

CLIMATE CHANGE & CHILDREN IN THE PACIFIC ISLANDS

FOR MID-TERM REVIEW



CLIMATE CHANGE AND CHILDREN IN THE PACIFIC ISLANDS

Report submitted to UNICEF Pacific

**from the Nossal Institute for Global Health,
University of Melbourne**

Mia Urbano

Nic Maclellan

with

Dr. Tilman Ruff

Dr. Grant Blashki

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Contents

Executive Summary	3
Map	7
Acronyms	8
1) Introduction	10
2) Context: Climate change, climate science and complexity	12
3) Stakeholders on Climate Change	16
3.1 Government and Multilateral activities on Climate Change in the Pacific	16
3.2 Civil Society Organisations Working on Youth and Climate Issues	24
4) The Impacts of Climate Change on Children in the Pacific	
4.1 Introduction	30
4.2 Rationale	30
4.3 Impacts on Children	38
4.3.1 Impacts relating to Survival	
a. Health	38
b. Water & Sanitation	40
c. Food and Nutrition	43
d. HIV&AIDS	46
e. Mental Health	48
f. Stress on Health Care Systems	50
4.3.2 Impacts relating to Development	
a. Education	51
b. Natural disasters	55
c. Displacement and Labour Mobility	58
4.3.3 Impacts relating to Protection	
a. Child Protection	64
b. Shelter and the Surrounding Environment	66
4.3.4 Impacts relating to Participation	
a. Children and Youth Participation and Voice on Climate Change	67
b. Children responding to natural disasters	69
4.4 Voices of children and young people on Tuvalu and Kiribati	72
5) Findings and recommendations	78
Matrix of key recommendations	86
Endnotes	87
Annexes:	
Terms of reference	
List of interviewees	

Executive Summary

This report on ‘Climate Change and Children in the Pacific islands’ commissioned by UNICEF Pacific and prepared by the Nossal Institute for Global Health, focuses on three key objectives:

- How does climate change affect children in the Pacific and how will it affect them in the future?
- Which stakeholders are already actively dealing with climate change issues across the Pacific region, with a particular focus on Fiji, Kiribati and Tuvalu, and are there any that handle the impact on children in particular?
- In what way should UNICEF Pacific engage in this field?

The report is based on meetings and interviews in Fiji, Tuvalu and Kiribati with government, donor and community representatives (conducted between 14 February and 3 March 2010). It also draws on literature reviews and three workshops with children and young people in Tuvalu and Kiribati.

It flags six core issues for UNICEF to consider if it is to expand its regional activities to develop a co-ordinated and effective response to the climate emergency.

- 1) While there is an increased level of activity and programming on climate change, there is concern among many agencies about how to integrate “climate” activities into existing work programs, without simply re-badging existing development work as climate adaptation.
- 2) Most agencies do not have an explicit strategic focus on children and climate change and little if any of their program activity is currently focussed on children. This provides both a challenge and opportunity for agencies like UNICEF that prioritise rights-based programming for children and young people.
- 3) There is a need to move from anecdote to evidence, working with local communities, NGOs and governments to research, document and publicise the social, cultural and economic effects of climate change, and develop baseline studies that will assist future research.
- 4) Co-ordination and (lack of) co-operation between the increasing number of stakeholders is a central and growing problem, with the potential to exacerbate existing levels of duplication and waste amongst donors and development agencies.
- 5) Much of the innovative and creative work on children and climate change is being conducted by non-government and community-based organisations. If UNICEF Pacific is seriously contemplating expanding its work in this area, it must extend its primary focus beyond work with national government ministries to also consider direct support to and engagement with the community sector.
- 6) Finally, and most importantly, many children and young people across the Pacific are increasingly aware of the potential impacts of climate change on their future and their current limited involvement in decisions on this issue. Children’s voice and participation in adaptation initiatives should be integrated into regional and national programming on climate change.

Section 2 of the report briefly describes the challenge of climate change for small island developing states, citing the work of the Intergovernmental Panel on Climate Change (IPCC) and other scientific bodies which have recommended action on climate mitigation and adaptation. Based on the IPCC’s Fourth Assessment Report and more recent scientific studies, key problems for Pacific Island states include effects on water resources; coastal ecosystems; agriculture, fisheries and food systems; biodiversity; human settlements and infrastructure; and broader economic, social and cultural effects.

In response to these challenges, the nations of the Pacific Islands Forum have been active participants in international negotiations through the United Nations Framework Convention on Climate Change (UNFCCC). In the region, Forum Island countries frame their response through the *Pacific Islands Framework for Action on Climate Change 2006 – 2015* (PIFACC) and other regional policies on disasters, energy and development.

Pacific governments have looked to international donors, UN agencies and multilateral organisations for financial, technical and political assistance to respond to the challenge of mitigation and adaptation to global warming. However it is noticeable that program documents and policy frameworks on climate change – from National Adaptation Plans of Actions to the Pacific Plan for Strengthening Regional Cooperation and Integration and the Pacific Island Framework of Action for Climate Change – make few if any explicit references to children. The overwhelming majority of studies and policy documents from major donor countries make no reference to the effects of climate change on children.

In spite of this, there are compelling developmental and ethical reasons for action to address the impacts of climate change on children – who are the future of our Pacific region.

Children, particularly young children, are in a rapid stage of growth and development. Children have rapid metabolisms, growing organs and nervous systems and developing cognitive faculties. They are also acquiring life experience and behavioural characteristics for negotiating their world. The flipside of their evolving capacities is that they have fewer assets than adults to offset vulnerability and address risks. For children under five years and girls at the onset of their reproductive years, adverse health and cognitive impacts can have life-long repercussions. The adverse effects of climate change threaten to set back regional and national efforts to improve children's health, education and well-being.

Beyond the hazards for children, there is a more positive reason to focus attention on children as part of broader programs to adapt to climate change. Children are not passive bystanders and should never be treated simply as helpless victims. Children possess capacities which form the basis for their active participation in emergency response, preparedness and mitigation. Children are effective communicators of risk and drivers of change in their communities. Living at the intersection between home, school and community, they can draw on lessons and ideas from all those spheres.

A central feature of this report is the belief that while there are many different groups vulnerable to climate change, an ability to respond requires an understanding of their unique situations and capacities. This is especially true for children who make up a large part of Pacific populations.

Section 3 of the report gives an overview of key regional actors involved in responding to climate change in the region – multilateral, government and non-government. It provides analysis of the climate policies and current programs of:

- Key aid donors (Australia, New Zealand, Japan, the European Union);
- members of the Council of Regional Organisations of the Pacific (including SPC, SOPAC and SPREP);
- United Nations agencies;
- Red Cross societies at regional and national level;
- regional bodies like the Pacific Conference of Churches (PCC) and the Pacific Youth Council (PYC);
- overseas NGOs working with climate and/or youth programs, including Save the Children, Oxfam, WWF, Live and Learn, and the Australian Youth Climate Coalition.

Section 4 outlines the many areas where children are being affected by the adverse effects of climate change. Drawing on interviews in Fiji, Kiribati, Tuvalu and other countries, and a literature review of international and regional studies, it argues that government and community leaders should consider the impact of climate change on children when they develop a response to the climate emergency.

The report highlights ways that climate change may set back the development objectives outlined in international agreements like the Millennium Development Goals. Looking at the impacts on children, it draws on the Convention on the Rights of the Child (CRC), which has been signed and ratified by all independent Pacific Island countries, based on four clusters of rights for children: Survival; Protection; Development and Participation. This report takes each of these areas, and sets out detailed examples where climate change is having, or will have, an impact on Pacific children:

Survival

- Health (Vector-borne diseases like malaria and dengue fever; heat stress; acute respiratory infections)
- Water and sanitation (Safe drinking water and water borne diseases; water storage and security, sanitation)
- Food and nutrition (threats to food security; changes to nutrition)
- Factors that may impact the HIV pandemic (Climate threats to community safety nets; increases to the out-of-school population)
- Mental health
- Stress on health care systems

Development

- Education (School attendance; climate-proofing schools; climate change and disaster awareness through schools)
- Natural disasters
- Displacement and labour mobility

Protection

- Child protection (consequences of natural disasters; internal mobility and protection; citizenship and registration)
- Climate change, children and Pacific disasters
- Shelter and the surrounding environment (Shelter reinforcement; floods and drownings).

Participation

- Children and youth participation
- Voices of children and young people on Climate Change
- Children responding to natural disasters

This section of the report also presents two case studies. The first looks at the adverse impacts of natural disasters in Niue and Fiji on children's education. The second analyses the impact on children and young people in Kiribati where the government is promoting education for migration and temporary labour mobility as a response to long-term climate displacement.

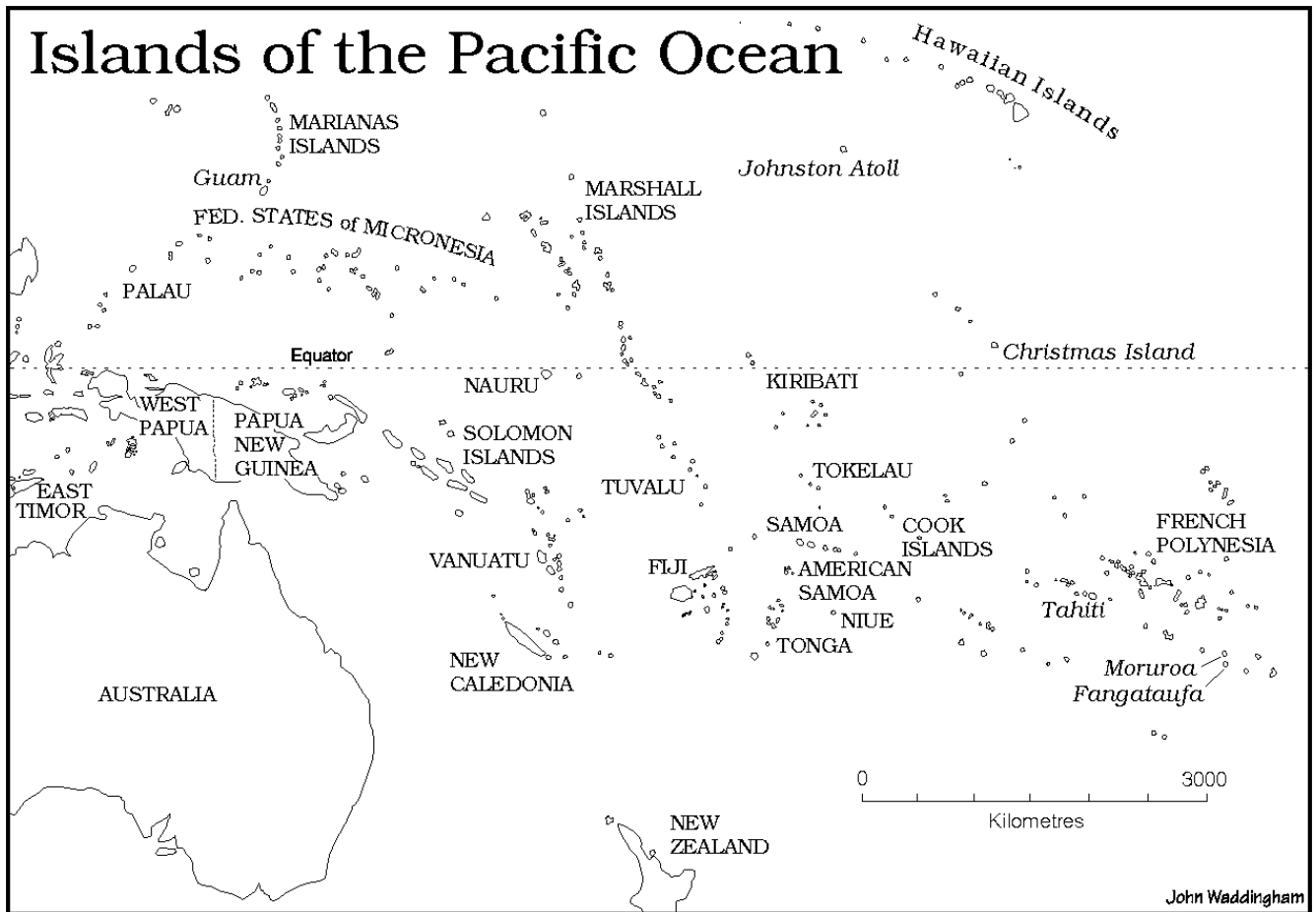
A particular focus of the research for this report was talking with young people themselves. During the field visits, the researchers met with representatives of the Pacific Youth Council, national youth

councils and groups of young environment activists and university students. The report includes a summary of the perspectives, paintings and photographs from three workshops conducted with children and young people in Tuvalu and Kiribati: a church youth group in Funafuti; 22 children aged 5-12 from the Tuvalu Red Cross Juniors group; and also members of the Kiribati Youth Panel, including children who had travelled to Copenhagen in December 2009 for the UNICEF Children’s Climate Forum.

The final section of the report makes recommendations on short, medium and long term activities that UNICEF Pacific might undertake. A summary of key recommendations is set out in the matrix, below:

Themes	Short Term (6 months)	Medium Term (2 years)	Long Term (5 years, for UNICEF cycle post-2013)
Personnel	Allocate staff time and resources to circulate this report, collate feedback and formulate UNICEF Pacific’s response to the recommendations in this report for the August 2010 Mid Term Review.	Recruit a full time staff member as a Climate change focal point in Suva (with a mandate to drive the issue internally, work with program chiefs, develop strategic directions from 2013, and network and liaise with stakeholders and children).	All key UNICEF program areas (PAPE, Child Protection, Education, Health, WatSan, HIV and Communications) at regional and country level should address and integrate responses to climate change in their work.
Integration	Participate in the Development Partners on Climate Change (DPCC) meetings in Suva, the SPREP Pacific climate change roundtable, and UNDAF meetings on climate and environment.	Work with UNESCO and UNEP to develop strategy and DRR protocols and curriculum on CC and DRR to map out the program. Increase work on food and water security (e.g. through participation in the SPC/FAO food security initiative).	Develop a systematic program for regional and national agencies to substantively integrate children’s issues into NAPAs, PIFACC and the regional disaster framework. Promote this agenda through the Climate Change Cross-Cutting Group (below).
Research	Initiate discussions with UNIFEM, UNESCO and UNDP Pacific Centre on joint research and documentation initiatives. Where feasible, include climate change-related aspects in planned studies.	Develop a research agenda to work with national governments and local communities on impacts of climate change relating to all of the core work areas (health, child protection etc)	Strengthen government monitoring and surveillance for physical and mental health impacts of climate change that is disaggregated to take account of the diversity of children, especially gender and age experiences.
Advocacy	Produce articles and advocacy materials on Pacific children and climate change for use in the lead up to COP16 in Mexico.	Develop advocacy materials on children and climate change in appropriate languages and formats (for lobbying, advocacy and in coordination with proposed regional forum, below)	Establish a “ <i>Climate Change Cross-Cutting Group</i> ” under the United Nations Sub-Regional Development Assistance Framework (UNDAF) for the Pacific
Participation	Follow up activities with youth and children’s’ ambassadors to COP15 in Copenhagen, and plan a process to support COP 16 ambassadors (with resources allocated for pre- and post-forum work with children).	Convene a regional workshop on Children and Climate Change, preceded by a Pacific Children’s Climate Forum, in co-operation with other relevant agencies.	Flowing out of the 2011-2012 workshop, establish a regional working group on climate change and children (involving CROP agencies, relevant government ministries, NGOs and youth reps).

MAP



ACRONYMS

ACP	African Caribbean Pacific
ADB	Asian Development Bank
ANZ	Australia and New Zealand
AOSIS	Alliance of Small Island States
AusAID	Australian Agency for International Development
AYCC	Australian Youth Climate Coalition
BPoA	Barbados Program of Action
CAN	Climate Action Network
CBDAMPIC	Capacity Building to Enable Development of Adaptation Measures in Pacific Island Countries
CCEMA	Climate Change, Environment and Migration Alliance
CDM	Clean Development Mechanism
CETC	Community Education Training Centre
CRC	Convention on the Rights of the Child
CROP	Council of Regional Organisations of the Pacific
CSIRO	Commonwealth Scientific and Industrial Research Organisation (Australia)
CSO	Civil Society Organisation
CSAWP	Canadian seasonal agricultural worker program
DPCC	Development Partners for Climate Change
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
EC	European Commission
EDF	European Development Fund
EKT	Ekalesia Kelisiano Tuvalu
EU	European Union
FAO	Food and Agriculture Organisation
FAR	Fourth Assessment Report
FEMA	Federal Emergency Management Agency
FFA	Forum Fisheries Agency
FSM	Federated States of Micronesia
GCCA	Global Climate Change Alliance
GEF	Global Environment Facility
GHG	Greenhouse gas
GLOSS	Global Sea Level Observing System
ICCAI	International Climate Change Adaptation Initiative
IDP	Internally Displaced Person
IFCI	International Forest Carbon Initiative
IFI	International Financial Institution
IFRC	International Federation of Red Cross and Red Crescent Societies
IPCC	Intergovernmental Panel on Climate Change
IUCN	International Union for Conservation of Nature and Natural Resources
JICA	Japan International Co-operation Agency
KANGO	Kiribati Association of Non-government Organisations
KANI	Kiribati-Australia Nurses Initiative
KAP	Kiribati Adaptation Program
KPS	Kiribati Police Service
LDC	Least Developed Country
LDCF	Least Developed Countries Fund
MCDEM	Ministry of Civil Defence and Emergency Management (NZ)
MDGs	Millennium Development Goals
MTC	Maritime Training College
NAPA	National Adaptation Program for Action
NCC	National Council of Churches
NDMO	National Disaster Management Office
NGO	Non-government Organisation

NYC	National Youth Council
NZAID	New Zealand Agency for International Development
ODA	Overseas Development Assistance
OI	Oxfam International
OIYP	Oxfam International Youth Partnership
ONZ	Oxfam New Zealand
PACC	Pacific Adaptation to Climate Change
PALM	Pacific Leaders Meeting (Japan)
PAPE	Policy, Advocacy, Planning and Evaluation
PCC	Pacific Conference of Churches
PCCR	Pacific Climate Change Roundtable
PCRC	Pacific Concerns Resource Centre
PEG	Pacific Energy and Gender network
PIANGO	Pacific Islands Association of Non-Government Organisations
PIC	Pacific island country
PICTs	Pacific island countries and territories
PIFACC	Pacific Islands Framework for Action on Climate Change 2006 – 2015
PIFS	Pacific Islands Forum Secretariat
PI-GCOS	Pacific Islands Global Climate Observing system
PIGGAREP	Pacific Islands Greenhouse Gas Abatement through Renewable Energy
PI-GOOS	Pacific Islands Global Ocean Observing system
PIREP	Pacific Islands Renewable Energy Project
Ppm	Parts per million
PRNGO	Pacific Regional Non-government Organisation
PYC	Pacific Youth Council
REDD	Reducing Emissions from Deforestation and Degradation in Developing Countries
RIP	Regional Indicative Program
RSE	Recognised Seasonal Employer program (NZ)
SCA	Save the Children Australia
SCCF	Special Climate Change Fund
SCF	Save the Children Fiji
SGP	Small Grants Program
SIDS	Small island developing states
SITRI	Solomon Islands Training and Research Institute
SOPAC	Pacific Applied Geoscience Commission
SPC	Secretariat of the Pacific Community
SPREP	Secretariat of the Pacific Regional Environment Program
SPSLCMP	South Pacific Sea Level and Climate monitoring project
SUNGO	Samoa Umbrella for Non Government Organisations
TANGO	Tuvalu Association of Non-government Organisations
TMTI	Tuvalu Maritime Training Institute
TuCAN	Tuvalu Climate Action Network
UNDAF	United Nations Sub-Regional Development Assistance Framework
UNDP	United Nations Development Program
UNEP	United Nations Environment Program
UNFCCC	United Nations Framework Convention on Climate Change
UNHCR	United Nations High Commission for Refugees
UNICEF	United Nations Children's Fund
UNIFEM	United Nations Fund for Women
UNU-EHS	United Nations University Institute for Environment and Human Security
USP	University of the South Pacific
VBDPRP	Vector Borne Disease Reduction Program
VCA	Vulnerability and capacity assessments
WCC	World Council of Churches
WHO	World Health Organisation
WTO	World Trade Organization
WWF	Worldwide Fund for Nature

1) Introduction

This report was commissioned by the Policy, Advocacy, Planning and Evaluation (PAPE) Program of UNICEF Pacific, based in Suva Fiji, to undertake a study on ‘Climate Change and Children in the Pacific’.

Based on the Terms of Reference (see annex), the study focuses on three key objectives:

- How does climate change affect children in the Pacific and how will it affect them in the future?
- Which stakeholders are already actively dealing with climate change issues across the Pacific region, with a particular focus on Fiji, Kiribati and Tuvalu, and are there any that handle the impact on children in particular?
- In what way should UNICEF Pacific engage in this field?

The Nossal Institute for Global Health, at the University of Melbourne in Victoria, Australia, proposed a four member team to prepare the report. The primary researchers were Ms. Mia Urbano (Senior Program Officer at the Nossal Institute) and Mr. Nic Maclellan (journalist and researcher on environment and development issues), supported by Associate Professor Tilman Ruff, and Associate Professor Grant Blashki, Senior Research Fellow at the Nossal Institute.

Two members of the research team, Mia Urbano and Nic Maclellan, travelled to Fiji, Kiribati and Tuvalu between 14 February and 3 March 2010. As well as consultations with representatives of key donor countries (Australia, New Zealand, European Union, Japan), Suva-based UN agencies and Pacific intergovernmental organisations (SOPAC, SPREP, USP), the researchers met with representatives of relevant government ministries in Fiji, Tuvalu and Kiribati. They also met with non-government, church and civil society organisations, who are working in the environment sector or with children’s and youth programs.

A particular focus of the research was talking with young people themselves. During the field visits, the researchers met with representatives of the Pacific Youth Council, national youth councils and groups of young environment activists and university students. In Tuvalu and Kiribati, we conducted exercises with children and young people from a church youth group in Funafuti; 22 children aged 5-12 from the Tuvalu Red Cross Juniors group; and also members of the Kiribati Youth Panel, including children who had travelled to Copenhagen in December 2009 for the UNICEF Children’s Climate Forum.

Whilst recognition of climate change has moved beyond the science community, examination of the human and social dimensions of global warming is more recent. The differential impacts for children, as well as other demographic groups, are less developed.

UNICEF Pacific has a core mandate – making the Pacific a world fit for children – and the goal of supporting the governments of Pacific Island countries in acknowledging children’s rights and incorporating them into national development strategies. But it is noticeable that program documents and policy frameworks on climate change in the Pacific – from National Adaptation Plans of Actions (NAPAs) to the Pacific Plan and Pacific Island Framework of Action for Climate Change (PIFACC) – make few if any explicit references to children. The overwhelming majority of studies and policy documents from major donor countries make no reference to the effects of climate change on children.

Where there are glancing references, children are identified alongside women, the poor and people with disabilities as “the groups most vulnerable to climate change”, with limited elaboration on the predisposing factors or impacts. Where human impacts of climate change are considered, data is seldom disaggregated by age, let alone by other important characteristics such as gender, ethnicity or location.

A central feature of this report is the belief that while there are many different groups vulnerable to climate change, an ability to respond requires an understanding of their unique situations and capacities, and this is especially true for children who make up a large part of Pacific populations. Children often amplify what adults also experience, and so addressing children’s health, development, environmental and citizenship priorities in relation to the effects of climate change, will improve community resilience in general.

Section 3 firstly outlines a list of key agencies and organisations working on climate issues in the region – multilateral, government and non-government. After this overview of key stakeholders, section 4 outlines the many areas where children are being affected by the adverse effects of climate change. Section 5 makes recommendations on short, medium and long term activities that UNICEF Pacific might undertake, flagging six core issues for UNICEF to consider if it is to expand its regional activities to develop a co-ordinated and effective response to the climate emergency.

There are a number of constraints that have limited the scope of this report:

- With a limited budget and travel time, the two researchers were only able to make brief visits to Fiji, Tuvalu and Kiribati. There was no opportunity to visit Solomon Islands and Vanuatu (UNICEF Pacific’s two other priority countries), even though some climate and development issues are different in Melanesia compared to the low-lying atoll nations.
- Because of financial and time constraints, there was no opportunity to visit rural areas or outer islands, which has skewed the perspectives to those of officials and urban dwellers in the three capitals.
- Because of these constraints, the researchers were also unable to travel to meet face to face with key regional agencies involved in climate programs (such as SPREP in Samoa), or will the full spectrum of UN agencies in the region. The researchers have relied on email and phone contacts to supplement the visits to Tuvalu and Kiribati.
- The two researchers do not speak the i-Kiribati or Tuvaluan languages, so some interviews and meetings with young people were conducted through translators.
- Key UNICEF program staff were not in-country during the two weeks of field work, limiting some detailed discussions on how their programs would be affected.
- Some activities were constrained by logistic difficulties in-country (including a day spent responding to the Pacific tsunami warning after the 27 February Chile earthquake – an event that helps focus the mind on the vulnerability of small island states to extreme events).

