

## CLIMATE CHANGE PROFILE



## REPUBLIC OF NAURU

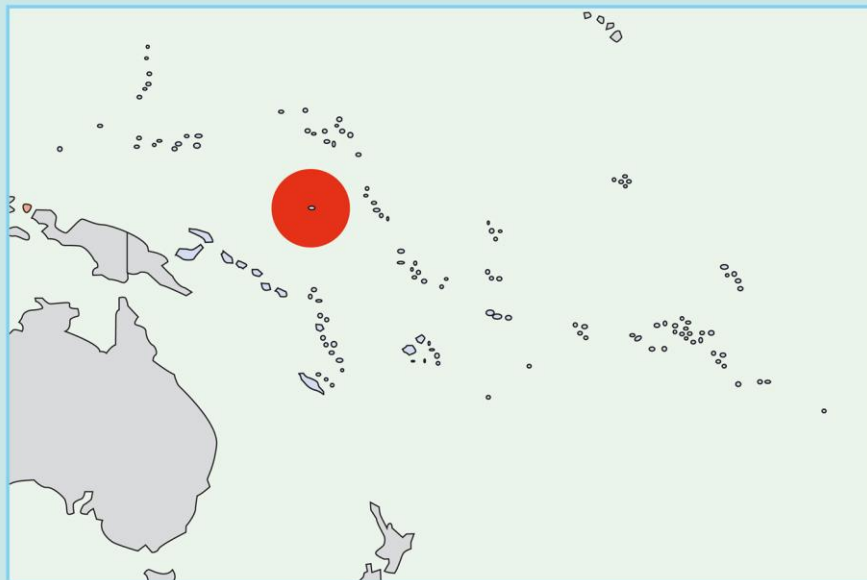
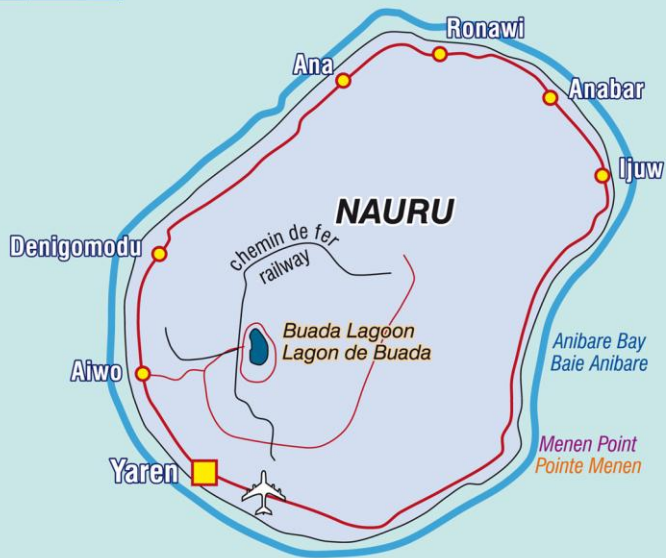
## GLOBAL CLIMATE CHANGE ALLIANCE: PACIFIC SMALL ISLAND STATES PROJECT





