and budgetary process.	• Revise capital budget appraisal guidelines to incorporate comprehensive hazard and risk management (CHARM) and vulnerability and adaptation (VA) assessments by 2015.
(vi) The need to increase the resourcing of adaptation and mitigation measures given the growing impact of climate change and disasters on public infrastructure and livelihoods.	***Short Term (up to 2 years)*** • Explore post-disaster financing modalities by 2015. ***Medium Term (3 to 5 years)*** • Improve access to global financing facilities such as the Global Green Fund.
(vii) The need to strengthen community partnership for building resilience for climate change and disaster.	***Short Term (up to 2 years)*** • Partner with civil society in undertaking capacity building at divisional and community level on building resilience. ***Medium Term (3 to 5 years)*** • Undertake vulnerability assessment for all communities by 2019. • Develop climate and disaster resilience plans for urban and rural communities (prioritising squatter settlements and other vulnerable communities) by 2019. ***Long Term (over 5 years)*** • Capacity building provided to communities for which vulnerability assessments have indicated that relocation is the long term adaptation strategy to minimise risks due to anticipated impacts of climate change.

Thematic Area 2: Waste Management

1. Introduction

Rapid urbanisation and industry development has placed a lot of pressure on the management of all forms of waste. The area of waste management is cross-cutting impinging upon sustainable natural resource management, development of alternative energy sources (biomass, biogas), and greening industries. This thematic area concentrates on the management of solid and industrial wastes, including air pollution, while sewerage and sanitation is dealt with in Thematic Area 6. The National Environment Strategy of 1993 assessed the situation of solid waste management as a 'critical issue' at that time, pollution and hazardous waste management as 'emerging issues' and sewerage disposal as a 'minor issue'. Twenty years on, despite acceding to numerous international conventions and enacting accompanying national laws, a comprehensive solution to effectively deal with waste management and its associated risks remains elusive.

Waste management in Fiji continues to be challenged by ineffective waste management systems at the municipal level, continued use of unsanitary dumps for urban waste, absence of an organised rural waste management system, lack of civic pride which is exhibited through indiscriminant public littering, and ineffective enforcement of existing legislations, particularly in policing industrial pollution. As Fiji's economic performance improves, this will increase activity in all sectors especially resource based sectors, wholesale and retail, manufacturing, and transport and tourism, which ultimately will lead to increased waste generation.

Section 40 of the 2013 Constitution guarantees the right of every person to a clean and healthy environment for the present and future generations. To effectively manage waste now and into the future, the Green Growth Framework must create an environment that incentivises the business of recycling, foster greater civic responsibility at the household level, and reforms the existing waste management systems.

2. Current Status

(i) Overview of existing policies, regulatory framework and initiatives

The regulatory framework for waste management is provided under the Public Health Act 1978, the Environment Management Act 2005 which regulates the disposal of hazardous waste and other pollutants, together with the Litter Decree 2010. Various national strategies have been formulated to address waste management such as the National Solid Waste Management Strategy 2011-2014, National Liquid Waste Management Strategy 2006, National Air Pollution Control Strategy 2007, and the revised National Liquid Trade Waste Policy 2013 of the Water Authority of Fiji.

The Public Health Act is currently undergoing review to encompass a proactive approach for public health interventions. The National Solid Waste Management Strategy 2011-2014, incorporates a new thematic area of sustainable financing to address waste management projects that are not dependent upon Government subsidies. The Litter Decree was amended in 2010 to allow police officers, health inspectors, port masters, forestry officers, environment officers, land transport officers and other public officers to be appointed by the Minister for Environment as Litter Prevention Officers. Draft regulations to control plastic bag pollution were also developed in 2012 and are currently being discussed amongst stakeholders.

With support from the European Union, the Lami Rubbish Dump Rehabilitation Project was completed in 2012. Its successor, the Naboro Landfill provides a model of sanitary landfill for other municipalities outside the Suva-Nausori corridor. The Lautoka City Council, through assistance from the Japanese International Cooperation Agency (JICA) has improved its Vunato dump and put in place measures to better manage recyclable waste. Through the implementation of the JICA Waste Minimisation and Recycling Promotion Project (2008-2012) waste minimisation practices such as the 3Rs (Reduce, Reuse and Recycle) were piloted in Nadi and Lautoka in the Western Division. A draft 3R policy was developed as an outcome of the Project and needs to be implemented.

Box 3: Naboro Sanitary Landfill

Whilst open dumping is still common amongst municipalities, their is a need for municipalities to consider the Naboro sanitary landfill model for proper management of waste. Such infrastructure will also greatly support the need to implement the waste minimisation concept (3Rs) nationwide.
Photo courtesy of the Fiji Times

The Government has also partnered with SPREP on a project to integrate climate change adaptation measures into the waste management sector (Adapt Waste Project). The aim of the Adapt Waste Project is to improve waste disposal sites so that they are resilient to the direct impacts of extreme weather events and to minimise risks to human health and the environment from the disposal of disaster debris. The Labasa Town Dump is the main project site and to a lesser extent the Seaqaqa District.

Rural Local Authorities have also introduced garbage collection service schemes in rural areas and various rural garbage disposal dumpsites are being identified for proper management of solid waste. In addition, modern incineration facilities have been installed to treat healthcare waste in major hospitals in Suva, Lautoka and Labasa. These facilities will also be installed at the sub divisional level.

The roles of key statutory bodies such as the Land Transport Authority, Water Authority of Fiji and Maritime Safety Authority of Fiji are important for effectively regulating and monitoring air pollution in the transport sector and waste discharged into water mains, rivers and the sea by commercial facilities, and ships or vessels including wrecks.

The Fiji National Water Quality Standards were adopted in 2011, which supports the development and implementation of risk management strategies that would ensure the safety of drinking water supplies in urban, rural and island communities of Fiji through the control of hazardous constituents of water. The Ministry of Health, in partnership with the Water Authority of Fiji, conducts monthly surveillance of water supply quality and facilitates water and sanitation improvement projects in rural communities.

In addition to land-based sources of waste, Fiji is also addressing marine sources of pollution. Fiji has benefited from the Pacific Ocean Pollution Prevention Programme 2010-2014 which involves the regional management of oil spills and ballast water management, as well as

addressing the transboundary movement of hazardous materials that are not covered under the Waigani Convention. This includes materials such as lead-acid batteries and tyres. Potential exists for innovative solutions to recycling a growing collection of used tyres such as through coastal reinforcements or seawalls.

The National Liquid Trade Waste Policy of the Water Authority of Fiji was reviewed in 2013. One of the objectives of the policy is to protect public health and the environment by providing the business sector with an environmentally friendly alternative liquid waste disposal option rather than the pollution of creeks, water courses and the marine environment in areas where wastewater services are available, and by accepting wastes that can be transported and treated and not compromise the quality of effluent or wastewater by-products.

(ii) Review of performance in context of sustainable development

With the exception of the Naboro Landfill which services five municipalities[11], the use of open dumps is the main waste disposal method practiced. Government is working with municipalities to make the transition to sanitary engineered landfills because of the negative impacts associated with open dumps on human health and the surrounding environment.

Box 4: Poor Waste Disposal Practices

Indiscriminate dumping of consumer waste (plastic plates and bottles in particular) is becoming an eyesore when it is washed up on local beaches. Poor waste management is not only harmful to the environment but also affects other sectors such as tourism. ***Photo courtesy of Peninsula Citizens for Sustainable Development. (www.pcsdbelize.org)***

The exorbitant costs associated with proper waste disposal and rehabilitating polluted environments is a major incentive to adopt environmentally sound waste management practices, prime of which is minimising waste. An incentive based system such as a packaging/container deposit mechanism (which has been discussed but not yet implemented) would instantly stimulate the desired actions from the general public consistent with the 3R approach that has been marketed the past few years. Comprehensive measures are also required to ensure all product packages used in Fiji are recyclable or biodegradable, including enforcing the banning on non-biodegradable plastic bags. Through appropriate incentives and more organised systems such as use of waste transfer stations, the necessary volume of recycling waste can be generated to support a viable recycling industry.

Effective waste management systems can also reduce long term costs for the economy indirectly. The damage caused by flash flooding, particularly around urban centers is mainly due to drains being blocked with improperly disposed waste. Likewise, the health costs related to dealing with epidemics such as the recent dengue outbreak can be minimised or eliminated if proper care is taken to disposing waste. Improving how the country manages the waste it generates therefore has sound economic, social and environmental justifications.

[11] Navua Local Authority, Lami Town Council, Suva City Council, Nasinu Town Council and Nausori Town Council

Over the past decade, it has been evident that municipal councils lack the capacity and resources to effectively manage waste in their respective jurisdictions. This is in addition to the challenge of managing waste generated in rural areas. A change in approach is necessary. The merits of the proposal to establish a Waste Management Authority (WMA) contained in the National Environment Strategy 1993 needs to be re-examined. Following the model of the Fiji Roads Authority. A WMA would assume overall responsibility for waste management in the country leaving the Department of Environment to focus on regulatory functions, compliance and enforcement. A WMA would take responsibility for implementing initiatives such as household waste separation and introduce cost-recovery measures (polluter-pays principle) to ensure waste management and pollution control is adequately financed. The WMA can also consider appropriate models to manage rural waste.

Enforcement of existing legislation continues to be weak as reflected by the state of pollution in various industrial, commercial and residential areas that is allowed to continue without reprisal. The lack of capacity within the regulatory bodies and general apathy of the public at large are the main hindrances to effective policing of improper waste management practices. The importance of educating the present and future generations on good environmental stewardship needs to be prioritised within the education system and raise the level of awareness throughout society on benefits and costs associated with waste management.

With increased urbanisation, the pressure on existing infrastructure is also leading to illegal dump sites by squatters and industrial type activities being undertaken in residential areas and causing pollution. The growth of industrial areas has seen an increase in industrial trade waste discharged into rivers and the sea. Effective management systems for industrial waste remain a concern. Monitoring of discharge from industrial areas (such as Vatuwaqa and Walu Bay in Suva) and by shipping vessels directly into the marine environment is an area lacking effective enforcement.

(iii) Assessment of key indicators and trends

Waste disposed at the Lami dump increased fivefold from 9000 metric tons in 1975 to 45,000 metric tons in 2004. The Lami dump began operations in 1956 and serviced the Greater Suva Area. The Naboro landfill, which took over operations from Lami in 2006 received just over 65,000 metric tons of waste in 2013. The landfill serves five municipalities (the Greater Suva Area and Navua).

3. Key Challenges and Proposed Way Forward

The key challenges and proposed way forward for this Thematic Area should be considered in light of the introductory paragraphs to Chapter 5.

Key challenges	**Proposed Way Forward, Actions and Timebound Indicators**
(i) The need to improve the capacity to effectively manage waste, in particular urban waste which has been driven by increased urbanisation.	***Short Term (up to 2 years)*** • Reconsider the proposal to establish a Waste Management Authority to manage waste throughout the country by the end of 2015.Alternatively, boost capacity of municipal and rural local authorities to manage waste through targeted incentives. • Charge 'environmental levy' on all imported products to finance waste management initiatives in the country by 2015.

	Medium Term (3 to 5 years) • Implement wherever possible waste sorting at household level including household composting throughout Fiji by end of 2017. • Reduce uncollected waste within the Greater Suva Area from 40,000 tons in 2013 to zero by 2017. • Establish Waste Recycling and Transfer Stations in strategic areas around the country by end of 2025.
(ii) The need to incentivise recycling and waste minimisation.	***Short Term (up to 2 years)*** • Implement packaging/container deposit mechanism by end of 2015 beginning with plastic bottles and expanding as appropriate. • Formulate incentives to support the recycling industry by 2015. • Immediately strengthen enforcement of the existing ban on use of non-biodegradable plastic bags. • Enact and enforce law to ensure all packaging material entering or being used in Fiji is recyclable or biodegradable (within 100yrs) by end of 2016. ***Medium Term (3 to 5 years)*** • Enact legislation to require importers to show how they intend to deal with the disposal of goods they import and/or its associated waste by end of 2017.
(iii) The need to increase civic responsibility towards the environment.	***Short Term (up to 2 years)*** • Immediately strengthen existing environmental education in schools system through a more practical or hands-on learning. • Introduce a national system that annually ranks urban centers, suburbs, villages or settlements based on waste management practices and general environmental stewardship by end of 2016. • Incorporate waste management provisions into the proposed village bylaw to ensure proper management practices are adopted at the village level. ***Medium Term (3 to 5 years)*** • Increase awareness in every household on use of the 3Rs (reduce, reuse and recycle waste) in rural and urban areas by 2020.
(iv) The need to strengthen enforcement of existing legislations.	***Short Term (up to 2 years)*** • Review and improve existing partnerships with agencies empowered by the Minister for Environment as Litter Prevention Officers under the Litter Decree 2010 to improve enforcement. • Direct more resources to increase the capacity for enforcement within regulatory authorities.

Thematic Area 3: Sustainable Island and Ocean Resources

1. Introduction

Fiji is a group of small islands (total land area of approx. 18,700km^2) surrounded by a large Exclusive Economic Zone of ocean (approx. 1.3million km^2). Clearly, opportunity for the future must lie in further development of Fiji's large ocean space and its resources. At the same time focus needs to continue on ensuring development is sustainable on the islands. Addressing the concentration of people and infrastructure in the coastal zone is also important, particularly within the context of building resilience to climate change due to sea level rise.

As an island nation, the manner in which Fiji's natural resources and biodiversity are managed will have implications on future economic prospects of the tourism and resource based industries, potential for developing renewable sources of energy, resilience capacity of communities to climate change and disasters, health and quality of life.

The economic contribution of the natural resource sector to the nation is usually the focus of most policy discourse. However, the natural ecosystems and biodiversity also provide essential goods and services that sustain life. This contribution is rarely quantified or considered when assessing the implications of development. Valuing the contribution of these ecosystem services is a major step forward in providing an accurate balance sheet of the true state of the Fijian economy.

Although natural resources have been fueling economic growth for the past decades, the issues of over exploitation, weak enforcement, and ineffective institutional mechanisms have resulted in adverse impacts on the long term sustainability of these resources, the environment, and most importantly to the people who depend on it for their livelihood. The competing demand for land, driven by urbanisation, higher demand for housing and growth of industries, such as tourism, is leading to new challenges of growing squatters and declining land under agriculture. The absence of a national land use plan compounds the challenges faced.

Section 40 of the 2013 Constitution guarantees the right of every person to a clean and healthy environment for the present and future generation. For the tool of green growth to steer the utilisation of natural resources onto a path of development that is sustainable requires an ecosystem approach to managing Fiji's resources and biodiversity, finding innovative models of enforcement that incentivises ownership from all stakeholders and having a national land use plan in place to guide development. A key requirement is a concerted effort to develop a mechanism to collect, analyse and present data on the use and state of our natural resources in a form that can be used by stakeholders, in particularly decision makers.

2. Current Status

(i) Overview of existing policies, regulatory framework and initiatives

There are numerous policies, plans and legislation in place governing the utilisation and management of Fiji's natural resources. In the marine resources sector, the Fisheries Act 1942 and Marine Spaces Act 1978 have been the main legislations governing the sector. Recently the Fisheries Act has been replaced by the Offshore Fisheries Management Decree 2012 and draft Fisheries Aquaculture Decree and draft Inshore Fisheries Management Decree. The

latter two pieces of legislation are still being vetted. Apart from these legislations, the Tuna Management Plan 2002 provides a framework for the management of the tuna industry, which is the major generator of economic returns in the marine resource sector.

The management of inshore fisheries is supported by the Fiji Locally Managed Marine Area (Fiji LMMA) network, a non-profit and charitable association of over 400 communities and up to 25 NGOs, government departments and academic institutions working together to promote and encourage the preservation, protection and sustainable use of marine resources by owners of the resource. To date, The network covers 10,745 square kilometres equivalent to more than 25% of Fiji's inshore area. Locally Managed Marine Areas have been established in 143 of Fiji's 410 *i-qoliqoli* areas with 415 *tabu* (no-take) areas covering over 960 square kilometres.

Box 5: Ucunivanua Locally Managed Marine Area

The first LMMA site in Fiji was established in 1997 in Ucunivanua Village, Verata-Tailevu. A protection area covering 24 hectares was set aside for Clams (Kaikoso). The administrative and operation costs over the first 5 years were F$20,000. The 2005 socio-economic impact study reported a 130% increase in household income for 600 people. In 2002 the Ucunivanua LMMA project was awarded the internationally renowned Equator Prize which recognises sustainable development solutions and resilient communities.

Photo and information courtesy of UNDP (2012). Fiji LMMA Network, Equator Initiative Case Study Series.

Prior to 1975 Fiji's mangroves were constituted as Forest Reserve and were managed by the Forestry Department. Following a Cabinet Decision in 1974 all mangrove Forest Reserves were deproclaimed following which they came under the jurisdiction of the Department of Lands and Survey in line with all other 'foreshore'. The Mangrove Management Plan 1986 is currently being reviewed[12]. In addition, the Coral Triangle Pacific 2010-2012 initiative is funded through the Asian Development Bank and involves the formulation of a proper coastal management plan. The province of Ra has been chosen as the demonstration site.