In spite of these constraints, the report provides a unique initial study on children and climate change in the Pacific islands. This report is submitted to UNICEF Pacific for consideration and circulation to relevant partners and agencies.

The researchers would like to thank Ms Mereia Carling in Suva, Ms Aren Ueara-Teannaki in Tarawa and other UNICEF Pacific staff for their assistance in compiling this report.

2) Context: climate change, climate science and complexity

“Climate change affects us all, but it does not affect us all equally. Those who are least able to cope are being hardest hit. Those who have done the least to cause the problem bear the gravest consequences.”

UN Secretary General Ban Ki-moon, Bali, December 2007.¹

“There’s a gap between knowing something is wrong with the climate and knowing that people in the Pacific are already being affected. That gap is a barrier to action.”

Reverend Tafue Lusama, Tuvalu, February 2010.²

For many interviewees, the term “climate change” raised mixed emotions.

On the one hand, Pacific island countries have been organising to respond to the adverse effects of global warming since the late 1980s, as governments and community organisations prepared for the 1992 Rio summit on Environment and Development and the 1994 Barbados Summit on Sustainability for Small Island Developing States.

The research for this study was conducted in the aftermath of the failure of the December 2009 climate negotiations in Copenhagen, and hard-pressed government and community leaders were often frank in their response to questions from yet more researchers about what the international donor community should be doing in response to the climate emergency. Given that vulnerable island nations have been calling for many years for much stronger international action on mitigation and adaptation, a number stressed the need to avoid “climate change” being the flavour of the month for developing assistance programming.

On the other hand, many interviewees stressed that climate change is not an isolated or confinable phenomenon. It touches on all of the pressing development and human security issues – population, health, education, disaster response – and is likely to frustrate or threaten progress towards core development goals. Climate change will increase government costs over time as impacts on water and food security and changes to reef and fisheries ecosystems exacerbate existing pressures related to urbanisation, changing diet and nutrition and population increase.

Climate change is not occurring in a vacuum, and it is clear that Pacific Island countries are being greatly influenced by other social and economic transitions, including changing patterns of urbanisation and labour mobility, population growth and a “youth bulge” and the ongoing economic effects of the Global Financial Crisis. One climate researcher involved in “climate proofing” villages in Fiji stated: “I see climate change work as normal development activity, but you’re factoring long-term projections into your decision making.”³

Climate as a cross cutting issue?

Looking at climate change as a ‘cross-cutting’ development issue allows government and community organisations to respond over a range of sectors (even though, as with other cross-cutting issues like gender, there are debates about whether to mainstream the issue in existing programs, or develop new focal points for action).

But the climate emergency is different from a number of other development challenges. IPCC projections for small island states mean that global warming will affect both the magnitude and frequency of extreme events, change average climatic conditions and climate variability, affecting underlying risk factors, and generates new threats that the islands region may have no experience in dealing with.

In contrast to existing disasters that affect the region, climate change has been described as a “slow-burning emergency” and many of the adverse effects of global warming will develop over long periods of time. Projections of climactic changes that occur over decades are outside the scope of governments and development agencies that plan their activities in short project and program cycles, raising concern that governments will be reluctant to take the hard, costly decisions now that will benefit people in future decades.

For children, the issue of intergenerational justice is central to the climate debate.

Many people stressed the need for ongoing research, analysis and documentation, to provide evidence that changes to ecosystems and human livelihoods were being driven by climate variability, or whether there were other dominant drivers. For example, in interviews in Fiji, Kiribati and Tuvalu, it was stressed that water security was a central issue affecting children’s health, but that salinity from rising sea level is just one part of a broader problem of water supply and sanitation, which is also affected by issues of urbanisation, population increase and problems of faecal contamination from humans and animals.

It is therefore important to note the need for a level of complexity and nuance in debates about climate change that will, on occasion, be missing in this report. In the vast array of issues affecting children’s health, education, rights and well-being, the physical effects of climate change intersect with and exacerbate a range of other economic, environmental and social processes. Given the limited scope of this initial survey, readers should recognise the broad brush taken to complex physical and social processes, which need more detailed study.

Climate science

This report will cite a range of evidence that stresses the enormity of the changes already being caused by global warming. In spite of ongoing public debate over the findings of the Intergovernmental Panel on Climate Change (IPCC) and the March 2010 announcement of an independent review of IPCC processes, UN Secretary General Ban Ki-Moon has reaffirmed the overall rigour of the science that underlies the IPCC’s recommendations for action on climate mitigation and adaptation.⁴ In addition the consensus of major scientific bodies and leading scientific journals worldwide is that climate change is indeed occurring and that anthropogenic emission of greenhouse gases are highly likely to be making a contribution.

In its 2007 Fourth Assessment Report (FAR), the IPCC expressed high or very high confidence that a range of impacts from climate change will adversely affect small island developing states (SIDS).⁵ Key problems include effects on water resources; coastal ecosystems; agriculture, fisheries and food systems; biodiversity; human settlements and infrastructure; and broader economic, social and cultural effects. The March 2009 IPCC scientific update conference in Copenhagen found that the worst-case impact scenarios outlined in the Fourth Assessment Report may be overly conservative.⁶

Over time, climate variability and increased CO₂ concentrations will affect changing precipitation patterns, intensification of extreme weather events, ocean acidification, increasing air and ocean temperatures and sea-level rise. SIDS, and especially low-lying atoll nations, are particularly vulnerable in comparison to other developing countries according to the IPCC: “Small islands, whether located in the tropics or higher latitudes, have characteristics which make them especially vulnerable to the effects of climate change, sea-level rise, and extreme events....Sea-level rise is expected to exacerbate inundation, storm surge, erosion and other coastal hazards, thus threatening vital infrastructure, settlements and facilities that support the livelihood of island communities.”⁷

There is a particular threat to food and water security, as outlined in the Small Islands chapter of the FAR:

- “There is strong evidence that under most climate change scenarios, water resources in small islands are likely to be seriously compromised.”
- “Climate change is likely to heavily impact coral reefs, fisheries and other marine-based resources.”
- “It is very likely that subsistence and commercial agriculture on small islands will be adversely affected by climate change.”
- “Sea-level rise, inundation, seawater intrusion into freshwater lenses, soil salinisation, and decline in water supply are very likely to adversely impact coastal agriculture.”⁸

Climate response

In response to these challenges, the island nations of the Pacific Islands Forum have been active participants in international negotiations through the United Nations Framework Convention on Climate Change (UNFCCC), as members of the Alliance of Small Islands States (AOSIS).⁹ In the region, Forum Island countries frame their response through the *Pacific Islands Framework for Action on Climate Change 2006 – 2015* (PIFACC), adopted by Pacific Islands Forum leaders in 2005.

Pacific governments have looked to international donors, UN agencies and multilateral organisations for financial, technical and political assistance to achieve the objectives set out in PIFACC. Some of the most vulnerable island states are Least Developed Countries (LDCs), including Tuvalu and Samoa, as well as UNICEF Pacific’s three priority countries Kiribati, Vanuatu and Solomon Islands.¹⁰

These Pacific LDCs are reliant on overseas donor support to help implement the changes needed to adapt to climate change and have developed National Adaptation Programs for Action (NAPAs) to identify their priorities for adaptation funding. Samoa completed the first Pacific NAPA in 2005, followed by Kiribati (January 2007), Tuvalu (May 2007) and Vanuatu (2007) and Solomon Islands (November 2008).

The failure of the December 2009 UNFCCC negotiations in Copenhagen to develop a legally binding treaty for post-Kyoto mitigation and adaptation initiatives has complicated the immediate future for climate activities in the Pacific. Without international agreement on co-ordinated adaptation funding, Forum island countries face a confusing array of international mechanisms to support national and regional activities.

Already, significant amounts of adaptation funding pledged by donor governments are being spent on policy reviews and scientific studies, rather than adaptation activities on the ground. In response, leaders from Small Island Developing States around the world gathered in the Maldives in 2007, and issued the Malé Declaration on the Human Dimensions of Climate Change. Calling for urgent action by developed nations, they “committed to an inclusive process that puts people, their prosperity, homes, survival and rights at the centre of the climate change debate.”¹¹

For Pacific nations, climate change is a matter of human security, as it undermines rights to life, security, food, water, health, shelter and culture. In 2000, leaders of 189 nations agreed on eight Millennium Development Goals (MDGs) to ensure the halving of extreme poverty by 2015. Unless urgent steps are taken to help people adapt to climate change, and unless these actions are integrated in national strategies for poverty eradication and sustainable development, many of the goals set for 2015 will not be met in the Pacific.

3) Stakeholders on climate change

There are a range of multilateral and government agencies and non-government organisations involved in responding to the challenge of climate mitigation and adaptation in the Pacific.

This section gives a brief overview of key regional actors, firstly highlighting the work of key aid donors (Australia, New Zealand, Japan, EU); CROP agencies, and UN agencies. It then details the work of NGOs and civil society organisations, including the Red Cross / Red Crescent societies at regional and national level, environmental and development NGOs, Pacific churches and youth groups.

Key findings from this snapshot of regional climate activities will be discussed in detail in section 5 (Findings and recommendations). A major issue, as discussed below, is that very little work is being done on the impact of climate change on children. This section highlights examples where some regional stakeholders have programs or activities that focus on children and young people, but there are clear gaps where UNICEF Pacific should be responding (for further discussion, see section 5 on findings and recommendations, which outlines six core issues arising from this stakeholder survey).

3.1 Government and Multilateral Activities on Climate Change in the Pacific

3.1.1 CROP agencies

A significant amount of donor / government work on climate change in the Pacific is conducted multilaterally rather than bilaterally, and implemented through regional intergovernmental organisations that are members of the Council of Regional Organisations of the Pacific (CROP). These include the Secretariat of the Pacific Regional Environment Program (SPREP, headquartered in Apia, Samoa), Secretariat of the Pacific Community (SPC, headquartered in Noumea, New Caledonia), University of the South Pacific (USP), Pacific Applied Geoscience Commission (SOPAC) and the Pacific Islands Forum Secretariat (all headquartered in Suva, Fiji), and other regional bodies.

The main co-ordinating policy for these agencies is the *Pacific Islands Framework for Action on Climate Change 2006 – 2015* (PIFACC), adopted by Pacific Islands Forum leaders in 2005, and reaffirmed by Forum leaders in Niue in 2008. Disaster response initiatives are co-ordinated through the *Pacific Disaster Risk Reduction and Disaster Management Framework for Action 2005 – 2015*.

PIFACC outlines priorities on climate change, renewable energy, ozone depletion and global negotiations.¹² It is the regional framework which sets priorities for adaptation funding for donor agencies, and is the key document for regional intergovernmental agencies like SPREP, SPC and SOPAC (All regional projects implemented by CROP members are supposed to be in alignment with the PIFACC).

The timeline of these two co-ordinating policies is seen as meshing with global development frameworks, such as the achievement of Millennium Development Goals (MDGs) by 2015, yet there are often problems of co-ordination at national level between ministries responsible for climate policy (often environment, meteorology and foreign affairs) and those responsible for areas directly affected by climate impacts (agriculture, fisheries, health, public works departments etc.). These issues are often repeated at regional level.

One central issue for UNICEF Pacific and other agencies concerned about the impacts on children is that neither of these framework documents mentions the impacts of climate change on children. There is a real need to shift attention from the physical, environmental and economic impacts of climate change towards the social and human dimensions of the climate emergency, as advocated by AOSIS at the Malé meeting on the Human Dimension of Climate Change in November 2007.¹³

The Pacific Regional Environment Program (SPREP) in Apia is the regional focal point for the PIFACC and develops action plans to implement the range of activities under the policy. In contrast, the South Pacific Applied Geoscience Commission (SOPAC) has responsibility for aiding member countries to sustainably manage natural resources and minimise risks from natural hazards. The Secretariat of the Pacific Community (SPC), headquartered in Noumea and Suva, has begun to integrate climate change into its work program in areas of responsibility including fisheries management, agriculture and public health.¹⁴

Forum Leaders have proposed rationalisation of programs and services of these three CROP agencies, with specific SOPAC functions to be transferred to SPREP (the Pacific Islands Global Ocean Observing System, the Islands Climate Update, the Climate and Meteorological Database, and monitoring and evaluation of greenhouse gases and the Clean Development Mechanism). Remaining SOPAC functions will be transferred to SPC as a new Geoscience Division. However the timing of this process is uncertain and inter-agency negotiations continue at time of writing.

SPREP's current climate change priorities include:

- Strengthened Meteorological Services, through the Pacific Islands Global Climate Observing System (PI-GCOS) project
- Understanding Climate Change, Variability and sea level rise
- Vulnerability, Adaptation and Mitigation, through the *Capacity Building to Enable Development of Adaptation Measures in Pacific Island Countries* and *Pacific Islands Greenhouse Gas Abatement through Renewable Energy* projects.
- Technical/legal advisory services for policy development on Climate Change
- Ozone-Depleting Substances

UNICEF's program sectors relate to SPREP adaptation initiatives and the key program is the Pacific Adaptation to Climate Change (PACC) project, funded by the GEF through the Special Climate Change Fund. Drawing on community-based perspectives from a previous Canadian-funded project (2002-06), over four years PACC will address adaptation issues in the islands like water resources management, food production and security, infrastructure protection and coastal zones. PACC involves six central principles:

1. Implementing adaptation measures
2. Governance
3. Improving our understanding of CC
4. Education training and awareness
5. Contributing to global greenhouse gas reduction
6. Partnership and co-operation.¹⁵

The Global Environment Facility (GEF) also funds work on renewable energy. Between 2003 – 06, GEF funded the Pacific Islands Renewable Energy Project (PIREP), which was then expanded after a 2005 evaluation study. Since 2007, it is renamed the Pacific Islands Greenhouse Gas Abatement

through Renewable Energy (PIGGAREP) project, and the GEF has granted five years funding through UNDP and SPREP.

SOPAC supports climate change adaptation in the region through a range of disaster risk management initiatives. Significant amongst these has been the development and implementation of DRM National Action Plans (NAPs), which are national adaptations of the *Pacific Disaster Risk Reduction and Disaster Management Framework for Action 2005 – 2015*. For community work, SOPAC has a major focus on energy and renewable energy, and hosts the Pacific Energy and Gender (PEG) network, which produces posters, brochures, a regular newsletter and training manuals on women and energy.¹⁶ In April 2008 SOPAC hosted a major regional conference on renewable energy in Vanuatu, which documented best practice on the use of solar, tidal, biofuel and other renewable resources.¹⁷

SOPAC also hosts a major initiative, funded by the European Union, for Integrated Water Resource Management (IWRM), which is vital for the key climate issue of water security. In interviews, SOPAC staff noted that their water work is more gendered and child friendly than energy programs: “It’s pretty easy for people to get the idea that kids need clean water to avoid water-borne disease.”¹⁸

Given UNICEF’s focus on child health, a key regional initiative is with work of SPC with WHO to develop the capacity of national health laboratories in Forum Island countries to monitor changes in diseases that could be worsened by climate change. This also involves developing policy and responses on the social determinants of health that are affected by climatic change but are the responsibility of ministries outside the health sector (e.g. on environment, food, housing, water and sanitation).

For the CROP agencies, the issue of food and water security is a major focus of regional climate change adaptation programs. The annual meeting of Forum Economic Ministers, held in October 2008 in Port Vila Vanuatu, focused especially on food and energy security in the region. An October 2008 meeting at the Secretariat of the Pacific Community (SPC) in Noumea had a major focus on climate change and food security, and SPC is working with the UN Food and Agriculture Organisation (FAO) on a major regional food security initiative – as discussed below in section 4, there is a significant opportunity for UNICEF Pacific to work with this initiative and raises issues of childhood nutrition.

3.1.2 Australia

As a key regional donor and member of the Pacific Islands Forum, the Australian Government supports a range of activities on climate change in the region.¹⁹

Australia major funding on climate change includes a range of international projects monitoring sea level rise and climate change in the Pacific, including the:

- Pacific Islands Global Ocean Observing system (PI-GOOS)
- Pacific Islands Global Climate Observing system (PI-GCOS)
- Global Sea Level Observing System (GLOSS)

The most important initiative is the regional South Pacific Sea Level and Climate Monitoring project (SPSLCMP). The project, which began in 1991, has SEAFRAME ocean monitoring gauges at 12 sites around the region used to generate an accurate record of variance in long-term sea level rise for the South Pacific.²⁰

Of more relevance for UNICEF’s work are new initiatives on climate adaptation.

In 2008, the Australian government under Prime Minister Kevin Rudd announced the International Climate Change Adaptation Initiative (ICCAI), pledging to invest \$150 million over three years from 2008-2011 to meet high priority climate adaptation needs in vulnerable countries. \$120 million of this fund is being spent in the Pacific, with the remainder allocated to the Mekong region and South East Asia. This initiative is jointly managed by the Australia's Department of Climate Change and the Australian Agency for International Development (AusAID).

There is also an International Forest Carbon Initiative (IFCI), also jointly managed by AusAID and the Department of Climate Change. According to AusAID: "Australia's International Forest Carbon Initiative (IFCI) aims to demonstrate that reducing emissions from deforestation can be part of an effective international response to climate change. Total funding allocated for the initiative to date is \$200 million over five years, focused on Indonesia and Papua New Guinea."

Australia also supports a range of disaster risk management and preparedness initiatives across the Pacific, through AusAID, Bureau of Meteorology and other departments.

The International Climate Change Adaptation Initiative (ICCAI) includes the following components:

- scientific information for policy and planning
- climate risk management component
- adaptation financing and implementation
- contributions to major multilateral adaptation funds

Much of Australia's A\$150 million pledge of climate adaptation funding for 2008-11 will be channelled through multilateral and regional intergovernmental organisations:

- \$40 million goes for a World Bank program on climate resilience, with a mixture of grants and concessional loans, piloting in Papua New Guinea, Tonga and Samoa.
- \$20 million for the Pacific Climate Change Science Program. In April 2009, the government advertised 24 positions for climate scientists and researchers to be based in Hobart and Melbourne with the Centre for Australian Weather and Climate Research, run by the Australian Bureau of Meteorology and Commonwealth Scientific and Industrial Research Organisation (CSIRO) - this research initiative focussing on climate and oceanographic modelling rather than local impacts.
- \$25 million for bilateral adaptation initiatives, such as the distribution of water tanks in Tuvalu, capacity building and technical assistance programs.
- \$12 million on the Pacific Adaptation Strategy Assistance Program, a regional program with a management team based in Apia
- \$6 million to Pacific intergovernmental agencies (SPC, SPREP, FFA)
- \$6 million over three years to the Global Environment Facility's small grants program (\$4 million for the Pacific and \$2 million for the Mekong region).
- \$2.7 million to non-government organisations (applications for NGO consortia closed in February 2010).

3.1.3 Aotearoa / New Zealand

The New Zealand Government supports a range of activities on climate change in the region. In 2009-10 NZAID allocated NZ\$6.0 million for its Pacific Regional Environment and Natural Disasters

program.²¹ NZAID provides separate assistance of approximately NZ\$21 million to CROP agencies that work in relevant areas on sustainable natural resource management, disaster risk reduction, renewable energy and climate change.

New Zealand contributes to adaptation work in the Pacific through a co-funding contribution to the Global Environment Facility Small Grants Program (GEF SGP). The GEF SGP - NZAID Pacific Environment Fund gives co-funding support to each SGP country program. Although the UNDP-managed program is largely focussed on CSOs, NZ's contribution can also be used by government agencies (national, provincial, and local) as well as non-government and community based organisations.

NZAID has supported the development and implementation of "Type II" partnership initiatives in the Pacific such as a regional partnership on water and sanitation coordinated by SOPAC (The Type II concept was established at the World Summit on Sustainable Development in Johannesburg in 2002 to link donors with regional agencies on behalf of their member countries).

NZAID has provided NZ\$1.5m towards the Kiribati Adaptation Programme (KAP), "which assists the Government of Kiribati's own priorities to strengthen coastal defences, protect its freshwater, and storm-proof the local hospital. As well as strengthening resilience to the effects of climate change, these initiatives can also deliver on other priorities such as health."²² After a critical mid-term review in 2008, which refocussed activities on two core areas: water security and improving protection of public assets through coastal protection. The KAP is currently seeking co-financing for ongoing operations beyond 2010, after the World Bank obtained US\$3 million from GEF for the next phase of operations.

The NZAID Pacific Regional Human Development Program, with an allocation of \$NZ13.5 million in 2009-10, incorporates two specific regional programs on health ("Ending poverty begins with health) and education ("Achieving education for all"). According to NZAID, "with an enhanced focus on gender and youth, the Programme recognises the clear linkages between health, education, gender and youth."²³

Like Australia, New Zealand contributes bilaterally with coordinated disaster relief immediately following natural disaster events. NZAID also has multi-year funding arrangements with SOPAC; the Ministry of Civil Defence and Emergency Management (MCDEM); the NZ Meteorological Service (weather forecasting, cyclone tracking and some risk mitigation work in PICTs); and Radio NZ International.

NZAID has also supported a regional environmental education initiative. In 2006 NZAID released its Environment Policy outlining the structure and focus of the agency's Pacific Regional Environment programme, which was updated in 2008 for the period to 2015.

3.1.4 Japan

The key framework for Japanese development and climate adaptation work is derived from policy set at the regular Pacific Leaders Meetings (PALM), which co-ordinate summits for leaders from Japan and the Forum Island Countries. In May 2009, Japan hosted the fifth Pacific Leaders Meeting (PALM5) in Hokkaido, to discuss trade, fisheries and climate change. Japan pledged 50 billion yen (US\$550 million) in grants, loans and project aid over the next three years.²⁴

Climate adaptation work in the Pacific is co-ordinated through JICA offices in Fiji and Papua New Guinea.²⁵ JICA's Fiji office covers Fiji, Tonga, Vanuatu and Samoa, with programs in Nauru, Kiribati (staffed by four JOCV volunteers) and Tuvalu (with a JICA climate change project co-ordinator and climate change policy advisor based in Funafuti).

Although the PALM meeting set out areas for climate-focussed programming (disasters, meteorology, water, renewable energy) the JICA Fiji office has not yet finalised programming for 2010-13. JICA currently has five main project areas, including

- ICT work at USP
- Programs on waste minimisation and recycling
- Community disaster management (including support for the Nadi Fiji Meteorological station which serves the region)
- Fisheries programming
- Climate change

JICA staff noted that the agency prefers to work bilaterally government to government, but in the Pacific has developed regional programs because of the small size of Pacific SIDS. Regional programs require co-ordination with relevant CROP and agencies – waste programs with SPREP, fisheries with FAO and SPC, immunisation with WHO and UNICEF - but inputs go directly to national governments.

Japan also develops programs based on LDC NAPAs in Tuvalu and Samoa as parallel co-financing projects with the GEF (e.g. two co-financing projects are currently underway in Tuvalu, including short-term counter measures for coastal erosion).

3.1.5 European Union

The European Commission Delegation to the Pacific allocates bilateral and regional funding through the European Development Fund (EDF). Existing EU programs on health, education and water and sanitation have potential for expansion in cooperation with UNICEF, but an EC Delegation representative in Suva noted that current European funding for climate activities has no focus on children.²⁶

As its major global mechanism for bilateral and regional climate funding, the EU has launched the Global Climate Change Alliance (GCCA) with funds amounting to € 100 Million to be dispersed at both a national and regional level for 2008-2010. The GCCA has a special focus on vulnerable least developing countries (LDCs) and small island developing states (SIDS), particularly atoll island states in the Pacific that are directly affected by climate change. The GCCA also acts as a platform for policy dialogue on climate change between the EU and LDCs and SIDS.

In 2008, Vanuatu was chosen as one of four pilot countries for GCCA initiatives (the others are Maldives, Cambodia and Tanzania). With the project managed by Director of the Department of Meteorology Mr. Jotham Napat, Vanuatu signed an agreement in October 2009 to receive 480 million vatu (€ 3.2 Million) to facilitate implementation of its National Adaptation Program of Action (NAPA). Based on the outcomes of the Vanuatu program, other Pacific islands are likely to benefit from the GCCA in the future.

At regional level, this year the University of the South Pacific (USP) will get 10 million Euros over five years from the GCCA. USP will be the lead agency in co-operation with SPREP and other CROP

agencies for a program on capacity development, community engagement on adaptation, and applied scientific research on climate change.

In addition, the EU has provided funding to enable Pacific countries better prepare themselves for natural disasters – not all funding allocated to the Pacific under the 9th EDF was utilised, and some has been rolled over into the current funding period of EDF 10.