# Nauru

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## Abbreviations

|            |                                                                                                                                                                                                                                                         |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ACP        | Africa Caribbean Pacific Group of States                                                                                                                                                                                                                |
| ADB        | Asian Development Bank                                                                                                                                                                                                                                  |
| AMU        | Aid Management Unit                                                                                                                                                                                                                                     |
| AOP        | annual operation plans                                                                                                                                                                                                                                  |
| ARM        | Atmospheric Radiation Measurement program                                                                                                                                                                                                               |
| CCCPIR     | Coping with Climate Change in the Pacific Island Region – project implemented in partnership with Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) on behalf of the German Federal Ministry for Economic Cooperation and Development (BMZ) |
| CIE        | Ministry of Commerce, Industry and Environment                                                                                                                                                                                                          |
| DOE        | Department of Energy (United States)                                                                                                                                                                                                                    |
| EDF        | European Development Fund                                                                                                                                                                                                                               |
| ENSO       | El Niño Southern Oscillation                                                                                                                                                                                                                            |
| FNC        | first national communication under the UNFCCC                                                                                                                                                                                                           |
| GCCA: PSIS | Global Climate Change Alliance: Pacific Small Island States Project                                                                                                                                                                                     |
| GDP        | gross domestic product                                                                                                                                                                                                                                  |
| GEF        | Global Environment Facility                                                                                                                                                                                                                             |
| HDI        | human development index                                                                                                                                                                                                                                 |
| ITF        | intergenerational trust fund                                                                                                                                                                                                                            |
| NSDS       | National Sustainable Development Strategy                                                                                                                                                                                                               |
| OTEC       | ocean thermal energy conversion                                                                                                                                                                                                                         |
| PACC       | Pacific Adaptation to Climate Change Project                                                                                                                                                                                                            |
| PACCSAP    | Pacific-Australia Climate Change Science and Adaptation Planning Project                                                                                                                                                                                |
| PEFA       | Public Expenditure and Financial Accountability                                                                                                                                                                                                         |
| PIFS       | Pacific Islands Forum Secretariat                                                                                                                                                                                                                       |
| RONADAPT   | Republic of Nauru Adaptation Framework                                                                                                                                                                                                                  |
| SME        | small and medium sized enterprises                                                                                                                                                                                                                      |
| SNC        | second national communication under the UNFCCC                                                                                                                                                                                                          |
| SOEs       | state-owned enterprises                                                                                                                                                                                                                                 |
| SPC        | Secretariat of the Pacific Community                                                                                                                                                                                                                    |
| SPREP      | Secretariat of the Pacific Regional Environment Programme                                                                                                                                                                                               |
| SPSLCM     | South Pacific Sea Level and Climate Monitoring Project                                                                                                                                                                                                  |
| UNDP       | United Nations Development Programme                                                                                                                                                                                                                    |
| UNFCCC     | United Nations Framework Convention on Climate Change                                                                                                                                                                                                   |

## OBJECTIVE OF THE CLIMATE CHANGE PROFILE

This climate change profile for Nauru has been prepared as part of the Secretariat of the Pacific Community's (SPC) Global Climate Change Alliance: Pacific Small Islands States (GCCA: PSIS) project. The goal of the GCCA: PSIS project is to support the governments of nine smaller Pacific island states, namely Cook Islands, Federated States of Micronesia, Kiribati, Marshall Islands, Nauru, Niue, Palau, Tonga and Tuvalu, in their efforts to tackle the adverse effects of climate change. The purpose of the project is to promote long-term strategies and approaches to adaptation planning and pave the way for more effective and coordinated aid delivery on climate change, including the delivery of streamlined adaptation finance, at the national and regional level.

This climate change profile is specific in nature and seeks to inform the GCCA: PSIS project as well as the larger SPC climate change support team. It commences with the country's background, including geography, economy, financial management and aid delivery. This is followed by a section focusing on the country's response to climate change, including climate change projections, institutional arrangements, ongoing adaptation activities and climate change priorities. The profile is a work in progress and will be revised and enhanced as the project develops.

## COUNTRY BACKGROUND

| Country Information <sup>1</sup> |                         |
|----------------------------------|-------------------------|
| Total land area                  | 21 km <sup>2</sup>      |
| Exclusive economic zone area     | 320,000 km <sup>2</sup> |
| Population (2008 estimate)       | 9,570                   |
| Population forecast (2015)       | 11,006                  |
| Annual population growth rate    | 2.1%                    |
| Population density               | 456 per km <sup>2</sup> |
| Human development index score    | 0.647 <sup>1</sup>      |

### Introduction

The Republic of Nauru lies at 0.5°S and 167°E. It is a raised atoll with an area of 21 km<sup>2</sup> and a maximum elevation of 71 m. The island is surrounded by a fringing coral reef between 120 and 300 m wide. The reef drops away sharply on the seaward edge to a depth of about 4000 m. The land area consists of a narrow coastal plain, known locally as Bottomside, ranging from 100–300 m wide, which encircles a limestone escarpment rising some 30 m to a central plateau, known as Topside.