As signatory to the Convention on Biological Diversity, a National Biodiversity and Action Plan (NBSAP) was formulated in 2003 but was only endorsed by Cabinet in 2007. The Plan has recently been reviewed and an Implementation Framework drawn up to improve implementation and monitoring under seven new thematic areas: inshore fisheries, species conservation, invasive alien species, forest conversion, coastal development, inland waters, and protected areas. Fiji is signatory to other key conventions and protocols that are geared towards addressing loss of biodiversity resources such as the Cartagena Protocol on Biosafety, the Nagoya Protocol, Wetlands Convention and Convention on International Trade of Endangered Species of Wild Flora and Fauna.

[12] The review is an activity of the Mangrove Ecosystem for Climate Change and Alternative Livelihood Project 2010 – 2012 is part of the broader Pacific Mangroves Initiative with the key goal "to assist the Pacific island countries and territories to implement sound practices and capacity building in mangrove management, including raising awareness of and maintaining high biodiversity values and ecosystem goods and services that can sustain or even improve the livelihoods and wellbeing of the local population depending off these coastal ecosystems".

The threats of invasive species to our natural ecosystems, biodiversity and to our economic development requires the need for effective control and management plans to address further impact that may be posed by these invasive species such as African Tulips, American Iguana and mynah birds cane toads and Asian SubterranianTermites to name a few to our natural resource and biodiversity. Some of the ongoing programmes currently being undertaken by the Bio-Security Authority to address this issue include the American Iguana eradication and Asian Subterranean Termite control programme. Through the Iguana eradication programme, a total of 34[13] iguanas (both juveniles and adults) were captured by the Biosecurity Authority in the third quarter of 2013.

Through the National Environment Council a National Protected Areas Committee has produced a map of all key biodiversity areas and important bird areas in Fiji, a draft map of priority terrestrial protected areas and marine managed areas in Fiji and a map of all wetlands of significance.

Similar to marine and coastal resources, various legislations and guidelines such as the Agricultural Landlord and Tenant Act, iTaukei Land Trust Act, Land Conservation and Improvement Act, Mining Act 1974, Forest Decree, and Fiji Forest Harvesting Code of Practice, are in place to manage land resources.

The Agricultural Landlord and Tenant Act, iTaukei Land Trust Act and Land Conservation and Improvement Act provide key overarching guide to the utilisation and management of land under agriculture. The latter piece of legislation is being reviewed to strengthen the policing of improper land use and water management practices in a proposed draft Land Resource and Water Management Decree.

The Fiji Forest Policy 2007 sets the foundation for sustainable forest management, and the Forest Decree 1992 is currently being revised to take into account current changes in the forest sector. The Fiji Forest Harvesting Code of Practice was reviewed in 2010. In addition, the Mahogany Industry Development Decree 2010 was introduced to oversee the development of the mahogany industry. To date, replanting of the mahogany resource is not continuing due to poor enforcement of the Decree. More effective and efficient enforcement of regulations are needed to increase productivity and ensure sustainability of forest resources.

Efforts have been underway for over a decade to modernise the Mining Act to provide a sound regulatory environment to support the development of the mining sector. Government is close to finalising a new Mineral Exploration and Exploitation Decree that will strengthen areas such as the need for environment and social impact assessments, occupational health and safety, and stakeholder engagement.

(ii) Review of performance in the context of sustainable development

Fiji's economic progress over the past decades has been built on the back of utilising its natural resources, either in the agriculture sector, sugar cane farming in particular, the tuna longline industry, harvesting native and plantation forests, and through marketing the pristine environment and picturesque beaches for the tourism industry. The continued emphasis solely on economic development is beginning to erode the resilience of the natural ecosystem.

[13] Biosecurity total iguana catches from the month of August to October, 2013

Land resources and biodiversity

While over 60% of Fiji's total land area is suited to some form of agricultural activity, only about 29% are appropriate for arable farming (classes I to IV). A study undertaken in 1965 on Fiji's soil resources observed that most arable land was under occupation and that future development would be on hilly terrain (classes V to VIII). In the absence of any recent study on the current status, the developments that have taken place, particularly the expansion of commercial and residential into land previously engaged in agricultural activity is symbolic of the huge demand on land and the vast encroachment onto arable agricultural land that has been permitted over the past decades. The expansion of agricultural farming onto marginal lands will require more use of fertiliser, pesticides and agro inputs to support plant growth unless a more sustainable solution is implemented such as biocides and organic fertilisers. The inability to effectively manage the competing demands for land from different segments vis-à-vis agriculture, urbanisation, commercial, and residential, is also resulting in secondary challenges of growing urban squatters, declining land under agriculture, and increase in informal or *vakavanua* land tenure arrangements.

Box 6: Competing Demand for Land

The competition for prime agriculture land from other development is pushing agricultural farming onto marginal land and encroaching into forests. Poor land use practices on these marginal lands inflict additional costs on the environment and welfare of society. ***Photo source: Unknown***

The nature of land utilisation practices, whether under agriculture or logging activities, has also exacerbated risks associated with high soil erosion, river and stream contamination from sedimentation, and increased pollution and flooding in low lying coastal and coral reef areas. The lack of enforcement of existing laws due to resource and capacity constraints is a major contributing factor. In addition, the lack of awareness of good land use practices and motivation towards resource stewardship is prevalent.

The impact of climate change through sea level rise and subsequent inundation of sea water poses a threat to agricultural activity on low lying arable land. New sustainable land management practices including agroforestry should be the focus on sloping land. Likewise the impact of climate change on changing weather patterns such as the frequency and intensity of cyclones and droughts will require a new look at land use activities.

For the forestry sector, renewed efforts are being made to encourage afforestation, reforestation and conservation of natural forests. These initiatives recognise the role of forests in climate change mitigation and adaptation efforts. The reducing emissions from deforestation and forest degradation (REDD+), ridge to reef, and forestry protected areas management are some examples of activities that focus on sustaining the natural forest resources. To encourage reforestation and replanting there is an urgent need to look at innovative benefit sharing arrangements as an option to formal leasing to foster ownership and partnership with the community. The separate regulatory framework governing the mahogany industry is a challenge for effective management of all Fiji's forest resources.

Investment regulations also need to be modified to attract additional investment in plantation development.

The mining sector is beginning to recover after a period of decline with new management and investment at the Vatukoula Gold Mine, commencement of iron sands mining in the Ba River delta and bauxite mining in Bua. Numerous exploration projects exist at various stages of exploration and may or may not become mining operations in the near future. Proper waste management from mining operations has always been an area of concern and if not managed properly it has the potential to threaten and contaminate the local ecological system such as streams, rivers and *i-qoliqoli*. The industry however in Fiji, works with due recognition of environmental risks and works within recognised guidelines and duty of care.

The vibrant construction sector is fueling growth in quarrying activity such that the extraction of minerals from quarries, riverbeds and other waterways is becoming common practice. Over 1.2 million metric tons of hard rock, sand and gravel has been removed since 2008, which is likely to have had a negative impact on the natural ecosystem of the rivers and coastal environment. Large industrial quarries for sand and gravel exist in the Nakavu deposit along the lower parts of the Navua river, the Naduri deposit to the west of the Sigatoka river mouth, the Semo Quarry located between Sigatoka and Nadi, and the Sigatoka Sand Dunes which is also a popular tourism attraction. This is apart from the dredging of smaller rivers and streams by small contractors which go relatively unmonitored. Overall, the lack of institutional capacity is a major concern in order to understand and effectively police exploration, mining and quarrying activities.

Ocean resources and biodiversity

The management of industrial fisheries has been increasingly challenging over the past decade. Deviations from the guidelines set by the Tuna Management Plan saw licences issued increased to 110 at one stage. While this increased activity in the sector, it was not sustainable given that Fiji is at the fringes of the migratory route of the tuna stock whereby on average only 1% of the total catch achievable in the region is caught in Fiji waters. Given that each vessel has a minimum tonnage of catch that it requires to ensure that its effort is viable, increasing the number of vessels greatly reduced the viability of each vessel operating. This had an adverse economic impact on the industry and some stakeholders argue, it has had an impact also on the stock.

Consistent with international and regional obligations, such as the Monitoring, Control and Surveillance Treaty, a total allowable catch (TAC) limit of 15,000 tonnes has been set in the industrial fisheries sector for targeted species such as yellow fin, albacore, and big eye tuna and bycatch such as marlin, wahoo and ogo. This TAC is monitored through visual monitoring systems and "catch-log" submissions by fishing companies. With big-eye and yellow-fin tuna catch rates declining in the entire Western and Central Pacific, albacore comprises the largest share of catch by Fiji's longline vessels within Fiji's Exclusive Economic Zone (an average 64% of total catch in the past 3 years).

There are 410 *qoliqoli* or customary fishing areas in the country which are important for food security. A key challenge to developing inshore fisheries has been the lack of knowledge about the resource stock, volume and value. In 2002, Government initiated a programme to systematic survey and makes an inventory of these resources. To date a total of 180 *qoliqoli* have been surveyed along with the restocking of 110 marine protected areas.

The possible exploitation of deep sea minerals is an emerging industry in the Pacific region. Recently Fiji approved 8 special prospecting licenses for 3 exploration companies for certain areas within Fiji's Exclusive Economic Zone. Little is understood about environmental risks related to such projects which must proceed adopting a precautionary approach noting that significant work has been undertaken by Nautilus Minerals in Papua New Guinea waters and by the International Seabed Authority in the Area (seabed areas beyond national jurisdiction).

Coastal resources and biodiversity

Fiji's coral reefs are some of the most extensive and diverse in the South Pacific, and consist of a wide range of reef types. Fringing reefs, barrier reefs, platform reefs, oceanic ribbon reefs, drowned reefs, atolls and near-atolls span over 10,000 km^2, with a national average hard coral cover of 50% in 2011. The Cakaulevu Barrier Reef or Great Sea Reef, north of Vanua Levu, is exceptional in being one of the longest barrier reefs in the world.

In 2000 and again in 2002, Fiji's reefs suffered a temperature-related mass bleaching event with subsequent loss of 40-80% of stony corals across the country. At this time the Global Coral Reef Monitoring Network Fiji node was formed to coordinate a variety of data about current reef health from around the region. Annual monitoring of up to 15 sites has shown a faster than expected recovery from coral bleaching, and by 2011, the national average hard coral cover and diversity was higher than before the event, showing the great resilience of reefs across the country. Whilst the national average coral cover in 2011 was over 50%, 28% on Viti Levu's Coral Coast fringing reefs and on the deep-water pinnacles of the Vatu-i-Ra Passage up to 70%.

While most offshore reefs are in a good and stable condition, with good resilience, many reefs close to inhabited shores show chronic stress and impacts from fishing, sedimentation and pollution from land-based sources. Reef systems are vitally important to the large proportion of the populace dependent on subsistence or small scale commercial fishing, and also to Fiji's extensive tourism industry. On a more local scale, Fiji's increasing population has created pressures on reefs from fishing as majority of the population live within 30 km of the coast, loss of marine habitats and pollution. Inshore coral reefs have been influenced by land-based impacts of agriculture, tourism development, industry and increased urban habitation. From these sources, nutrient and sediment pollution have the greatest impact on inshore reefs. Sand mining activities also have an impact on inshore biodiversity and Fiji's tourism attraction potential.

The availability of data on coastal resources and biodiversity is critical to ensuring it is managed well. Unsustainable exploitation of the artisanal fishery, such as mangrove harvesting and selling undersized fish and crustaceans, due to economic hardship is a growing concern. Crustacean, mollusc and beche-de-mer resources are under considerable management pressure due to reclamation of mangrove areas and conversion to other uses – sugarcane, tourism and urbanisation. The expansion of squatter settlements along coastal areas close to urban centers is also creating waste and sanitation challenges.

Fiji has an estimated area of 16.5 km2 of seagrass beds spread across the coastal intertidal flats around the country. Six seagrasses (five species and one sub-species) are found in Fiji. Seagrass beds are likely to be impacted by global pressures related to climate changes such as increasing cyclone incidence, rainfall, temperature and light levels. Sea-level rise is expected to result in the loss of those seagrasses growing in deep water at their present

depth limit. Such climate change issues may result in up to a 5% loss of Fiji's seagrass by the year 2035, and between 5 – 20 % loss by 2100.

Local threat to seagrass is found around many coastal areas, in particular Nadi, the Coral Coast and the Mamanuca Islands, excavation of channels and reef top pools for resort developments have destroyed and disturbed seagrass beds, and improper sealing of the sides of such continues to cause suspension of sediments, leading to longer term degradation of surviving beds. In addition, the few mines (gold and copper) found in Fiji create a great deal of sedimentation and in some cases toxic waste run off, into rivers and subsequently into coastal waters.

Fiji has the third largest mangrove area (38,000 ha of land) in the Pacific islands, after Papua New Guinea and the Solomon Islands. Mangroves are under pressure from human influence due to conversion and land-use, traditional exploitation of mangrove resources (timber extraction and overharvesting of fishes and invertebrates) and pollution. These threats can cause a reduction of area available for mangrove retreat, increased risk of coastal erosion, a decline in mangrove species and changes to fish and invertebrate spawning grounds. It has been estimated that mangrove coverage has declined by 10% since 1991. Through partnerships between Government, NGOs and other stakeholders including local communities, initiatives have been ongoing to rehabilitate deforested mangrove areas.

(iii) Assessment of key indicators and trends

The Fisheries Department has completed a marine resource inventory of 180 *qoliqoli* as of December 2013. To date the Fisheries Department has established more than 110 marine protected areas, however only 1 is gazetted. The Fisheries Department will be targeting the gazetting a total of 16 in 2014.

. The Ministry of Lands is currently putting a spatial (GIS) database and maps together, and GPS surveys have been completed for the Central, Western and Eastern Divisions. The forest area has been increasing gradually from 2009 to 2012 from 1.1 million hectares in 2009 to 1.17 million hectares in 2012. It needs to be determined whether this growth is due to planting high value timbers or natural vegetation. In addition, five conservation and protected forest areas are in the process of establishment but yet to be gazetted. These areas include: Delaikoro, Wabu, Emalu, Vunivia and Taveuni.

In 2007 a National Forest Inventory was underway which includes the establishment of plots and the collection of forest related data. To ensure continuous monitoring of the forest resources, in 2009, Fiji started to establish 100 permanent sample plots in the seven largest islands of Fiji: Viti Levu, Vanua Levu, Taveuni, Kadavu, Gau, Koro, and Ovalau. With regards to determining value of carbon credits from forests, relevant data, surveys and information gathering is currently underway from the Fiji REDD+ pilot sites and from the permanent sample plots. Stakeholder consultations were undertaken in 2012 and 2013 to address issues on forest carbon rights and forest carbon ownership.

The Ministry of Lands and Mineral Resources is also formulating a long-term strategy for the mining sector. It is awaiting the endorsement of the draft Mineral Exploration and Exploitation decree by Cabinet before formulating the long term strategy.

3. Key Challenges and Proposed Way Forward

The key challenges and proposed way forward for this Thematic Area should be considered in light of the introductory paragraphs to Chapter 5.