Under the 10th EDF for the Pacific, the EU delegation has developed a so-called "blue-green" strategy for national and regional development cooperation.²⁷ Under the Regional Indicative Program for the Pacific 2008 – 2013 (RIP), the European Commission (EC) has committed 95 million Euros to develop new regional projects focusing on strengthening Regional Economic Integration and trade (45 million) and Sustainable Management of Natural Resources and the Environment (40 million for work on renewable energy, environmental management and adaptation responses to rising sea levels), with a further 10 million for activities by non-state actors.

At time of writing, the Forum Secretariat is lobbying for the further 10 million Euros from the Pacific regional allocation to be focused on climate change programs. PIFS Secretary General Tuiloma Neroni Slade states: "I hope to see at least 10 million Euros committed to the regional efforts towards tackling the priority issues of Climate and its impact on the livelihoods of the people especially those living in the Smaller Island States."²⁸

Most European work on climate change in the Pacific is managed multilaterally through the EDF and EC Delegation, but some EU member states run their own programs in the region.

France has major initiatives on renewable energy (with sale of wind turbines to five Pacific nations) and coral reefs through the CRISP program. Germany's *SPC/GTZ Pacific-German Regional Programme on Adaptation to Climate Change in the Pacific Island Region* is currently operating in three countries – Fiji, Tonga and Vanuatu (The SPC/GTZ regional program focuses on sustainable management of land-based natural resources with mainstreaming of climate change issues in regional and national policies and plans. Avoiding deforestation is a fundamental element of the project's strategy in Fiji).

In Copenhagen, the German Federal Ministry for Economic Cooperation and Development announced it would commit another 10 million Euros to climate change programs in Pacific countries, in addition to the current 4.2 million Euro SPC/GTZ program.

3.1.6 International Finance Institutions

The Bali Action Plan, adopted at the December 2007 UNFCCC conference of parties in Indonesia, recognises the urgent and immediate needs of poorer counties that are especially vulnerable to climate change, including Small Island Developing States (SIDS) and Least Developed Countries (LDCs).

A central role is allocated for the Clean Development Mechanism (CDM) through which Australia, New Zealand and major industrialised nations in the northern hemisphere reduce emissions by investing in clean energy technology in developing countries.

Following the 2007 Bali conference, the World Bank has created special climate investment funds (including a Clean Technology Fund, a Strategic Climate Fund and a Forest Investment Fund). The

Bank projects that G8 countries will channel between US\$7-12 billion through these Bank funds, in co-operation with regional multilateral banks like the Asian Development Bank (ADB).

As part of Australia's contribution to the World Bank administered Climate Investment Funds, the ICCAI will contribute A\$40 million to the Pilot Program for Climate Resilience (The Pacific region has been identified as a target of the program).²⁹ Over three years from 2008-09, Australia provided A\$100 million to the Bank's Clean Technology Fund and A\$50 million for adaptation and forestry initiatives under the Strategic Climate Fund.

The Australian Adaptation Initiative is also used for contributions to major multilateral adaptation funds, including A\$7million over two years for the Clean Energy Financing Partnership Facility, managed by the ADB, and A\$3 million over two years to the global Energy Sector Management Assistance Program managed by the World Bank.

3.1.7 UN agencies

A July 2009 scoping study of UN work on climate change in the Pacific by Dr Willy Morrell notes that: "Work being carried out by the UN System in the Pacific (and by other non-resident UN organisations at the global level) is perceived by Pacific stakeholders as a vitally important component of the Pacific's overall efforts to combat and adapt to climate change. The United Nations is providing substantive support in numerous fields including: environmental management, biodiversity conservation governance, human rights, gender equity, health, education, food security, water security, disaster risk management, poverty reduction and sustainable energy. Many of the UN's initiatives link directly to building national and regional capacity, and ultimately resilience to climate change."³⁰

This is reaffirmed in a recent PIFACC evaluation by SPREP, which states "the UN system and the GEF remain key funding and implementing partners for much of the regional climate change work."³¹

In a message to the 2008 Pacific Islands Forum in Niue, UN Secretary General Ban Ki-moon announced that the United Nations planned to establish an Inter-Agency Climate Change Centre to help coordinate support to Pacific Island countries to combat the impact of global warming in their region.³² However, the 2009 scoping study by Dr. Morrell noted there is limited support in the region for such a Climate Centre and highlighted a number of ways that UN agencies in the Pacific, including UNICEF, might act instead to improve co-ordination and programming without the establishment of a co-ordinating centre in Apia.

The scoping study notes that United Nations agencies in the Pacific can improve their work with PICs on climate change in a number of ways:

- support PICs in their endeavours to leverage co-financing for GEF and other funding sources.
- collaborate more strongly with CROP agencies and particularly SPREP
- continue to move away from *ad hoc*, short-term, project-based development assistance to a more programmatic and collaborative approach that delivers both short and long-term development outcomes at the community level
- develop longer-term funding cycles that will help facilitate improved national and community planning activities, and the development and retention of human resource capacity within the region.
- remove project application, management and reporting procedures that are cumbersome and overly demanding on the existing capacities within the region.

- implement concrete adaptation measures at the community level that focus on initiatives that deliver both short-term development outcomes and longer term resilience to climate change (e.g. food and water security, disaster risk management).

In the course of our research, UN agency staff from UNDP Pacific, UNESCO and UNIFEM highlighted the need for greater inter-agency collaboration on the ground, and the potential for joint research and action. For example, UNIFEM staff in Suva and Tarawa stated their interest in undertaking joint collaborative research with UNICEF to examine the impact on climate change on women and children in the region, potentially in Kiribati where the two agencies are co-located in the UN Joint Presence Office. This initiative could be supported by using graduates or undergraduates from the University of the South Pacific (USP) for fieldwork and as interns in the UN offices, and incorporate lesson learning and knowledge building alongside the formal research.

3.2 Civil Society Organisations Working on Youth and Climate Issues

UNICEF's work on climate change could operate both at national and regional levels, where there are a number of Pacific regional non-government organisations (dubbed PRNGOs³³) that work with youth, including in areas addressing the impacts of global warming.

As well as PRNGOs, a number of International NGOs are active in the region on this issue:

3.2.1 Red Cross / Red Crescent

Some of the most detailed work on climate and disaster risk reduction with relevance for children is being done by Pacific Red Cross Societies, with support from the Red Cross/Red Crescent Climate Centre in the Netherlands.

The *Red Cross/Red Crescent Climate Centre*³⁴ was established in 2002 to support the International Federation of Red Cross and Red Crescent Societies (IFRC) to reduce people's vulnerability to climate risks. The Centre has been promoting early warning and early action on climate, given the massive implications of global warming for humanitarian organisations like the Red Cross. The Climate Centre is headed by Ms. Madeleen Helmer.

The Climate Centre's Senior Program Officer for the region is Rebecca McNaught, who is based at the Australian Red Cross in Melbourne after working across the Pacific for the IFRC in Suva (Ms McNaught also serves as the Youth contact for the Red Cross Climate Centre).³⁵

In the Pacific, the Red Cross "*Pacific Climate Change and Disaster Risk Reduction program*" began in 2005 with pilot programs in the Samoa and Tuvalu Red Cross societies. This program then extended to Solomon Islands, Tonga, Cook Islands, Palau and Kiribati, with Papua New Guinea, Fiji and Vanuatu joining in 2008. Affiliates have prepared a detailed background document on climate change for their country which gives useful country information and data.³⁶ Project activities are summarised in the report of a 2007 regional climate workshop.³⁷ As well as working with local communities, Red Cross works with governments across the region (e.g. developing Disaster Risk Response curriculum with the Ministry of Education in Fiji, or promoting climate change awareness with the National Disaster Management Office in Solomon Islands).

The Climate Centre and action by affiliated Red Cross societies in the Pacific are based on four pillars:

- **Awareness:** Education and communication about climate risk management within the Red Cross / Red Crescent Movement and among the general public;
- **Action:** Integrating climate risk management into Red Cross programs through the 'Preparedness for climate change' program "in which the National Societies are supported to assess the climate risks within their countries, align with all possible partners in their country, explore which climate risks are effecting the existing programs and in the last phase: come up with a concrete action plan to integrate addressing climate risks in the operations of the National Society."
- **Advocacy:** Bringing concerns about the impacts of climate change on vulnerable people and experiences with climate risk reduction to national and international policy makers;
- **Analysis:** Analysing, documenting and sharing knowledge and experiences on climate risk management.

In the Pacific, the Red Cross network, through national societies and the IFRC, has a major focus on youth, through mobilisation of youth volunteers, disaster preparedness training and climate / environmental awareness raising. The global Red Cross alliance is developing a "young person's guide to climate change."

As detailed in the next section 4, there are significant initiatives with children and young people, such as the Tuvalu Red Cross juniors, youth theatre groups, or work by Solomon Islands Red Cross on climate awareness (with youth programs on schools awareness, poster competitions, village assessments a 2008 National Youth Forum on Climate Change.)³⁸

3.2.2 WWF

The environment organisation WWF Pacific, affiliated to WWF International, has been a leading player in regional climate advocacy work in recent years.³⁹

WWF has supported community action networking to build capacity in Tuvalu and Cook Islands for advocacy and campaigning on climate impacts. WWF has also supported the involvement of expert NGOs on government delegations to international climate negotiations. WWF has run a number of activities in the Pacific involving young people in line with WWF international priorities, including:

- *Climate Witness:* gathering stories about how climate change impacts local communities. In the Pacific, the project has gathered information from Tuvalu, Cook Islands, and Fiji and produced a 'Community Toolkit' for communities to identify and implement adaptation options.⁴⁰
- *Earth Hour:* organising for Earth Hour on 28 March, where households and businesses dim their lights for an hour to highlight energy and climate issues.

Climate activist Ben Namakin, now based at the WWF South Pacific office in Suva, is co-ordinating Pacific Youth Climate networking.

3.2.3 Pacific Churches

Many interviewees raised the importance of religious beliefs affecting attitudes to climate change in the Pacific – a vital issue given the social roles played by Christian denominations around the islands, and the outreach of the churches to isolated communities all around the region. Regional ecumenical organisations like the Pacific Conference of Churches (PCC), are mounting increased education and

action programs on issues of climate change, adaptation and displacement, although some church congregations have challenged the need for action, citing Biblical injunctions like God's promise to Noah after the Flood: "*neither will I ever again smite everything living as I have done*" (Genesis 8:21).

In 2004, the World Council of Churches (WCC) organised a major regional ecumenical meeting on climate change in the Pacific, which produced the Otin Taai Declaration.⁴¹ The Declaration outlines the role of churches, ecumenical structures, governments and communities to address climate change, and outlines a framework for activity. At the 2007 PCC General Assembly in Pago Pago, American Samoa, delegates passed a resolution stating:

"PCC, in collaboration with member churches and National Councils of Churches (NCCs), works towards establishing a church - state covenant on the Environment with all member governments of the Pacific Island Forum to ensure that all are called to be stewards to take care of God's creation and to correcting the wrongs that had been done to earth."⁴²

Following a November 2008 workshop, PCC and member churches agreed on a process to begin investigating church - state partnerships on environment issues.⁴³ This mandate is now reflected in a work program for the PCC staff in Suva to support member churches and NCCs on a range of action on climate change, which could be supported with information, expertise on technical issues and resources. The PCC secretariat in Suva now has full time officers working on climate change and outreach with women and youth.

The PCC has developed a work program to advance understanding and action by member churches and NCCs, based on the following objectives:

- To enhance the Pacific churches' prophetic voice on the need for just and sustainable policies to mitigate the affects of climate change
- To strengthen regional partnerships between Churches, NGOs and inter-governmental agencies towards influencing regional and international policies on mitigation, adaptation, resettlement and financing
- To facilitate joint actions of solidarity among member churches with the people of Kiribati, Tuvalu and the Marshall Islands
- To enhance the theological reflection and capacity of the member churches on the environment
- To provide opportunities for the prophetic voice of the church on environmental stewardship

As well as running climate awareness programs for secondary students in Fiji, the PCC has been running awareness workshops in Kiribati, Cook Islands, Tuvalu and French Polynesia, but thus far has lacked resources to implement programs on the ground.

3.2.4 Pacific Youth Council

Over the last few years, there has been a revival of the regional Pacific Youth Council (PYC), which links national youth councils which in turn represent non-governmental youth organisations (church, sporting, cultural, island community associations etc). PYC is the key partner of the SPC Human Development Program for Youth through which national and provincial youth councils have access to the regional development agenda for youth. The first PYC started as an initiative of the SPC but is now an autonomous organisation registered as an independent NGO in Fiji.

PYC Secretariat Coordinator Tarusila Bradburgh from Fiji is based at the SPC Community Education Training Centre (CETC) in Narere. The PYC Secretariat is responsible for coordination, advocacy and building partnerships with other agencies to support National Youth Councils (NYCs) in eight Forum Island countries (Fiji, Tuvalu, Nauru, Tonga, Cook Islands, Solomon Islands, Vanuatu, Niue).

These councils work closely with government youth departments to implement action on national youth priorities. In Tuvalu, the secretary of the TNYC told us: “We are a big voice for youth to push issues to government to say that climate change will affect their life, their future.” However, informally we understood there is growing debate about whether NYCs should become autonomous organisations outside of formal government structures. Presently, it is fair to say that the PYC is taking an incremental approach to the growth and support of national councils. With the small team base in several countries, activities have been ad hoc and work is focussing on peer to peer awareness raising, ahead of concerted policy advocacy in future.

Some NYCs have begun education and advocacy on climate and environment issues. PYC worked in partnership with SPC for the Pacific Youth Festival in 2009, gathering over 300 young people from 13 Pacific Island nations. Adaptation to climate change was one of the four main themes of the festival and was reflected in the festival’s final *Suva Youth Declaration*.⁴⁴

In terms of climate change, the PYC noted that some young people have had privileged access to information either through schools or youth forum attendance, but that there remains a large population of young people who do not understand or are unaware of the issue. This was felt to especially be the case for rural and outer island youth. Government Youth Departments across the Pacific were perceived to be leading youth initiatives within countries, and that there was potential in the future to increase youth involvement in programming and to give increased attention to a lower age group (late teens – 20 year olds) over time.

3.2.5 Save the Children

Save the Children Australia (SCA) runs a regional program focussing on Melanesian countries (Solomon Islands, Vanuatu, Papua New Guinea, Timor Leste) while Save the Children Fiji runs an independent program.⁴⁵

A current focus of SCA activities are the Youth Outreach Programs (YOP) which involve training for outreach on livelihoods, and capacity building programs on youth voice and promotion of child rights. SCA and SCF also has a major focus on Disaster Risk Management and emergency response, and are beginning to integrate climate change into their work on DDR.

In Solomon Islands, the SCA office is moving to integrate action into climate change into its YOP and capacity building activities. SCA is approaching climate change as a cross cutting theme within its Country Strategic Plan, and so is in the process of considering what this means for programs as diverse as education, HIV prevention etc.

SCA is collaborating with the National Disaster Management Office on the development and roll out of evacuation plans for 20 schools in Honiara. This was prompted by experiences in 2009 with a tsunami alert where children were sent home from school and so were unaccompanied and left to their own devices if an emergency struck.

SCA regards UNICEF as a key partner, with examples of work together advocacy for the Child Protection Bill, and post disaster assessments after the earthquake in Rendova in Western Province in January 2010, and regards the UNICEF “tent schools” as a crucial resource to complement SCA’s efforts for educational continuity in post disaster settings.

SCA has strong rural programs and reach with young people, a channel through which many stories are circulating of climate related food shortages, with water taro not growing in certain areas and banana plants dying. SCA observed that nutrition is regarded as challenging in some rural communities for 3 – 6 months a year, and this is on the rise. Although there was acknowledgement that this is anecdotal evidence, and needs investigation for an adequate response to be mounted (This concern is corroborated by assessments of food security in remote communities on the weather coasts of Guadalcanal and Makira islands, Solomon Islands, undertaken by the NGO Terra Circle.)⁴⁶

3.2.6 Australian Youth Climate Coalition

The Australian Youth Climate Coalition (AYCC) is a network of youth organisations and individuals engaged in climate advocacy founded in November 2006 – all AYCC staff, volunteers and steering committee members are under thirty, and the vast majority are under twenty-five.

Paralleling American initiatives for Latin America and European initiative on Africa, AYCC has a specific program targeted to support young people in the Pacific - Project Survival Pacific (PSP). The PSP team involves sixteen young volunteers, who live and work throughout Australia and the Pacific (including Australians in Vanuatu, Tonga and the Solomon Islands).

The AYCC, together with church networks like Pacific Calling Partnership, assisted Pacific youth to attend the Bali, Poznan and Copenhagen negotiations, with a delegation of eleven youth climate advocates from the Pacific travelling to Denmark (Fiji, Vanuatu, Papua New Guinea, the Cook Islands, the Solomon Islands, and the Federated States of Micronesia). AYCC will work to send Pacific youth to Mexico in December 2010 and has an ongoing focus on children’s awareness raising. SPREP is discussing how it can best mobilise the AYCC’s network of young people from the Pacific who are involved in UNFCCC meetings, and this may be an area for UNICEF to collaborate.

3.2.7 Oxfam International Youth Partnership

OIYP is the Oxfam International Youth Partnership program – “a global network of young people who share a vision of a just world and are committed to working for peaceful, equitable and sustainable social change with their communities.”⁴⁷ Every three years, Oxfam recruits 300 young people from around the world to become Action Partners – after an initial workshop in Australia, dubbed “Kaleidoscope”, the OIYP program focuses on building skills and knowledge, supporting action and facilitating networking.

Since 2000, Oxfam has recruited Action Partners from the Pacific, building a network of young people who campaign on issues like HIV, water security, gender violence, conflict and climate change. Oxfam is currently working with the Pacific Youth Council (PYC) to prepare for the November 2010 training program.

With another OIYP program running from 2010-2013, there is scope to tap into this network that run peer-to-peer programs with children and young people in Melanesia and Polynesia.

3.2.8 Live & Learn

A number of government interviewees highlighted the work of Live & Learn, and their work on adaptation initiatives and awareness raising in schools, with a particular focus on young people.

Live & Learn Environmental Education is a non-profit, non-government organisation which promotes greater understanding and action toward human and environmental sustainability through education and dialogue building. Originally established in Australia in 1992, the first country office was opened in the Solomon Islands in 1995. As locally registered NGOs, Live & Learn operates offices in Fiji and Vanuatu (1998), Papua New Guinea (2000), as well as in Asia.

Live & Learn partners with community members to promote formal and informal education. (e.g. through their River Care Program in Fiji , Vanuatu , the Solomon Islands , and Papua New Guinea over 131 schools participate in water quality monitoring activities). The organisation conducts Rapid Assessment of Perceptions (RAP) towards environment and sustainability issues in rural Melanesian communities.

4) The Impacts of Climate Change on Children in the Pacific

4.1 Introduction

There are many different groups vulnerable to climate change. However, an ability to respond requires a detailed examination of how climactic factors are currently or likely to be experienced by members of that particular group, and the spectrum of needs, risks and capacities that are revealed.

The section below presents an analysis of the implications of climate change for Pacific children. This UNICEF-commissioned study is the first of its kind to examine the effects of climate change on children in the Pacific islands region. That said, it is important here to reiterate the parameters of this study and to underline that this is a preliminary assessment or ‘snapshot’ of key impacts.

The intensive two-week literature review and 17-day field assessment in Fiji, Tuvalu and Kiribati was selective and small in scale. The literature review was twofold: considering evidence of attention to children within core climate change and environment literature, and, in turn, reference to climate change within child-focussed literature. Visits to individual countries were brief (5 days), and included Tuvalu which is not currently a UNICEF priority country. Field consultations were therefore a mix of scheduled and opportunistic meetings, and so the information gleaned from the field reflects that balance. Importantly, there was the chance in both Tuvalu and Kiribati to meet with children and young people, and so their perspectives enrich and give immediacy to the issues presented below.

This section has been divided into two parts:

- Presentation of the rationale – the value and importance of considering the impact of climate change on children, including a need to appreciate the heterogeneity of children (4.2); and
- Discussion of key impacts - comprising information on core UNICEF program areas (health, education, HIV, child protection and water and sanitation) as well as issues that were either commonly raised or of such gravity they deserve note (4.3).

Given that the Convention on the Rights of the Child (CRC) is paramount to UNICEF, the discussion of impacts below has been structured into sub-sections that align with the four clusters of rights within the CRC, namely: Survival; Protection; Development and Participation. Collectively, these four elements are vital to child thriving and wellbeing. They are equal in importance although some elements have greater priority at different stages of a child’s life cycle.

4.2 Rationale

4.2.1 Why children?

There are compelling health, development and ethical reasons for understanding the impacts of climate change on children.

Firstly, children, particularly young children, are in a rapid stage of growth and development. Children have rapid metabolisms, growing organs and nervous systems, and developing cognitive faculties. They are also acquiring life experience and behavioural characteristics for negotiating their world.

However, the flipside of their evolving capacities is that they have fewer assets than adults to offset vulnerability and address risks. For children under five years and girls at the onset of their reproductive years, adverse health and cognitive impacts can have life-long repercussions.

The environment has long been recognised as a key determinant of child survival and health. Children, especially those under five years, are sensitive to environmental factors such as temperature, precipitation, air and water quality, owing to their physical, cognitive and physiological immaturity.⁴⁸ They are physically and emotionally less equipped to deal with deprivation and stresses.⁴⁹

The world has a young population. Currently, 2.2 billion people are under the age of 18, with some 85% of the world's youth living in developing countries. Furthermore, there is an estimated 625 million children under five years of age, a life stage greatly sensitive to health and cognitive effects.⁵⁰ So on sheer numbers alone, the impact of climate change on children obliges examination and action.

There are also widely endorsed international agreements that oblige attention on children in a warming world.

i) Climate change impinges on a number of rights enunciated in the *UN Convention on the Rights of the Child* (1989) - the only UN Convention to have been ratified by every independent Pacific Island country. The CRC does not explicitly mention a right to be protected from disaster. However, climate change, whether experienced as gradual change or sudden disasters on children's lives, directly affects the following rights:

- Children's right to life, survival and development (Article 6);
- Children's right to preserve identity, including nationality (Article 8);
- Rights of children seeking refugee status or considered refugees to receive appropriate protection and humanitarian assistance (Article 22);
- Children's right to the enjoyment of the highest attainable standard of health (Article 24);
- Right of every child to a standard of living adequate for the child's physical, mental, spiritual, moral and social development (Article 27); and
- Right to education (Article 28).

Furthermore, climate change adaptation also has implications for considering the best interests of the child in all issues affecting them (Article 3), the right to freedom from discrimination (Article 2), as well as children's rights to participation (Article 12) and access to information (Article 17), and the specific rights accorded to children with disabilities (Article 23) and children from ethnic, religious or linguistic minorities (Article 30). The UN Committee on the Rights of the Child is currently developing child-centred policy guidelines on climate change for states reporting to the Committee.⁵¹

ii) Produced and adopted by 180 nations at the 2002 UN General Assembly Special Session on Children, *A World Fit for Children* articulates the right of every child to a safe, healthy environment in which to develop and grow, and pledges states "to give every assistance to protect children and minimise the impact of natural disasters and environmental degradation on them".⁵²

iii) With only 5 years remaining until the target of 2015, climate change jeopardises the sustainable development agenda established by the Millennium Development Goals (MDGs). The UNDP

Human Development Report 2007-8 observed that climate change is already arresting progress towards the MDGs, and if left unchecked, “will lead to development reversals in the 21st century”.⁵³

Due to global social and economic inequities, and correspondingly limited protective infrastructure and resources for large scale adaptation, climate change impacts will be more devastating for developing countries and will undermine their progress out of poverty. This is relevant to the impact of climate change on children, since two of the MDG goals and four of the supporting targets are explicit to children’s development. A number of further goals intersect with children’s development in a climate changing world.

Goals and targets relevant to children and potentially affected by climate change include:

- MDG 1 (Target 2): Achieve full and productive employment and decent work for all, including women and young people;
- MDG 2: Achieving Universal Primary Education;
- MDG 2 (Target 1): Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling;
- MDG 3 (Target 3): Eliminate gender disparity in primary and secondary education, preferably by 2005, and in all levels of education no later than 2015; and
- MDG 4: Reducing Child Mortality;
- MDG 4 (Target 1): Reduce by two thirds, between 1990 and 2015, the under-five mortality rate.

Other goals and targets relating to climate change and development include:

- MDG 7 to Ensure Environmental Sustainability; and
- MDG 8 on a Global Partnership for Development, especially to address the needs of Small Island Developing States.