Topside consists of a matrix of coral-limestone pinnacles and limestone outcrops, and covers an area of 1,600 ha (over 70% of the island). It has been the focus of phosphate mining for over 80 years. Relative elevations on Topside vary generally between 20 and 45 m above sea-level. The highest point on the island is Command Ridge (71 m). Buada

<sup>1</sup> The human development index (HDI) is a comparative measure of life expectancy, literacy, education, and standards of living for countries worldwide. It is a standard means of measuring well-being, especially child welfare. It is used to distinguish whether the country is a developed, a developing or an under-developed country, and also to measure the impact of economic policies on quality of life. The HDI score indicates that Nauru is in the medium human development category.

Lagoon, a landlocked, slightly brackish, freshwater lake, and its associated fertile depression (about 12 ha in area), is located in the low-lying southwest-central portion of the island at an elevation of about 5 m above sea-level.<sup>ii</sup>

## Government

Nauru is an independent parliamentary representative democratic republic with an 18 member unicameral parliament. Independence was gained on 31 January 1968 from the Australia, New Zealand and British administered United Nations trusteeship.

Nauru has had a volatile political history, with over 36 changes of government since independence in 1968, and 17 changes of administration between 1989 and 2003. In 1997 there were four different presidents in as many months. Following seven years of discussion and negotiation, the country held its first constitutional referendum on 27 February 2010 in a bid to change the system and structure of government. Notably, the Constitution of Nauru (Referendum Amendments) Bill 2009 sought to change to a directly elected president (instead of one chosen by parliament), clarify the roles of the president and cabinet, and provide stronger mechanisms for ensuring stability and continuity of government.

The Constitution specifies that the cabinet is composed of the president, and a deputy president and four or five other members of parliament appointed by the president. There are 13 government ministries split between the current five cabinet members (Table 1).

Table 1: Ministries of the Government

|                                                             |
|-------------------------------------------------------------|
| Ministry of Commerce, Industry and Environment              |
| Ministry of Education                                       |
| Ministry of Finance and Sustainable Development             |
| Ministry of Fisheries                                       |
| Ministry of Foreign Affairs and Trade                       |
| Ministry of Health                                          |
| Ministry of Home Affairs                                    |
| Ministry of Justice, Border Control & Correctional Services |
| Ministry of Nauru Phosphate Royalty Trust                   |
| Ministry of Police and Emergency Services                   |
| Ministry of Public Services                                 |
| Ministry of Sports                                          |
| Ministry of Telecommunications and Transport                |

## National and sector policies and strategies

Nauru's National Sustainable Development Strategy (NSDS) 2005–2025<sup>iii</sup> serves as the country's blueprint for reform, recovery and development as it reforms and rebuilds its institutions and economy. The NSDS articulates five overarching goals, which are: (i) to establish a stable and fiscally responsible government; (ii) improve infrastructure and basic services; (iii) diversify and grow the economy; (iv) rehabilitate mined lands for livelihood sustainability; and (v) improve domestic food production.

Thus sectoral policy setting is still maturing in Nauru and is underpinned by the NSDS, which is designed to provide 'a future where individual, community, business and government partnerships contribute to a sustainable quality of life for all Nauruans'. The following sector

priorities have been identified to facilitate the vision for sustainable development. In the context of economic sectors the priorities are to:

- 1) Fully rehabilitate Topside with a greater area of rehabilitated land utilised for livelihood sustainability, including environment conservation and protection.
- 2) Increase revenue generation through the efficient and effective use of the few available remaining resources (e.g. phosphate reserves and fish stocks) and establishment of a national trust fund.
- 3) Increase the level of domestic agricultural production initiatives such as kitchen gardens, fish farms, and milkfish and yabbie ponds to reduce dependence on imported food and to address food security.
- 4) Develop a small and medium enterprises (SME) sector that includes the participation of the community as the basis for the economy, supported by the development of a conducive business services environment.
- 5) Improve labour market access for Nauruans, leading to a higher flow of remittance.

In respect of social sectors the priorities are to:

- 1) Improve the educational system, focusing on the quality (to regional standards), scope (primary, secondary, vocational, and life and trade skills) and reach (new audiences such as mature age groups).
- 2) Provide effective preventative health services, reducing lifestyle-related illnesses.
- 3) Establish an efficient and effective judicial system with strong, functioning law and order.
- 4) Increase the use of traditional values, knowledge, skills and practices to strengthen cultural and national identity.
- 5) Provide better utilities and transport services in the infrastructural sectors, including increased use of renewable energy, and improved power (non-diesel generation i.e. ocean thermal energy conversion and solar), water, waste management, roads, and sea and air services.