Key challenges	Proposed Way Forward, Actions and Timebound Indicators
(i) The need to develop a natural resource management system that is inclusive and integrated.	***Short Term (up to 2 years)*** • In partnership with community, NGOs and development partners, build upon existing community based resource management systems and replicate in all provinces by end of 2016. • Improve coordination of all resource management activities by legislating coordinating function of the Divisional Commissioners' Offices by end of 2015. • Institutionalise biennial Natural Resource Summits by end 2015 to encourage information dissemination and build partnerships amongst stakeholders. • Continue capacity building and awareness programmes with all communities, in particular with resource owners, on the importance of proper environmental stewardship. • Immediately strengthen existing environmental education in schools system through a more practical or hands-on learning. ***Medium Term (3 to 5 years)*** • Develop appropriate toolkits to promote ecosystem approach to development as a guide practitioners at national, divisional, municipal and community levels in assessing new and existing development activities by end of 2017. • Develop a national invasive species plan by end of 2017. • Mainstream environmental auditing in investment approvals process.
(ii) Need to recognise the importance and potential of Fiji's vast marine ecosystem.	***Short Term (up to 2 years)*** • Undertake awareness and capacity building with communities, district, provincial, and government to strengthen understanding and appreciation of marine ecosystem services by the end of 2016. • Government to continue to work with the community and civil society on initiatives such as the establishment of marine protected areas and community based fish wardens. • Reduce offshore fish license cap to 50 be end of 2016. • Reduce total allowable catch across all target tuna species to 12,000 metric tonnes by end of 2016. ***Long Term (over 5 years)*** • Complete the marine resource inventory surveys of 410 *i-qoliqoli* by 2025. • Establish monetary value of the ecosystem provided by each 410-*qoliqoli* including fish stock by 2020.
(iii) The need to develop a mechanism to access data on state of environment and natural resource use to facilitate proper decision making.	***Short Term (up to 2 years)*** • Encourage data sharing among key stakeholders under the National Environment Council structure by 2015. • Formalise partnerships with the tertiary institutions and regional and international organisations in undertaking research or surveys by end of 2015. ***Medium Term (3 to 5 years)***

	• Explore the use of spatial aerial technologies, for example remote piloted aircraft (drones) for surveying land and marine resources. ***Long Term (over 5 years)*** • Strengthen the capacity of Bureau of Statistics to collate and report on natural resource and environment related data by 2020. • Undertake feasibility study on the possibility of integrating green accounting/ ecosystem valuation into the GDP formulation and budget process by 2020.
(iv) The need to establish a coordinated mechanism to manage the competing Demand for Land.	***Short Term (up to 2 years)*** • Identify a National Coordinating Agency to develop and manage a Sustainable Land Use Plan for the whole of Fiji by end of 2015. • Enact the relevant legislation to empower the National Coordinating Agency by end of 2016.
(v) The need to strengthen enforcement of existing legislations that govern natural resource use and management.	***Short Term (up to 2 years)*** • Complete necessary processes to pave way for enactment of new Mining Exploration and Exploitation Decree, Inshore Fisheries Decree, and Land and Water Resource Management Decree by end of 2016. • Strengthen partnerships between Government, civil society and communities by establishing forums at district and provincial level to discuss environmental issues and share experiences and good practices. • Conduct awareness for resource owners on legislation governing resource management and the environment, in particular on their roles, responsibilities and obligations under the law by end of 2015. ***Medium Term (3 to 5 years)*** • Decentralise enforcement authority to lower administrative tiers, either at district or divisional level by 2017. • Increase resources to integrated divisional teams of the Divisional Commissioner's Office to effectively carry out monitoring operations by 2017.

Thematic Area 4: Inclusive Social Development

1. Introduction

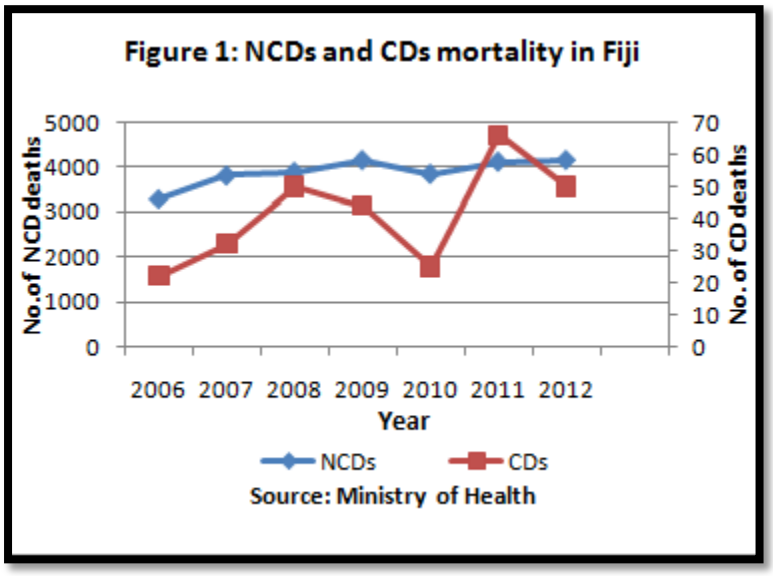
Social development is a key pillar of people-centred sustainable development and central to the needs and aspirations of all Fijians by empowering them to attain secure and sustainable livelihoods.

Green growth provides indirect benefits to support poverty reduction, improve productivity and quality of life through more inclusive economic growth, efficient and sustainable use of resources and food security. Effective waste management and a clean, healthy environment are vital to reduce the impact of communicable diseases like dengue fever. Green economic and environmental policies under other thematic areas will give due consideration to socio-economic inclusion. Improving quality of life will also be pursued through education for all, improved health systems, gender equality and cultural and heritage conservation.

For social development, 5 out of 8 Millennium Development Goals (MDGs) should be achieved by 2015. Fiji's Human Development Index ranking, assessing income levels, access to education, and quality of health services, has also improved from 108th in 2009 to 96th out of 187 countries in 2013.

However, lack of economic opportunities has seen poverty incidence increase by 16% between 1977 (15%) and 2009 (31%), with about 43% of the rural population (equivalent to 22,496 households) living in poverty and 128 squatter settlements around the country. Reducing poverty has been constrained by weak economic growth, rising prices, bad business practices and lack of job opportunities.

Developing human capital through full access to education at all levels is an essential condition for poverty reduction, gender equality and human development. Affordability (30.6%) and lack of interest (36.1%) are the major reasons for school drop outs.



Fijian life expectancy (67 years) is lower than the global average (71years). Quality of life and productivity is threatened by high prevalence, and mortality rates, of Non Communicable Diseases (NCDs) particularly amongst the working and younger population [**Figure 1**]. An estimated 30% of the population (251,181) suffers from diabetes and 66.9% are overweight and obese (560,134) according to an NCD Survey in 2011. Half the children under five are not getting enough nutrients in their diet (National Food and Nutrition Centre, 2007).

Around 64% of women in relationships have experienced physical and/or sexual violence, which is twice the global average (Women's Crisis Centre). Achieving gender equality in decision making and income levels and eliminating violence against women in accordance with international convention is crucial for sustainable development.

Cultural revitalisation is needed in the advent of globalisation to conserve the rich cultural heritage of all communities. Capacity constraints hinder the preservation of heritage, with a growing gap between the traditional knowledge and skills of elders and the younger generation in conservation and sustainable use of resources such as forests, inland waters, coastal and marine ecosystems.

The Bill of Rights in the 2013 Constitution provides the framework for socio-economic development by guaranteeing the right, amongst others, to education, economic participation, social security schemes, and health.

2. Current Status

(i) Overview of Existing Policies, Regulatory Framework and Initiatives

Social Inclusion

Poverty reduction is a key priority in Fiji's development agenda. The Integrated National Poverty Eradication Programme Framework provides for social protection schemes for the most vulnerable and disadvantaged. Major schemes include: the Poverty Benefit Scheme for financial support to the poorest 10% of the population; the Social Pension Scheme for the elderly aged 70 years and over; the Child Protection Allowance for children in institutional and kinship care; the Bus Fare Subsidy for elderly, disabled persons and school students; the Food Voucher Programme for rural pregnant women; Welfare Graduation Programme for supporting sustainable income generating programmes by social welfare recipients and exprisoners; the Northern Development Programme for encouraging micro medium entrepreneurship in the Northern Division; and the Social Housing Policy for poor households who face difficulty in home loan repayment.

Universal Education Access and Youth Empowerment

Making Fiji A Knowledge Based Society is critical for sustained green economic growth. Universal education efforts include: establishing Early Childhood Education centres, free tuition fees, text books and transport assistance, and new schools in rural and maritime areas. To promote vocational skills, management skills and financial literacy, Basic Employment Skills Training and Financial Education are being rolled out in schools. Climate change and disaster risk management and environmental education are now part of the school curriculum. With development partner assistance the Access to Quality Education Programme provides social protection and improves school facilities in disadvantaged areas. The Fiji Qualifications Framework will be fully implemented to make higher education qualifications compatible with the knowledge for sustainable socio-economic development. Seeds of Success and youth empowerment programmes provide life skills training for school drops outs and school leavers unable to find employment.

Gender Equality and Women Empowerment

In alignment with the Women's Plan of Action (2010-2019), women resource centres are being established in all provinces to enhance women's leadership, business management skills, and to coordinate income generating projects. The *Zero Tolerance Violence Free*

Community campaign to stop violence against women and children now targets 15 communities annually through collaboration with key stakeholders to conduct legal literacy training and community awareness. Commitments by rural and urban communities are supported at the national level through new laws including the National Gender Policy 2014, Crimes Decree 2010 and Child Welfare Decree 2010.

Health Development In view of the changing patterns of societal behaviour and demography, associated with the NCD burden, the *National Food and Nutrition Policy 2008* has been adopted and the regulatory framework for the public health system reformed to address: tobacco control; marketing of unhealthy foods and beverages; and the preparation and processing of food. Partnerships with civil society and faith-based organisations are being formed to advocate healthier lifestyles in the community.

Box 7: Health Promoting Schools

Schools provide the most effective and efficient way to reach large portions of the population. With growing recognition that education influences health and vice-versa, the World Health Organization in partnership with the Ministry of Health and Ministry of Education have initiated a large-scale Health Promoting Schools Programme (HPS) that is targeting 84 schools across Fiji. The aim of the HPS is to help schools transition into more healthy and wholesome environments for Fiji's upcoming generation. In an effort to cut the prevalence of NCDs, the HPS has many components ranging from better physical education programmes, to stricter regulations on food that is sold on school premises, to more awareness of NCDs and drug, tobacco, and alcohol abuse.

Government Online Portal www.fiji.gov.fj

Culture and Heritage Conservation
A *National Cultural Policy 2014* will streamline all culture related legislation, strategies and activities. This includes *Cultural Enhancement Procedures* for: traditional learning; capacity building for resource persons and local custodians; and promoting cultural tourism to enhance economic livelihoods particularly in rural areas. Learning i-Taukei and Hindi languages is now compulsory in all primary schools. Where necessary, development of land is subjected to an Archaeological Impact Assessment by the Fiji Museum, which carries out archaeological mapping of traditional sites and assists in creating boundaries for important cultural sites. The National Trust of Fiji now manages at least 14 heritage sites around Fiji of which 35% are natural heritage sites, 30% are cultural sites while the other 35% are community conservation projects. The Cultural Mapping Programme targets one province per year in facilitating the identification of cultural resources, unique traditional skills, and valued knowledge bearers in the *iTaukei* community to foster cultural identity, and maintenance of traditional knowledge as a sustainable source of living.

(ii) Review of Performance in Context of Sustainable Development
Fiji is unlikely to meet, by 2015, the 3 MDGs of halving poverty, promoting gender equality and empowering women, and combating HIV/AIDS and other diseases.

Across the Pacific, hardship and lack of economic opportunity is an increasingly prominent concern that reduces quality of life. Declining agricultural activity, a major source of livelihoods in rural areas, and under developed infrastructure, has contributed to increased poverty in rural communities. Income inequality in Fiji is comparable to some of the East

Asian Countries with higher inequality in rural areas than in urban areas (2014 World Bank Report on Hardship and Vulnerability)
Many factors have a bearing on hardship and poverty in Fiji, in particular household size and level of education. Households with more children and elderly are more susceptible to poverty (52%) compared to households with none (22%) and lower in households with a parent with post secondary education (10.3%) than households without secondary education (estimated at 50%) according to the World Bank (2011) Report on Poverty. Social protection systems based on the makeup of disadvantaged households and education for all remains crucial for poverty reduction.

High rates of school dropouts are a contributing factor to child labour and exploitation, youth unemployment and entrenched poverty with more children dropping out in rural areas (58%) than urban (41%) as shown in Table 1.

Table 1: Reasons for Leaving Schools by Rural/Urban in 2010 and 2011

Reasons for Leaving Schools	Rural	Urban	Total
Disabled/Illness	190	129	**319**
Cannot afford	575	874	**1450**
Family did not allow	210	28	**238**
Not interested	1179	531	1710
Education not considered valuable	42	0	42
To work for pay	59	0	59
To work as unpaid family worker	53	0	53
Help at home	87	0	87
Others	361	416	777
Total	**2756**	**1978**	**4734**

Source: Employment and Unemployment Survey, 2010/11, Fiji Bureau of Statistics

In pursuing inclusive green economic growth due consideration must be given to the following challenges, and to people-centred social development aimed at creating a safe, healthy, educated and culturally vibrant Fiji. This will reduce poverty and vulnerability, sustaining human resource development for the improved well-being for all communities.

- In Fiji, like all developing countries, participation in sustainable development requires a broader holistic framework of learning through a full cycle of high quality early childhood, primary, secondary and tertiary education. The learning framework for critical skills like literacy and numeracy, science and technology and culture and arts needs to be monitored against required standards. Education access, affordability, quality and relevance, complemented by youth empowerment, are all equally important considerations.

- While gender parity has been achieved in education, Fiji lags behind in empowerment of women in decision-making and professional jobs. High prevalence of violence against women and children remains a challenge and cultural barriers and inaction, which perpetuates this suffering, must be addressed. A "whole of society" approach must be pursued to identify and address the root causes of gender based violence.

- NCDs are one of the major causes of mortality, hindering achievement of MDG 6, with an average of 3906 NCD related deaths per year. Indications that 30% of the population suffer from diabetes, compared to 16% in 2002, suggests rising prevalence in the younger population. Socio-economic and environmental determinants and changing lifestyles contribute to the common risk factors for NCDs like child obesity, physical inactivity, poor diet, tobacco and alcohol abuse. Increased attention to health promotion and preventive care is a more cost effective way of addressing these issues Promoting food security and affordability and encouraging healthier lifestyles, including sports and physical activity, are needed to address increased consumption of cheaper unhealthy food.. Examples of health promotion initiatives include the *Best Buys* initiative, Health-Promoting Schools programme and Wellness Concept through multi stakeholder engagement.

- Fiji has a wealth culture and heritage. This is also an important social safety net, as traditional and contemporary crafts and arts, including music, dance, films and cultural festivals can serve as a sustainable source of income and employment. However, its diversity is being gradually eroded by globalisation, technological advancement and modernisation of society. In addition to the growing gap in traditional knowledge between generations, there is the wider use of English for communication amongst youth. Heritage preservation is hindered by limited capacity and needs to be strengthened to support sustainable tourism, mining and forestry developments with more attention given to the close association between education, culture and the environment. These cross-cutting interactions are a necessary requirement supported by the Green Growth Framework.

(iii)Assessment of Key Indicators and Trends

- *Incidence of poverty reduced to negligible levels from 35% (2002) to less than 15% by 2015:* While national poverty incidence has increased by 16 %age points between 1977 and 2008-09, it has decreased from 35% in 2002-03 to 31% in 2008-09.
- *Increase net enrolment rate for secondary schools rise from 79% to 90% by 2012*: The net enrolment rate for primary school has increased from 96.9% in 2009 to 99.3% in 2012 and for secondary school from 77.2% in 2009 to 82.9% in 2012.
- *Gender Equality and Women Empowerment:* Women make up 28% of the public service Senior Executive Services (SES) grade in 2012 and 36% of the economically active in 2011. Assault causing actual bodily harm is the most common gender based violence offence committed from 2007 to 2012, with a total of 1701 cases of which 94% cases were against female victims at an annual average of 377 cases. There has been a 71% decrease in domestic violence cases during this period.
- *Reduce prevalence of diabetes from NCDs:* Preliminary results from the 2011 WHO NCD Survey indicate an increase in diabetics to 30% from 16% in 2002 and 66.9% of population is overweight or obese; 9.7% have high blood pressure; 29.6% with raised blood glucose or medicated for raised blood glucose.
- *Culture and Heritage Safeguarding:* With an annual target of surveying 20 new sites, Fiji Museum has conducted an average 16 Archaeological Impact Assessments per annum from 2010 to 2013. Out of 14 provinces in Fiji, the Ministry of i-Taukei Affairs has mapped 8 provinces as of 2013. Out of the 5 listed in the UNESCO World Heritage Tentative List for Fiji, only the Levuka has been inscribed as a World Heritage Site.

3. Key Challenges and Proposed Way Forward

The key challenges and proposed way forward for this Thematic Area should be considered in light of the introductory paragraphs to Chapter 5.