The links between the MDGs, climate change and adaptation strategies relevant to children is captured in the following table that features in the UNICEF Innocenti Research Centre report on *Climate Change and Children*.⁵⁴

Climate change and the Millennium Development Goals

Millennium Development Goal	Link to climate change	Adaptation solutions related to children
Goal 1: Eradicate extreme poverty and hunger	<ul style="list-style-type: none"> Climate change is projected to reduce poor people's livelihood assets, for example, health, access to water, homes and infrastructure. Climate change is expected to alter the path and rate of economic growth due to changes in natural systems and resources, infrastructure and labor productivity. A reduction in economic growth directly impacts poverty through reduced income opportunities. In particular in Africa, food security is expected to worsen. 	<ul style="list-style-type: none"> Promote alternative livelihood and small-scale entrepreneurship Vocational training for out-of-school youth and women, related to renewable energy technologies, rainwater catchment, groundwater recharge, and small-scale irrigation environmental cleanup/repairment Community projects such as excavating canals, reducing water logging, raising of embankments
Goal 2: Achieve universal primary education	<ul style="list-style-type: none"> Links to climate change are less direct, but loss of livelihood assets (social, natural, physical, human and financial capital) may reduce opportunities for full-time education in numerous ways. Natural disasters reduce children's available time, while displacement and migration can reduce access to education. 	<ul style="list-style-type: none"> Environmental education Youth-led community mapping of risks and disaster preparedness School-based early warning systems Awareness and advocacy activities School gardening programmes initiated to support nutrition
Goal 3: Promote gender equality and empower women	<ul style="list-style-type: none"> Climate change is expected to exacerbate current gender inequalities. Depletion of natural resources and decreasing agricultural productivity may place additional burdens on women and girls' health and reduce time available to participate in decision-making processes and income-generating activities. Climate-related disasters have been found to impact more severely on female-headed households. 	<ul style="list-style-type: none"> Local community-based water management programmes Community gardens Disaster preparedness and risk reduction Community action to eliminate conflict-inducing environments
Goal 4: Reduce child mortality	<ul style="list-style-type: none"> Direct effects of climate change include increases in heat-related mortality and illness associated with heat waves. Climate change will likely result in declining quantity and quality of drinking water, which is a prerequisite for good health, and exacerbate undernutrition – by reducing natural resource productivity and threatening food security. 	<ul style="list-style-type: none"> Access to health services Household water treatment and oral rehydration therapy Improved access to sanitation and hygiene education
Goal 5: Improve maternal health	<ul style="list-style-type: none"> Children and pregnant women are particularly susceptible to vector- and waterborne diseases. 	<ul style="list-style-type: none"> Strengthening of health services and distribution of malaria pills through schools
Goal 6: Combat HIV/AIDS, malaria and other diseases	<ul style="list-style-type: none"> Climate change may increase the prevalence of some vector-borne diseases and vulnerability to water or food-borne diseases, or diseases transmitted from person-to-person. 	<ul style="list-style-type: none"> Increased vector control and response to waterborne diseases Provision of insecticide-treated mosquito nets Cleaning of stagnant water
Goal 7: Ensure environmental sustainability	<ul style="list-style-type: none"> Climate change will alter the quality and productivity of natural resources and ecosystems, some of which may be irreversibly damaged, and these changes may also decrease biological diversity and compound existing environmental degradation. 	<ul style="list-style-type: none"> Increased access to water and sanitation Tree-planting campaigns School and community gardens Mapping of water sources and sanitation promotion Demand-led approaches to school water supply, sanitation and hygiene
Goal 8: Develop a global partnership for development	<ul style="list-style-type: none"> Climate change is a global issue and the response requires cooperation from all countries, especially to help developing countries adapt to the adverse impacts of climate change. 	<ul style="list-style-type: none"> Better information exchange between governments and non-governmental organizations Build civil society alliances Initiate discussions on the Convention on the Rights of the Child and climate change at all levels

Source: Adapted and expanded from UNDP, UNEP, World Bank, Asian Development Bank (ADB), African Development Bank Group (AfDB), GTZ, UK Department for International Development (DFID), Organisation for Economic Co-operation and Development (OECD), European Commission, Netherlands Development Cooperation, *Poverty and Climate Change: Reducing vulnerability of the poor through adaptation*, launched at the eighteenth session of the Subsidiary Bodies of the UNFCCC in Bonn, Germany, 10 June 2003, p.12.

Finally, climate change is an intergenerational issue. Children will live with the consequences of climate change decisions made today for the rest of their lives. From an ethical standpoint, climate change is therefore an issue of “intergenerational justice” and it affects children living in different countries differently.⁵⁵ There is an urgency to address the special needs of this generation’s children arising from climate change and to account for the intergenerational gravity and global inequity of the impacts. On these grounds, attention to the impacts of climate change on Pacific children needs to be in the foreground and opportunities for their participation and views needs to be supported.

4.2.2 Diversity of children

It is important to acknowledge that children themselves are a diverse, heterogeneous population. In advocating for or giving increased attention to children in a warming world, it is vital to avoid generalising for all ages and demographics, and in effect, reproducing lines of marginalisation and discrimination.

Important demographic differences between children include their age, sex and gender, ethnicity, religion, educational attainment, socio-economic status of their families, and whether they are disabled/non disabled, employed/unemployed and whether they live in urban or rural/main island or outer island locations. Children also have unique personalities, evolving capacities and aptitudes, and different preferences, needs and life circumstances. Collectively, these characteristics mean that children will be impacted by climate change in different ways, have different risks and vulnerabilities, and different levels of resilience.

There are also differences in the knowledge and level of data available that hamper understanding of the different circumstances between children. Birth and adult registration is estimated to be low, although reportedly increasing, in Kiribati, and so overall population data on children is limited. Additionally, routine health data collected on children disproportionately focuses on 0 – 5 years. While children under five are at a critical stage for health and development, it means that very little epidemiological information exists for children over five and in adolescence.⁵⁶ This gap in knowledge is likely to influence priorities chosen and the efficacy and equity of interventions, including for climate change policy and adaptation.

Parks and Abbott’s 2009 UNICEF Pacific study *Protecting Pacific Island children and women during economic and food crises*, undertook participatory assessments to identify the “people and households likely to be experience the greatest hardships in the Pacific”. The list included:

- Unemployed.
- Single mothers and teenage couples without means to raise their children.
- Youth and school drop outs with few prospects for the future.
- Orphans or people without relatives in the community.
- Homeless people or those living with relatives.
- Land-less individuals, families without access to land, or settlers.
- People with large families and/or those supporting relatives.
- People living with disabilities.
- Chronically sick without regular support.
- Prisoners’ dependents and ex-prisoners.⁵⁷

In the section of impacts (below), we contend that climate change intersects with existing poverty and human security concerns. Given this theory and the abundant anecdotal evidence of climate change

affecting food security, Parks and Abbott's list may highlight these people within Pacific communities whose socio-economic fragility mean that they will have fewer resources and less security for facing the impacts of climate change. In turn, the children of those families identified above may be more vulnerable too. While this extrapolation would need to be tested by systematic investigation on climate change, the list serves as a useful illustration of the diversity within Pacific communities that is a determining factor in hardship and resilience.

Three other populations specific to climate change hardship that arose through our field consultations are:

- Households located on shorelines and areas more exposed to storm surges and sea level rise;
- People living on outer islands, remote services
- People living in houses made of traditional materials (e.g. with pandanus thatched roofs) which prevent water collection.

Throughout the course of the field visit, a number of people offered anecdotes and opinion on how diversity between children could influence the experience and degree of climate impacts. Some selected examples follow.

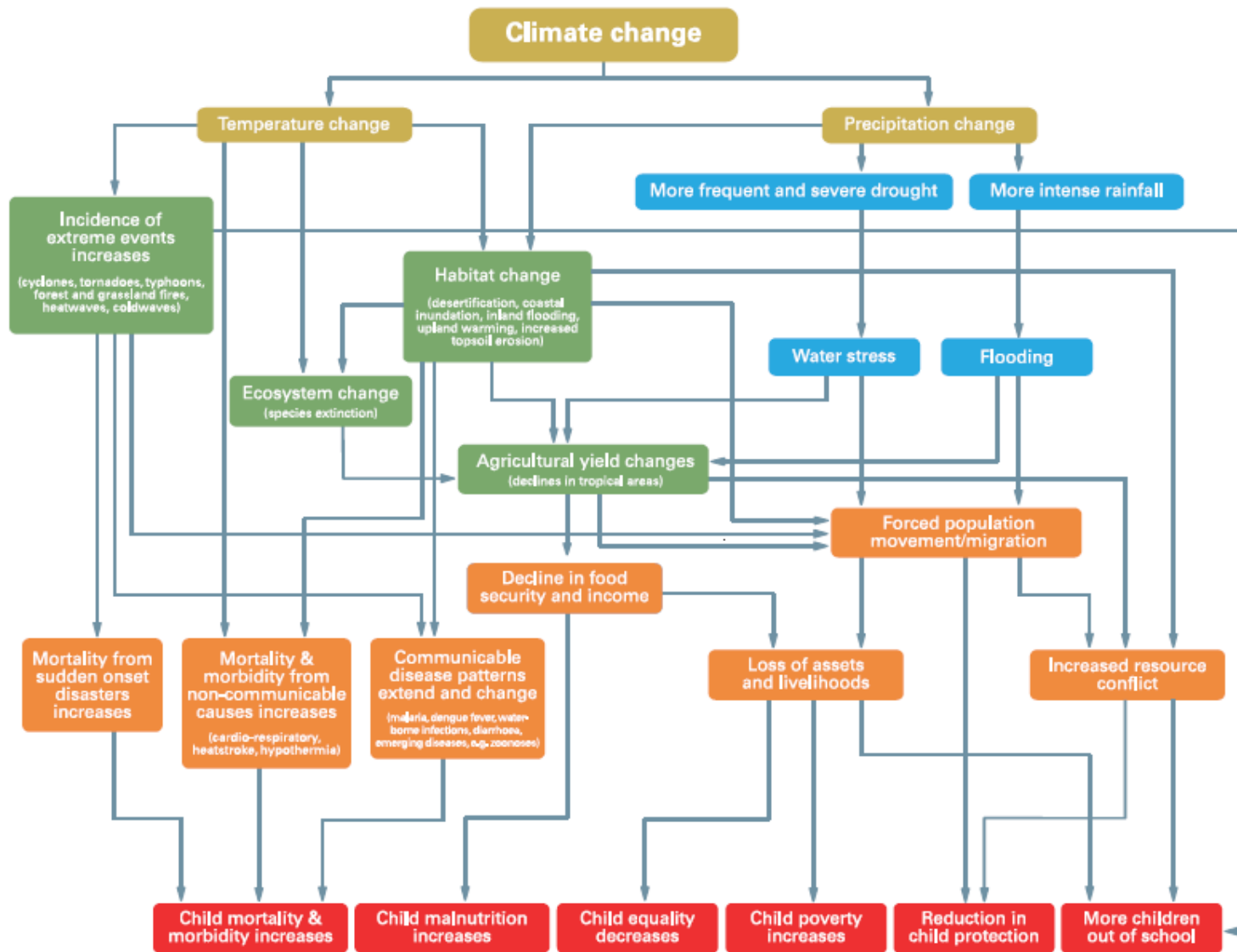
- i) Gender was repeatedly mentioned as a defining factor in a child's response to natural disasters and to long-term resilience and adaptation strategies. There is established international evidence of gender and age differentials in mortality rates arising from disasters, with the highest rates being for girl children. In other regions, an estimated 90% of the victims from the 1991 cyclone in Bangladesh were women and children, and a study of tsunami-related mortality rates in Aceh concluded there was "clear evidence of differential impact of both age and gender, where children, older adults and women were disproportionately affected".⁵⁸ A number of agencies have attributed this to women and children's smaller average size and strength, which makes them less able to outpace or endure an extreme event, especially the case for pregnant or nursing women. Gender specific activities, such as men and boys climbing coconut trees for toddy or learning to swim when they go out fishing together, may also mean boys are better able to climb trees and escape storm surges and floods (a survival strategy for men and boys in Sri Lanka during the 2004 tsunami).⁵⁹ The tendency to exclude women from climate change decision making processes and from disaster risk reduction management also reduces their knowledge of evacuation routes and protective or adaptive measures, and the knowledge that can be transmitted to their children.⁶⁰
- ii) Children living on outer islands were regarded as having less access to education and health, as illustrated by the fact that only high school on Kiribati is located on the main island of South Tarawa. There is also limited communications infrastructure, and so early warning systems for health and meteorological incidents can be affected and opportunities for preventive health education and messaging is reduced. Added to that, essential services and goods, such as food imports, oil, health services and emergency and general transport rely on shipping access. Kiribati also has two planes that service the outer islands (which were temporarily grounded until government subsidised the fuel)⁶¹ but both ship and plane services are weather dependent, and there were recent instances of services being grounded on both Tuvalu and Kiribati.

- iii) The Tuvalu Red Cross reported in 1999 that they had identified 160 people with disabilities on the main island of Funafuti (86 being male and 74 female), with at least half of this group listed as under 25 years.⁶² A representative from the Pacific Disability Forum visiting Tuvalu noted that her colleagues at the sole Disabled People's Organisation on Tuvalu estimated that 80% of people with disabilities lived on the outer islands. Based on the UN ESCAP estimate that around 10% of any population would be living with disability, this would translate to around 1000 people on Tuvalu and so perhaps 800 people would be on outer islands, and 400 of these people may be under 25 years.⁶³ A recent national survey on Kiribati found that of the 3,840 people with disability identified, 23% of this population was under 20 years of age.⁶⁴

- iv) Examining the impacts of climate change on health, shelter and survival after natural disasters, evidence suggest that the most severe or permanent impacts (i.e. death or stunting) will be felt by the youngest children; but those that survive to or are currently adolescents will arguably face a future where livelihoods, employment options, homeland and cultural bonds are uncertain or unclear.

While this study was limited in scope and sample size, we endeavoured to be mindful of the differences between children, both in terms of who was consulted and questions that were asked. The information gleaned from consultations with children and young people is incorporated in the section below.

A diagram from a report by UNICEF UK shows the many ways that climate change, such as variability in temperature and precipitation, affects children's lives and well-being.⁶⁵ (See overleaf.)



4.3 Impacts on Children

“Personally, I think UNICEF should put resources for climate change into health and education. Health - to build resilience for the diseases that will come when climate change worsens the environment. Education - to build the long term capacity for our youth to move elsewhere if the worst changes come in the future (though I hope that happens well after I’m gone).” Government official, Tarawa.

This section of the report will detail impacts of climate change on children relating to survival, development, protection and participation.

4.3.1 Impacts relating to Survival

a. Health

There is clear international evidence that climate change is already impacting on the health of children, and will increasingly do so. As early as 2000, the WHO attributed 2.4% of diarrhoea worldwide, and 6% of malaria in some middle income countries to climate change – diseases that disproportionately affect young children in developing countries.⁶⁶

In unequivocal terms, the UNICEF Innocenti Research Centre’s landmark study on *Climate Change and Children* states that, “many of the main killers of children (malaria, diarrhoea and under nutrition) are highly sensitive to climatic conditions.”⁶⁷

According to the Intergovernmental Panel on Climate Change (IPCC), there are a number of climate-induced health trends that experts predict with a “high confidence”. These include:

- Increase in malnutrition and consequent disorders, including those related to child growth and development;
- Increase in the number of people suffering from death, disease and injury from heatwaves, floods, storms, fires and droughts.
- Change in the range and breeding patterns of infectious disease vectors;
- Specific to malaria, there will be a contracting of the malaria boundary in some regions and an expansion in others, and the transmission season may be changed; and
- Increase in cardio-respiratory morbidity and mortality associated with ground-level ozone.⁶⁸

Based on this forecast, the already considerable rates of child mortality and morbidity due to malnutrition, respiratory, diarrhoeal and vector-borne diseases are poised to increase. The Stern Review estimated that under the baseline scenario predictions, climate change would account for an additional 40,000 – 160,000 child deaths per year in South Asia and Sub-Saharan Africa alone.⁶⁹

In the Pacific, Tuvalu has successfully reduced its mortality rate in children under five years of age from 41 in 1991 to 19 in 2003.⁷⁰ Kiribati has seen 25 per cent reduction of under five mortality rate between 1990 and 2001.⁷¹ But increases in extreme climate conditions – such as floods, droughts or damage to water supply – may set back these improvements in infant wellbeing. Concerted effort will be needed to safeguard the gains that have been made.

Vector-borne diseases

Rising temperatures pose clear challenges to the health of children. The Lancet Commission states that: “Vector reproduction, parasite development cycles and bite frequency increase with temperature.”⁷²

With the multiplying effect of heat on abundance of vectors (e.g. mosquitoes, flies and ticks), this means that vector-borne diseases such as malaria, dengue and encephalitis are likely to be more widespread in Melanesia. It is also predicted that temperature rise will mean that regions once free of malaria, such as cooler highland areas, will be hospitable to the *anopheles* mosquito which breeds in conditions over 8 degrees Celsius.

The dengue vector can breed in very small quantities of water, even a cupful, and so dengue flourishes in urban areas with unsealed water storage and heavy precipitation. With Tuvalu and Kiribati experiencing high but not regular rainfall amid poor drainage around houses and roads, dengue is an increased risk for atoll nations.

Mosquito-borne diseases such as malaria and dengue claim the lives of approximately 800,000 children each year around the world.⁷³ While Tuvalu and Kiribati do not have the malaria vector, malaria is endemic to Vanuatu and Solomon Islands, two of UNICEF Pacific’s priority countries. In Papua New Guinea, Solomon Islands and Vanuatu – amongst the poorest countries in our region, researchers are now beginning to document the link between climate change and health. Solomon Islands Ministry of Health researchers Eric Hale and Hugo Bugoro are conducting studies on the link between environment and health outcomes through the Vector Borne Disease Reduction Program.⁷⁴

An increase of malaria in more mountainous regions in the Pacific has been reported: for example, in Papua New Guinea’s Western Highlands Province, the number of malaria cases has been increasing in recent years, from 638 recorded cases in 2000 to 4,986 cases in 2005.⁷⁵ In 2007, Joseph Apa, Chief Executive Officer of Goroka Hospital in PNG’s Eastern Highlands province, attributed malaria outbreaks in the area to increased temperatures: “In the last five to fifteen years, the climate has changed and it’s getting warmer up here in the Highlands and we are now experiencing mosquitoes breeding in the Highlands and transmitting malaria parasites. So we could say that global warming has contributed to this climate change in the Highlands and hence the malaria outbreak in the Highlands.”⁷⁶

There is no published data regarding the impact of climate change on avian flu, and it is worth noting that this discussion has not taken into account the emergence of new diseases this century, that may be introduced or magnified by climate change.⁷⁷

Heat Stress

In a warmer world, young children as well as the elderly are most at risk of heat stress and dehydration, since they sweat less and have a higher surface area to body mass ratio.⁷⁸ Children in densely populated urban areas may be at higher risk.

Anecdotally in our interviews with children from the Tuvalu Red Cross Juniors (aged between 5 – 12 years) the importance of tree shading was highlighted. One child told us that the placement of a new water tank distributed to his household meant that a large tree had to be cut down in his yard to accommodate it: “Daddy said the leaves got in the new gutter.” From the child’s perspective, removing a shady tree next to the house where children played made it hotter in the house – an unintended consequence of the donation of water tanks from Australia and the European Union!

Acute Respiratory Infections

Households and communities without access to electricity and energy sources are forced to rely on smoke producing, polluting fuel sources for their cooking, lighting and domestic needs. Air pollution, particularly when generated within the confines of a home, is extremely harmful to the health of children. It is a significant risk factor for acute respiratory infections, which claim the lives of almost two million children globally each year.

Although direct climate change impacts on respiratory health are of greater concern in big cities, for example by increasing ground level ozone, the more pertinent respiratory issue for the households and communities we studied is how they obtain their energy for cooking, lighting and domestic needs.

b. Water and Sanitation

Water shortage and water inundation both pose risks to health, and are set to be exacerbated by changing precipitation patterns caused by climate change. In times of drought, people ration their water usage and prioritise drinking needs over washing and hygiene.⁷⁹

Even in the ‘liquid continent’ of the Pacific, drought is a concern, as shown during the last major El Nino event in 1997–8. Beyond normal weather variability, there are longer term trends for higher temperatures: “These natural fluctuations include the El Nino Southern Oscillations (ENSO) in the Pacific Ocean. In El Nino years – those when cold surface water is not apparent in the tropical eastern Pacific – global temperature is considerably warmer than normal. A particularly strong El Nino occurred in 1998 resulting in the warmest year on record across the globe. In La Nina years – when cold water rises to the surface of the Pacific Ocean – temperatures can be considerably colder than normal. ...A La Nina was present throughout 2007 and much of 2008; despite this temporary cooling, 2008 is currently the tenth warmest on the global record.”⁸⁰

The 1997–98 El Nino saw decreased rainfall in the northern Pacific, with the Marshall Islands and Federated States of Micronesia (FSM) facing severe shortages. In FSM, 40 atolls ran out of potable water and the government was forced to introduce water rationing for two hours a week.⁸¹ The US government brought in desalination equipment to support the urban centres of the neighbouring Marshall Islands. In Fiji, drought wiped out some two thirds of the 1998 sugar crop (at a time when an estimated 80% of water in the west of Viti Levu was estimated as going to tourist hotels). In 1998, Australia spent more than A\$30 million supplying food aid to isolated areas in Papua New Guinea affected by drought, with PNG’s coffee harvest badly affected.

While salt water floods are a major threat to the fertility of agricultural land, contrasting dry periods can increase the stress on food supply, in a country where most people grow their own food in village gardens and many urban communities still grow food in small *sup sup* gardens or town plots. In 2007, the people of the Reef Islands in Temotu Province, Solomon Islands faced a long dry spell which cut production from breadfruit trees and other seasonal fruit trees. Rather than used staple crops like bread fruit, people turned to imported goods like rice and noodles, changing their children’s diet and nutrition.

Access to safe water and sanitation is vital to human health. In terms of water, quality as well as quantity is important, so that people have adequate water for drinking, washing and hygiene needs.

Flooding can overwhelm and destroy sanitation infrastructure, causing the faecal contamination of groundwater sources and flood waters, and increasing the risk of water borne conditions, such as diarrhoea including cholera. Children under five account for 80% of water and sanitation-related illness annually because of their less developed immunity, and since their play activities bring them into contact with pathogens.⁸² From Kiribati in 1977 to Papua New Guinea in 2010, there have been occasional outbreaks of cholera across the region, and monitoring and surveillance of water supplies affected by changing climatic conditions will impact on the budgets of public health divisions.

Safe drinking water and water borne diseases

Globally, 1.1 billion people in developing countries do not have access to safe water.⁸³ Of the estimated 8.8 million child deaths worldwide in 2009, 2.2 million were due to diarrhoea resulting in dehydration.⁸⁴ The WHO estimates that diarrhoeal diseases account for 12% of all deaths of children under five across the Pacific region, with rates of 13% and 22% in Tuvalu and Kiribati respectively.⁸⁵

Acute diarrhoea in young children can result in death within a day or less if left untreated. Children “rehydrate less efficiently than adults” and safe water is required for the ORT solution, so family knowledge of this is critical for children to survive bouts of diarrhoea.⁸⁶ Given that outer islands have less access to health services, it is especially important that families located there are aware of this simple and life saving remedy.

The Director of Health in the Ministry of Health for Tuvalu said that that knowledge of oral rehydration therapy (ORT) for treating episodes of diarrhoea was sufficient on Funafuti, but that it was “probably not” sufficient on the outer islands. There were two typhoid outbreaks in Motufoua high school in 2001 (Tuvalu’s high school located on the outer island of Vaitupu).

Kiribati and Tuvalu have mean annual average temperatures of between 28 – 30 degrees Celsius, which combined with high humidity, requires a high daily water intake. Breastfeeding mothers also require an adequate water intake to maintain their milk supply. Shortages of safe drinking water compound the risk of water related illness and death, especially in the youngest children. As the Director of Tuvalu’s Department of Rural Development remarked: “Water (availability) is a problem, especially for younger ones. Small babies require a lot of clean water, for washing their clothes and nappies, and for their bathing.”⁸⁷

The WHO estimates that 65% of the population on Kiribati does not have access to safe water, and that less than 40% have access to adequate sanitation.⁸⁸ Rising sea levels will contaminate fresh water sources, as is already occurring in Kiribati and affecting the quality of drinking water. Tuvalu has an active water testing program, and randomly tests homes after storms, and the Health Department noted that “there is a lot of contamination, but people have no choice. We advocate the boiling of water. Water tanks do not supply enough to meet the need.”

On Kiribati, reticulated water is rationed and on occasions is offline every second day. The Senior Youth Officer from the Ministry of Internal and Social Affairs (MISA) told us that a 10 year old girl had said to her that that because of rationing, she drank water drawn from the well, saying, “I know it’s not good for you, but I have no choice”. A medical officer from Tarawa Hospital concurred that wells are the most accessible source of water for the people. He said that the Health Department’s fortnightly testing of the water repeatedly sees that the well water is not safe, and that even the treated water is contaminated and not safe to drink.