Other cross-cutting priorities are to:

- 1) Develop the human resources in technical, organisational and financial management capacities.
- 2) Develop a stable, trustworthy, fiscally responsible government with transparent and accountable parliamentarians, cabinet and public service.
- 3) Establish a legislative and institutional framework conducive to foreign investment and the setting up of companies to generate employment and income, including foreign banking presence and clear tenure/rental laws.
- 4) Maintain good bilateral, region-wide and international relations and comply with international standards.

A 2009 review of the NSDS showed that, while much progress has been made, many constraints prevail, including the significant lack of capacity to implement reforms and meet the various international legal obligations, as well as the substantial fiscal cost of maintaining basic services to the community. Strong and sustained commitment to reform will be essential, not only to restore the basic operations of the public finance management system and the broader public sector, but also to strengthen its accountability mechanisms and to restore its overall credibility.

## Economy

Revenues have traditionally come from exports of phosphates. Few other resources exist, with most necessities being imported, mainly from Australia, Nauru's pre-independence administrator and now its primary source of development assistance. Primary reserves of phosphates were exhausted and mining ceased in 2006. In 2005 an Australian company entered into an agreement to exploit a deeper layer of secondary phosphate in the interior of the island and mining began the following year. The secondary phosphate deposits are projected to last another 30 years. The rehabilitation of mined land and the replacement of income from phosphates are serious long-term problems.

Nauru lost further revenue in 2008 with the closure of Australia's refugee processing centre, making it almost totally dependent on food imports and foreign aid. To cut costs, the government has frozen wages and reduced the size of public service departments. However, housing, hospitals, and other capital plants are deteriorating. The cost to Australia of keeping the government and economy afloat continues to rise.

| <b>Economic Information<sup>iv</sup></b>             |                  |
|------------------------------------------------------|------------------|
| Gross national income per person (2007)              | USD 2,310.00     |
| Gross domestic product (GDP) current (2007 estimate) | USD 19.2 million |
| GDP per capita (2007 estimate)                       | USD 2,181.00     |
| Number of people employed                            | 2,603            |

Nauru's economy remains in a fragile condition. The NSDS includes a number of economic reform and management goals, with the short- to medium-term priorities of stabilising, reviving and diversifying the economy. Aid-financed public expenditure is the main source of economic activity. The public sector's contribution to both GDP and formal employment stands at around 40%. The economy has contracted significantly over the last decade. Inflation averaged 3% from 2004 to 2007, but rose to 4.5% in 2008, a result of the global surges in food and fuel prices. Inflation has moderated since 2008. Private sector growth has been extremely limited, while the potential for construction, agriculture, tourism and fishing remain unfulfilled.

## Financial management

The civil service currently employs an estimated 1,217 workers, approximately 40% of the formal workforce. Since 2004, the government, with assistance from its donor partners, has been undertaking a range of reforms across the public service, including restructuring the human resource department, revising salaries and enhancing performance-monitoring measures. However, performance audits and evaluations remain weak in the public sector.<sup>v</sup>

State-owned enterprises (SOEs) continue to pose major systemic risk to a frail public finance management system and its macroeconomic situation, both in terms of current subsidy requirements as well as contingent liability risk. Phosphate mining revenues fuelled a rapid fiscal and economic expansion from the late 1960s through the late 1980s. Portions of the windfalls were invested in a series of national trust funds whose collective market value had reached AUD 1.5 billion by 1990. For a period Nauru's per capita income was amongst the highest in the world. However, investment losses, mismanagement and pervasive accountability weaknesses led to a rapid run-down in trust fund assets, which in turn precipitated a rapid fiscal and economic collapse.



While some reform progress has been made in recent times, public financial management remains a critical challenge. Strengthening the public financial management system is a core goal of the NSDS, and ongoing reforms aim to establish a stable, trustworthy, and fiscally responsible government. The government adopted a medium-term fiscal policy in 2004, which has helped improve budgetary planning and management. It has also enacted specific legislation to abolish offshore banking, resulting in its removal from the Financial Action Task Force black list. Donor transfers, fisheries revenue, phosphate royalties and dividends, and sales of fuel products are the primary non-tax revenue sources. Official development assistance transfers made up over 50% of total revenue over the 2009–2010 period, with Australia the largest contributor. Australia injected an estimated AUD 23.4 million in total development assistance in 2009–2010, much of which is channelled through Nauru government financial systems. Efforts are under way to expand revenue flows from the mining of secondary phosphate, which commenced in 2007.