Key challenges	Proposed Way Forward, Actions and Timebound Indicators
(i) There is a need to ensure economic growth and environmental use and protection does not adversely impact vulnerable communities, including the poor, people with disability and the elderly.	***Short Term (up to 2 years)*** • Strengthen monitoring of key social development indicators (population, poverty, green employment, health demographics, education access) to support formulation of national strategies and policies targeted under this Framework by 2016. • Social safety nets under the Integrated Poverty Eradication National Programme support the adoption of green growth principles. • Strengthen awareness and capacity building of rural communities through the rural development machinery to sustainably utilise available resources for improving living standards and addressing urbanisation. ***Medium Term (3 to 5 years)*** • Development of a population policy to address issues relating to changes in population growth rates, age structure, migration and urbanisation. ***Long Term (over 5 years)*** • Reduce the number of people in poverty to 150,000 by 2030 from 259,554 in 2008-09 and in accordance with post-2015 Sustainable Development Goals.
(ii) There is a need to provide universal access to education from pre-school to tertiary level in particular for school aged children.	***Medium Term (3 to 5 years)*** • Provide appropriate interventions to make formal education more attractive taking into account factors related to the quality of education, like better teachers and library resources, smaller classes, adequate rural school facilities individualised instruction, more tutorials, and extra time with teachers, amongst others. • Strengthen capacity of families and communities to encourage school enrolment, through civic education, community monitoring of vulnerable groups, and community-based services to support families, youth and children in need.
(iii) There is need to enhance job- skills development for sustainable development focusing on high quality learning for all children and empowerment programmes for youth.	***Short Term (up to 2 years)*** • Initiate green growth education in primary and secondary curriculum by 2016. • Continuous curriculum review, training needs assessment and development programmes for critical skills, literacy and numeracy, physical wellbeing, social and cognitive skills, science and technology, and culture and arts, to support green growth by 2016. ***Medium Term (3 to 5 years)*** • Integrate green growth principles, at all levels of education and training curricular supported by teachers capacity building and the adoption of centrally developed national qualifications by tertiary education providers by 2020. • Provide realistic employment alternatives for young people

Key challenges	Proposed Way Forward, Actions and Timebound Indicators
	appropriate to their locations and resource availability through apprenticeship schemes, trade skills, self-entrepreneurship, and vocational training programmes by 2020.
(iv) There is a need to address the low participation of women through economic empowerment and roles in decision making at all levels.	***Short Term (up to 2 years)*** • Identification of green growth opportunities under the Women's Plan of Action by 2015. ***Medium Term (3 to 5 years)*** • Strengthen partnership with Women NGOs and women interest group officers in the rural and maritime areas to support development of female entrepreneurs by 2017 • Increase economic empowerment programmes such as the number of micro finance projects by women from 16,668 in 2010 to not less than 19,500 by 2017. • Increase women's capacity to participate in decision making and leadership at all levels of development (from village to national government) by 2018. ***Long Term (over 5 years)*** • Integrate gender concerns and perspectives in policies and programmes for sustainable development by 2025. • Women make up at least 30% of public decision making bodies, boards and committees at all levels by 2025.
(v) There is a need to influence the behaviour of people to make healthy changes to their lifestyles, in light of the NCD burden.	***Short Term (up to 2 years)*** • Strengthen capacity of individuals, particularly the younger generation, to make healthier choices through school curriculum, sports promotion and physical activity, better pricing and labeling, and public awareness. • Target promotion of healthy lifestyles and social responsibility in corporate sponsorship of sports tournaments and junk food advertisements for all people, especially those activities targeting children and youth. ***Medium Term (3 to 5 years)*** • Enhance the social structure (including gender), education and employment, trade and fiscal policies, food standards and purchasing power through strategic cross sectoral engagement and coordination with all health actors, NGOs and private sector, to intervene at specific levels.
(vi) There is a need to promote culture as a driver of sustainable development through implementation and enforcement of cultural policies and protection mechanisms, institutional strengthening, and enhancement of cultural practices.	***Short Term (up to 2 years)*** • Finalise the National Cultural Policy by 2014 that would streamline all sectors, in terms of reporting and updating activities that impact the culture and environment sector. • Develop and implement a Fiji Cultural Statistics Framework by 2015 to address the fragmentation of baseline data on culture and its contribution to sustainable development for better monitoring and informed decision making. • Strengthen village bylaws to streamline environment education, improved production and consumption patterns, adopt sustainable water management practices and energy efficiency. • Strengthen the financial and human capacity of the National Trust of Fiji and the Fiji Museum in natural and cultural heritage sites conservation and conducting Archaeological Impact

Key challenges	Proposed Way Forward, Actions and Timebound Indicators
	Assessments by 2016. • Enhance cultural industry activities that are environmentally friendly, and emphasise the sustainable use of local resources through product development, standards and branding in crafts, and Made in Fiji initiative by 2016. ***Medium Term (3 to 5 years)*** • Systematic research and monitoring of priorities to synergise cultural initiatives into green growth framework (sustainable resource management use through traditional customs and practices) by 2017. • Integrate culture (including arts and heritage) in the formal education curricula at all levels through a Fiji Cultural and Education Strategy and promote through national events such as school cultural competitions and educational television programmes by 2020. ***Long Term (over 5 years)*** • Develop natural heritage sites for ecotourism purposes in partnership with the private sector. • Complete Cultural Mapping of Traditional Knowledge and Expressions in all 14 provinces, especially with the documentation of cultural aspects such as ceremonies, dialects, heritage sites and best resource use management practices. • Develop a Cultural Impact Assessment Framework for the valuation of intangible cultural heritage by 2025. • Recognition and value of national natural heritage sites through the inclusion of more than one (Levuka) in the UNESCO World Heritage List, include at least 1 in the UNESCO Biosphere Reserves by 2030.

Thematic Area 5: Food Security

1. Introduction

The agriculture and fisheries sectors provide important sources of livelihoods, income and employment and are also key sectors for a transition to green growth. The growth in population, rising demand for food, over-fishing and the decline in arable land available has placed pressure on our agriculture and fisheries sectors to ensure adequate food security.

The concept of 'food security' in the Fijian context is defined as the '*ability to produce healthy affordable food for all Fijians*'. This definition encapsulates four key preconditions; (i) having the domestic capability to produce and feed the local population; (ii) having a sufficiently diverse food production base to satisfy dietary needs; (iii) having the distribution systems in place that links people to markets to access food; and (iv) having farm level efficiency monitored to ensure local produce is priced competitively in the domestic market.

In light of this definition, factors such as natural disasters, volatile commodity prices, lack of economies of scale because of size, loss of arable agricultural land and farm level inefficiency, including supplying the tourism industry, will continue to be major challenges to meeting the preconditions for a food secure Fiji.

Section 36 of the 2013 Constitution binds the State to take reasonable measures to ensure every Fijian is free from hunger and has access to food and water of acceptable quality and quantity. It is evident therefore that in order to strengthen Fiji's food security, a major change (transformation) in the agricultural sector value chain that focuses on farm efficiency and improved market linkages through information generation and dissemination is necessary. This Green Growth Framework provides an opportunity to contribute to this transformation.

2. Current Status

(i) Overview of existing policies and initiatives

Fiji does not have an overarching national policy on food security. Strategies to address nutrition are covered under the Food and Nutrition Policy 2008 of the Ministry of Health. This continues to be the basis for food supplementation and fortification initiatives.

Through the Ministry of Agriculture, the focus is on food security at the household level. Millions of dollars have been invested by Government over the past decades in the agriculture sector, particularly targeting subsistence farmers, as part of its rural development strategy. Some these included the import substitution initiative implemented after independence through direct investment in agricultural development projects such as the Yalavou Beef Development Project, Cocoa Nucleus Projects and Rice Development Projects. The Commodity Development Framework of the 1990's was focused on increasing public expenditure to "jump start" the production of commodities such as ginger, cocoa, dalo and aquaculture. The Demand Driven Approach programme developed in 2006 focused on the production of export and import substitution commodities which are in demand by both domestic and export markets. All these initiatives in some way have led to the emergence of thin or disorganised markets. Recently, with the assistance of development partners, a draft 20-year Agriculture Development Plan has been developed but yet to be approved, with food security as one of its core objectives.

The management of inshore fisheries resources is also critical to food security as fish are an important source of protein for many rural communities. Through the Department of Fisheries, support has been provided to small-scale fisher peple in the form of outboard motors and engines, the installation of fish aggregation devices, and rural ice plants to support subsistence as well as supply the local market. Additionally offshore and inshore fish stocks are affected by overfishing and loss of habitats, the removal of mangroves, and climate change.

While Government interventions have focused on the production side of food security, initiatives to better manage market arrangements and market access infrastructure have not been well coordinated. In addition, while farmer training is undertaken through the extension services of the Ministry of Agriculture, local produce continues to be priced above imported produce. This is a reflection of many issues, prime of which include farm efficiency, production scale, and value chain arrangements.

(ii) Review of performance in context of sustainable development

The lack of an overarching framework and inability to integrate existing data spread between various stakeholders has led to a situation where Fiji cannot objectively assess its food security status. There is extensive evidence to suggest Fiji's food security status is unstable when considered against the four preconditions.

Fiji is relatively self-sufficient in key commodities such as chicken (20,428 tonnes in 2012) and pork (1,180 tonnes in 2012), however they are mostly supplied at much higher prices than their imported alternatives. The magnitude of food imports to meet domestic demand has also continued to grow over the past 10 years. Self-sufficiency in key commodities such as dairy and rice has continued to decline. For example, on average, $30 million of rice is imported annually from Thailand, Vietnam or Australia to supplement local rice production which declined from a high of 30,000 tonnes of paddy rice in the 1980s to below 8000 tonnes in 2011.

Box 8: Disorganised Fresh Food Markets

While fish is an important source of protein for the rural population, the current disorganised market is affecting its affordability for ordinary Fijians.
Photo courtesy of Ministry of Strategic Planning

National nutrition surveys conducted in 1993 and 2004 revealed high rates of anaemia among pregnant women and schoolchildren, infant malnutrition, iodine deficiency disorders, and rapidly increasing diet-related Non-Communicable Diseases. In response, Government has since 2010 partnered with UNICEF in a National Iron and Micronutrient Supplementation Project which will end in 2014. Preparations are underway for a National Nutritional Survey in 2014 (these are undertaken every 10 years), and it will be undertaken concurrently with a Demographic Health Survey.

Additional challenges are also emerging such as Fiji's growing population which currently stands at close to 840,000 and is projected to reach one million by the year 2030. Increased pressure is expected on land and fisheries resources to meet this growing demand.

Increased urbanisation (51% of the population now resides in urban centers) is also having the twin effect of reducing labour in the rural agriculture sector as well as fueling consumer preferences away from locally grown food to imported cheaper alternatives and fast food. This is exacerbating the incidence of NCDs in Fiji.

In an effort to curb overfishing of inshore stocks, collaboration is underway with NGOs such as the Worldwide Fund for Nature and the Fiji Locally Managed Marine Area Network on the protection and restocking of key marine ecosystems such as reefs and mangrove areas. The increased in demand for fresh fish to supply hotels, restaurants and supermarkets is placing this source of protein beyond the means of ordinary consumers. In addition, there is a need to develop the aquaculture industry to relieve pressure on our reef ecosystems to meet the demand for this important source of protein.

For agriculture commodities such as root crops Fiji has a thin market which is vulnerable to both oversupply and undersupply. Under such circumstances, both farmers and consumers suffer. Managing supply to the market requires access to a network of information in order to provide advice on forecasts on production of different crops. The existing work by the Ministry of Agriculture and the Fiji Livestock and Crops Council to register farmers provides a good basis to establish this agriculture network. Once this network is developed using a platform provided by modern technology (such as through the mobile networks and the use of spatial GIS-based data storage) it can be used to transmit information updates and advice from farm level to prospective markets/end users or to technical officers.

Previous initiatives have focused on increasing agricultural farming as opposed to efficient agricultural farming. Improving farm level efficiency will improve returns for the farmer as well as translate into better and affordable prices for ordinary Fijians. Adopting a peer group system will involve farmers within a locality being monitored regularly. Through the monitoring process, consultations with individual farmers and as groups will be undertaken to share and learn best practices from each other.

Box 9: Rising Fresh Food Prices

Inefficiency at farm level, high cost of agro inputs, disorganised markets and inconsistent supply throughout the year are among key factors contributing to volatile and high pricing of fresh fruits and vegetables in the local market.
Photo courtesy of Ministry of Strategic Planning

The challenge of disorganised or thin market structures involving middlemen, geographic spread and in some instances remoteness and low farm efficiency, are part key factors that result in fresh local agricultural produce being priced beyond the affordability of low income households. Moving towards a situation where ordinary Fijians are able to afford fresh local produce will require targeting improvements in efficiency at the farm level, better organising and streamlining market linkages and managing domestic supply through improved market information infrastructure.

Improving production of traditional crops and vegetables, backyard farming, organic farming, agroforestry and aquaculture are areas that can make significant contributions to greening

Fiji's economy, promoting food security and creating opportunities for sustainable livelihoods.

Building resilience to natural disasters such as tropical cyclones and flash floods provides a test on the strength of our food security situation. Traditional practices of planting disaster resilient crops and storage techniques to prolong the shelf life of food are now rarely practiced. To this effect, the Pacific Food Secure Working Group is implementing a food security regional framework/programme to improve resilience and production of food products. With climate change likely to increase the frequency and intensity of natural disasters, there is a need to focus on the establishment of a local seed industry to produce and import genetic material and also ensure availability of seed and planting material.

(iii)Assessment of key indicators and trends

Rising Food Imports

One of the Roadmap targets is to reduce the value of fruit and vegetable imports from around $150m annually to $80m by 2014. Consumption goods have the largest slice in the overall import data particularly the food import component which shows an ever increasing trend. To December 2013, food imports have recorded a high of 6.9% of GDP or approximately $793.2 million.

Nutrition

The proportion of under-five year old children with malnutrition is as an "indicator of poverty and hunger" used by the Ministry of Health. The rate of undernourished children in Fiji has declined from 15 per cent in 1980, to 6 per cent in 2009. However, reducing the prevalence of under-five year old malnutrition continues to be a priority of the Government through its poverty and hunger eradication policy.

- Stunting, or low height for age, is caused by long-term insufficient nutrient intake and frequent infections. Stunting generally occurs before age two, and the effects are largely irreversible. Prevalence of stunting is nearly twice as high in young girls compared with boys (Fiji National Nutrition Council, 2008).
- Wasting, or low weight for height, is a good predictor of mortality among children under five. It is usually the result of acute significant food shortage and/or disease. Prevalence of wasting is highest in young children under two years old as compared to children aged 2-5 years (National Food and Nutrition Council, 2008).
- Micronutrient deficiencies are a serious public health problem and result primarily from diets lacking essential vitamins and minerals, such as iron, vitamin A, and zinc. Anaemia, usually caused by insufficient intake of iron, remains widespread among women and young children. Prevalence of anaemia affects about half of all children under five years old. There is no marked difference in the prevalence of anaemia by gender, consistent with global trends, anaemia is more prevalent in children aged 6-23 months compared to children 2-5 years old.

3. Key Challenges and Proposed Way Forward

The key challenges and proposed way forward for this Thematic Area should be considered in light of the introductory paragraphs to Chapter 5.

Key challenges	Proposed Way Forward, Actions and Timebound Indicators
(i) The need to develop a holistic food security policy for Fiji.	***Short Term (up to 2 years)*** • Establishment of a forum to discuss food security issues in Fiji by 2015. • Develop a National Food Security Policy by 2015 • Develop a holistic food security programme that integrates the key sectors of agricultural, fisheries, health and education by 2015. • Development of a policy/guidelines on the use of agricultural chemicals. ***Medium Term (3 to 5 years)*** • Develop a Domestic Food Production Database (agriculture and fisheries) by 2017. ***Long Term (over 5 years)*** • Undertake a joint agriculture and fisheries census survey by 2019.
(ii) The need to improve efficiency at farm level which ultimately contributes to low commodity pricing in the market.	***Short Term (up to 2 years)*** • Institutionalise peer group systems among smallholder farmers (agriculture and fisheries) by 2016. • Develop user friendly guidelines for organic farming practices in Fiji to encourage organic farming 2016. • Provide incentives for organic farming and investment in green house and hydroponic technology by 2016. • Continue initiatives to improve the use of farm waste for animal feed, organic fertiliser or biomass. ***Medium Term (3 to 5 years)*** • Improve energy efficiency of farms by encouraging use of solar, biogas or biomass by 2019.
(iii) The need to improve market arrangements for primary agriculture and fisheries produce.	***Short Term (up to 2 years)*** • Register farmer groups by 2016. • Establish collection centers/ rural transformation centers in strategic in selected locations. • Undertake full supply and value chain analysis and costing for key food security commodities by 2016. ***Medium Term (3 to 5 years)*** • Encourage development of public private partnership arrangements in operation of collection centers/rural transformation centers by 2017.
(iv) The need to establish an efficient system for collecting and disseminating market information.	***Short Term (up to 2 years)*** • Develop a market information and dissemination system via mobile networks by 2015.

(v) There is a need to strengthen research and development.	***Short term (up to 2 years)*** • Increase resources directed to agricultural research, particularly in the areas of developing alternative feed supplements for the livestock sector, organic fertiliser substitutes and disease and pest management and agricultural technology machinery. • Strengthen research collaboration with local, regional and international tertiary institutions. ***Medium Term (3 to 5 years)*** • Undertake research on soil fertility by 2019. • Undertake crop modeling looking at crop suitability under different climatic conditions by 2019.
(vi) There is a need to promote the revitalisation and enhancement of traditional farming skills and knowledge.	***Short Term (up to 2 years)*** • Develop a toolkit for rural communities on the application of traditional food production and preservation practices by 2016. • Develop a manual on the various drought and flood resistant traditional crops including fruit trees available and planting techniques by 2016. • Mainstream agroforestry into farming practices by 2015.