A multi-country study with data from over 80 countries also found that the best predictor of a child's nutrition (after a household's capacity to procure food) is the level of access to safe water. It is contended that calories that should be absorbed for growth are directed to fighting the water borne infection.⁸⁹

The threat of water-borne diseases is predicted to increase in a warmer world. A 2001 research study in Fiji has documented changes in diarrheal disease trends, with increased risk of severe diarrhoea for each 1 degree Celsius increase in predicted temperature rise.⁹⁰

The predicted effects of climate change would also be amenable to increasing cholera outbreaks. Alongside its efficient transmission through food and water, cholera bacteria thrives in brackish water (i.e. estuarine or water sources with salt water intrusion), and so climatic conditions in atoll nations would be favourable as hosts. An official from the Public Health Department of the Ministry of Health in Fiji reported their recent finding of a sudden increase in the incidence of diarrhoea among children, which was unexpected at this time of year (January and February). Notably, the current budget was the first time that the environmental health unit within the Ministry had been allocated money for climate change.

Lastly, skin infections are already observed to be on the rise due to heavy rains and storm surges. The Director of Health in the Tuvalu Ministry of Health said that the Princess Margaret Hospital on Funafuti and local health workers are currently treating more skin infections, some of which had been eradicated years ago. They are seeing an increase in fungal infections, scabies and bacterial impetigo, attributed to the inundation of areas by the sea and contamination of water sources.⁹¹

Water storage and security

In 2008-09, on Tuvalu's main island of Funafuti, households were provided with large water tanks through donor-funded programs from the European Union and AusAID. In 2010, there are plans to extend this program to the outer islands (As a notable aside, a church leader involved in TuCAN considered that these water tanks were the "only project that has benefited the community level from the adaptation funding for the vulnerable communities"). A government official noted that some tanks had been delivered but not connected and that the rainy season for 2009-10 was almost over. An official from the Environment Ministry in Tuvalu also noted that the exposed coastal environment was very corrosive, and so there was a need for maintenance or for specially reinforced tanks. Responsibility for guttering, piping and maintenance reportedly falls to the households at present.

Kiribati also faces changing patterns of rainfall and water supply, as noted in a recent World Bank study: "Rainfall variability is linked to ENSO events, which have a major impact on water availability on the atolls. Specifically, El Niño events are associated with high rainfall and more secure water supply in Kiribati. The reverse situation is linked to periods under La Niña. Severe, prolonged droughts are common in the drier islands in the central and southern equatorial region (e.g., the Gilberts, Banaba, the Phoenix Islands, and Kiritimati)."⁹²

On Tarawa, fewer tanks were visible, and those that had been distributed were reportedly for communities to share, rather than for individual households and this meant responsibility for their maintenance was not clear. Many houses and *maneabas* in Tarawa and the outer islands do not have guttering and tanks for rainwater harvesting. Investment in community water supply projects could

provide quick returns both for development and adaptation needs, in a country with high but not regular rainfall levels.

Access to water or rainfall is also needed for growing food. The Kiribati National Adaptation Program of Action (NAPA) notes: “Food crop production is known to be critically dependent on the quality and quantity of soil moisture and ground water. Seasonal variability of precipitation, prolonged droughts, more efficient evaporation-transpiration and occasional seawater wash-over have localised serious impacts on crop production and threaten the very livelihood of the people. These impacts are expected to intensify according to climate change scenarios. The scenarios expect precipitation to increase but variability of precipitation is not featured or accounted for.”⁹³

The repercussions of food insecurity for children are examined further in the section below on food and nutrition.

Sanitation

Reports from both Tuvalu and Kiribati suggest that sanitation infrastructure is in a critical state. On Kiribati, informal housing and peri-urban settlements have mushroomed and account for 25 per cent of housing on South Tarawa. Without an adequate sewerage system and limited options for garbage disposal, this overcrowding has led to unsanitary conditions in some areas.⁹⁴

In interviews with staff from the Ministry of Public Works in Kiribati, it was stressed that salinity from rising sea level is just one part of a broader problem of water supply and sanitation, which is as affected by issues of urbanisation, population increase and problems of faecal contamination from humans and animals.

An official from the Department of Environment on Funafuti also said that the sanitation system has been seeping into the water table and so now the island is dependant on rainfall. Good sanitation requires both the availability and the utilisation of appropriate infrastructure, with the latter often being the most challenging to achieve. However, the Director of Health for Tuvalu also said that “the community has had to shift from pit toilets to flush toilets and now to compost toilets, since the flush toilets are not good now because of the rising sea level (and infiltration of the ground water table). This is a big leap for people.”⁹⁵

After a disaster event such as a flood or cyclone, according to the WHO, “diarrheal disease as a result of contamination of water supplies, breakdown of sanitation facilities and the need to scavenge for food, often take a larger toll of life than the original disaster.”⁹⁶ The challenge of maintaining appropriate levels of sanitation on Kiribati and Tuvalu are only set to be compounded by climate change, and the feedback loop to ill health for children is repeated. The Government of Kiribati has been developing a National Water Strategy, with water security one of two key areas being maintained under the current phase of the Kiribati Adaptation Program (KAP).

c. Food and Nutrition

Food Security

Speaking to the UN General Assembly in September 2008, President Emmanuel Mori of the Federated States of Micronesia (FSM) stated: “The nexus between food security and climate change cannot be

overlooked. In Micronesia, the farmlands and the inhabitants occupy the low-lying fringes and islands barely a few meters above sea level. Taro patches which provide the main staple of our people for centuries are now under threat by sea-level rise. Already, many islands have experienced inundations of their taro patches and other food crops by salt water, resulting in decreasing production and crop destruction.”⁹⁷

Food security is defined by the Food and Agriculture Organisation of the UN (FAO) as “when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary requirements and food preferences for an active and healthy life.”⁹⁸

In 2008, the FAO released a major study on food security and climate change in the Pacific, with detailed case studies on Vanuatu, Marshall Islands and Cook Islands.⁹⁹ It documents how, without adaptation measures, damage to the food sector by 2050 could represent 2–3 per cent of Fiji’s GDP and 17–18 per cent of Kiribati’s 2002 GDP.

The assessment of food security within Pacific Island countries classified countries into three groups according to their “resource endowments and the importance of agriculture”. Kiribati and Tuvalu were included in the group of “land-poor micro-states that are predominantly atolls”. Given the limited arable land available, and the limited scope for expanding agriculture, the study affirmed that atoll countries rely more on imported food. It estimated for a country such as Kiribati, the dependency on imports for food security is 36% nationally, but as high as 61% on South Tarawa, the populous southern section of the main atoll. Other studies have noted the steady rise in food prices in the Pacific, with staples such as rice having increased from AUD\$16 per 20 kg bag in 2006 to AUD\$21 in 2008 in Kiribati.¹⁰⁰ This is in a country with a GDP per capita of US\$1,142 in 2009.¹⁰¹

In this context, a key factor in food security is the capacity of households to purchase food. FAO has developed a Food Import Capacity Index, that measures food import dependency against income (e.g. from export earnings, remittances) and debt levels to determine food security. Although extrapolating from limited data, with their low export earnings, Kiribati and Tuvalu rank as extremely vulnerable.

Households on these two atoll nations depend largely on remittances from family member seafarers for their food security (38% and 12% in Tuvalu and Kiribati respectively), which makes them especially vulnerable to economic downturns.¹⁰² The Director of the Department of Rural Development on Tuvalu told us that because of the recent market downturn, “opportunities for seafarers are decreasing and they have to wait longer in between shipping jobs.”¹⁰³

Fish is the main source animal protein in Pacific Island diets, and there is high per capita consumption. Traditional subsistence crops such as taro and bananas are high in nutritional value, including in essential vitamins and minerals. However, changes in crop yield, fish stocks and plant diversity are already being observed. While there may be multiple factors involved, climate change and varying precipitation patterns are amongst them.

There were numerous documented and anecdotal examples of how climate change is impacting on food production.

On Tuvalu, government and NGOs representatives relayed stories that fishing is not as productive and that catch varies. As a result, fishermen need to go out further and for a longer time now.

Tuvalu community leader Annie Homasi told one of the authors: “With our root crops like *pulaka* [taro], it takes years to be harvested. But with the current sea surges, the salty water gets in the *pulaka* pits, which makes it harder to grow. We’re looking at getting species from other countries to help with this. Our coconut trees on the coast fall down because of erosion.”¹⁰⁴

For Kiribati, Marshall Islands and some other atoll nations, harvests of staple foods like coconuts, breadfruit and pandanus have been disrupted by extreme weather events in recent years. A drought affecting the country in 2007-08 cut production of copra (a major income earner for rural communities) as coconut trees failed to bear fruit.

Damage to food supplies is also affected by climate-related natural disasters, like the extensive flooding which affected Fiji in January 2009. According to a detailed study by the International Union for Conservation of Nature (IUCN) on families affected by the 2009 floods, “about 42 per cent of flood-affected farms are expected to struggle to provide even their family’s basic food needs.”¹⁰⁵

The loss of food resources or stress to gardening and fishing from drought or flood can contribute to community tensions (e.g. we were told of cases when children raided neighbouring gardens or fruit trees for food, after their own gardens had failed).

Sea level rise is already resulting in coastal erosion and saline intrusion into freshwater lenses and ground water sources, as well as into tuberous staple crops such a swamp taro. As an example of the disruption of climate change to food production, cleaning the soil through rainfall may take up to two years, and the taro itself takes two to three years before it is ready to harvest.¹⁰⁶

Significantly, this is the situation before factoring in major climate effects, and it gives cause for concern about the impact of future climate change on child nutrition.

Nutrition

Under-nutrition is defined as the outcome of insufficient food intake. It includes being underweight for one’s age, too short for one’s age (stunted), dangerously thin for one’s height (wasted) and deficient in vitamins and minerals (micronutrient malnutrition). Children are malnourished if their diet does not provide adequate calories and protein for growth and maintenance or they are unable to fully utilise the food they eat due to illness (under nutrition).¹⁰⁷ A 2008 Lancet study on nutrition estimated that child malnutrition, low birth weight and suboptimal breastfeeding account for the deaths of 3.5 million mothers and children each year.¹⁰⁸

Malnutrition is a vicious cycle whereby a nutrient-depleted child is more susceptible to infections, which in turn reduces their uptake of nutrients from food consumed. Even when there is food intake, the caloric benefit may go towards fighting infection within the child’s body. A chronically malnourished child of 2 or 3 years of age will then face irreversible damage through physical and cognitive stunting.¹⁰⁹ A malnourished child will struggle at school, and this will potentially set a course of diminished options in employment and livelihood.

On Kiribati, there are high rates of malnutrition and deficiencies in iron, vitamin A and protein reported for children under five.¹¹⁰ The Kiribati NAPA notes: “Food crop production during water stressed conditions is minimal as ground water lenses get dry or turn brackish. The combined impacts on the livelihood of the people would have shortened their life, causing malnutrition particularly among children.”¹¹¹

A UNICEF Officer in Kiribati described a dire scenario that linked climate and economic factors. At the end of February 2009, the outer island of Banaba, which is entirely dependent on the cassava crop and imported foods, had been declared a state of emergency since the island had run out of food. Drought had spoiled the cassava crop and since the island has a small population (around 300 people), private shipping companies that run the supply route had decided that it was not profitable to maintain. There were reports that people were only eating fish and pumpkin, and that children could only attend school two hours a day since everyone on the island had to look for food.¹¹²

A similar issue was raised in Tuvalu, where it was noted by an official from the Ministry of Environment that, “once the boats do not arrive on time with the tinned food, we are in trouble. There is always shortage, at all times.”¹¹³

These examples illustrate the compound effect of climate change on other pressures and transitions, such as the global economic crisis and the move to a market economy. For outer islands, with the privatisation of small shipping routes, food security is currently at the mercy of commercial interests. However, with droughts and floods predicted to intensify, the compounding effects of climate change will do likewise. Problems arising from loss of traditional food supplies and increases in use of imported processed foodstuffs contribute to ongoing regional concerns over obesity and related health impacts, with the Secretariat of the Pacific Community (SPC) mounting a major Health Pacific Living program.¹¹⁴

The international health community acknowledges that more comprehensive modelling of climate-related health impacts is needed. However, we can legitimately extrapolate from existing knowledge of the interaction of temperature and weather variability on water and air quality, vector patterns, and food security. At this stage, these inferences point to climate change being a profound amplifier of the threats to the health and survival chances of children. Attending to child health before the slow or sudden onsets of climate change is one of the best forms of resilience building.

Beyond the impacts on diet and nutrition, the role of food as part of culture and socialisation in Pacific societies may be affected as climate change transforms food production.

One government official in Tuvalu lamented the loss of games that he played as a child, where children would sneak out at night as a group and find shellfish on the reef to eat as a common feast. Now, with changing reef ecology, those shellfish are no longer found near the village and the children stay at home: “Something that’s good for the kids has been lost. This thing was part of our lives because it taught us about sharing, about being together.”

d. HIV&AIDS

The impact of climate change on HIV risk for children and young people was explored in less depth than other areas of this study. This was partly because our brief country visits were not convenient for meeting with relevant stakeholders and owing to the limited published data available. However, it was possible to identify a few areas where general HIV risk and vulnerability patterns may be exacerbated by climate change. These points are speculative, but the links drawn could merit the UNICEF Pacific HIV&AIDS program considering a watching brief for the impact of climate change on patterns and rates of HIV infection in future.

Since children can acquire HIV through mother-to-child transmission (during pregnancy, delivery or through breastfeeding) or through infection in later life, we have considered the risk of HIV at both stages.

Climate Threats to Safety Nets

Within the Pacific, customary land ownership and strong norms of social obligation and sharing resources have served as a traditional safety net.¹¹⁵ However, this was based on self sufficiency derived from home grown crops and plentiful fish stocks, which climate factors are undermining. Traditional safety nets are being threatened by the increasing reliance on paid food imports, and the transition to a monetary economy for school supplies, healthcare, transport and energy needs.

There is growing evidence that limited employment opportunities for young women and loss of income at times of economic and social stress is contributing to greater involvement in transactional sex in some Pacific countries. The growth of a local, albeit informal, “sex industry” on Kiribati was documented by UNICEF in 2005 and ascribed to the shortage of other paid work for women.¹¹⁶

The 2006 Pacific regional report on *Child Sexual Abuse and Commercial Sexual Exploitation of Children in the Pacific* which UNICEF co-authored, corroborated this dynamic. The report found evidence across the region that children were working as sex workers, spurred by the expectation that they contribute to the family economy, in settings with limited employment options.¹¹⁷ This obviously raises issues of child protection from exploitation, however its links with HIV and STI risk are explored in this section.

Although climate change is only one of a number of “push” factors, the need and desire for money has been linked to reports of adolescent girls engaging in transactional sex with visiting foreign seafarers in Kiribati. A number of people in Kiribati told us that young girls would board ships at Betio wharf, befriend seafarers (often Korean) and exchange sex for money and gifts. It has been reported that sometimes girls are engaged in sex work with the support of family members, and it is considered on the rise in Kiribati in response to girls’ or their family’s cash poverty, limited training and employment opportunities for boys. Given that women outnumber men in population size on both Kiribati and Tuvalu, the lack of income options for women will be a trend to watch.

Permanent and seasonal migration is another household coping strategy for economic strains exacerbated by climate change and in preparation for potential climate displacement (This dynamic is discussed in detail below in the case study on Displacement and Labour Mobility). With separation from spouses or partners, male seafarers can engage in extra marital sex and place themselves and partners at risk of HIV or other STIs. Equally, the absence of the male head of household may render the women or girls of that household at risk of sexual violence from others in the community.

Lastly, in the wake of natural disasters and wars, it is commonly reported for people to seek comfort in sexual intimacy, whether with spouses or outside of marriage. After the tsunami, Aceh reported a baby boom, whereby families seek to rebuild their lives and also bring children into their lives where they may have lost them.¹¹⁸

Already, the experience of disasters like cyclones and tsunamis in the Pacific Islands region has led to forced displacement of communities for short and longer periods of time. Given the IPCC has predicted a likely increase in the intensity of cyclones and extreme weather events, there is a need to further

analyse and anticipate the effects on sexual behaviour, including abuse and child protection consequences, in the aftermath of natural disasters in the Pacific.

Climate Change Increasing the Out of School Population

Climate change could add to the population of out-of-school youth in two ways: 1) Slow-onset insecurities that lead to the diversion of household budgets and efforts for shelter reinforcement and food; and 2) Natural disasters causing household economic losses or lack of interest in attending school.

The presently high rates of out-of-school youth and youth unemployment create factors conducive to the spread of HIV. Some young people who are out of school may have less access to sources of important health and life-skills information. Limited awareness of HIV transmission and prevention measures would put both them and later their children at higher risk. Typically such information is delivered through the education system, but there is a need for development of curriculum to incorporate life skills awareness. It is worth adding that much peer-to-peer education occurs outside of formal educational settings, and the role of NGOs and community education initiatives need extra support.

Children who drop out of school face greater challenges in finding gainful employment. Unemployment can lead to boredom, frustration, and lowered self esteem, leading to risk-taking such as excessive drinking and unprotected sex. Several people on Kiribati mentioned the high rates of drinking among adolescent girls, which could lower both interest in and negotiating power for protected sex.

UNICEF's *Situation Analysis of Children, Women and Youth in Kiribati* from 2005 noted that while the average age of marriage for women was 21 at that time, the birth rate for 15–19 year olds was rising, suggesting that more births to this age bracket are single women.¹¹⁹ Staff of the Family Health Associations on both Tuvalu and Kiribati concurred that teenage pregnancy was on the rise, however some births would take place outside the formal health sector and so would be underreported in the data.¹²⁰ Teenage pregnancy infers unprotected sex between young people, and so a greater risk of HIV transmission. Indeed a 2004 WHO survey on Kiribati found a high prevalence of Sexually Transmitted Infections (STIs), with approximately 15% of pregnant women infected, rendering them more biologically susceptible to HIV infection.¹²¹ There is also a greater likelihood that pregnant teenagers and teenage mothers are more likely to be discouraged from attending or drop out of school.

e. Mental Health

There is an established body of literature on the mental health effects of large scale natural disasters, including on children. These reports also discuss factors that moderate mental health outcomes and recovery from these events.¹²² While less consideration has been given to the mental health and psychosocial effects of a slow-onset change such as climate change, literature on the topic is emerging.

Ahead of considering the implications of climate change on children's mental health, it is important to note that children are able to demonstrate resilience and resourcefulness in coping with adversity. Care needs to be taken to adequately recognise and respond to distress and trauma in children, but to avoid pathologising behaviour that may in fact be within a healthy response range to an extreme event.

Climate change will impact on social determinants of mental health and wellbeing. These include socio-economic status, social cohesion, and environmental and household security. The American Psychological Association has documented the following mental health effects of the losses and disruption caused by natural disasters: acute and post-traumatic stress disorder, other stress related problems such as complicated grief, anxiety disorders, depression, somatic disorders, drug and alcohol abuse, increased vulnerability of those with pre-existing severe mental illness, and *elevated risk of child abuse*.¹²³

In the case of slow-onset climate change, the psychological effects are also expected to be gradual and cumulative. Some of the effects that are anticipated include: an increase in violent aggression which has been shown to correlate with temperature rise; community conflict as natural resources diminish; and reaction to social economic disparities between the haves and have nots, or those responsible for climate change and those not.¹²⁴ As a possible illustration of this last factor, when our study was wrapping up a focus group discussion with a church group on Tuvalu and asked whether the group had any closing questions or comments, one young man asked us (knowing we were Australian): “Why didn’t the Australian people sign the Kyoto Protocol, and why didn’t they stop using green house gasses?” Another girl asked: “Will Australia give us land so we can come and live there?”¹²⁵

In terms of the specific impacts on and resilience of children, one study notes that “levels of psychological vulnerability and resilience depend on children’s health and internal strength as well as household dynamics and levels of social support.”¹²⁶ Mothers and women will naturally have an influence on these factors for children, especially if male household members take on seasonal work overseas. This makes significant one study’s finding of a “significant” association for women between food security and depression and anxiety, which along with irritability and insomnia, are conditions likely to be intensified by the unpredictability and general insecurity that climate change effects will bring.¹²⁷ There is a growing body of research suggesting that stress “erodes the cognitive capacity of children, whether in the womb or after birth”. While not fully understood, studies have indicated that stress produces hormones that affect have a toxic affect on children’s brains.¹²⁸

Fritze and Blashki further observe that the mental health impact of climate change has a “life cycle” aspect, meaning that the psychological impacts will be different for people of different ages now.¹²⁹ Children and young people will face an uncertain future and will experiencing different climatic impacts than their parents. In consultations with a couple of government officials directly involved in climate change, our study asked how they think about the issue as parents. One official said, “I don’t know how to respond to climate change questions from my kids. I have a grand-daughter who will feel the impact of the inundations in 50 years, and her grandchildren will be facing the relocation”.

This study found that there were differing levels of climate change awareness between children and young people. There is an issue as to how children are currently processing a concept that is abstract yet inevitable, especially in the case of those who have no engagement and only limited information on the phenomenon.

It was not our objective to explore levels of climate change knowledge among children, but given the early stage of incorporating climate change into the school curriculum, it is safe to assume that knowledge comes from media and conversation and so information may be confusing or conflicting. The magnitude of this global change is likely be overwhelming for some children, and stir different emotions, ranging from fear and despair to a sense of being powerless and so inhibited from taking action.¹³⁰

The children and young people we met with during the consultations expressed a spectrum of emotions on the issue, ranging from fear and denial, to sadness and uncertainty about the future. A pair of young women friends in their early 20s epitomised this. One friend told us, “We worry about sea level rise and talk about it every day”. The other young woman said, “No, it is too scary to talk about sea level rise so sometimes we ignore it.”¹³¹

Bearing this in mind, creating a sense of urgency with children around climate change needs to be handled with sensitivity. Even if the range of options for action are not ideal or those that parents and children had anticipated for their lives, as Fritze and Blashki note, “when people have something to do to solve a problem, they are better able to move from despair and hopelessness to a sense of empowerment.”¹³²

As discussed in the stakeholders review (section 2) and the key findings (below) there are a range of non-government and community organisations that see youth mobilisation as an important tool for maintaining a sense of personal well-being and empowerment, as well as providing benefits for the wider community.

f. Stress on Health Care Systems

This section has so far illustrated the multiple and magnifying effect of climate change and health. An increase in infectious disease and illness will also put enormous pressure on the health system workforce, facilities, and resources. For health systems that are chronically under-funded and understaffed, burden of disease may well exceed local response capacity.

Surveillance and reporting systems are less resourced in developing countries, and for many core child health indicators in Tuvalu and Kiribati, information is simply not available.¹³³ Health early warning systems rely on past data to track whether there is a change in incidence patterns, and this will mean that basic monitoring functions need to be in place in countries on the climate change frontline, to anticipate outbreaks and emergencies.

UNICEF’s existing initiatives could be expanded over time to monitor climate impacts. UNICEF Pacific has already initiated sentinel site surveillance systems in Fiji, Tonga and Tuvalu and its three priority countries of Kiribati, Solomon Islands and Vanuatu as a response to the global economic crisis. This pilot initiative, which aims to alert governments to sudden changes in vulnerable populations could be developed over time to monitor communities affected by short and long term impacts of climate change. UNICEF’s recent support for a Database Officer for MDGs 4 and 5 (Reduce Child Mortality and Improve Maternal Health, respectively) to be placed in South Tarawa Hospital is also notable step. Equipment, vaccine and treatment planning and procurement will need to keep pace with changing health trends.

The Director of Health for Tuvalu has a strong commitment to primary health care. With primary health care’s integrated approach to health and wellbeing, combining preventive strategies on nutrition and environmental health with curative care, the reinforcement of primary health care systems would be effective in building the resilience of communities and their children to water, air and sanitation related illness (In neighbouring Kiribati, this will be particularly relevant in densely populated Betio, on South Tarawa, and for the outer islands which are up to 3 days away by boat from curative or emergency services).

In Tuvalu, the Health Department has a midwife based on every island which is vital for the early detection of general health and obstetric complications, in order to arrange transport to Funafuti. To avoid transport and logistics problems, the department has a policy that all first deliveries must be on the main island of Funafuti. However, climate and weather patterns are already impacting on service provision. The director of health described to us how four weeks of storms over January 2010 meant that with no ships going to the outer islands, they couldn't respond to an emergency. He shared that "our biggest fear is having outbreaks on the outer islands, because of storms."¹³⁴

Medical and public health personnel are critical during the emergency phase of any disaster – especially for remote countries. However, Kiribati and Tuvalu only have one functioning tertiary health service each. If there is an increase in cyclonic activity or other extreme weather events, health services can be severely affected: Niue's sole hospital was destroyed in Cyclone Heta in 2004 and Samoa's hospital was destroyed in the 2009 tsunami. The WHO has a current campaign, 'Hospitals Safe from Disaster' that is part of the UN International Strategy for Disaster Reduction.¹³⁵ Unless contingency plans in staffing, supplies and facilities are in place, an extreme climatic event may be debilitating for the health system on these islands.