The Asian Development Bank (ADB) reports that over USD 700 million worth of mining revenue may be available over the next 20 years. The ADB is providing technical assistance to re-establish a national trust fund. The government managed to achieve budget surpluses in five of the past six fiscal years up to 2008–2009. However, Nauru's solvency position remains extremely weak. As of 2008, external and domestic debt estimates stood at AUD 370 million and AUD635 million respectively, giving Nauru one of the highest debt-to-GDP ratios in the world. The government has established a debt management strategy to deal with this debt burden, initially concentrating on the external debts.<sup>vi</sup>

As part of the programming process for the 10th European Development Fund (EDF) the Government of Nauru has made a range of commitments to improve governance in certain areas of policy. Achieving these commitments requires some short-term assistance, especially in relation to the drafting of a public finance management plan, taxation exchange information agreements, energy plans and legislation. An AUD 2.9 million (€2.3 million envelope) has been earmarked for this purpose. While the financing agreement was signed in July 2010, an international service call for tender failed and the preparation of the main supply tender has not started.

#### Direct budget support

The Government of Australia provided direct support amounting to AUD 26.2 million<sup>2vii</sup> to the Government of Nauru in 2011–2012. This money was used for hiring expatriate staff in the government and for funding capital works and equipment purchases, in particular for the diesel generators at the power plant.

The Republic of China (ROC) –Taiwan provided AUD 4.68 million to the government's budget in 2007–2008 to fund general government expenditures. ROC-Taiwan also provided assistance to Nauru as in-kind donations, such as 60 residential off-grid solar lighting systems in 2008, and the donation of school office equipment in 2006. The Taiwan International Cooperation and Development Fund operates a piggery and a community garden to promote household food production.

The Japanese government provided ¥100 million (AUD 1.04 million) in 2008–2009 for diesel fuel purchases. It has also funded rainwater catchment systems for use on community buildings. Nauru has expressed an interest in participating in Japan's Cool Earth

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<sup>2</sup> This includes cash paid each year in line with the Nauru Settlement Treaty, in addition to amounts through the AusAID Country Programme, other regional programmes and support through other government agencies, including Australian Federal Police.

programme, which would see the funding of a grid-connected photo-voltaic system in the near future, but details on the status of Nauru's application are unavailable.

Nauru is also benefiting from the AUD 1.5 million (€1.2 m) Africa, Caribbean and Pacific (ACP) support programme, which, through the Pacific Power Association, provides regional expertise in the integration of renewable energy in the power utility mix. A major regional initiative in the area of renewable energy and energy efficiency project (REEEP) is being formulated for the 10<sup>th</sup> EDF Pacific REEP.

The ADB launched a technical assistance programme in December 2010 to assist the Government of Nauru establish an intergenerational trust fund (ITF). The ITF would provide a source of revenue in support of future government expenditures. This technical assistance is part of a broader public financial management reform focusing on: (i) improved public financial management; (ii) improved corporate governance and performance of SOEs; and (iii) a social safety net and support for vulnerable people. The technical assistance will also address public financial management weaknesses identified in the Public Expenditure and Financial Accountability (PEFA) assessment in late 2010. Following the PEFA assessment, Nauru volunteered to have its national planning and budgetary processes peer-reviewed under the Cairns Compact for Strengthening Development Coordination in the Pacific.<sup>viii</sup>

The PEFA assessment conducted in 2010<sup>ix</sup> outlined some of the pressing issues relating to Nauru's public finance management system:

- 1) Non-sustainable debt levels, which are currently in excess of AUD 520 million and more than 30 times the domestic revenues generated per annum.
- 2) Vulnerability to phosphate demand and price fluctuations due to limited diversification in local industries.
- 3) Reliance on SOEs in the public sector, which have been largely unaccountable.