Thematic Area 6: Freshwater Resources and Sanitation Management

1. Introduction

In Fiji, as in all other parts of the world, freshwater is critical for all life to be sustained. This reality is often ignored until there is a shortage. On planet Earth it is a fact that freshwater comprises only 3% of Nature's water cycle the vast majority being ocean. Likewise in Fiji, only a very small part of Fiji's water cycle is freshwater contained in the rivers, lakes, and in the ground of the islands. In Fiji, whilst it is appreciated that freshwater is an essential resource, it is much less appreciated that freshwater is a precious resource and it is not equally available on every island. As a consequence, and taking into consideration other factors such a population and water use generally, freshwater resources management in Fiji necessarily may differ from place to place on the larger islands, and from island to island amongst the smaller islands. By 2030 climate change models suggest various scenarios for different parts of Fiji but all suggest that changes will take place that will either increase or decrease the frequency and intensity of rainfall and droughts. The demand for freshwater and related sanitation issues must be prepared to adapt to these changes.

The availability of freshwater is dependent on rainfall, which replenishes natural underground and surface water resources. At the same time rainwater harvesting particularly using the roofs of buildings is an important additional source that can result in significant savings in energy required to pump and treat water through a reticulation system.

In Fiji, dams have been built across river to harness water to generate electricity. Rivers also provide water for agriculture, forestry and industry, processing wastes, processing timber and supplying food. Freshwater also serves for recreational, cultural and tourism uses. With this huge demand, pollution and waste pose a serious threat which requires sound sustainable management practices.

Proper management of Fijis water resources requires a holistic and integrated approach. This includes watershed management, management of demand and supply of water, wastewater management and sanitation. With the increased risk and vulnerability of water resources to climate change it is imperative to build resilience, which calls for the use of innovative approaches to maximise the use and volume of available water. The use of available technologies is crucial to developing more efficient water management systems. Options for rainwater harvesting, efficient irrigation systems, industrial recycling, storm water management, aquifer management and use of renewable energy technologies for desalination plants in remote locations need to be fully explored and exploited wherever cost-effective.

Section 35 of the 2013 Constitution guarantees the right of every person to accessible and adequate sanitation while Section 36 of the 2013 Constitution guarantees the right of every person to clean and safe water in adequate quantities.

2. Current Status

(i) Overview of existing policies, regulatory framework and initiative

The overarching policy goal for water resource management including sanitation is *"increasing access to continual safe drinking water and appropriate sanitary waste disposal systems"*.

The 1955 Water Supply Act and the 1985 Rivers and Stream Act govern the protection and conservation of water resources in the country. In 2012, Government endorsed a new Rural

Water and Sanitation Policy, which provides a common framework and platform for all relevant stakeholders in the water resources and sanitation sector to work together for the optimum utilisation of water resources by the rural communities. The Department of Mineral Resources is in the process of finalising a National Water Resource Management and Sanitation Policy that will become the overarching policy on water resources management in the country and serve as the basis for the formulation of a new Water Resource Management Decree. The Department of Mineral Resources is also in the process of finalising the Groundwater Resources Exploitation and Management Policy which aims to put in place an enabling framework for the effective and efficient exploitation and management of groundwater resources in Fiji. The framework will set the platform to ensure the sustainable exploitation of groundwater resources through best management principles.

Box 10: Vanuavatu Desalination Plant to Relieve Water Problems

The construction of a desalination plant on the island of Vanuavatu will relieve fresh water problems for approximately 200 inhabitants of this remote island in the southern Lau Group. The desalination process uses reverse osmosis to purify salt water to make it drinkable..

Source:http://www.fiji.gov.fj/Media-Center/Press-Releases/VANUAVATU-DESALINATION-PLANT-TO-RELIEVE-WATER-PROB.aspx

Since 2010, Government has provided some incentives to soften the impact on the implementation of water and sanitation projects. For instance, in 2011 Government reduced fiscal duty on the importation of desalination and sewage treatment plants from 5% to 0%. From 2013 as part of the Rural Water and Sanitation Policy, Government provides 90% the cost of any installation of rural water schemes – a water supply management plan must be completed and approved before the funding is approved by Government.

(ii) Review of performance in context of sustainable development

In Fiji, the water and sanitation sector has been facing major challenges over the years in terms of maintenance and upgrading of the existing infrastructure, financing of new water infrastructure and lack of technical staff.

To enhance the sustainable delivery of water and sanitation services, in 2007 part of the Water and Sewerage Department was transformed into a commercial statutory authority (Water Authority of Fiji Promulgation 2007) to provide access to quality drinking water and wastewater services to over 144,000 residential and non-residential metered customers reaching over 800,000 people including those in Rotuma and the outer islands.

Over the past 4 years, around $110 million has been spent annually to upgrade the old water supply and sewerage infrastructure in the major urban centres, particularly to cater for the expanding population residing in the Suva/Nausori corridor. Remote island communities are also being assisted in the identification and development of their respective groundwater sources. For example, the Ministry of Land and Mineral Resources have put in place

initiatives supporting the management of water resources through two government funded projects. A Groundwater Assessment and Development Project on Small Islands and Large Islands. Also, desalination water plants have been installed on Kia, Vanuavatu, Kavewa and Viwa islands improving access and water security in maritime areas.

To cater for the long term water supply for the Suva/Nausori corridor, a feasibility study on the Sovi river catchment has commenced. As part of the study, other alternative dam sites like Waibogi in the upper reaches of Navua river, and the upper Waimanu river are also to be investigated for potential new sources for water supply and power generation.

Fiji's groundwater aquifers have also formed the basis for a successful bottled mineral water industry generating an average of $117.5 million/year in exports over the last 5 years despite limited specific legislation on the use of groundwater resources. This calls for prudent measures including the development of an appropriate legislative framework for the sustainable commercial extraction of groundwater resources.

In the Fijian economy, hydroelectricity has become widespread with the generation of power increasing from 40% in 2003 to around 61% in 2013 indicating greater use of freshwater resources for cleaner and greener energy. Though encouraging, the Fiji Electricity Authority's target to provide 90% of the country's energy from renewable energy sources calls for the urgent need to ensure a balance between development of cleaner and greener energy from hydropower sources and ensuring availability of freshwater resources for other uses.

Fiji is supported by many partners with the implementation of water and sanitation initiatives as part of its long term commitment to promote capacity building, advocacy and awareness in sustainable water management. For example, a demonstration project is being implemented in the Nadi river basin. Opportunities that need urgent further assessment include rainwater harvesting and composting toilets.

(iii)Assessment of key indicators and trends

- Around 80% of the population (around 95% urban and around 75% rural) has access to safe water with some form of treatment, while 35% of the population has access to sewerage facilities.
- Annual freshwater withdrawals (% of total freshwater withdrawal) – Agriculture[14] (61.2%), domestic[15] (28.03%), and industrial[16] (10.77%); annual freshwater withdrawals (% of total internal resources) is around 0.29%; and renewable internal freshwater resources[17] (billion cubic meters) is around 28.55[18].
- The capacity of urban water treatment plants in most urban areas has either exceeded capacity or is about to reach their maximum capacity.

3. Key Challenges and Proposed Way Forward

The key challenges and proposed way forward for this Thematic Area should be considered in light of the introductory paragraphs to Chapter 5.

[14] irrigation and livestock production
[15] drinking water, municipal use or supply, and use for public services, commercial establishments, and homes
[16] direct industrial use (including withdrawals for cooling thermoelectric plants).
[17] Renewable internal freshwater resources flows refer to internal renewable resources (internal river flows and groundwater from rainfall) in the country.
[18] Source: World Bank Indicators, 2011.

Key Challenges	Proposed Way Forward, Actions and Timebound Indicators
(i) Access to safe drinking water and sanitation in Fiji.	***Long Term (over 5 years)*** • 95% of the population to have access to safe drinking water by 2025 from the current 80% (2014). • 60% of the population to have access to proper and improved sewerage facilities by 2030 from the current 35% (2014). • Reduce the amount of unaccounted water (leaks, theft, unmetered) from the current 50% (2014) to 25% by 2025.
(ii) There is a need for better protection, management and conservation of water resources.	***Short Term (up to 2 years)*** • Approval and implementation of the National Water Resource Policy by 2015 including reactivation of the National Water Committee. • Approval and implementation of the Groundwater Resources Exploitation and Management Policy by 2015. • Explore technology options and economic incentives for improving efficient use of water resources and wastewater including but not restricted to increased use of spring water, rainwater harvesting, efficient irrigation systems, improved cropping and livestock systems, industrial recycling, storm water management, aquifer management, use of renewable energy technologies for desalination plants in remote locations and compost toilets. • Adoption of an integrated approach by the Water Authority of Fiji and Water and Sewerage Department to develop a mechanism for a detailed water resources monitoring and management in collaboration with Fiji Meteorological Services and other relevant agencies. ***Medium Term (3 to 5 years)*** • Adoption of watershed management plans using integrated water resources management principles for all major rivers, waterways and drainage systems. • Build capacity and capability of resource owners to incorporate the notion of environmental stewardship in their community project proposals. • Empower people, especially vulnerable and disadvantaged groups to better manage their own water resources. ***Long Term (over 5 years)*** • Build resilience among watershed communities to adapt to water related disasters including those caused by climate change and watershed mismanagement.
(iii) There is a need to develop and monitor water and wastewater quality standards.	***Medium Term (3 to 5 years)*** • Develop and or strengthen water quality and wastewater standards and monitoring mechanisms for various types of water use for example, domestic, agricultural, industrial and commercial by 2017.
(iv) There is a need to address data gaps in water resource planning.	***Medium Term (3 to 5 years)*** • Develop a database on national water use, extraction and replenishing rates and disseminate widely for water resource planning and matching water supply with demand by 2017

	taking into consideration World Health Organisation standards. • Regular update of freshwater, wastewater and recycled water resource inventory.

Thematic Area 7: Energy Security

1. Introduction

Over the years, Fiji has become very heavily dependent on imported fossil fuels. This can be broadly described as energy for transportation and energy for the production of electricity. Energy for transportation in Fiji is an issue that includes many other aspects of infrastructure given the scattered and small communities on islands spread over large distances of ocean. As such sustainable transportation is considered as a separate thematic area. This Thematic Area 7: Energy Security focuses on power generation, including energy efficiency. Energy for transportation is covered under Thematic Area 8 on Sustainable Transportation.

Energy security is defined as "*the uninterrupted physical availability of energy at a price which is affordable, while respecting environmental concerns*"[19]. In Fiji, energy is supplied in three main forms: (i) biomass in the form of fuelwood and crop residues for cooking in rural areas and to a lesser extent industrial residues for power cogeneration in the timber and sugar industries; (ii) as imported fossil fuels; and (iii) as electricity, of which a significant share is generated from hydropower with much smaller contributions from wind and solar energy.

Fiji's energy demand is characterised by a high reliance on imported fossil fuels. Petroleum imports grew from around $400 million in 2004 to a little over $1.2 billion in 2012 which is approximately one third of Fiji's total import bill.

For electricity generation, the Fiji Electicity Authority's fuel bill has risen from around $60 million in 2007 to around $140 million in 2011[20]. The implementation of the renewable energy strategy needs to be further enhanced in order to reduce Fiji's dependence on imported fossil fuel for electricity generation.

While the level of energy intensity is relatively low, improving Fiji's energy efficiency across all the sectors of the economy will reduce the energy costs. Moreover, the current institutional and policy framework for the energy sector with overlapping responsibilities and significant gaps in the area of regulation and oversight, require strengthening to encourage effective and efficient private sector participation.

The green growth tool aims to make Fiji an energy efficient nation by reducing dependence on imported fossil fuels. This will require investment in more renewable energy projects, increasing public education and awareness on energy efficient technologies and practises, and attracting more private sector investment in large scale electricity generation.

2. Current Status

(i) Overview of existing policies and legislation

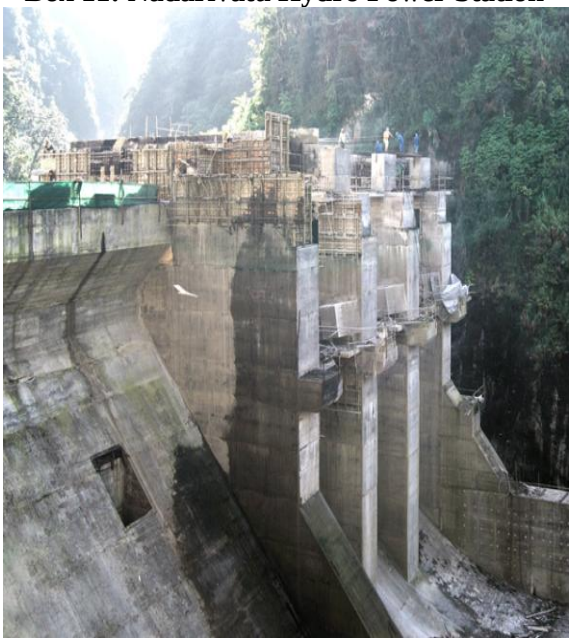
The revised National Energy Policy 2014-2020 sets out Government's vision and strategic direction for achieving sustainable energy for all. The overarching vision for the policy is *"a resource efficient, cost effective and environmentally sustainable energy sector"*. The three major objectives of the policy are to: (i) provide all Fijians with access to affordable and reliable modern energy services; (ii) establish environmentally sound and sustainable systems

[19] Definition used by International Energy Agency.
[20] Source: Fiji Electricity Authority Annual Report.

for energy production, procurement, transportation, distribution and end use; and (iii) increase the efficient use of energy and the use of indigenous energy sources to reduce the financial burden of energy imports.

In addition to the new national policy (2014-2020), the 20-year old Rural Electrification Policy (1993) provides the policy framework for the implementation of the rural electrification programmes[21] in the rural areas.[22] Under this old policy for rurl areas, there are five different electrification options available to rural communities which include: diesel, solar, and hydro connection to the main grid; and connection to a Government power supply system. Under this policy rural communities' contribution to the total cost of project was 10% while 90% was paid by Government. A review of the Policy in 2008 reduced the contribution from rural communities to 5% of the total project cost while the remaining 95% is paid by Government. This is to support Government's effort that all Fijians must have access to electricity. The Fiji Electricity Authority also contributes financially towards the rural electrification programme, annually The Authority spends around between $2-2.5 million on rural electrification. This is in addition to the funding of other rural electrification project which the Government co-finances with the Authority. Examples include the Seaqaqa to Dreketi rural electrification project, the Nauouo to Rukuruku grid extension project, the Nalebaleba to Keiyasi grid extension project, and the Tavua to Korovou grid extension project.

Box 11: Nadarivatu Hydro Power Station



One of the major achievements for the sector is the commissioning of the Nadarivatu Renewable Energy Power Facility in September 2012 which has a capacity of 40MW and has reduced the Fiji Electicity Authority's fossil fuel bill by $40 million annually.

Sourcehttp://www.mwhglobal.com/mwh-

The regulatory framework relevant to energy include: the Electricity Act (Cap.180); Land Transport Act (1998); Environmental Management Act (2005); Hotels Aid Act (1999); Public Private Partnership Act (2006); Petroleum (Exploration and Exploitation) Act (Cap.148); Petroleum Act (Cap 190); Fuel and Power Emergency Act (Cap 191); Commerce Commission Decree 2010; Public Enterprise Act (1996); Land Conservation and Improvement Act (Cap.141); Native Land Trust Act (Cap.134) and Crowns Land Act (Cap.132); State Acquisition of Lands Act (Cap.135); and Marine Act.

(ii) Review of Performance in Context of Sustainable Development

Over the years, Fiji's import bill on fossil fuel for electricity generation has been escalating. For example, the total quantity of industrial diesel oil (IDO) fuel burnt in 2012 was 30,694 tonnes and heavy fuel oil (HFO) fuel burnt was 28,302 tonnes, aggregating to 58,996 tonnes.

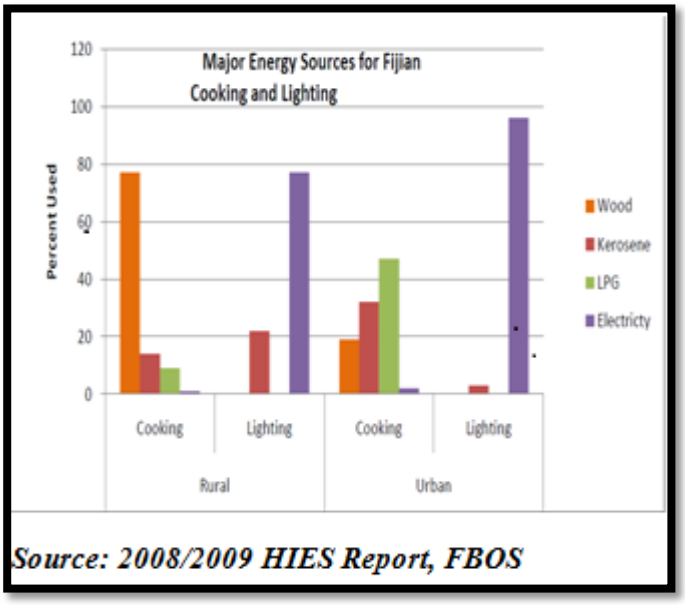
[21] Since 1994, Government has allocated a sum of $94.28 million for the Programme.