4.3.2 Impacts relating to Development

a. Education

There are a number of ways in which education and schools themselves are impacted by climate change. It creates a need for curriculum that teaches children about their changing environment and climate change specifically.¹³⁶ It also makes a priority of disaster and evacuation protocols and drills in schools.

The climate-proofing of school facilities is needed to ensure as far as possible that they are safe structures in times of extreme storms and cyclones, and that they can function as places for learning during heavy rains or wind. School also provides a form of stability for most school children, and so education provides a routine and return to normalcy after extreme weather events.

In the long term, an education also equips children with the skills and knowledge for obtaining employment, further study and for life. Where climate change and weather related factors impinge on learning, the benefits and objectives of education are undermined.

Boys and girls have diverse experiences in the education system and their enrolment and retention in school is often impacted by gender norms - for example the preferencing of boy's education over girls in some countries, especially in times of financial hardship; lack of support services for teenagers who are pregnant; or sexual harassment of girls by teachers.

Furthermore, the experience of children living and learning in urban centres contrasts with those in rural areas or outlying islands which often lack the same level of school infrastructure, trained teaching staff and educational resources. In terms of tracking differential educational attainment and outcomes across the region, disaggregated data is essential and currently not routinely collected. An important role for development planners is to improve access to timely and accurate data sources that reflect the diversity of children according to gender, age, location and other indicators.

The following sections present anecdotes gathered during interviews which describe how climate change is already impacting on education, coupled with references drawn largely from studies on children and disaster risk reduction programs in schools.

School attendance

Adverse climate and weather patterns will make it more difficult for children in developing countries to attend school. Officials from the Education Department of Tuvalu confirmed that attendance at school “is very low” on rainy days. They described that if it is windy and raining heavily, schools sometimes close because they are not sealed and the shutters cannot withstand the elements. They further recounted that when it is wet, some children do not attend school because they do not have transport or umbrellas, and others arrive to school in wet uniforms, which impacts on their concentration and learning.

Similar effects are found in the international literature: a UNICEF report noted an association between sea level rise in the Caspian Sea and a decline in school attendance in one site. Consultations with these residents identified a number of contributing factors, including the departure of teachers to work elsewhere, that students had deteriorating health, and that families withdrew children due to economic reasons and some had moved away.¹³⁷

Good health is essential for cognitive development and learning, and so the health impacts identified in the section above threaten children’s educational attainment. Similarly, in periods of resource scarcity, children may also be withdrawn from school to assist in family subsistence activities, as described above in the case of Banaba Island, Kiribati.

There are differences across the Pacific, both between countries and over time, in the net enrolment rate in primary education and primary completion rate. Some countries have increased the net enrolment rate, for example Kiribati grew from a reported 76.2% of the relevant age group in 1990 to 97% by 2005. However, completion rates are markedly less in Kiribati, with a decrease from 98% in 1990 to a reported 82% primary completion rate in 2003.¹³⁸

By contrast, Tuvalu reported 98% net enrolment rate in 1991 and 100% for both net enrolment and completion rates in 2002. However, these figures should be compared against the Tuvalu NAPA which reports a reduction in the general literacy rate and in girls’ school attendance. Significantly, the NAPA correlates this with children being drawn into collecting water and firewood for the household.¹³⁹

Worldwide, over 101 million school age children are out of school.¹⁴⁰ In consultations on both Tuvalu and Kiribati, several interviewees estimated that around 40% of high school age people are out of school, and so this raises the issue of a significant number of adolescents who would not be reached by formal education on climate change and how to respond to weather events.

In the Solomon Islands, the Red Cross has worked with the National Disaster Management Office to design an FM radio quiz for young people integrating messages climate change and disasters, and this was broadcast in Honiara and other parts of the country.¹⁴¹ This example illustrates how radio may be one way of reaching this out of school population.

Case study: Disasters hitting the education of children

Two recent disasters provide examples of the cost to education, both for governments and aid donors who divert funds to disaster response, and for the children themselves: Cyclone Heta which hit Niue in 2004 and flooding in Fiji in January 2009.

Cyclone Heta caused significant social and economic disruption to the island state of Niue, which has a population of only 1,550 people. The damage bill of NZ\$37.7 million was nearly three times the value of Niue's annual GDP. There were a range of social and environmental impacts: "Heta completely destroyed the Huanaki cultural centre where people would regularly congregate for cultural displays and dances, as well as the national museum and 90 per cent of its collection. There were other significant intrinsic losses such as the loss of personal possessions and records, many land title and health records... and the loss of the national hospital in which most Niueans were born."¹⁴²

As with other natural disasters, Heta affected children's education and health through disruption of classes and damage to school and hospital facilities. The destruction of Niue's only hospital, at a cost of over NZ\$4 million, meant extra costs for the creation of a temporary hospital extension and the referral of patients to New Zealand for treatment.

Damage to school buildings cost NZ\$100,000 for repairs, with a further NZ\$200,000 for replacement of school equipment and supplies. Primary and secondary schools were forced to delay the school term and extend school year to make up for the delayed start. Schools organised counselling exercises for students affected emotionally and psychologically by the experience of living through the cyclone.¹⁴³

A second example comes from the major floods across the Pacific in December 2008 and January 2009, caused by a combination of tropical rain depressions, king tides and storm surges. Floods affected Australia, Solomon Islands, the Federated States of Micronesia and Marshall Islands (which both declared states of emergency) and Papua New Guinea (with at least 38,000 people from 2,000 villages affected).¹⁴⁴

For two weeks in January 2009, the flooding across Fiji caused 11 deaths and devastated the economy. Some low-lying areas in the west and north of the country were under water for days, with flooding in some areas reaching 3-5 metres. Fiji's military-run interim administration declared a state of emergency and Prime Minister Voreqe Bainimarama said the flooding was the worst ever in Fiji's history, with direct effects on more than 116,328 people in the Western Division and 30,667 people in the Central Division.¹⁴⁵

Fiji's Director of Meteorology Rajendra Prasad stated: "The January 2009 flood was the worst natural disaster to economically affect Fiji since the [El Nino] drought in 1998 when the loss exceeded F\$160 million."

The economy suffered massive disruption, with over F\$16.6 million damage to roads and bridges, losses for the sugar cane crop estimated at 68,960 tons, over F\$10 million damage to the water reticulation system and millions more for damage to schools and hospitals, electricity and telecommunications infrastructure.

According to a post-disaster study by IUCN, the flooding directly affected household incomes, with the number of sugar cane families falling below the poverty line increasing to 77 per cent (as compared to

54 per cent without the floods occurring). This rapid decrease in household incomes, and damage to cane planting which affects next year's crop, posed challenges that directly affected children: "Many sugar cane farmers and others in flood affected areas were forced to make some difficult choices immediately following the floods. Many families had to choose whether to send their kids to school or to meet their basic food requirements. Had it not been for the humanitarian assistance provided by many national and international organisations, it is likely that many children would have dropped out of school this year."¹⁴⁶

The disaster meant that key donors had to provide immediate assistance to assure families could afford to send their children to school: the EU provided \$1,806,209 and Australia \$142,440 for the payment of a year's school fees for children, as well as building repairs to school buildings and new classroom furniture and library supplies. Over \$3.5 million was provided by donors as in-kind assistance through UNICEF and Red Cross, while NGOs like Save the Children provided money for school fees and lunches.

Beyond the disruption of children's learning, the floods also had longer-term social and economic impacts on families – especially mothers and grandmothers – who had to take extra time off work to care for children while schools were closed for repair.

Climate-proofing schools

Internationally, there are a number of tragic international incidents where schools have collapsed during natural disasters, resulting in a large number of child fatalities. National disasters have prompted national attention to the safety of the physical infrastructure of schools, for example, Bolivia's development of national Child Friendly School architecture standards; and the case of children petitioning parents and the school board for the relocation of schools from landslide-prone zones in Southern Leyte in the Philippines.¹⁴⁷

Climate change is set to only increase the exposure of schools to heavy storms and extreme weather, and so structures need to be safe for children to attend. (In Tuvalu, education officials informed us they had problems with rain from extreme storms getting into electrical wiring in schools, causing damage to school infrastructure.)

In times of natural disasters, the size of school buildings and grounds means that they are often used as evacuation sites, disrupting children's access to schooling. Where school drop out is common, lengthy disruption to schooling means children are less likely to return. UNICEF's "School in a Box" and "Tent Schools" were praised by a number of people during the consultations, as a vital resource for supporting learning continuity and stability for children as a temporary measure after an extreme event.

Climate Change and Disaster Awareness through Schools

The Children's Climate Forum Declaration from the 15th UN Conference of the Parties (COP 15) at Copenhagen in December 2009 expressed that "climate change education should be a mandatory and substantial area of the school curriculum. Governments should also support organisations which already educate youth on climate issues."

The field consultations for this study underlined a strong need for children to have more knowledge of weather and climate events, and that their environment is changing. It is especially important that they

understand how to respond to events, how they can and avoid illness. As described in the stakeholders section, UNESCO is leading a Pacific wide initiative to support the integration of climate change awareness into the existing curriculum.

Undergraduates from the Econesian environmental coalition at the University of the South Pacific (USP) in Suva agreed that: “At high school, teachers explain the scientific process of greenhouse gases but not the effect on people”.¹⁴⁸

A number of international studies advocating for “building a culture of resilience to disasters through schools” cite the example of 10 year old British girl Tilly Smith, who is credited with saving the lives of over 100 people when the tsunami struck Thailand on 26 December 2004. She recognised the signs she had learnt in her geography class, and raised the alarm.¹⁴⁹ Cuba is also highlighted as having a strong national curriculum on disaster preparedness, developed jointly with the Cuban Red Cross, and delivered in May each year before the hurricane season.¹⁵⁰

In Tuvalu and Kiribati, interviewees described that when the tsunami warning was sounded late in 2009, many children flocked to the shoreline to watch the sea, were happy and playing and did not understand the significance of the warning. Children may be exposed to conflicting information about disaster preparedness – for example, on Kiribati, one woman interviewed explained that elders believe in “Nareau, Kiribati’s God of Creation” who has erected deep sea walls in the ocean that protect the island from tsunamis. She said that when the tsunami warning sounded, her father told her and her children not to worry or do anything.

There are international examples of participatory disaster risk reduction programs in schools, such as the work by the NGO Live and Learn with the Ministry of Education in Fiji. The Tuvalu Red Cross is working with schools on Funafuti in evacuation drills and disaster risk reduction, and intends to extend this to the outer islands. Pacific schools could draw on initiatives from other regions, such as the Mekong delta region of Vietnam. In areas which often flood, communities undertook hazard mapping with students, to identify safe evacuation routes home. Children in one school also identified a need for their school to be equipped with small boats, in preparation for higher floods in future.

Globally, the UNEP and UNICEF are developing an Environmental Education Resource Pack for Child Friendly Schools.¹⁵¹ This provides resources for children on mitigation efforts, disaster risk reduction, and promotes an understanding of a child’s local environment. Although not specified, the resource appears to be tailored to school-based delivery, and may be a valuable resource to obtain and share and discuss with UNESCO if appropriate or adaptable to the Pacific region.

Ultimately, the education sector will also need to be aligned as far as possible with evolving national adaptation plans and policy on climate change. For example, the discussion of merit-based migration that has been raised by the President of Kiribati will require an emphasis on vocational education channels and English fluency.

One study contended that, “recent declines in educational enrolment and literacy rates on Tuvalu will most certainly affect their productivity in the post-location period and exacerbate the difficulties of adapting to a modern, market-based culture.”¹⁵²

This issue is explored in detail in part c) below, which presents a case study on Kiribati, climate displacement and labour mobility.

b. Natural disasters

“Older people in Tuvalu had great traditional knowledge for reading the weather. For example, normally there would be two or three breadfruit on a branch, but if there were four or five, people would say there’s a big storm coming. So through this, people knew how to prepare, by drying fish, preserving food and other things. Now this knowledge is dying out, so we should be trying to record it.”

Taukei Kitara, Tuvalu.¹⁵³

While climate variability is not a factor in all natural and human-induced disasters, over the last two decades more than three quarters of global disaster events were hydrological, meteorological or climatological in nature, accounting for 45 per cent of deaths and 80 per cent of damage.¹⁵⁴

According to research in *The Lancet* medical journal: “climate change impacts are projected to increase the numbers of children affected by disasters, from an estimated 66.5 million per year in the late 1990s, to as many as 175 million per year in the coming decade.”¹⁵⁵

The IPCC reports that climate change is expected to exacerbate the risk of disasters, through more frequent and intense hazard events and greater vulnerability to existing hazards. Scientists have also predicted an increase in vector borne diseases, soil and coastal erosion as a result of climate change.¹⁵⁶ IPCC projections for small island states mean that global warming will affect the magnitude and frequency of extreme events, change average climatic conditions and climate variability, affecting underlying risk factors, and generates new threats, which the islands region may have no experience in dealing with.

Pacific island countries already face severe economic losses from extreme weather events like storm surges, cyclones and king tides. In the Pacific islands, natural disasters have affected more than 3.4 million people since 1950, with cyclones accounting for 76 per cent of reported disasters (1950–2004), followed by earthquakes, droughts and floods. The total population affected by each event has been rising since the 1950s.¹⁵⁷

There are a range of direct impacts from natural disasters in the Pacific (including damage to roads, bridges, schools and other public infrastructure, damaged crops etc) as well as indirect costs (such as opportunity costs when scarce resources are diverted from long term development programs into short term recovery and reconstruction work). Less well analysed are intangible costs, including the psychological and emotional impact of trauma on children and other vulnerable members of affected communities, as discussed in the Mental Health section 4.3.1(e) above.

Impacts on water and food security, and changes to reef and fisheries ecosystems, will exacerbate existing pressures related to urbanisation, changing diet and nutrition and population increase. Climate change will increase these costs over time - for example, the World Bank projects that the combined annual damage bill from climate change and sea level rise could be equivalent to 17–34 per cent of Kiribati’s GDP at 1998 rates.¹⁵⁸

The experience of cyclones and floods in recent years highlights this problem. Many Pacific countries have long faced with natural disasters like cyclones and storm surges, and used a range of traditional knowledge to help cope with the impacts (e.g. constructing houses with materials that can withstand

certain types of wind, or preparing “cyclone food”, such as tubers which can be buried and fermented in preparation for post-disaster recovery.)¹⁵⁹

While there still unresolved scientific issues over the link between global warming and the *frequency* of cyclonic activity¹⁶⁰, there is increasing research to show there are significant links between climate change and the *intensity* of tropical cyclones.¹⁶¹ Cyclones cause major damage to infrastructure in Pacific countries and the number of hurricane-strength cyclones (with winds greater than 117km/hr) has increased in the Pacific since 1950.¹⁶² Cyclones can increase wave height which augments inland flooding for low-lying areas and atoll nations. In extreme cases, even a high coral island like Niue (“the Rock”) can be affected, as shown by Cyclone Heta in 2004 (the cyclone had an average wave height of 13.7 metres, destroying 43 houses that were more than 25 metres above sea level).

For many years the Cook Islands were regarded as beyond the main danger area for cyclones, with the country’s easterly position meaning a cyclone might hit every twenty years. But in the months of February and March 2005, the Cook Islands were hit with five cyclones. In the days between 1–17 February, three of these cyclones (Meena, Nancy and Olaf) were classified as Category 5 as they passed through Cook Islands waters, destroying 75 per cent of houses on the island of Pukapuka.¹⁶³

Predicted increases in the intensity of natural disasters like cyclones will exacerbate existing economic effects. For example, Samoa was hit by two cyclones in successive years, Cyclones Ofa (1990) and Val (1991) causing damage of US\$440 million, an amount greater than the country’s annual average GDP. In 1997, Tuvalu suffered three cyclones within four months – Gavin (5 March), Hina (12 March) and Kelly (10 July).

There is a growing literature on the economic impacts of natural disasters on PICs.¹⁶⁴ A 2006 World Bank policy report has calculated the estimated economic impact of disasters, showing that Vanuatu (with 37 reported disasters between 1950 and 2004) had an average of 15.5 per cent of the population affected in disaster years, with an average impact on GDP of 30 per cent. The figures were much greater for smaller island states (in Samoa for example, the respective figures were 42.2 per cent for affected population and 45.6 per cent for GDP).¹⁶⁵

However, these studies have very limited gendered analysis and do not analyse other vulnerable groups within the general community. Recent studies on the risk of disasters and climate variability in the Pacific Islands conducted by Global Facility for Disaster Reduction and Recovery, World Bank and SOPAC make no mention of children.¹⁶⁶

There is an important role for UNICEF to research and publicise this issue, as women and children are disproportionately the victims in disasters, generally suffering a higher mortality rate in floods, cyclones or displacement events. For example there was a high mortality and morbidity rate among children following the 2004 Indian Ocean Tsunami, where the largest numbers of fatalities were women and those under the age of fifteen.¹⁶⁷

Climatic changes that contribute to natural disasters and extreme weather events will have a range of impacts on children, requiring increased commitment to child protection initiatives and changes to health and education budgets. The displacement of people from their homes leaves unaccompanied or orphaned children vulnerable to exploitation; people displaced from their land and reef will take time to resume food production, affecting children’s nutrition; damage to hospitals, health clinics and medical services may impact disproportionately on maternal child health and vulnerable children under five.

Pacific development agencies and aid donors already commit significant resources to disaster risk reduction, management and response. Climate change adaptation and disaster risk reduction (DRR) have similar aims and mutual benefits, but often donor programs on the two areas are not integrated. There is potential to use DRR tools that have proven to be effective in dealing with weather-related events that will be exacerbated by climate change.¹⁶⁸

However donors should not simply integrate climate change programming into existing regional initiatives on disaster preparedness, risk management and response. Climate change has been described as a “slow-burning emergency” and many of the adverse effects of global warming will develop over long periods of time.¹⁶⁹

While many of the techniques for community vulnerability assessment and disaster preparedness have relevance for climate adaptation, they are not adequate to make long-term assessments of changes that may take decades to become apparent. There is a need for development of different research tools that involve baseline studies and rolling review, to cope with the drawn out nature of the climate emergency.

c. Displacement and Labour Mobility

“If all the predictions on climate change are true, it’s a threat to the future of the youth. I’d like my children to enjoy Tuvalu as long as they want, and their children and grandchildren, rather than go to another country that would be alien to them. To lose custom and tradition will affect the young generation. Physically they’ll still be Tuvaluan but morally they’ll have lost their essence.”

Tuvalu youth leader, February 2010.

The current intergovernmental *Pacific Islands Framework for Action on Climate Change* (PIFACC), developed by Forum member countries, makes no mention of climate displacement or migration.

In spite of this, some Pacific island governments like Kiribati, Tokelau and Niue are openly discussing issues of relocation and resettlement due to climate change. In July 2007, a joint statement from Pacific environment ministers to the Forum Economic Ministers Meeting (FEMM) noted: “The potential for some Pacific islands to become uninhabitable due to climate change is a very real one. Consequently some in our region have raised the issue of their citizens becoming environment refugees...Potential evacuation of island populations raises grave concerns over sovereign rights as well as the unthinkable possibility of entire cultures being damaged or obliterated.”¹⁷⁰

In August 2009, the outgoing chair of the Pacific Islands Forum, Premier of Niue Toke Talagi, said it may be time for the regional organisation to formally consider the issue of resettlement of people affected by climate change. Speaking at the official opening of the 2009 Forum leaders meeting in Cairns, Talagi stated: “While all of us are affected, the situation for small island states is quite worrisome. For them, choices such as resettlement must be considered seriously and I wonder whether the Forum is ready to commence formal discussion on the matter.”¹⁷¹

Across the Pacific, there have long been trends where young people are on the move (from rural to urban settings, between Forum island countries and from the islands to Pacific Rim countries) seeking improved livelihoods, reliable income and the three E’s – education, enjoyment and employment. Now there are a number of examples where people from low lying islands are also considering migration or

relocation after being affected by extreme weather events, tectonic land shifts or climactic change that damages food security and water supply.¹⁷²

While there is a reaction against the term “climate refugees”, there is a growing international literature that discusses the link between climate change and migration.¹⁷³ In April 2008 a Climate Change, Environment and Migration Alliance (CCEMA) was launched by UNU-EHS, the United Nations Environment Programme (UNEP), the International Organisation for Migration (IOM) and Munich Re Foundation (MRF).

The United Nations High Commission for Refugees (UNHCR) hosted a meeting in Canberra in December 2008 with representatives from Kiribati, Tuvalu, Bougainville and the Maldives as part of a broader reassessment underway in the agency over the ways that climate change will affect UN agencies.¹⁷⁴ The seminar raised a range of issues that need consideration in any relocation debate:

“Apart from the direct impact on affected communities themselves, the prospect of mass human displacement raises serious concerns about land, shelter, resources and livelihoods, and minimising conflict and shortages arising from the need for adjustment by communities which will receive climate displaced populations. The cost and complexity of these rather obvious issues have been relatively neglected in the forecasts of economists, scientists and policy-makers. One consequence is the paucity of practical discussion of actual solutions to address these scenarios, in particular the specific housing, land and property rights options required for people forced from their homes due to the effects of climate and other environment-related changes.”¹⁷⁵

The potential for forced displacement because of climate change needs extensive and long term community participation and debate – and this must involve children and young people as well as their parents and community leaders. On a personal level for adults and children, displacement means leaving behind places of work and play, homes, belongings, religious and cultural sites, including places where relatives are buried. On a community level, it represents the fracturing of social networks, the loss of culturally assigned roles, positions of authority, language, and sites for community practices such as dance and music. Given the strong ties to the land and sea in Pacific culture, there is a need to anticipate that “cultural bereavement” is likely to be experienced by families and children.¹⁷⁶

As an old man in Solomon Islands told one of the researchers in 2008: “They talk about us moving. But we are tied to this land. Will we take our cemeteries with us? For we are nothing without our land and our ancestors.”¹⁷⁷

Coping, and how experiences are perceived and interpreted, are also moderated by culture. A relief worker we interviewed who was involved in the response to the tsunami in Samoa in 2009 was told by locals that some churches took the view that the tsunami was a punishment from God because people in the tourism industry worked on a Sunday. There have been some important studies on the way that religious and cultural values in the Pacific can help or hinder responses to climate impacts, and further work in this area would be valuable.¹⁷⁸

For UNICEF Pacific, the long-term implications for children who are displaced from their home raise important questions of mandate. Under the CRC, there are provisions that apply to displaced children, for example the rights of children to an identity (Article 8) and the rights of refugee children (Article 22). However, refugee rights may not apply for climate-displaced people – UNHCR’s formal mandate does not cover people who are displaced internally or seek refuge overseas because of environmental causes. Because of its practical experience in dealing with large scale forced movement of people,

UNHCR staff and resources have in practice been allocated to supporting the aftermath of major natural disasters (such as the 2004 Asian tsunami, 2005 South Asian earthquake, 2006 floods in Somalia and 2008 floods in Burma, amongst others). UNHCR, together with its primary focus on refugees and asylum seekers, does have a responsibility under international humanitarian law for stateless people – the threat that some low-lying atoll countries might eventually disappear has raised new debates on statelessness and sovereignty.

Moving to a new location within a country or across international borders is just the first step, and international experience on resettlement raises a host of dilemmas for communities on the move. The failure of resettlement in developing countries comes not just from inadequate inputs of resources (money, staff, and political will) but from the inherent complexity of this as a social process involving human beings with hopes, dreams, aspirations and especially memories. This element should not be underestimated. Current leaders in small island states obviously feel a burden of intergenerational equity. As formal interviews with government officials ended, a number of people spoke in a personal capacity – with some sadness and emotion – about their hopes for their children and grandchildren and their own sense of responsibility. As one noted: “Our core challenge is to remain here. Maybe our great grandchildren will not see Tuvalu if this generation does not act.”¹⁷⁹

Case study:

Impacts on children’s education and wellbeing from labour mobility in Kiribati

The effect of climate change on resettlement and government attempts to respond through migration and temporary labour mobility can be shown by looking at two of the small atoll nations most threatened with climate displacement in coming decades – Kiribati and Tuvalu.