The peer-review of the Republic of Nauru under the Cairns Compact for Strengthening Development Coordination in the Pacific recommended a number of pertinent actions to strengthen coordination, planning and budgetary processes in Nauru, including: (i) the need for Australia and the European Union to work with Nauru to accelerate the transition from current forms of support to budget support, in ways that look at public financial and public service systems as a whole; (ii) that all development partners agree to use the PEFA assessment and any public financial reform programme arising from it as the basis for the provision of funding and technical assistance; and (iii) that the Government of Nauru convene a public financial management working group with interested development partners to discuss and track a reform programme.

The Pacific Islands Forum Secretariat (PIFS) is currently conducting a study on practical application of options for improved access to, and management of, climate change resources<sup>3</sup> on Nauru. The study is focused on assessing the various options available and modalities for climate change financing, including general and sector budget support, programme and project funding, technical assistance, and contributions to and arrangements for the trust fund. In-country consultations indicate that: (i) the public financial management system in Nauru is still evolving and addressing some of the needs identified in the PEFA assessment; (ii) all sectors of government are required to complete their annual

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<sup>3</sup> This study is in response to a request by the Pacific Island Forum Leaders to provide assessments for practical application of options to improve access to, and management of, climate change resources by the first quarter of 2012.

operational plans (AOPs) and submit them to the National Development Committee for approval. Once approved, the AOPs become the basis of a national budget. However, the AOPs need to be linked to the NSDS which has a longer timeframe. The NSDS will be reviewed in the last quarter of 2012 and thus provides an opportunity for the entry of AOPs; and (iii) a financial management information system has been introduced to facilitate expenditure, monitoring and reporting but it will take at least two years to become fully operational.

National and sector budget support has the advantage of direct access to sources of funding, although all external support is disbursed through the Development Fund administered by the Aid Management Unit (AMU) in the Ministry of Finance. The PIFS case-study report (prepared by consultants) will include all these options.

#### Aid management policy

In recognition of the importance of coordination and managing development assistance, the Government of Nauru has established the AMU within the Department of Finance to oversee and coordinate all assistance received from developed countries and donors. A transparent process has been established to channel aid assistance through the Department of Finance. At the implementation level, departments are expected to monitor the progress of each project and the AMU will provide additional oversight.

#### Donor support

Official transfers from donors make up around 50% of the national budget, although some aid flows are not reflected in the budget. Nauru receives support from numerous donors and development partners, most prominently Australia, ADB, Japan, the European Union, ROC-Taiwan, New Zealand, USA, and regional and international organisations, including United Nations agencies. Ongoing programmes support a wide range of governance and public sector reforms and capacity development. Australia's ongoing development programmes are the most extensive and are guided by the Nauru–Australia Partnership for Development. Under the partnership, Australia helps Nauru to make progress in various aspects of the NSDS, with a particular focus on faster progress towards achieving the Millennium Development Goals.

## **RESPONSE TO CLIMATE CHANGE**

### **Current and future climate**

#### Current climate

Nauru lies in the dry belt of the equatorial oceanic zone, with diurnal temperatures ranging from 26°C to 35°C, and nocturnal temperatures between 22°C and 28°C. Annual rainfall is extremely variable, averaging 2,126 mm per year (data from 77 years from 1916 to 1993) with a range of 280 to 4,590 mm. Monthly rainfall data available for the period 1977 to 1993 indicate a range of 0 to 746 mm, with 62 months out of 204 months (for which data were available) having less than 100 mm of rain. Rain tends to be more frequent during the months of December to April. Droughts, which can last as long as three years, place severe stress on natural species, and lead to the death of non-coastal exotics and fruit trees (such as breadfruit).<sup>x</sup> The El Niño Southern Oscillation is the main influence on inter-annual variability.

### Expected future climate<sup>xi</sup>

Projections for all emissions scenarios show that temperatures will continue to rise in Nauru, as will sea level. Under the high emissions scenario (A2) the increase in temperature is projected to be in the range of between 0.3°C and 1.3°C by 2030 (Table 2). The increase in temperature will result in an increase in the number of hot days and warm nights. There will also be an increase in the average annual and seasonal rainfall over the entire course of the 21<sup>st</sup> century.

Projected increases in rainfall are consistent with the expected intensification of the South Pacific Convergence Zone, the Intertropical Convergence Zone and the West Pacific monsoon. However, not all model results show consistent results, giving rise to some uncertainty in rainfall projections. Less frequent droughts are projected for Nauru over this century.