[22] Roughly, about 49% of Fiji's population lives in the rural areas in over 1,100 villages and settlements in the 14 provinces of Fiji and Rotuma.

In comparison, the total quantity of IDO fuel burnt in 2011 was 53,238 tonnes and HFO was 17,648 tonnes, aggregating to 70,886 tonnes.

In addition to the Fiji Electricity Authority, the Fiji Water Company and Vatukoula Gold Mine Limited are major companies which use imported fossil fuels for electricity generation. The latter have a demand requirement of 5 MW and 17 MW respectively.

Over 60% of electricity supply is already generated from hydropower. There is exploitable potential to raise the share of renewable electricity rapidly to over 80%, given that there are still a number of medium size undeveloped hydro sites and significant unexplored geothermal, solar, and wind resources. However, there has been limited private investment in Fiji's power sector to date which is largely due to the following: (i) lack of a clear regulatory framework for encouraging third party electricity generation; (ii) resource information not being made public; and (iii) a general weakness in Fiji's business climate[23]. These will need to be addressed to enable Fiji to meet its full potential for renewable electricity generation and meet the need for future power sector investments.



It should be noted that the major form of energy that is used for cooking purposes is as follows. In rural areas it is fuelwood (77%), while in urban areas it is Liquid Petroleum Gas (LPG) (48%). Kerosene is also a major form of energy for cooking – rural areas (17%) and urban areas (27%).

In rural areas, producing electricity from diesel generators is increasingly expensive and is putting pressure on the income level of rural communities. Most rural communities now prefer solar home systems for power supply due to continuing rising costs of fuel and irregular shipping services to the outer islands. Solar home systems provide clean and uninterrupted supply of electricity. The cost of solar technology is high but government is subsidising 95% of the cost through its rural electrification programme. Also, the sustainability of the Government funded rural electrification schemes is not secured. Community operated models often lead to deteriorated and inoperable diesel and hydro systems, while collection rates from households for solar home systems are low and as a result have to be heavily subsidised.

Government has also been promoting the development of other indigenous local energy resources like biofuels in order to reduce the dependence on imported fossil fuels for electricity generation. The possibility of ethanol production in Fiji has been considered, however its financial viability is highly sensitive due to inconsistent supply of feedstock and the poor performance of the sugar industry over the last 10 years has deterred investors. The

[23] Fiji was ranked 60th in the 2013 *Doing Business* report by the World Bank. Fiji is well below the regional average in some categories, including starting a business. Similar conclusions are drawn in the Asian Development Bank's 2011 *Private Sector Assessment* which states "The general business climate in Fiji is not conducive to attract sufficient private capital...".

production of molasses by the Fiji Sugar Corporation (FSC) has decreased from around 115,000 tonnes in 2007 to around 67,000 tonnes in 2012 while sugar production has declined from 237,000 tonnes in 2007 to around 159,223 tonnes in 2012. A recent feasibility study on ethanol production from molasses which was undertaken by the Fiji Sugar Corporation recommended a 60 kilo litres per day ethanol plant to be constructed which will produce 16.579 million litres of anhydrous ethanol which is much more than the required amount of 10 to 12 million litres required for the E10 blending in Fiji[24]. A study funded by the World Bank in 2008 on the feasibility of ethanol in Fiji states that the high cost of cultivating cassava means that it is a relatively high cost feedstock for ethanol production and yields negative margins unless oil prices are very high.

On improving demand side energy efficiency, current efforts so far have focused on appliance labelling for refrigeration technology in the domestic sector, the development of training material for a programme on energy efficiency in schools, and public awareness campaigns. There is clearly potential to expand these initiatives and make more of an impact on energy efficiency, including through increasing labelling awareness campaigns and targeting improvements in the public sector.

While information about the supply side of energy is available at an aggregate level, there is unfortunately, little data and information on the demand side of Fiji's energy balance. Fiji's energy demand is driven by household consumption of electricity and transport fuels (covered in Thematic Area 8: Sustainable Transportation) and by the major industries, in particular agriculture, forestry, tourism, and mining. Demand has increased over the past decade and is likely to continue increasing in the future. Potential renewable energy projects on Fiji Electricity Authority's radar for investment includes: Qaliwana hydro project (17MW); Wailoa downstream hydro project (28.6MW); upper Navua river project; Naboro waste to energy project; and Waibutasavu hydro project (4.4MW).

(iii) Assessment of Key Indicators and Trends

Some of the key indicators and trends for energy include:

- The national electrification coverage has increased from around 80% (urban – 95% and rural – 70%) in 2007 to around 90% (urban – 98% and rural – 80%) in 2012.
- The share of renewable energy in electricity generation has increased from around 40% in 2003 to 61% in 2013.
- There are two state owned Independent Power Producers (IPPs) supplying electricity to the national grid: (i) Tropik Wood Industries Ltd in Drasa, Lautoka; and (ii) Fiji Sugar Corporation which supplies for approximately six months a year from Lautoka and Labasa sugar mills during the sugarcane crushing seasons.
- Development of the Nadarivatu renewable hydropower facility which was commissioned in September 2012 and has a total installed capacity of 40MW.
- In 2011, Cabinet approved biofuel standards for B5 (blend of vegetable oil derived biodiesel and petroleum diesel) and E10 (blend of anhydrous ethanol and petrol) for Fiji.
- In 2010, the Fiji Electricity Authority's renewable power stations generated around 420 Giga Watthours (GWh) of energy (48%), thermal power stations[25] 415 GWh of energy (49%). Independent Power Providers supplied 20 GWh of energy (2%) and 1% from wind. In 2013, the Authority's renewable power stations generated around 533 GWh

[24] The project financials show that the project is commercially and economically viable with an internal rate of return of 15.01% and net present value of FJ$43 million calculated considering a 7% discount rate.

[25] Thermal power plant stations are power plants that generate electricity using IDO and HFO fuel.

(61.1%), and thermal power stations 325 GWh (37.2%), The IPPs generated 14.7 GWh (1.7%).

3. Key Challenges and Proposed Way Forward

The key challenges and proposed way forward for this Thematic Area should be considered in light of the introductory paragraphs to Chapter 5.

Key challenges	Proposed Way Forward, Actions and Timebound Indicators
(i) Access to affordable and reliable modern energy services to all Fijians.	***Medium Term (3 to 5 years)*** • 100% of the population to have access to electricity by 2020 from the current 90% (2014).
(ii) There is a need to reduce dependence on imported fossil fuel as a source of energy for electricity generation.	***Short Term (up to 2 years)*** • Investment into more renewable energy projects that are feasible in Fiji such as solar (stand alone, solar farm, photovoltaic grid connected), biofuel, wind, micro hydro projects and biogas power generation (agricultural wastes). • Continued research and development in the area of new renewable energy technologies, including further exploration of ocean energy, geothermal energy and generation of energy from waste. • Explore whether use of renewable energy could be considered a part of the approval process for new investments. ***Medium Term (3 to 5 years)*** • Promote and improve guidelines and technical standards for renewable energy technologies. ***Long Term (over 5 years)*** • Continue research and development for energy from hydrogen fuel cells. • Renewable energy share in electricity generation to be around 99% by 2030 from the 61% in 2013.
(iii) There is a need to enhance the IPP entry in the electricity sector by expediting the current reform process.	***Short Term (up to 2 years)*** • Expedite the current reform of the industry and shift the regulatory role from Fiji Electricity Authority to Department of Energy. • Establish economically justified feed in tariffs or similar mechanisms through a study to give incentives for production of energy from various renewable energy sources. • Carry out a study to develop an Independent Power Producer (IPP) framework. ***Medium Term (3 to 5 years)*** • Establish a transparent process for procurement of new large scale capacity from IPPs, pricing and other principles to be applied in all new power purchase agreements and grid connection standards.
(iv) There is a need to expand the current energy efficiency initiatives.	***Short Term (up to 2 years)*** • Continue to increase public education and awareness of energy efficiency by providing information to end users on the range of energy saving technologies and options available. • Extend the current system of energy labelling and minimum energy efficiency standards to all widely imported electrical appliances and industrial equipment that contribute substantially to energy demand. • Provide financing including economic incentives to increase energy efficiency and decrease energy intensity.

	• Develop and implement an energy information database, so that demand side data is collected and analysed and a verifiable data trail is created to document real and potential energy savings. • Promote energy efficiency in the public sector, as a platform for demonstrating the feasibility of energy efficiency projects. • Support voluntary efforts by the business community to improve energy efficiency including public recognition of best performers, providing information on potential, dissemination of best practice and encouraging development partner energy efficiency programmes ***Medium Term (3 to 5 years)*** • Encourage supply side efficiency, for example replacing old machines/power generators that are not performing efficiently compared with new efficient ones. • Construct energy efficient buildings to demonstrate and promote the awareness on the initiative. • Update the codes and standards for buildings and industry to provide among others minimum standards for energy use for ventilation, cooling and lighting and will be regularly reviewed in response to new research, building practices and technologies. ***Long Term (over 5 years)*** • Strengthen the enabling environment for energy service companies to undertake and finance public and private sector energy efficiency projects.
(v) There is a need to implement a major biofuel project by the private sector.	***Short Term (up to 2 years)*** • Develop a National Biofuel Strategy Framework which will provide an overarching policy framework for the biofuel industry in Fiji. • Review of current biofuel standards (in particular to allow triglyceride blends for diesel engines) to facilitate the more economic development of indigenous biofuel resources such as coconut oil. ***Medium Term (3 to 5 years)*** • Formulation of a Biofuel Act. ***Long Term (over 5 years)*** • South-South cooperation with other countries to acquire technical expertise on the development of biofuel industry.
(iv.) There is a need for sustainability of current rural electrification schemes because there is uncertainty on affordability for rural communities with limited income.	***Short Term (up to 2 years)*** • Develop a national electrification master plan, showing how each unelectrified area of Fiji will be served with least cost solutions. • Review of the Rural Electrification Policy. ***Medium Term (3 to 5 years)*** • Improve the effectiveness and sustainability of the existing management models for off grid rural electrification including Renewable Energy Service Companies and community cooperatives being used to provide electricity to isolated communities and areas not served by the Fiji Electricity Authority. • Establish a framework for encouraging off grid rural electrification projects by non government providers including community based organisations, social service providers (schools, health centres), non government organisations, and the private sector.

Thematic Area 8: Sustainable Transportation

1. Introduction

This thematic area focuses not only on the dependence of transportation on imported fossil fuel but also considers critical issues, especially infrastructure, facing the three modes of transport: land, air and maritime. Transport plays a critical role in Fiji's economy as a means of facilitating economic and social opportunities and providing benefits that result in positive multiplier effects such as better accessibility to education, health services, markets, employment and investment. The transport sector has been contributing around 12% of GDP over the last few years. It also employs a considerable number[26] of people in both formal and informal sectors with the latter being the most vibrant in the land transport industry.

The Nadi International Airport is recognised as a hub for access to other Pacific islands by air. Fiji Airways' purchase of three new A330 aircraft with 30% higher fuel efficiency compared with the aircraft replaced is also contributing to reductions in carbon emissions. Fiji also has a well-established road network system. The management of roads has been reformed in the past year as Government seeks to bring the management of Fiji's roads up to international standards. Likewise, upgrading of the two major ports of Lautoka and Suva which are on the path of major shipping lines is resulting in increased visits by cruise ships. Despite this, the transport industry continues to face new and emerging challenges due to rapid urbanisation and motorisation.

In response to the guiding principle of this Green Growth Framework to reduce carbon foot prints, transport is also one of the highest contributors towards carbon dioxide emissions amounting to around 729 Gg (approximately 47% of Fiji's total carbon dioxide emission)[27], primarily due to increasing transport fuel use. In the short to medium term, efforts should focus on promoting fuel efficient vehicles, alternative fuel sources and improving traffic management systems.

Being a maritime nation, concerns like infrequent shipping services due to high fuel cost, high boat fares associated with high freight charged on cargo continue to have a negative impact on the production and income generation potential of the outer islands. More so, international regulations driven by the International Maritime Organisation to reduce air pollutant emissions from shipping coming into force within the decade are also likely to significantly increase both the cost of fuel and costs associated with compliance. These regulations will apply to both domestic shipping and international shipping transiting Fiji waters. Exploring renewable energy technologies and retrofitting of existing vessels and new build vessels for the maritime sector) are solutions to reducing fossil fuel use, emissions and shipping costs.

[26] According to the Bureau of Statistics - Transport and Storage Report (2008), the sector provides employment of around 9,516 people of which: 49.6% are in land transport; 25.7% are in warehousing and support activities; 16.3% are in water transport; and 8.4% are in air transport and overall the sector makes up around 8.3% of Fiji's total employment.

[27] Second National Communication to the United Nations Framework Convention on Climate Change prepared by the Government of Fiji, in consultation with the National Climate Change Coordination Committee and National Stakeholders (2013).

This Green Growth Framework provides a tool to help steer the economy onto a path of sustainable transportation which will require providing incentives for importation of fuel efficient vehicles, development of alternative fuel sources, initiatives to assist in the transition to a low carbon sea transport and strengthening the enforcement on operators to minimise environmental degradation and pollution.

Section 34 of the 2013 Constitution guarantees the right of every person to have reasonable access to transportation.

Box 12: Introduction of Fuel Efficient Vehicles

The introduction of new vehicle models like the Toyota Yaris in November 2013 demonstrates the increasing quality of motor vehicle on our roads, vehicles with better performance, reliability and fuel efficiency, helping to minimise greenhouse gas emissions and their negative impact on Fiji's environment.

In 2010, the government announced the reduction of import duties for smaller engine vehicles. For example, the duty for vehicles less than 1500cc engine capacity was reduced from 32 per cent to 15 per cent. This was further complemented in the 2012 budget where vehicles with less than 2500cc engine capacity were also reduced to 15 per cent.

The government is also working towards improving the standard of fuel, to bring it in line with international standards, and has restricted importation of second-hand vehicles to only those that comply with Euro 4 fuel standards. This will ensure that more high quality fuel efficient and environmentally friendly vehicles are imported into Fiji.

Source: http://www.mailife.com.fj/asco-motors-launches-all-new-toyota-yaris/

2. Current Status

(i) Overview of existing policies, regulatory framework and initiatives

The policy for transport is to "*provide an integrated transport system that is safe, efficient, affordable, accessible to all and environmentally sustainable"*. The Fiji National Transport Sector Plan (1993) sets out the strategic direction for transport and outlines the policies to reengineer the transport sector. This Plan is currently being revised for which one of the key priorities is the promotion of sustainable transport systems in Fiji so that the reliance on imported fossil fuels for transport is minimised.

The key regulatory framework guiding the industry includes:

- Land transport - the 1998 Land Transport Act which was amended through a Decree in 2013 (Decree No. 8 of 2013).
- Air transport - Civil Aviation Act 1976 as amended, Civil Aviation of Authority of Fiji Act 1979 as amended, Civil Aviation Security Act 1994 as amended, Civil Aviation Reform Act 1999 as amended, Air Navigation Regulations 1981 (as amended), Civil Aviation (Security) Regulations 1994 (as amended), Civil Aviation (Fees and Charges) Regulations 2007, Civil Aviation (Occurrence Reporting and Incident Investigation) Regulations 2007, and Various Aerodrome Restriction Orders etc.
- Maritime transport – the new Maritime Transport Decree and Ship Registration Decree are expected in 2014 to replace the Marine Act 1986. This legislation is expected to better regulate the safety aspects of shipping services and requirements for registering ships respectively in Fiji.

Over the years, some of the measures implemented to achieve sustainable transportation include: duty concession (free fiscal, import excise and VAT) on importation of vehicles (vehicle should be less than 5 years from the year of manufacture for petrol and diesel and less than 8 years from the year of manufacture for gas and solar powered vehicles) by returning residents in 2014; introduction of a green tax in 2013 which increases the fiscal duty on motor spirits from 44 cents per litre to 46 cents per litre and on automotive and industrial diesel oil from 18 cents per litre to 20 cents per litre; reduction of concession for bus fuel from 18 cents to 15 cents in 2012 (also a rebate of two cents per litre for the bus and fishing industries); age restriction on gas and solar powered vehicles extended to 8 years in 2012; and imposition of a ban in 2008 on importing motor vehicles (cars, trucks and buses) of more than 5 years of age.

(ii) Review of performance in context of sustainable development

Over the years, progressive institutional reforms have been implemented in the transportation sector. Some of the recent achievements include the following:

Land Transport

- As part of ongoing public sector reforms, the Fiji Roads Authority was fully established on 01st January 2013 and is now responsible for all matters pertaining to construction, maintenance and development of roads in Fiji. Some of the major roading projects currently being implemented include upgrading of the Buca Bay Road and Nabouwalu/Dreketi Road in Vanua Levu, Sawani/Serea Road, Sigatoka Valley Road, and Moto Road in Viti Levu. These projects are expected to be completed by mid-2014 except for the Nabouwalu/Dreketi Road which is scheduled to be completed by end of 2015. The upgrading of these roads is expected to provide critical market links for farmers and buyers and substantially reduce their business costs and support economic development.
- The use of a public private partnership modality to finance infrastructure development is also being pursued.