Kiribati President Anote Tong has stressed that climate adaptation alone will not address the problems facing the country. Speaking to the UN General Assembly in 2008, he argued: “While we require adaptation measures, our adaptation options are extremely limited, given the nature of our islands. We are a country of low-lying coral atolls with most islands rising no more than two metres above sea level. Adaptation measures of moving inland and to higher ground are impractical for us. We cannot move inland due to the narrowness of our islands, nor are there higher grounds to which we could escape from the rising seas.”¹⁸⁰

President Tong has publicly raised the possibility that many of the 100,000 people in Kiribati must one day move elsewhere, whether internally to larger atolls like Kiritimati, or overseas to larger Pacific neighbours like Fiji or Pacific Rim countries like Australia and New Zealand. Interviews with government representatives from Kiribati and Tuvalu highlighted that governments are advocating for increased mitigation efforts by industrialised nations and exploring all options for adaptation to climactic change, and that relocation is the last option to consider.¹⁸¹

Betarim Rimon of the Office of the Berititenti in Kiribati says that: “In Kiribati, we are talking about relocation over time rather than forced displacement. We think about relocation as a long, thought out, planned process.”¹⁸²

President Anote Tong has stressed that this strategy involves the training of people to make them competitive and marketable at international labour markets: “The relocation of the 100,000 people of Kiribati, for example, cannot be done overnight. It requires long term forward planning and the sooner

we act, the less stressful and the less painful it would be for all concerned. This is why my Government has developed a long-term merit-based relocation strategy as an option for our people. As leaders, it is our duty to the people we serve to prepare them for the worst-case scenario.”¹⁸³

In interviews about the possibility of climate displacement, different responses came from the elderly compared to younger people who have more flexible skills for migration. Annie Homasi from the Tuvalu Association of Non-Government Organisations (TANGO) says the slow pace of action on climate change by large industrialised countries has the potential to cause uncertainty and even division in the local community, for people who are fearful they may have to relocate from their homes: “There’s quite a debate at home, maybe even a division, between the older generation and the young people. Because they go overseas for school, the young ones say ‘Yeah, we have to move’. But the older ones say ‘This is me, my identity and my heritage – I don’t want to go.’”¹⁸⁴

Kiribati has focussed on training opportunities for young men as seafarers or seasonal work programs in the horticulture industries of Pacific Rim countries like Australia and New Zealand. Kiribati has signed on to New Zealand’s Recognised Seasonal Employer (RSE) scheme and Australia’s Pacific Seasonal Worker Pilot Scheme (PSWPS), which provide seasonal employment opportunities in fruit-picking and horticulture industries.¹⁸⁵ For young women, there are currently opportunities in nurse training and as aged care workers (Pacific Rim countries like Australia, New Zealand and Japan are currently debating opportunities for Pacific women to be recruited to assist the age care industries given ageing populations and shortages of trained carers and nurses.¹⁸⁶)

Since 2007, Australia has funded the \$6 million Kiribati-Australia Nurses Initiative (KANI), and some 80 young i-Kiribati women have travelled to Australia for nursing training.¹⁸⁷ The scheme involves an Academic Preparation Program (16 weeks in Kiribati), Nursing Diploma Preparation Program (16 weeks in Australia), Nursing Diploma (12–18 months at Brisbane TAFE colleges) and the Bachelor of Nursing degree (a further 2 years at Griffith University in Queensland). According to AusAID, “the initiative will enable i-Kiribati youth to attain Australian nursing qualifications and industry experience. In Australia, i-Kiribati nurse educators attain further education and skills development to Australian standards to strengthen Kiribati nursing education outcomes and health care services.”¹⁸⁸

Australia's Parliamentary Secretary for International Development, Bob McMullan, notes that: “Some of the people will graduate, go back to Kiribati, add substantially to the pool of qualified nurses there and improve the health system. But some of the others will stay in Australia and they'll send remittances back and both those things are incredibly valuable.”¹⁸⁹

As Pacific geographer John Connell notes, nurse training boosts opportunities for migration, as there are shortages of health workers in Pacific Rim countries: “Many people entered the health professions less out of altruism, or a particular interest in medicine, than through recognition that this might be a means to maximise or at least improve family incomes and welfare. Parents have encouraged their children to enter the profession for the same reason and increasingly so as familiarity with overseas circumstances increases. Employment in the health system thus enables migration as much as being an instigator of it.”¹⁹⁰

While the benefits of remittances from overseas workers cannot be ignored, an increase in the “brain drain“ of health professionals from Pacific countries to developed countries like Australia and New Zealand could worsen the shortages of health workers in the islands, with consequent impact on the provision of care for children. For example, in 2006 there were 652 Pacific-born doctors working in Australia and New Zealand as well as 3,467 nurses and midwives from the Pacific.¹⁹¹

Another crucial source of revenue for Tuvalu and Kiribati are the remittances of seafarers who crew vessels for international shipping companies from North America and Europe.¹⁹² Both governments have a strategy for training young Tuvaluan and i-Kiribati seafarers, mainly boys, to work on overseas shipping lines, with sailors travelling overseas for eight months in the year. The two countries host training colleges: the Tuvalu Maritime Training Institute (TMTI) on Amatuki Island, Funafuti Atoll and the Maritime Training College (MTC) on Betio, South Tarawa. These colleges provide a key vocational training opportunity for young people who drop out of schooling at Form 3. Most of the people trained are young men, but since 2005 young i-Kiribati women have taken up positions as cooks and stewards on overseas ships.

The seafarers' remittances provide major and positive development outcomes for families and communities. Maria Borovnik's study of seafarers' remittances in Kiribati estimates that 57 per cent of funds remitted to wives and partners are spent on basic needs, 30 per cent saved for investment and 13 per cent spent on school fees.¹⁹³ Because of the i-Kiribati tradition of *bubuti* (a request by a family member that cannot be refused), cash and goods coming into the community spread through the extended family, rather than remaining with one individual.

The seafarers' wages are the basis of economic support for many people within the home community, ranging from 1–30 people. Borovnik estimated 4,200 people in Tuvalu (population 10,000) and 10,200 people in Kiribati (population 100,000) were directly dependant on the seafarers' income. European-style houses, motor scooters and electrical appliances are now widely utilised, so family members will put pressure on their children working locally or overseas to provide these kinds of goods.

Much of the literature on labour mobility in the Pacific from donors and multilateral agencies like the World Bank and Asian Development Bank focuses on the role of remittances in development outcomes.¹⁹⁴ There are other benefits such as the repatriation of skills and education, the promotion of tourism and the seeding of funds for small business development. A high proportion of migrant workers remittances are used to fund spending on children's education. The long-running Canadian seasonal agricultural worker program (CSAWP) shows that children of migrant labourers are likely to stay longer in school: Jamaican workers were found to spend up to 35 per cent of remittances on children's education and there is a positive correlation between the number of years workers are employed in CSAWP and their children's school leaving age.¹⁹⁵

However, migration also has social costs. The lifestyle and work habits of overseas seafarers have negative as well as positive impacts on the social and economic circumstances of dependants and communities. There are a range of social impacts – on labour rights, family life and development outcomes for women and children – that need to be addressed if seasonal and temporary labour schemes become part of the regional response to climate displacement.

The Secretariat of the Pacific Community (SPC) has conducted detailed studies of the social implications of seafaring for community development, which indicated multi-faceted – and often negative – impacts on children and family life:

- Wives, partners and children of seafarers reported difficulties maintaining contact with overseas workers, causing stress and depression. This was exacerbated because depression is not considered a real 'health problem' in many Pacific cultures.
- There are complex gender and childhood development issues, when sailors communicate largely with their spouse rather than their children while overseas. Children also reported anger

or annoyance at their father on his return, for disrupting household routines, ignoring their personal development, or diverting their mother's attention to caring for her spouse rather than her children.

- There is some internal migration from outer islands to Tarawa, as seafarers' families move to the capital to avail themselves of more time with their spouse/parent between voyages.
- Loss of employment by seafarers due to illness, injury or decline of job opportunities in times of recession had 'catastrophic' effects on the economic circumstances of some families.
- Some seafarers engaged in unsafe sexual activity while overseas, often under the influence of alcohol. There is an increased risk of HIV&AIDS and STIs for the workers, but also for wives / partners who find it difficult to refuse unprotected sex when their husbands return from overseas, and face violence if they refuse.
- An increase in violence against spouses was also related to alcohol abuse, with returning sailors engaging in drinking sessions with their mates. Women were reluctant to report domestic violence to police in this case because 70–80 per cent are dependant on their spouse/partners' income
- The majority of wives/partners and children reported difficulties resuming relationships with returning seafarers.¹⁹⁶

Research on Pacific temporary labour mobility from other island states shows that there are significant impacts on children's well-being as well as family livelihoods with the increase of seasonal and temporary labour programs.¹⁹⁷ While there are many positive effects from increased remittance flows – including extra money for school fees or improved housing – there are also many social costs which impact children and family life:

- Current deployments of Fijian men as UN peacekeepers, British soldiers or private security guards in Iraq and Kuwait have provided evidence of psychological stress on children and negative impacts on educational standards.¹⁹⁸
- Church leaders report a number of cases of family break-up, infidelity and new relationships forming, as one spouse worked overseas for lengthy periods. There are a number of anecdotal reports of Pacific men who had married in Australia to obtain residency rights, even though they had a wife and family at home.
- Community leaders are worried about the ways in which increased amounts of migrant work will affect gender roles in rural villages. There are concerns about the loss of male role models, and the potential impact that departing young workers will have on the traditional gendered allocation of jobs.
- There are also concerns about the ageing of the population in rural areas, as young people migrate to urban centres or overseas, may impact on agricultural production and add burdens on already stressed health services. Older women end up with more unpaid child care when their working age children move to cities or overseas for employment.¹⁹⁹

A growing concern is a pattern of suicides amongst Pacific youth, with the Pacific having the highest youth suicide rates in the world.²⁰⁰ For Indo-Fijians and in Samoa, suicides amongst young women exceed those for young men, which is unusual for almost all populations in the world.²⁰¹ This youth crisis is in part connected to the absence of parents and relatives; while extended families often used tight authority systems, they also provided older relatives such as aunts and uncles with whom children can talk about their problems. Researchers such as the Micronesia Seminar's Father Fran Hezel have highlighted the effects of globalisation as one of the many elements in youth suicide, as customary and family mechanisms for conflict resolution have been shattered by migration – with family members working overseas, traditional family reconciliation mechanisms are not working as effectively.²⁰²

This brief overview of a multi-faceted social and economic process has obvious implications for UNICEF. If in coming years climate change will increase internal and overseas displacement, this has major implications for family life and children's well-being. The current increase in temporary labour mobility schemes, as a deliberate response to the lack of adaptation and development options, creates new pressures in all the areas where UNICEF Pacific currently has work programs: education, child health, HIV&AIDS and STIs, and child protection.

4.3.3 Impacts relating to Protection

“My observation is that many kids here in Tuvalu are already aware and knowledgeable about climate change and disasters. But I'm not sure if they really know what it means. For them as young kids, the conditions on our small atoll are normal. Born and raised here, we get used to storms and cyclones, so it's not a big thing. It's only when people come from overseas and tell us how small our islands are that you get a sense of the high risk.” Eseta Lauti, Secretary General, Tuvalu Red Cross.

a. Child Protection

Protection Consequences of Natural Disasters

Natural disasters can mean that children are at heightened vulnerability to abuse, violence and exploitation, if separated from family or orphaned by the event. Disasters that result in people having to live in emergency shelters, which are crowded and have little provision for privacy, have been documented to report in protection concerns for children, such as sexual violence.

After the tsunami in Sri Lanka, one study noted that adolescent girls complained about lack of privacy and their experience of sexual harassment in the shelters. Staff from Save the Children and some vocal women within Ampara District, Sri Lanka also reported that the cramped shelters, with a lack of privacy for dressing and bathing, had resulted in “many abuses”.²⁰³

Elevated stress for adults is well understood to have repercussions for children, including violence and neglect. Studies have established the link between increased rates of child abuse with parental depression, loss of property, financial loss and a breakdown of social supports. Natural disasters can trigger all of these factors and after Hurricane Katrina in New Orleans in 2005, a report notes that “the rates of inflicted head injury to children under the age of two increased five-fold.”²⁰⁴ Natural disasters also engender mental health and psychosocial impacts, as discussed in more detail in the Mental Health section 4.3.1(e) above.

The UNICEF *Situation Analysis of Children, Women and Youth in Kiribati* from 2005 noted that parent-child relationships in Kiribati are very formal, with an expectation that children comply or face severe physical punishment.²⁰⁵ Against this backdrop, additional stress on parents and children through climate hardships may intensify this dynamic.

The relief worker interviewed after the Samoa tsunami also said that in the immediate aftermath she saw a lot of children walking around by themselves, and that she was not aware of any child friendly spaces or recreational activities for them.

Internal Mobility and Protection

With the only high school on Kiribati located in Betio, and the majority of paid employment opportunities on Tarawa, many children and young people migrate from the outer islands and stay with extended family in the capital. However, a number of people interviewed on Kiribati mentioned the fact that these children were not well looked after or poorly treated as compared with the household children. This was also a finding of UNICEF's *Kiribati Situation Analysis* which further stated that for these children staying with extended family, "A passive form of neglect is quite common...they may get little supervision and attention to their needs."²⁰⁶

As climate change renders the more exposed outer islands less habitable, internal displacement is set to rise. Climate change has already caused internal population displacement in the Pacific, with the relocation of a small number of people from the Carteret Islands in Bougainville, or people dislocated by extreme weather events in Vanuatu and Tuvalu.²⁰⁷ With increased stress on natural resources and competition for limited employment and livelihood options between households, communities are likely to experience an undermining of traditional, communal support systems. Climate change also poses risk of conflict occurring, especially in communities with existing ethnic or religious tensions.

At times of internal displacement, some children may move with their family unit, which may be a protective factor – depending on household functioning. In the cases where they are sent to other relatives, this will be a population of children whose welfare may need to be monitored over time.

Citizenship and Registration

Birth registration is vital to safeguard children's protection from abuse, neglect and exploitation, primarily through the establishment of proof of age (and the corresponding protections and entitlements flowing from that), as well as access to services essential to a child's health and development.

Birth certificates give displaced people and refugees a legal identity and access to services enjoyed by the host community, opening the way to a more secure future. By establishing a legal identity, through registration and granting of birth certificates, can help IDPs open a bank account, obtain travel documents or access education and health services. This process can also help governments to plan such services for refugee populations.

Already in the Pacific, there are examples where UN agencies have provided support for refugee populations; for example, in 2004 PNG authorities and UNHCR provided birth certificates to 1,217 West Papuan refugee children living at the East Awin camp in Papua New Guinea (These children aged between 6 months and 20 years were the children of people fleeing from the Indonesian-controlled province of Papua between 1984 and 1986.²⁰⁸) The birth certificates gave the refugee children easier access to PNG services in education and health.

This example shows the way that UN agencies can work with national governments to address the identity, education and health needs of displaced children and their families. This will become more important as environmental effects displace communities in coming decades, as highlighted by the Kiribati case study above. Despite the fact that school enrolment now requires production of a birth certificate, birth and adult registration and rates on Kiribati are very low. According to official statistics quoted in UNICEF's *Pacific Child Protection Baseline Report 2008*, "approximately 20% of children under 19 were registered as at 2005."²⁰⁹

Birth registration entitles a child to citizenship and the protection and entitlement that flow from this. If or when climate displacement eventuates, it will be vital to have a complete knowledge of the child population within a country, in order to safeguard against any particular child, or category of child, being left behind. A representative from the Pacific Disability Forum expressed concern that children with disabilities or severe illness would be left behind.²¹⁰ With few other international actors working on child protection in the Pacific, UNICEF will be key in monitoring, even if informally, the future impacts of climate change on children's protection.

Funding for child protection

The diversion of donor and government funding towards climate mitigation and adaptation programs will have medium and long-term implications for government revenues and budgeting. As will other social sectors like health and welfare, this may have adverse effects in reducing investments in child-protection systems.

This is already an area where there is little investment being made in most Pacific countries, despite the costs of child abuse being significant burdens on government budgets. The diversion of funds for relief and re-building initiatives may leave governments less able to invest in child protection, even though there will be an increased need after extreme events.

b. Shelter and the Surrounding Environment

Shelter Reinforcement

Secure or reinforced housing is an important defence for children from the effects of climate events such as increased rainfall, forceful storms and tidal surges that overwhelm sea defences damage and claim houses. Children living in substandard housing are at elevated risk of perishing in house destruction or by drowning.

Short-term counter measures, such as sea wall defences made from local materials, were visible on Tarawa and Funafuti. Significantly, on Tarawa, households bear the cost of erecting sea walls, and it was explained in one interview that, "if you don't own the land you are on, you are less inclined to rebuild the sea wall". People who have migrated from the outer islands and poorer households would be less likely to own land, and so the children of these families will be more exposed to climatic and weather effects, such as sea level rise, storm surges and inundation of their houses.

A number of people interviewed also mentioned that the diversion of household budgets to house and sea wall repairs resulted in less money for food and for school needs such as uniforms, transport fares and books.

Floods and Drownings

With flooding caused by storms and inundation from the sea, the risk of drowning will also increase. Bangladesh, which is significantly affected by floods on an annual basis and by sea level rise, surveyed 171,000 households for its 2003 national Health and Injury Survey and found that drowning was the single leading cause of death among children aged 1–18.²¹¹ This is an arresting finding, given the reported frequency of these episodes in the Pacific, especially on Kiribati.

A similar study in Nepal after severe floods in Sarlahi District found that flood fatality rates were six times higher among children than adults, were highest among girls. The respective fatalities rates were 13.3 per 1000 for girls and 9.4 per 1000 for boys. While the cultural context of South Asia is vastly different to the Pacific, similar rates were also found in South East Asia which has a seafaring and coastal communities.²¹²

Young children are especially at risk of drowning, since they may not have learnt to swim yet and are more dependent on their parents or guardians. A number of people confirmed that children on Kiribati and Tuvalu learnt to swim at a young age, although this wasn't further verified.

Floods may also force other families into temporary shelter or permanent displacement. When houses are destroyed, families lose items for survival such as essential medicines, clothing and cooking equipment and children may also lose items such as toys and school materials. In one clutch of households on Funafuti, in an area that had been inundated in a previous year, the water had not receded and rubbish and debris was visible – posing risks for both illness and injury.

However perceptions of these hazards vary, according to people's living circumstances and poverty. One interviewee in South Tarawa told us: "People who don't have any money don't care about climate change. They're used to roughing it and being sick and drinking bad water and sleeping in poor housing already. If there's flooding they just wade through it and don't go around saying 'Oh, oh, oh, I'm scared!'"

4.3.4 Impacts relating to Participation

Children and Youth Participation and Voice on Climate Change

"The energy and creativity of children and young people must be nurtured so that they can actively take part in shaping their environment, their societies and the world they will inherit."²¹³

In the consultations that led to UNICEF's *The State of Pacific Youth Report* in 2005, young people specifically emphasised that, "they want more opportunity to contribute actively to the development of their communities."²¹⁴

This was also confirmed in the youth delegate statement from the conference on Youth Visioning for Island Living in 2005. Relating to climate change, youth expressed their desire for the following:

- Building partnerships with youth to support preservation of culture with and for future generations;
- Involving youth in decision making concerning social, cultural and physical environment;
- Engaging small island youth as environmental advocates;
- Providing youth with the skills and knowledge necessary to plan for and respond to the dangers posed to their societies by natural disasters; and
- Contributing to the development and implementation of policies to effectively manage marine and coastal resources.²¹⁵

More recently, youth delegates at the 2nd Pacific Youth Festival held in Suva, Fiji in July 2009 selected climate change as one of the four central themes of this regional youth gathering. In the Suva

Declaration that was issued after the Festival, young people drew attention to the social and sustainability threats posed by climate change, and highlighted that the engagement of young people in climate change action augments the community's capacity to respond. Areas of concern expressed in the Declaration included:

- Many traditional and national leaders remain to be convinced of the magnitude and severity of climate change;
- Many young people are not aware of these critical issues affecting all of their futures;
- There is no strategy to hold nations accountable to protecting our people from the effects of climate change;
- Unsustainable fishing, forestry and agricultural practices and the disastrous impacts of mass migration to urban centres and industrialization have serious impacts on food and productive security and waste management;
- Some communities already are living with the consequences of climate change and have little access to clean water and sanitation due to salinisation of fresh water lenses; and
- The risk of losing their ownership rights of their land and ocean territory, and national identity.

Areas recommended for action included:

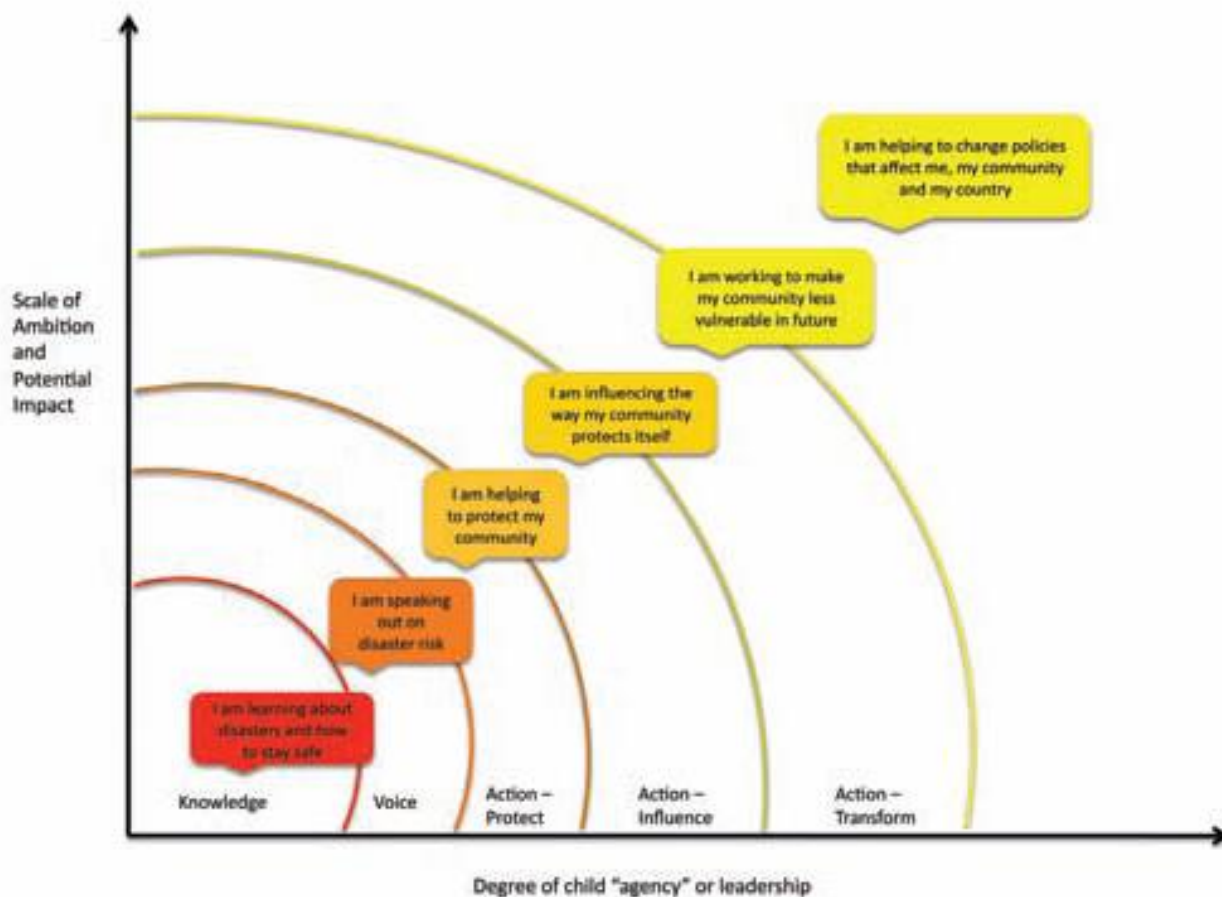
- The scale and regional nature of environmental and climate change issues requires effective networking at national, regional and international levels and consolidated efforts to protect the region's natural resources and our nations' environments. This includes working with young environmentalists;
- Strongly support advocacy initiatives by young people in bringing the issues faced by island countries to the international arena. In this regard, we endorse the Pacific Youth Festival Declaration on Climate Change and young peoples' call to be included the global, regional and national agenda for climate change adaptation;
- Acquire and update technology and equipment for effective climate monitoring to ensure Pacific nations have advance notice of natural disasters; and
- The Pacific region needs a strategy to hold Pacific nations accountable for the protection of their people from the effects of climate change and to stand in solidarity to hold industrialized countries accountable for the environmental and social impacts in the Pacific.²¹⁶

As identified in the Declaration, the field consultations for this study reiterated the fact that only a small number of children have detailed access to information and discussions on climate change, such as the COP 15 Children's Ambassadors and the Tuvalu Red Cross Youth Group on Funafuti. Tarusila Bradburgh from the Pacific Youth Council noted "I think there is a certain group of young people who understand, but a large group who do not understand."²¹⁷

One NGO representative emphasised that there was a need to "improve *all* young people's understanding of the *humanitarian* implications of climate change". Children are often "sentimentalised" as passive or helpless, or as not capable of or interested in contributing to community issues. However, there is abundant evidence of children being involved in climate change and disaster risk reduction efforts globally, and bringing an independent, unblinkered perspective, and a resourcefulness and concern to the issues. Another NGO representative enthused that children bring a "wonderfully creative slant to messages". Children are also incredible connectors within communities, moving between family, school, peer group and workplaces.