Projections of sea level rise under the high emissions scenario (A2) indicate that by 2030 Nauru will have experienced sea level rise in the range of 5 to 14 cm. Ocean acidification is likely to continue throughout the current century in waters around the Nauru region.

Table 2: Climate change projections for Nauru for 2030 and 2055 under the high emissions scenario (A2).<sup>xi</sup>

| Climate Variable                                    | Expected Change                               | Projected Change by 2030 (A2) | Projected Change 2055 (A2) | Confidence Level |
|-----------------------------------------------------|-----------------------------------------------|-------------------------------|----------------------------|------------------|
| Annual surface temperature                          | Average air temperature will increase         | +0.3°C to +1.3 °C             | +1 °C to +2.2 °C           | Moderate         |
| Maximum temperature (1 in 20 year event)            | More very hot days                            | NA                            | +0.9°C to +2.1°C           | Low              |
| Minimum temperature (1 in 20 year event)            | Fewer cool nights                             | NA                            | -0.9°C to +3.3 °C          | Low              |
| Annual total rainfall                               | Annual rainfall will increase                 | +15 to +37%                   | +16 to +66%                | Low              |
| Wet season rainfall                                 | Wet season rainfall will increase             | -20 to +38%                   | -29 to +71%                | Low              |
| Dry season rainfall                                 | Dry season rainfall will increase             | -20 to +48%                   | -17 to +81%                | Low              |
| Sea surface temperature                             | Sea surface temperature will increase         | +0.1°C to 1.5°C               | +0.7°C to 2.3°C            | Moderate         |
| Annual maximum acidification (aragonite saturation) | Ocean acidification will continue to increase | +3.2 to 3.6 Ωar               | +3.0 to 3.2 Ωar            | Moderate         |
| Mean sea level                                      | Sea level will continue to rise               | +5 to +14 cm                  | +9 to +48 cm               | Moderate         |

## Institutional arrangements for climate change

Management of climate change is coordinated and facilitated through the Ministry of Commerce, Industry and Environment (CIE). The Ministry is also the national focal point for the United Nations Framework Convention on Climate Change (UNFCCC) and serves as the Global Environment Facility (GEF) operational focal point. The United Nations Development Programme (UNDP) is the main implementing agency of the GEF for Nauru. All climate change and climate change-related programmes, projects and activities implemented nationally and through bilateral, regional and international support and assistance are managed and coordinated through the CIE.

## Ongoing climate change adaptation activities

- 1) *South Pacific Sea-Level and Climate Monitoring Project* – This project commenced in 1991 with the objective of installing eleven sea-level monitoring stations across the Pacific Basin. All stations were operational by October 1994, with Nauru's station installed in June 1993. *Ongoing*, with training and capacity building provided to Nauru experts.
- 2) *Atmospheric Radiation Measurement Program (ARM) Tropical Western Pacific* – The ARM Program is an ongoing global change research programme supported by the U.S. Department of Energy (DOE). ARM scientists focus on obtaining field measurements and developing models to better understand the processes that control solar and thermal infra-red radiative transfer in the atmosphere (especially in clouds) and at the earth's surface. The Nauru facility was established in November 1998 as the second Tropical Western Pacific climate research station. The ARM Program selected Nauru because it is on the eastern edge of the Pacific warm pool.
- 3) *Pacific-Australia Climate Change Science and Adaptation Planning (PACCSAP)* project – supporting the Government of Nauru to develop improved climate change projections and adaptation planning activities. *Ongoing 2012–2013*. Nauru and 14 other Pacific countries are part of this AUD 32 million project.
- 4) *Second national communication under the UNFCCC* – USD 405,000. *Ongoing* – Nauru is currently preparing its second national communication to the UNFCCC (2009–2012). Under this project, Nauru produced vulnerability and adaptation assessment, a mitigation assessment and a national adaptation programme of action: the Republic of Nauru Adaptation Priorities (RONADAPT). RONADAPT is awaiting government endorsement.
- 5) *Pacific Adaptation to Climate Change Project* – a multi-country regional project, which in Nauru focuses on water resources management, implemented by SPREP and UNDP. *Ongoing* USD 500,000.
- 6) *Enhancing water security for Nauru through better water management and reduced contamination of ground water – integrated water resources management* – GEF-funded project. *Ongoing*. Implemented with support from SPC.
- 7) *Development of a climate change policy and the joint national action plan for climate change adaptation and disaster risk reduction* with technical assistance from SPC and SPREP. Commencing April/May 2012.
- 8) *Global Climate Change Alliance: Pacific Small Island States* – supporting the Government of Nauru to mainstream climate change into national and sector strategies (including sector budget support) and to implement specific adaptation actions in key sectors. Implemented by SPC. *Ongoing*, 2012–2014.
- 9) *Coping with Climate Change in the Pacific Island Region (CCCPIR)* – project implemented in partnership with Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). Strengthening the capacities of regional organisations and