Air Transport

- Around 14 airline companies with 50 aircrafts are currently registered in Fiji, of which the main player is the Fiji Airways having recently acquired three new Airbus 330 aircrafts. Apart from Fiji Airways which is a domestic, regional and international operator, Fiji Link (Pacific Sun) is a domestic and regional operator whilst the other airlines operate domestically. In 2013, 9 other regional and international airlines operate in and out of Fiji contributing to a total of 116,774 annual aircraft movements in the Nadi Flight Information Region and the domestic airspace.
- Investments are being made to improve aerodrome infrastructure to be compliant with International Civil Aviation Organisation (ICAO) standards and practises. Apart from ongoing improvements, major dashboard upgrades are planned for Rotuma, Savusavu, Matei, Nausori and Nadi from 2014.
- Fiji is in alignment with the ICAO Global Plan Aviation System Block Upgrade strategy which allows States to align with programmatic and flexible systems engineering approach which will advance Fiji's air navigation capacities based on specific operational requirements. This will enable Fiji's aviation industry to realise the global harmonisation, increased capacity and improved environmental efficiency that modern air traffic growth now demands in every region around the world.

Maritime Transport

- In order to improve access to communities in the outer islands, Government continues to prioritise the construction of key regional jetties that benefit many island communities.
- A price control order has been issued on maritime shipping passenger fares and freight rates charged by shipping operators to the travelling public.
- New vessels are being purchased to provide frequent shipping services to outer and remote islands. Also, since 1997, $1.5 million has been allocated annually under the shipping franchise scheme to assist vessel operators service the uneconomical routes which has resulted in increase in passenger numbers by more than 60% and cargo volumes by 80%.
- A Sri Lankan conglomerate, Aitken Spence PLC took over the management of Ports Terminal Limited[28] in May 2013. This is to bring about reform including improvement in efficiency and productivity in both the Suva and Lautoka ports.

Box 13: New Government Vessels to Improve Maritime Links

The maritime transportation has been one of the most neglected sectors over the years and this is has been transformed with the purchase of two new ships by the Government - *MLC Sigavou and MV Vunilagi*. *MLC Sigavou* is a 47 metres, 149 tonnes vessel, which can carry 20 passengers plus cargo was purchased from Malaysia at a cost of US$2.6 million. *MV Vunilagi* is a 45.5 metres landing craft which can carry 30 passengers plus cargo was purchased in Malaysia at a cost of US $2.4 million. The new vessels will kick start some of the government projects such as providing water supplies and generators for electricity for the outer islands. People from the outer islands will also be able to carry their goods from Viti Levu to the islands more conveniently with cost efficient trade rates.

(iii) Assessment of key indicators and trends

Some of the key indicators and trends for transport include:

- The contribution of transport towards GDP increased from around 9.4% in 2003 to around 12% in 2012;
- Reduction in annual fatalities on all forms of transport from 57 in 2009 to 41 in 2012;
- Reduce annual carbon dioxide emissions per capita from 1.6mt to 1.0mt (currently around 1.5mt);
- Reduce vehicle emission opacity from 70% to 50% (currently 50%). This indicator will be measured from this year after the purchase of the vehicle emission tester;
- Increase in the number of registered vehicles from around 80,139 in 1990 to around 171,157 in 2011; and
- Minimum of two trips per month on each outer island route by the ships/vessels (at the moment, only 1 trip is made to the outer islands).

[28] Aitken Spence PLC has purchased of 51% shares, worth $10.53 million, into Ports Terminal Limited.

3. Key Challenges and Proposed Way Forward

The key challenges and proposed way forward for this Thematic Area should be considered in light of the introductory paragraphs to Chapter 5.

Key Challenges	Proposed Way Forward, Actions and Timebound Indicators
Land Transport	
(i) Encourage the use of fuel efficient vehicles to reduce transport sector's dependence on imported fossil fuels, including through the review of existing relevant policies.	***Short Term (up to 2 years)*** • Promote fuel efficiency of imported motor vehicles to reduce petroleum consumption which includes: o continue to enforce age limits on all second hand vehicles (five years and less). o provide incentives for importation on new vehicles with better and more fuel efficient engine technologies. • Local industry to comply with Euro 4[29] fuel standards including setting up of relevant infrastructure and review of the fuel prices. ***Medium Term (3 to 5 years)*** • Introduction of Euro 4 fuel and vehicles • Regular review of fuel and vehicle standards and compliance with international standards. • Promote the fuel efficiency of the existing motor vehicle fleet, including promoting fuel efficient driving practices through information campaigns and driver training, and by improving the enforcement of vehicle maintenance and maximum axel weight standards. ***Long Term (over 5 years)*** • Reduce Fiji's dependence on imported fossil fuel for transportation which is using around 42% (2010) of final energy consumption to around 25% by 2030.
(ii) There is a need to develop and demonstrate alternative fuel sources for land transport.	***Short Term (up to 2 years)*** • Increase development and use of biofuels for the land transport industry. • Explore and invest into low carbon vehicles like electric cars and hybrid vehicles. • Explore the potential for railway transport including undertaking a feasibility study, in particular for the cane farming areas in the Western Division in the "off season". ***Medium Term (3 to 5 years)*** • Develop necessary standards for the use of other forms of alternative fuel for land transport industry. ***Long Term (over 5 years)*** • Diversify the current energy mix through the use of Liquefied Petroleum Gas (LPG) and Liquefied Natural Gas (LNG) in the industrial, land transport and domestic sectors.
(iii) There is a need to shift towards public transportation and non	***Short Term (up to 2 years)*** • Promote use of public transport for example, buses.

[29] Euro 4 means European standards for emission from vehicles.

motorised land transport, due to the significant increase in number of vehicles on Fiji's roads.	• Review the optimal number of private and public service vehicles and develop appropriate regulatory arrangements to promote more transparency in licensing arrangements. • Explore and develop exit strategy for vehicles that have reached their life span. • Explore opportunities on cycling lanes in major urban areas. ***Medium Term (3 to 5 years)*** • Accelerate vehicle replacement schemes (e.g. car scrapping schemes). • Promote cycling and establishment of cycle paths in urban areas, as well as public and private sector participation in cycle to work schemes. • Develop appropriate traffic management plans for major urban centers such as Suva and Lautoka to improve traffic flow, deal with traffic congestion and reduce vehicle emissions.
Air Transport	
(iv) There is a need to manage air traffic growth and aviation related activities.	***Medium Term (3 to 5 years)*** • Develop a civil aviation management plan that links Fiji to ICAO's strategic systems and standards. • Explore the potential for use of environmentally friendly technology within the aviation industry.
Maritime Transport	
(v) Provision of a regular, affordable and sustainable domestic shipping industry.	***Short Term (up to 2 years)*** • Minimum of two trips per month on each outer island route. • Improve the operating efficiency of vessels for example, weather routing and slow steaming and support technological innovation for example, better hull and propeller designs which could result in fuel savings. • Reinvigorate traditional knowledge of using small "canoe" and "camakau" boats for accessing the jetties to reduce the use of fossil fuel operated outboard motors. • Purchase of a renewable energy vessel through a partnership between Government Shipping Services and private sector investors and in close consultation with interested communities. • Support initiatives that assist in the transition to a low carbon sea transport future such as the Oceania Centre for Sustainable Transport. • Explore the potential use of 4-stroke outboard motors in Fiji. • Build relationships with global and regional industry leaders and researchers working in the field of sustainable sea transport. • Investment into outer island jetties and bridges programme. ***Medium Term (3 to 5 years)*** • Incorporate incentives for trialing and adoption of low carbon technologies for domestic shipping in relevant strategies, policies and plans. ***Long Term (over 5 years)*** • Revitalisation of the local boatbuilding and shipbuilding industry. • Affordable and regular shipping services to the outer and isolated islands and between coastal communities to be sustained in the

	future.
(vi) There is a need for compliance with IMO regulations for shipping industry.	***Short Term (up to 2 years)*** • Establish a modality by which Fiji can be represented at IMO meetings, including through strengthening of south-south cooperation. ***Medium Term (3 to 5 years)*** • Investigate compensatory mechanism(s) to address costs of compliance with IMO regulations for shipping.
Multi-Modal	
(vii) There is a need to reduce the environmental impacts from all forms of transportation and reduce climate change impacts on transportation infrastructure.	***Short Term (up to 2 years)*** • Strengthen enforcement on operators to minimise environmental degradation and pollution. • Provide necessary training to enforcers. • Develop certification standards for climate proof infrastructure. ***Medium Term (3 to 5 years)*** • Develop waste management standards for the transport industry (land, air, marine) to ensure that the relevant waste is either reused or disposed/incinerated in a manner which is not harmful to human health or the health of the environment. • Establish enforcement measures to ensure that new infrastructure meets climate proof standards.

Thematic Area 9: Technological Innovation and Development

1. Introduction

This Thematic Area addresses the current status of technology in Fiji relative to future innovation and technological development to support green growth. It endeavours to propose practical solutions to address the existing challenges in key areas. It should be noted that many of the proposed solutions are cross-cutting in nature and is applicable to other Thematic Areas.

Technological progress in Fiji as in all Pacific island countries and the world at large has shaped development, encouraging countries to become more innovative in this increasingly competitive world. Subsequently, mandatory global standards and measures are now being promoted and implemented by renowned international organisations[30] as part of the global agenda on the prevention of environmental degradation which can arise from the use of inappropriate technologies.

Building strong technological capabilities, improving technological transfer with developed countries, and building strong systems of innovation are important for economic growth, social welfare, and environmentally sustainable development. Technological capability refers to the ability to learn, understand and master the use of existing technologies to solve problems, while innovative capability refers to the ability to use and develop new solutions to problems.

Fiji is heavily reliant on imported high tech goods, while its own research and development capabilities are in their infancy. Given its strong resource base and a highly literate, technically knowledgeable young population, there is a need to focus on attracting appropriate, affordable, and accessible technology to complement Fiji's efforts in achieving growth that is sustainable. The increasing global emphasis on open source development creates an opportunity for developing countries to build significant Fiji centric technological advances. These initiatives must be tailored to suit the research and development requirements in Fiji. A starting point would be to strengthen institutional support in resource based sectors and proceed upstream on the resource mobilisation and man power rationalisation fronts.

2. Current Status

Technology research and development in Fiji is mostly concentrated within the private sector and higher learning institutions, and Fiji has operated without a national policy. Since it is a global player in the global production value chain, there is a need for focused intervention on platforms that provide for the absorption, digestion and refining of imported technologies. Such policies should support the importation of green technology.

[30] Organisation for Economic Co-operation and Development, World Bank, United Nations Environment Programme, United Nations Economic and Social Commission for Asia and Pacific, etc.

The establishment of Fiji as a regional hub for Information and Communication Technology (ICT) in the Pacific has supported this transition by improving communication and access to appropriate and relevant technologies. In 2011, the International Telecommunication Union [31] ranked Fiji's ability to deliver ICT services and infrastructure to its citizens as among the most dynamic in the world. In its annual review of more than 150 countries, Fiji was the only small island developing state to receive special recognition, improving thirteen places over the previous year to finish 81st. Fiji's 2013 ranking of 82nd is supported by strong growth in mobile broadband penetration; the extension of 3G coverage; the development of the region's first national broadband policy; Government's commitment to making internet access affordable; and the continual expansion of e-Government services. These encouraging developments have been supported by the following policies, regulatory framework and initiatives:

Box 14: Vodafone's 4G Uptake

Vodafone Fiji which is a partnership with the ATH Group provides mobile telecommunications services to 720,000 Fijian customers. The uptake and adoption of Vodafone's 4G services for the two month period since launch has offset initial expectation with over 6,000 customers signing up for its 4G plans. This adoption rate was better than the 3G uptake in 2007 when mobile broadband services were first launched in Fiji.

Source: http://www.vodafone.com.fj/pages.cfm/general/about-us/media-releases-1/media-releases-14/vodafones-4g-uptake.html

- Post and Telecommunications Decree 1989
- Telecommunications Promulgation 2008
- Telephone Registration Decree 2010
- Fiji National Broadband Policy 2011
- Reform of Information Technology and Computing Services Decree
- Media Industry Development Decree 2010
- ICT Development Policy
- Regulation of National Spectrum (Amendment) Decree 2013
- One-laptop-per-child Initiative
- e-Government Project
- Kalabu Tax Free Zone- tax free incentives available to new and existing ICT operators/ businesses
- The establishment of the Japan-Pacific ICT Centre at the University of the South Pacific-Laucala Campus.

<u>Technological Innovation</u>

Technological innovation is a critical need across all Thematic Areas for planning, implementation and optimisation of green growth, maximising economic return and minimising environmental impact.

[31] The International Telecommunication Union (ITU) regularly assesses the level of ICT development of its members and ranks countries on a composite index, the ICT Development Index that measures ICT development potential, and progress in ICT development over time.

The Global Innovation Index 2013, which measures a country's innovative capabilities out of a total score of 100%, lists Fiji's current capabilities at 30.5%. While we scored higher than the 25.7% recorded by Papua New Guinea (the only other Pacific island country captured in the index), Fiji's overall ranking (97th out of 142 countries surveyed) needs further improvement. The index recognises the key role of innovation as a driver of economic growth and prosperity, and acknowledges the need for a broader vision of innovation that is applicable to both developed and emerging economies.

The private sector, public sector (government ministries/departments), and educational institutions each require different technological capabilities. Efforts should not only be directed towards developing new technologies, but also towards making improvements to existing technologies, such as by improving the energy efficiency of electrical appliances. Many low carbon technologies are in different stages of development within the innovation chain. Accordingly, the type of support required by government will differ depending on the stages and maturity of these respective technologies. Also of importance is the need to improve technological transfer between Fiji and its more developed partner countries.

Technological Development

Investment in research and development on environmentally sustainable technology in the Asia-Pacific region is still relatively small. Greater investment will be needed from Fiji's partners to accelerate progress. The long term challenge for improving technological development will be to enact policies that foster a knowledge based and innovative culture. However, given Fiji's weak research and development climate and current low levels of innovation, the more practical short term focus should be on improving access to existing green technologies via technology transfer through north-south or south-south partnerships, and by promoting the use of these technologies. While most technological transfer is driven by the private sector, in the case of green growth a stronger impetus is needed from the public sector in terms of providing funding and support for research on environmentally sustainable projects.

3. Key Challenges and Proposed Way Forward

The key challenges and proposed way forward for this Thematic Area should be considered in light of the introductory paragraphs to Chapter 5.

Key challenges	Proposed Way Forward, Actions and Timebound Indicators
(i) Support research and innovation in green technologies and services	***Short Term (up to 2 years)*** • Promote the use of social media and ICT based planning tools in the public sector. • Green existing industries by subsidising companies that use green technology throughout the entire chain of production. ***Medium Term (3 to 5 years)*** • Increase funding for universities and other research institutions that refine and improve existing technologies in a sustainable manner, such as the Oceania Centre for Sustainable Transport (Refer to Thematic Area 8: Sustainable Transportation). • Develop a national framework that promotes innovation and research and development towards environmentally sustainable technology by the end of 2017.
(ii) Further develop ICT skills	***Short Term (up to 2 years)*** • Form an appropriate body to provide support for ICT

	education and provide policy advice on ICT matters by the end of 2016. The responsibilities of this body could include enacting standards on the inflow, use and proper disposal of household appliances, machinery, and equipment; identifying and developing the basic ICT skills needed by students and the workforce; and promoting ICT education and up skilling. ***Medium Term (3 to 5 years)*** • Increase access to appropriate technologies via technology transfer between our more developed bilateral, regional and international partners. • Increase the number of government community telecentres by at least 5 each year.
(iii) Promote the use of Green Technologies	***Short Term (up to 2 years)*** • Increase public awareness on the environmental benefits of using low carbon, energy efficient technology (Refer to Thematic Area 7 on Energy Security). • Formulate minimum product standards for imported household appliances by end of 2016, focusing on technical regulations on quality, packaging that adheres to international sanitary and phyto sanitary measures (SPS), and energy labeling (Refer to Thematic Area 7 on Energy Security). • Develop a list of approved energy efficient appliances to inform consumer purchasing choices by end of 2015 (Refer to Thematic Area 7 on *Energy Security*). • Reduce or remove import duties on low carbon technology (Refer to Thematic Area 10 on Greening Tourism and Manufacturing Industries). ***Medium Term (3 to 5 years)*** • Incentivise large scale foreign direct investment (FDI) in industries which develop environmentally sustainable technology in areas such as transportation, renewable energy, manufacturing, agriculture, etc.
(iv) Develop national innovative capabilities	***Medium Term (3 to 5 years)*** • In light of national circumstances, priorities and goals, develop a science, technology and innovation and research and development strategy and integrate with overall sustainable development strategy across all thematic areas by end of 2017. • At least 50% of secondary school teachers trained to implement the revised Fiji National Curriculum Framework by 2020 (Refer to Thematic Area 4: Inclusive Social Development).

Thematic Area 10: Greening Tourism and Manufacturing Industries

1. Introduction

In Fiji today, the interdependence between economic and environmental systems necessitates the need to green industries as the current focus on growth is placing unsustainable pressure on our natural resource endowments. Green industries promote sustainable patterns of production and consumption - patterns that are resource and energy efficient, generate low carbon and low waste, are non-polluting and safe and produce products that are responsibly managed throughout their lifecycle.

Tourism and manufacturing industries[32] are vital to the economy of Fiji as they contribute significantly to foreign exchange earnings, GDP and employment. According to the World Travel and Tourism Council, tourism's total contribution to Fiji's GDP was estimated at 35.8% for 2012. With around 650,000 visitor arrivals in 2013 largely from Australia, New Zealand, North America, Europe, Japan and Korea, Fijian tourism is characterised by high end, luxury accommodation and dominance of transnational hotel chains reflecting a truly foreign dominated industry structure. This coexists with smaller scale and locally owned enterprises that attract a wider range of tourist demographics and budgets, including backpackers, adventure tourists, culture and nature interested tourists.

Manufacturing, on the other hand has been steadily contributing around 14% of GDP in the last 10 years driven largely by the processing of non-food products. The industry comprises of the manufacture of textiles, garments, footwear, sugar, tobacco, food processing, beverages (including mineral water), chemicals, metal products, paper and wood-based products. Production in these industries is supported by imported and locally sourced raw materials.

2. Current Status

(i) Review of Performance in Context of Sustainable Development

Tourism

The growth of the Fijian tourism industry has been largely around the appeal of the country's natural scenery, the reefs, beaches and unique culture, Characteristically, Fiji's reputation is a safe, relaxing destination offering a cluster of distinctive Fijian experiences in natural environments. The quality of the environment, both natural and manmade, is essential to tourism. However, tourism's relationship with the environment is complex. It involves many activities that can have adverse environmental effects. Many of these impacts are linked with the construction of general infrastructure such as roads and airports, and of tourism facilities, including resorts, hotels, restaurants, shops, golf courses and marinas. Generally, tourism's impact on environment can be analysed through natural resources and energy use, physical impact of tourism development and the impact of touristic activities.

[32] This definition of manufacturing includes manufacture of food products, beverages, tobacco products, textiles, wearing apparel, footwear, leather products, wood, products of wood and cork except furniture, articles of straw and plaiting materials, paper and paper products, printing and reproduction of recorded media, coke and refined petroleum products, chemicals and chemical products, basic pharmaceutical products and preparations, rubber and plastics products, other non metallic mineral products, basic metals, fabricated metal products, except machinery and equipment, motor vehicles, trailers and semi trailers, other transport equipment, furniture, repair and installation of machinery and equipment (Fiji Standard Industrial Classification, 2010).

Water, especially freshwater, is one of the most critical natural resources that is generally overused by hotels for swimming pools, golf courses and personal use by tourists. According to the Fiji Hotels and Tourism Association the average tourist uses around 200 litres of water per day, which can result in water shortages and generate a greater volume of wastewater in Western Viti Levu that is tourism intensive and at the same time drought prone. With the growth of golf tourism in the country, water conservation is of particular concern as golf courses require enormous amount of water every day. Under the Green Globe initiative, hotels and resorts are instituting linen and towel reuse programmes in guest rooms to reduce the loads of laundry for washing and have upgraded to efficient laundering equipment. Some tourism facilities in the country have installed water sense labelled faucets, showerheads, toilets and flushing urinals that are more water efficient. Other initiatives include the design of water smart landscapes that provide beautiful surroundings while reducing water needed for irrigation and composting and incinerating toilets that not only conserve water, but are ecologically friendly.

Recreational tourism relies on land resources and marine biodiversity. Land resources such as minerals, fertile soil, forests, wetland, wildlife and marine biodiversity are often negatively affected by increased construction of tourism and recreational facilities, particularly along the coastlines which are very attractive to both tourists and developers. Clearing of forested land, sand mining and development of artificial marinas has led to the loss of biological habitats of marine life and mangroves which Fijian villagers depend on for subsistence. Coral reefs, which play a substantial role in maintaining marine and coastal ecosystems, are affected by shoreline development, increased sediments in water and trampling by tourists. To address these biodiversity issues, the tourism industry in Fiji is creating awareness and educating tourists on sustainable environmental behaviour prior to embarking on nature visits. Resort boat operators are instructed not to anchor directly on reefs but only on designated buoys, and some tourism operators no longer engage in reef-based activities.

Tourism operators around the country are using biodegradable substances and fertiliser ashes generated from incinerating toilet waste to maintain soil fertility. Other biodiversity protection initiatives include rehabilitation of the turtle population through tourist activities, and incubation and release of endangered marine species. Growing of fresh organic produce by hotels also contributes to the reduction of their carbon footprint and sustainable land resource use.

The tourism industry has very high demand for energy for heating, cooling and lighting purposes. The World Wide Fund for Nature estimates that more than 50% of Fijian hotel or resort's operating costs are for electricity and diesel, used especially to maintain island tourism facilities. The absence of indigenous fossil fuel resources in the country leaves Fiji with no option but to import fuel at

Box 15: Island Resort using 100% Solar

Photo courtesy of Turtle Island Resort

Turtle Island Resort is an example of how the tourism industry can be more environmentally conscious. It has became one of the first total clean energy resorts in the world after the installation of 968 solar panels that are now providing 100% of the power needs of the island. On rainy and cloudy days, the solar plant operates at about 85% of full capacity, maintaining outstanding energy efficiency. The solar installation produces over 1 megawatt of power a day helping reduce 220 tons of GHG emissions per year and saves 85,000 liters of diesel consumption per year. This has reduced the resorts annual diesel costs by a significant 90%.

considerable cost. To address high energy costs and exposure to related external shocks, already a number of hotels in the country have engaged in significant energy efficiency measures and are using renewable energy sources. Current initiatives underway to reduce energy bills and carbon footprints of hotels include the use of energy efficient light bulbs, sensor lighting in gardens and areas that are least frequently used, room keys that control electricity supply, solar hot water systems and temperature regulation of air conditioning units. One tourism facility is using almost 100% solar energy to meet its energy demands, and in doing so benefits the nearby communities with the excess solar power. The powering of Port Denarau Marina exclusively by solar energy is another sustainable tourism initiative.

Tourism can cause the same forms of pollution as any other industry. This includes air emissions, solid waste, and release of sewerage, oil and chemicals. International air travel, accommodation and internal tourist transportation are key contributors of carbon dioxide emissions in the tourism sector. In most tourism facilities, guest rooms, kitchens, restaurants, laundries, offices, gardens and conference rooms generate large volumes of solid and liquid wastes, which can result in negative ecological, disease and aesthetic impacts if not properly managed. To address waste management, Fijian hotels comply with the Waste Disposal Permit System. The use of composting and incinerating toilets, including sand filtering and halogen light dehydration procedures for sewerage waste treatment, are also some of the sustainable solid waste management practices deployed by tourism operators. Used cooking oil is also sold by hotels for recycling.

Manufacturing

The manufacturing industry in Fiji is closely linked to natural resource use and energy to run production plant and equipment that processes raw materials into finished goods. Traditionally, manufacturing industries draw freshwater, land and mineral resources for use as key inputs into the production process. According to World Bank estimates, 10% of total freshwater withdrawals in the country are for industrial use. Within the industry, beverage, chemical, food and paper product manufacturing are most water intensive. In particular, beverage manufacturing requires a high quality water source, putting the water use of this industry in direct competition with the local population and their drinking water needs. Some water conservation initiatives undertaken by industry players include modernisation of manufacturing facilities that are more water efficient and streamlining of the cleaning of production lines that reduce water usage significantly.

Manufacturing, like tourism, is an energy intensive industry. In 2005, manufacturing industries consumed 170kWh of electricity to power their plant and equipment, which increased to 202kWh in 2013, representing an increase of around 19%. Environmentally sustainable initiatives by the industry to use alternative and cheaper energy include the use of bagasse and wood chips to produce energy. Some manufacturers have also retrofitted resource and energy efficient plant and equipment to reduce energy consumption.

In terms of waste generation, the manufacturing sector contributes towards air emissions, solid and liquid industrial refuse. It is estimated that the manufacturing sector, including construction activities, generate around 16.1% of total carbon dioxide emissions in the country. This places the manufacturing industry on the second spot in the carbon emissions scale after the transport industry.

Other industrial wastes include heavy metals, oil, grease and wastewater. Of these, liquid wastes are discharged into the sewerage system that eventually ends up in the marine

ecosystem. Greening initiatives focused on reducing carbon emissions in the industry include the use of lightweight packaging materials and locally sourced raw materials that result in lower emissions in the transportation stage. Conversion of waste to energy via bio-energy generation processes is also being done in the industry to manage solid industrial waste. Liquid wastes are also pre treated by some of the manufacturers in the country. Industry players also comply with the provisions of the Environmental Management Act solid and liquid waste management strategies whereby they are required to sort out their waste prior to collection. As part of their corporate social responsibility, manufacturers are also running solid waste recycling programmes in communities.

3. Key Challenges and Proposed Way Forward

The key challenges and proposed way forward for this Thematic Area should be considered in light of the introductory paragraphs to Chapter 5.

Key Challenges	Proposed Way Forward, Actions and Timebound Indicators
(i) Promoting sustainable use of water resources in tourism and manufacturing industries.	***Short Term (up to 2 years)*** • Tourism and manufacturing facilities to adopt water efficient technologies and equipment through retrofitting. • Provision of concessionary finance for development of new water efficient infrastructure. • Audit of industry wide water usage. • Explore the feasibility of desalination plants in tourism and manufacturing facilities to minimise the use of freshwater resources. ***Medium Term (3 to 5 years)*** • Wastewater recycling to become widespread in tourism and manufacturing industries by 2019.
(ii) Strengthen conserving biodiversity for sustainable tourism and manufacturing practices.	• Create awareness and educate tourism and manufacturing stakeholders on the effects of their activities on biodiversity. • Promote tourism and manufacturing business activities that foster protection of biodiversity. • Monitor compliance with sustainable tourism practices • Promote ecotourism and provide subsidies to ecocompliant resorts. • Develop partnerships with international environmental agencies to help in manifesting stringent sustainable environmental solutions.
(iii) Promoting energy efficiency in tourism and manufacturing industries.	***Short Term (up to 2 years)*** • Incentivise the adoption of energy efficient technologies, plant and equipment. • Industry energy audits to become mandatory for tourism and manufacturing industries. • Institute energy efficient practices in tourism and manufacturing facilities. • Monitor compliance of policies and procedures contained in the Environmental Management Act. • Institute green awards and certification for greening initiatives in tourism and manufacturing industries.

	Medium Term (3 to 5 years) • Develop local capacity to provide back up support for new energy efficient technologies, plant and equipment. • Use of renewable energy powered transportation to become widespread in the tourism industry by 2019. ***Long Term (over 5 years)*** • Tourism and manufacturing industries to work towards utilising 100% renewable energy by 2030.
(iv) Enhancing waste management in tourism and manufacturing industries.	***Short Term (up to 2 years)*** • Tourism and manufacturing facilities to strengthen efforts in composting of biodegradable refuse. • Coastal tourist resorts to make use of seaweeds cleaned up from their beaches to generate biofertilisers. • Strengthen monitoring of waste disposal by tourism and manufacturing industries. • Separation of waste materials according to material type to better facilitate waste management at landfills. • Develop partnerships amongst industry players to enhance greater corporate social responsibility in managing waste. ***Long Term (over 5 years)*** • Set up wastewater purification and distillation systems for tourism and manufacturing industries by 2025. • Widespread use of carbon dioxide recovery techniques in tourism & manufacturing industries. • Maximise solid and liquid waste recycling in tourism and manufacturing industries.

CHAPTER 6: IMPLEMENTATION AND MONITORING ARRANGEMENTS

This Green Growth Framework for Fiji is a 'living document'. Implementation is anticipated to commence following consideration by a National Summit in May/June 2014. Nonetheless, it needs to be acknowledged that many challenges are already known and actions are in place in various plans, strategies and policies to provide a response. The Framework will support and complement these initiatives and thereby contribute to accelerating implementation.

This Framework is the first attempt by Fiji to develop a national response to the outcome of the international Summit on Sustainable Development convened in Rio in June 2012 that calls for green growth to be a tool to support development that is sustainable. It follows that any implementation, reporting and monitoring must not only be clear but also flexible so that improvements to the Framework can be made in a seamless and transparent manner.

Essential First Steps

The Framework is acknowledged as a tool to support doing development that is sustainable and as such complements 'The Roadmap', the current national sustainable development plan which itself comes to an end in 2014 and must be subject to review. It is therefore clear that this review process and the subsequent development of a successor national sustainable development plan will take place as implementation of the Framework commences. It is essential that this opportunity is taken to ensure the future national sustainable development efforts are supported and complemented by green growth.

The Framework is intended to be people-centred and people-driven. Furthermore, taking into consideration the guiding principles of the Framework, an essential first step in implementation of the Framework is advocacy supported by a communication strategy which needs to be ongoing. To facilitate this, the Framework will be translated into vernacular languages and distributed as widely as possible with the intention of reaching out to all Fijians at the household level.

Proposed High Level Multi-Stakeholder Panel on Sustainable Development

As with the development of this Framework, political will and leadership are essential elements for its success. It necessarily follows that the oversight and reporting process should be the responsibility of a High Level Panel chaired by the Prime Minister (proposed name, High Level Multi-Stakeholder Panel on Sustainable Development),

A Terms of Reference for the Panel will be necessary. However, membership of the Panel must ensure comprehensive representation from across the stakeholder groups but at the same time remain manageable in size. Observer status may be appropriate for some stakeholder groups such as key external donor partners. It can be assumed that the Panel will meet as necessary but least twice per year to provide oversight and recommendations. One of these meetings will be convened prior to the commencement of the development of the national budget at which its report and recommendations will be taken into consideration.

Monitoring

Notwithstanding this integrated, inclusive and innovative approach to the Framework, necessarily a single entity has to be given overall responsibility for monitoring which in turn will provide advisory reports to the High level Panel.

The logical entity to carry out this role is Strategic Planning and National Development assisted as necessary by all other stakeholders and existing processes. It is anticipated that whilst this role will grow over time, in the first instance it will not impose an undue burden on current manpower and resources. Many existing communication links exist between central government and the people through the district, provincial, and tikina networks that can be utilised as part of monitoring to ensure people are indeed the beneficiaries and visible.

Throughout the development of the Framework both at the technical and provincial levels, emphasis has been placed on the urgent need to address the lack of data and the importance of having in place effective and ongoing data gathering processes that will in turn contribute to more effective decision-making at all levels.

This urgent need presents itself as a major challenge that has to be addressed if the processes to be established by the monitoring agency are to be useful, effective and successful. It is simply not possible to manage what is not measured.

Time-Bound Targets

This Framework is a tool to support the current Roadmap and its successor. The Roadmap is itself underpinned by national policies and strategies which are largely developed at sector level. These policies and strategies themselves have/should have time bound targets. It is not the intention of this Framework to duplicate these.

Nonetheless, for reporting and monitoring purposes time-bound targets are required for the Framework. The structure of the thematic areas of the Framework which are cross-cutting takes a 'whole of development' approach rather than sectoral. This permits the targets to be achieved by integrated and synergistic efforts, the outcome of which is the 'whole is greater than the sum of the parts'. In effect more is done or achieved with less or shared effort which is a guiding principle of the Framework.

During the consultations associated with the development of the Framework both at the thematic working group level and at the provincial level calls were made to shorten the timelines. After due consideration this was deemed to reflect the support for this new Green Growth Framework initiative rather than the expectation of being able to deliver against short timelines.

Too much expectation set against timelines which are unrealistically short will inevitably lead to disappointment and frustration, and ultimately failure of the Framework. Likewise vague expectation set against unclear often distant timelines lead to failure. The latter scenario can be assigned to "sustainable development" itself which is often criticised as being vague with no visible timelines.

Therefore in order to fulfill its intent as a tool to support development that is sustainable, this Framework has established targets with the following timelines: Short (up to 2 years), Medium (3-5 years), and Long (beyond 5 years).

This continuum of timelines coupled with the 'living document' nature of the Framework will permit achievements to be identified and emerging concerns including new 'hot spots' to be addressed without surprises.

Furthermore, necessary resource allocations will permit the national budget process to be utilised especially for the targets identified with short timelines, and donor partnerships for targets with medium to long term timelines.