their member states to adapt to climate change and mitigate its causes. *Ongoing, 2009–2015.*

- 10) *Climate change financing case study on Nauru* – assessing the practical application of options for improved access to, and management of, climate change resources at country level. Implemented by Pacific Islands Forum Secretariat. *Ongoing, April–August 2012.*
- 11) *University of the South Pacific-EU Global Climate Change Alliance* project – addresses the challenges of climate change impacts in the 15 Pacific ACP countries, including Nauru, through capacity building, community engagement, and applied research. The objective of this project is to develop and strengthen the Pacific ACP countries' capacity to adapt to the impacts of climate change. Overall available funding is € 8 m. *Ongoing, 2010-2014.*

### **National climate change priorities**

With regard to climate change, Nauru has outlined its climate change priorities in its first national communication (FNC) prepared under the UNFCCC in 1999. The vulnerability and adaptation statement included in the FNC highlighted the following priorities. (The second national communication to the UNFCCC is not yet available, so the FNC priorities are included here. It should be noted that the more recent RONADAPT document identified similar priorities as those listed below):

- 1) Water supplies – fluctuations in water supply due to effects of climate change and sea-level rise will mean heavy reliance on desalination plants. The effect may be wide and varied, including the need to truck / import water, increase of more health risks, etc. In Nauru, brackish water is commonly used for sanitary purposes in homes and the two hotels.
- 2) Agriculture and fisheries – these sectors can both be affected when rainfall amounts vary and seawater temperatures rise. The effects are often difficult to determine.
- 3) Fire – the risk of fire increases during drought periods, which are associated with ENSO episodes. For Nauru this risk is high, considering the limited fresh water resources available and the limited number of suitable points of access to the ocean for pumping seawater.
- 4) Health – this is mainly affected by the lack of adequate freshwater supplies. This generally leads to the higher incidence of water-borne infectious diseases such as typhoid and diarrhoea, of which a number of cases have been reported.
- 5) Environment – this can be affected during an ENSO episode through stressing groundwater resources, temperature levels in the lagoon, and unusual wave action.
- 6) National economy – droughts or floods may affect all of economy of a small country such as Nauru. Extreme events that occur as a result of ENSO episodes may affect the country's GDP.

Other priorities, consistent with those outlined in the FNC, have been outlined in the draft RONADAPT document. Thus the most urgent and immediate needs for climate change adaptation in Nauru should be in the areas of water resources, human health, agriculture, fisheries and marine resources, coastal zones, and disaster management, in that order of priority.<sup>xii</sup> RONADAPT outlines specific adaptation actions in each priority vulnerable sector.

- 1) Water resources – enhancing Nauru's water security.
- 2) Human health – capacity building in climate change adaptation.
- 3) Agriculture – mass production of drought tolerant fruit trees.

- 4) Fisheries and marine resources – baseline study and assessment of climate change impacts on coral reefs, fisheries and marine resources.
- 5) Coastal zones – integrated coastal zone management and coastal protection plan.
- 6) Establishment of disaster management system.
- 7) Early warning system – national centre for drought monitoring, meteorological and hydrological services.
- 8) Establishment of a national adaptation fund.
- 9) Mainstreaming climate change into national development policies and plans.

### **Gaps and constraints**

A major challenge for Nauru is its general lack of highly skilled personnel to take on the task of managing climate change risks over the long term. Ongoing climate change education, training and public awareness are needed urgently to help address these issues.

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