Furthermore, there are strong social norms in Pacific culture, whereby participation, power and decision making is based on age. A young church leader in Fiji explained that “we learn at the feet of our elders”. However, culture is not a static doctrine, and there was clear evidence of young people in Tuvalu and Kiribati desiring a greater role and voice in their futures.

Representatives from the Econesian group at USP relayed, “when we speak with the community, we have to learn to tread slowly. It is a very long process, but if you start by engaging with the chief, the people will listen to you.” It is crucial that the very children who will experience and feel the impacts of climate change have the opportunity to be involved and make a difference to how it affects their lives. The diagram that follows neatly illustrates the amplifying effects of increasing children’s agency in their communities, extracted from *Children and Disaster Risk Reduction: Taking stock and moving forward*.²¹⁸



Climate change is described as the defining issue of our times. This is acutely so for the children of Tuvalu and Kiribati who are on the frontline of climate impacts. While climate change is currently conceptualised and programmed for at the national level, its effects will be experienced locally. There is enormous need to understand at close range, and from the children themselves, how their lives are being affected – and the responses that they, their family, schools and community are mounting in response.

Children responding to natural disasters

There is a need to integrate children's rights into regional disaster preparedness and response programming in the Pacific. When it comes to disasters, children are particularly vulnerable and rely on adults for protection and support. In the Pacific literature on climate and disasters, women, children and the elderly are usually discussed together as a combined category of vulnerable people. But children have specific vulnerabilities and needs which have to be specifically addressed in risk reduction.

At the same time, children are not passive bystanders and should never be treated simply as helpless victims. Children also possess capacities according to their stage of development which form the basis for their active participation in emergency response, preparedness and mitigation. Children are effective communicators of risk and drivers of change in their communities – one interviewee noted that children in the Pacific live at the intersection between home, school and community, and can draw on lessons and ideas from all those spheres.

While there are varying levels of awareness about climate change in Pacific island communities, and limited understanding of the science of global warming, “children often know more about the climate change issue than their parents or grandparents, because issues about climate change are being taught in school and because children are accessing environmental and other media through electronic communication sources more regularly than their elders are.”²¹⁹

Unlike mitigation, which can be prescribed and regulated by regional or global policies, effective adaptation policies and strategies depend on an understanding of local circumstances – and children bring a particular perspective to community responses: “DRR efforts cannot properly account for children's needs unless specific attention is paid to this during the design and implementation of any intervention...DRR interventions involving children [follow] along a continuum from expanding Knowledge, to enhancing Voice, to taking Action.”²²⁰

DRR work has traditionally been dominated by top-down thinking with children being seen as passive victims in need of protection. Recently the International Federation of Red Cross / Red Crescent societies and NGOs such as Plan International and Save the Children have been working with children as active participants in efforts to reduce the risks faced by themselves and their communities. Some of this work is being done in formal settings – for example school safety programs link the school to the family and community in disaster risk reduction.²²¹ But as discussed in section 3, NGOs are organising outside the formal education systems with youth radio projects, reading clubs, art projects and other peer-to-peer initiatives.

The Solomon Islands Youth and Climate Change Forum in November 2008 involved over 70 youth participants. During field trips to Solomon Islands communities, participants interviewed local inhabitants to find out more about the changes in weather that they are noticing. Red Cross organised youth theatre, poster competitions and an FM radio quiz for schools on the International Day for Disaster Risk Reduction (IDDR), raising awareness on how to reduce disaster risk.²²² Overseas experience also provides some models for Pacific countries – for example, the Bahamas Red Cross has embarked on an innovative campaign on climate change, working with deaf children in Nassau to promote disaster preparedness and response among people with disabilities.²²³

Rather than seeing climate change as a separate issue, agencies like the Red Cross are working to reduce climate-related risks by integrating activities into ongoing development and disaster risk

reduction programs. This comprehensive approach to manage the rising risks is called “climate risk management.”²²⁴

UNICEF could work with other UN and CROP organisations in the Pacific, to begin to integrate lessons learnt from overseas about children and DDR into regional programs co-ordinated through the *Pacific Disaster Risk Reduction and Disaster Management Framework for Action 2005 – 2015*.²²⁵ UNDP Pacific Centre has initiated a project on south-south co-operation on disaster risk management between the Caribbean and Pacific – given its global reach, UNICEF could contribute to this process with information and research on effects on children.

5) Findings and Recommendations

Based on the overview of regional activities on climate change and on the survey of key impacts on children, six core issues arise for UNICEF Pacific:

- 1) While there is an increased level of activity and programming on climate change, there is concern among many agencies about how to integrate “climate” activities into existing work programs, without simply re-badging existing development work as climate adaptation.
- 2) Most agencies do not have an explicit strategic focus on children and climate change and little if any of their program activity is currently focussed on children. This provides both a challenge and opportunity for agencies like UNICEF that prioritise rights-based programming for children and young people.
- 3) There is a need to move from anecdote to evidence, working with local communities, NGOs and governments to research, document and publicise the social, cultural and economic effects of climate change, and develop baseline studies that will assist future research.
- 4) Co-ordination and (lack of) co-operation between the increasing number of stakeholders is a central and growing problem, with the potential to exacerbate existing levels of duplication and gaps amongst donors and development agencies.
- 5) Much of the innovative and creative work on children and climate change is being conducted by non-government and community-based organisations. If UNICEF Pacific is seriously contemplating expanding its work in this area, it must extend its primary focus beyond work with national government ministries to also consider direct support to and engagement with the community sector.
- 6) Finally, and most importantly, many children and young people across the Pacific are increasingly aware of the potential impacts of climate change on their future and their current limited involvement in decisions on this issue. Children’s voice and participation in adaptation initiatives should be integrated into regional and national programming on climate change.

Each of these points is elaborated in the following sections, and then some short, medium and long-term recommendations are outlined for UNICEF Pacific.

5.1 Increase in regional activity on climate change

As detailed in the list of stakeholders (section 3), there is an increasing range of organisations engaged in programming on climate change in the Pacific. Some interviewees raised concern that climate change was “the flavour of the month”, and that donors and UN agencies would simply re-badge existing work programs on relevant areas as “climate adaptation” work, in the recognition that the UNFCCC process was creating significant funds for climate mitigation and adaptation programs.

Pacific island countries have argued for greater funding to be allocated for adaptation programs, as they have insufficient resources to address the adverse effects of global warming. But a central message coming from Pacific governments is that this funding should be *new and additional money rather than the reallocation of existing ODA funds*. At the 2008 UNFCCC conference in Poland, AOSIS argued for: “Availability of new and sufficient financial resources separate from the current ODA commitments to vulnerable countries, especially the SIDS and LDCs, to assist them in building their capacities, implementing adequate adaptation measures and accessing appropriate technology to

respond to the challenge of climate change.”²²⁶This equally applies to work on climate change and children.

The increased flow of adaptation funding in coming years will raise practical problems. Many program funds are directed at one implementing ministry, rather than at a multi-sectoral inter-ministry coordinating group. Some SIDS face major pressures in managing the range of new demands – one official in Tuvalu noted: “I don’t think the amount of funds we receive for adaptation is sufficient for our needs. However at the same time, a problem for climate change work is the management of adaptation programs. It’s very difficult for a small place like this when we have a lack of knowledge and know how.”²²⁷

Pacific governments publicly welcome support for increased commitments from donor partners like Australia, New Zealand, Japan and the European Union and from UN agencies working in the region. But the Forum leaders’ official communiqué in 2008 stressed: “The priority of Pacific SIDS is securing sustainable financing for immediate and effective implementation of *concrete adaptation programmes on the ground* (emphasis added).”²²⁸

The Pacific’s call for ‘new and additional funding’ is based on the recognition that existing development challenges need ongoing financial and human resources. Specific research and action on climate change should not draw away ODA funds from existing work on health, agriculture, education, child protection etc. Indeed, Forum leaders have argued that extra funding for climate activities should be targeted in line with the UN Millennium Development Goals “through ‘no regrets’ or ‘low regrets’ actions in affected sectors that are already facing development challenges, including food and water security, health, and the capacity to deal with extreme events such as tropical cyclones, flooding and droughts, thereby simultaneously delivering on sustainable development aims.”²²⁹

The allocation of significant amounts from donor climate adaptation initiatives to infrastructure, scientific research and policy development raises concern amongst Pacific community organisations.²³⁰ For example, research funding allocated to climate science may produce valuable data, but there are questions about how this research is communicated to policy makers in the Pacific, let alone translated into concrete adaptation work in the low-lying atolls of the region. Much of this research will generate climate models as a basis for planning risk reduction, but comes at a time when island governments, universities and NGOs are seeking resources for empirical research and action on social impacts in the atolls and islands of the region. The challenge for climate adaptation donors is how to draw on local knowledge and empower grassroots communities across the region.

Based on the attitudes of interviewees in Fiji, Kiribati and Tuvalu, a central priority for program work in the Pacific in general and relating to children in particular, should be supporting partners on issues of food and water security. Food and water supplies are affected by the changing climate, in economies already buffeted by rising prices for energy and imported foods.

5.2 Lack of program activity on children and climate change

Given that children below 18 years make up more than 40 per cent of most Pacific island populations, it is a concern that most policy documents on climate change in the Pacific ignore the issue of children and how they are affected.²³¹

A study of regional strategies such as PIFACC²³², the Pacific Plan for Strengthening Regional Co-operation and Integration, National Adaptation Programs of Action (NAPAs), climate policy documents from key donor countries like Australia²³³, multilateral agencies like the World Bank²³⁴ or NGOs like Oxfam International²³⁵ reveal they make no explicit reference to the effects of climate change on children and rarely reference the unique vulnerabilities of children or address their needs. At best, there are glancing references to children alongside other especially vulnerable groups, such as “women, children and the elderly.”

While there are important initiatives to begin disaggregating the gendered impacts of climate change, such as the UNDP Pacific Centre’s February 2008 workshop on the gendered dimensions of disaster risk management and adaptation to climate change²³⁶, there is little effort to do the same for children in the Pacific. While research on the links between climate change and poverty is becoming more prevalent, only a handful of studies disaggregate poverty and examine the specific impacts and adaptive capacities of different poor and excluded groups

Some interviewees stated that it was important to see children in the cultural context of family, household and community, and argued that existing community-focussed adaptation activities would benefit Pacific children: “the condition of the children is often controlled by the condition of the women in the community.” Another interviewee argued: “Even if you try to target children, there’s not much you can do for children alone. You must focus on the community around the children. If you secure the household and the community then you secure the child.”²³⁷

But as section 4 of this report has detailed, there are specific effects of climate variability that particularly affect children to a greater degree in comparison to other family or community members: problems of water and food security that contribute to adverse health effects for under-5 year old children (diarrheal diseases, malaria and infectious diseases etc); impacts on early childhood education that will flow on to later life; greater vulnerability of children to flooding, cyclones or other extreme weather events (globally, women and children are statistically 14 times more likely to die in a natural disaster than men²³⁸); psychological impacts arising from fears about the future as awareness of climate change grows; and vital issues of children’s voice and advocacy in the global conversation about responses to global warming.

This provides a major opportunity for UNICEF Pacific, to work with non-government and community organisations already active in this area, and raise a rights-based agenda for children amongst key policy makers in the region, including donors, UN and multilateral agencies, and national governments. Through the coalition of development agencies *Children in a changing climate*, there is a small but growing body of international research on how to mainstream children’s rights in national and regional adaptation initiatives.²³⁹

As detailed in section 4, there is enormous potential to work directly with children and bring them into climate adaptation initiatives as active participants rather than beneficiaries of adult largesse.

5.3 Moving from anecdote to evidence

Health officials in Fiji, Kiribati and Tuvalu all stated that their Ministry of Health would welcome assistance with research to analyse changing environmental and climactic conditions and the trends in public health impacts.²⁴⁰

Many government interviewees provided great insights and anecdotes about the effects of climate change on children's health, education and well-being, but often acknowledged that they lacked the financial resources and technical capacity to research and document these phenomena, and establish baselines for future study and programming.

One valuable area would be to document case studies from the small island developing states of the Pacific, which could have international relevance for the 43 members of the Alliance of Small Island States (AOSIS). For example, there is a growing international literature on children and DDR, but few case studies from the Pacific islands and little if anything on the effects on children.

There is scope for UNICEF to commission dedicated Pacific research and advocacy on:

- impacts on children from particular disasters;
- initiatives by and for children such as DDR training and awareness raising; knowledge based exchanges (e.g. through schools); the use of analytical tools such as vulnerability and capacity assessments (VCA); and basic disaster preparedness drills (e.g. the work of the Tuvalu Red Cross juniors);
- school curricula on climate change, environmental awareness and disaster response (including co-operative work with UNESCO on the compilation of bibliographies of Pacific-focussed materials); and
- school based DDR and emergency procedures, updating first aid and safety equipment, educate staff and students on how to cope in an emergency, and undertake disaster preparedness drills.

Within the Pacific, UNICEF can also share research and climate adaptation approaches from other UNICEF regions. It is worth noting that there are several databases that compile research and adaptation strategies on climate change (e.g. UK Climate Impacts Programme and the UNFCCC database on local coping strategies).

One core recommendation is that within the next two years, UNICEF Pacific (working with relevant government and NGO representatives) convene a regional forum and workshop on Children and Climate Change. This workshop of donors, CROP agencies and NGOs could be preceded by a Pacific Children's Climate Forum – a regional youth summit on children in a warming world.

While these events are resource intensive, with a long term outlook and careful planning of objectives and outcomes (including concerted work with children before and after in UNICEF priority countries), it could be a strong platform for highlighting the issues, educating other children through supplementary media on the event, and demonstrating the value and legitimacy of children's ideas on the issue without upsetting the norms that may apply within a community meeting.

Such an event would have multiple spin offs:

- A forum in 2011 or 2012 and subsequent publications and reports would raise the profile of children in the regional climate change debate, as a starting point for a longer term program by UNICEF Pacific to lobby governments and donors to integrate child-focussed analysis into the regional frameworks that will replace PIFACC and the MDGs after 2015.
- It would increase UNICEF's engagement with children on the issue of climate change, and also with agencies working well with children (e.g. Tuvalu Red Cross).

- It would build connections between youth groups and children from UNICEF’s three priority countries.
- The forum could begin to map out a research agenda for Pacific governments and regional donors on the range of issues identified in section 4 of this report.
- Participants in the forum could develop a regional working group on children and climate change, involving relevant UN, government and NGO representatives, together with youth and children’s organisations.

5.4 Co-ordination between stakeholders

A core issue for the small island states is their weak capacity to deal with a complex array of multilateral and bilateral climate initiatives. As one recent evaluation of climate change activity in the region notes: “the multiplicity of partners and implementing agencies highlight the need for improved oversight of implementation of the PIFACC and well as improving coordination and harmonisation at the project level.”²⁴¹

This issue is repeatedly reaffirmed in the 2009 scoping study conducted for UN agencies in the Pacific in 2008–09.²⁴²

As well as global funds established under the UNFCCC process – such as the Least Developed Countries Fund (LDCF), the UNFCCC Special Climate Change Fund (SCCF) and the global UNFCCC Adaptation Fund – there are a range of new national initiatives. Six new bilateral environment funds have been announced since December 2006, including funds from Australia, Japan and the European Union that intend to allocate resources to the Pacific:

- Australia’s International Climate Change Adaptation Initiative (ICCAI) and International Forests Carbon Initiative (IFCI)
- Japan’s Cool Earth Partnership
- The EU’s Global Climate Change Alliance
- Germany’s International Climate Protection Initiative
- The UK’s Environmental Transformation Fund (International Window).
- The Environment and climate change thematic window of the UNDP MDG Achievement Fund.²⁴³

During our interviews, government officials and community leaders expressed concern that there will be extensive administrative and reporting requirements to access funding, which places great burdens on SIDS who are already constrained in the resources needed to finalise timely funding proposals. One government official told us: “Donor co-ordination is improving compared to the past, but in spite of all the talk by donors about the Paris Declaration, the Cairns Compact blah blah blah, donors are still bullying us to meet their agenda and timetables rather than our own.”

At the local level, Pacific island government departments face competing political agendas and say that administrative procedures of donor countries can be a significant burden.²⁴⁴ A major problem is that donor countries and UN agencies often channel adaptation funds to the Pacific through regional initiatives rather than prioritising and tailoring programs to the particular and diverse situation on the ground in each country.

If UNICEF Pacific is to integrate greater awareness and action on climate change into its program, it must address this question of co-ordination and co-operation with other agencies, both government and

non-government. Discussions with donors and national government representatives highlighted a number of co-ordination dilemmas and challenges for UNICEF:

- a) key regional and national agencies are based outside Suva (e.g. SPREP as the climate change focal point in Apia, with SPC headquartered in Noumea), so UNICEF will have to allocate extra resources to effectively engage in regional programs outside its three priority countries
- b) Many interviewees raised concern about staff turnover in UN agencies, as a barrier to sustainability of programming on climate change which requires a long term outlook, awareness of existing regional and local initiatives, and co-ordination with other agencies that relies on personal contact as much as institutional mechanisms.

In spite of these issues there are existing inter-agency fora where UNICEF can be actively engaged, promoting the rights of children and seeking donor and government integration of children's issues into their programming. These include:

a) Development Partners for Climate Change (DPCC)

The informal donors working group was initiated by UNDP and ADB as a mechanism for Suva-based donors and CROP agencies to co-ordinate climate activities. Interviewees identified the DPCC as a valuable initial step for sharing information, but acknowledged that it had not yet led to co-ordination of programs at country level or inter-agency collaboration in programming to avoid duplication or competition.²⁴⁵

b) Pacific Climate Change Roundtable (PCCR)

SPREP has recently co-ordinated meetings of the Pacific Climate Change Roundtable (PCCR), in Samoa in 2008 and Marshall Islands in October 2009, to provide a mechanism to monitor and evaluate progress on implementation of PIFACC.

There have been mixed reports about the work of the PCCR. An October 2009 evaluation of the PIFACC process found: "There is a widely held view that the PCCR overall, and the meetings which have been held, are largely ineffective in terms of contributing to the intended purpose of the PCCR. This includes it acting as a monitoring and evaluation mechanism for the PIFACC, serving as a coordinating body for activities under the Framework, and sharing lessons learned from best practices in the implementation of climate change and related initiatives."²⁴⁶

According to interviews with SPREP staff, the format of the next roundtable and the possibility of establishing working groups are currently being evaluated, but the PCCR remains a key opportunity for UNICEF to present research and advocacy on children for agencies involved in climate change programming.²⁴⁷ SPREP is also moving to develop a database of all climate project and programming, as a tool for co-ordination and information sharing.

c) United Nations co-ordination and liaison with CROP agencies

There are a range of other sectoral working groups or co-ordinating initiatives at regional level (such as the Pacific Energy Donor Working Group), and in spite of the added time, staffing requirements and meetings, it will be important for the chiefs and staff of UNICEF core programs to co-ordinate with these initiatives. In consultation with other UN agencies, UNICEF Pacific could:

- Appoint a dedicated climate officer within PAPE to liaise with other UN agencies and CROP organisations on climate change.
- Address the idea mooted by SPREP, for the placement in Apia of a “United Nations Liaison Officer” to help align the work of UN System and CROP agencies on climate change.
- Consider the establishment of a “*Climate Change Cross-Cutting Group*” under the United Nations Sub-Regional Development Assistance Framework (UNDAF) for the Pacific.
- Share the UNICEF Pacific climate change agenda with the UNICEF New York Climate Change Advisor, to engage them on the particular circumstances and potential of Pacific children.

5.5 Working beyond government

While climate change is currently conceptualised and programmed for at the national level, it will be experienced locally. There is a crucial need to understand the changes in social, cultural and environmental context at close range.

Much of the work at community level is being conducted by non-government, community and church-affiliated organisations. It is often these groups that are directly working with the children themselves whose lives are being affected, and monitoring the adaptation responses that they, their family, schools and community are mounting in response.

Interviewees encouraged UNICEF to engage with key donors, SPREP and other CROP agencies to see how community organisations can be integrated with national initiatives and access climate funds flowing into the region, to develop more children-focussed programs.

More importantly, UNICEF needs to increase its active consultation and co-operation with key community and non-government agencies that maintain regional networking on youth and climate issues, as part of their overall regional co-ordination. Many of these groups maintain regional meetings that UNICEF should request to participate in (for example, Red Cross Pacific Secretary Generals and disaster management staff both meet regionally each year. The Red Cross has a global Youth Commission and runs parallel youth meetings alongside any Red Cross meeting in the Pacific region. Pacific youth delegates also attend the global youth meeting held every decade by the IFRC – the latest at Solferino, Italy in 2009).

5.6 Voice for young people

“The energy and creativity of children and young people must be nurtured so that they can actively take part in shaping their environment, their societies and the world they will inherit.” (A World Fit for Children)²⁴⁸

Many of our interviewees who work with children stressed that engagement of children and young people is important for dispelling a sense of powerlessness. By recognising their creativity, agency and concern, it helps ensure that children can understand and be prepared for the changes that they are facing.

Many formal structures for young people at national and regional level – the Pacific Youth Council and National Youth Councils – are at an embryonic stage, but there are extensive networks of youth groups and associations, affiliated to churches, sporting groups and other networks. The spirit of youth volunteerism has been mobilised on the issue of climate change; and so UNICEF’s mandate on

representation of children's views and supporting their voice provides an opportunity for greater advocacy.

The UNFCCC process has provided a significant opportunity for young people to participate in the climate debate. A 17-year-old woman Christina Ora from Solomon Islands was chosen from amongst international youth delegates to carry the voice of young people to the plenary of the December 2009 UN climate negotiations in Copenhagen. Addressing the climate change conference, Christina said: "I was born in 1992. You have been negotiating all my life. You cannot tell us that you need more time."²⁴⁹

Much of the youth advocacy has been supported by NGO networks. Pacific youth have been supported to participate in national, regional and global meetings with finance, information and logistics from organisations like Oxfam, Red Cross, AYCC's Project Survival Pacific and the church-based Pacific Calling Partnership.

For young people it was liberating to be able to engage with government ministers and officials in ways that are culturally more difficult at home. One young woman from Fiji who travelled to Copenhagen told us: "Here in Fiji you can't talk to the minister, but at an international conference you can approach him." A SPREP official confirmed the value of youth participation in global and regional activities: "It was great to have young people at Copenhagen. They really grew over the two weeks. They wrote their own speeches, lobbied ministers, got strength from each other. This group could do more at home. They're a great resource group."²⁵⁰

There is scope for UNICEF to develop activities in co-ordination with church, NGO, community and Red Cross networks, to support young people who have begun to network on climate issues. This work has broader benefits – the major regional stakeholder discussions on climate in Majuro and Suva during October 2009 (which involved most donors and UN agencies) identified the UNFCCC process as a key opportunity for action on "empowering women and youth in political representation and national decision-making."²⁵¹

Young people stressed that donors have a responsibility to support young people who have returned from conferences, workshops or training (for example, in an interview young people from Kiribati sponsored by UNICEF Pacific to travel to Copenhagen for the Children's Climate Forum in December 2009 raised that they had had no resources for follow up activities.²⁵²). Another interviewee agreed that "it's very hard to penetrate UN organisations to get support." A third young climate activist in Fiji stated: "There is a lack of funds for youth initiatives. If we initiate a project, we have to cut out 90 per cent of what we want to do because we don't have any funds. We rely on human resources."

Although UNICEF's primary focus is children under 18, the development of a network of young people could provide opportunities for peer-to-peer work with younger children. This could help address the problem of "privileged learning", where people who have the opportunity to participate in conferences, workshops or training can share their knowledge with other young people.²⁵³

In spite of growing awareness of changing climatic patterns, many interviewees highlighted the need to improve access to information about global warming and how it may affect local communities. Interviewees stressed the importance of producing information in vernacular languages as well as English and French, and developing appropriate materials for an islander audience. One under-resourced area is to develop materials and training programs to educate Pacific journalists about children and climate change, who in turn can carry information to outer island communities.

KEY RECOMMENDATIONS TO UNICEF PACIFIC:

Themes	Short Term (6 months)	Medium Term (2 years)	Long Term (5 years, for UNICEF cycle post-2013)
Personnel	Allocate staff time and resources to circulate this report, collate feedback and formulate UNICEF Pacific's response to the recommendations in this report for the August 2010 Mid Term Review.	Recruit a full time staff member as a Climate change focal point in Suva (with a mandate to drive the issue internally, work with program chiefs, develop strategic directions from 2013, and network and liaise with stakeholders and children).	All key UNICEF program areas (PAPE, Child Protection, Education, Health, WatSan, HIV and Communications) at regional and country level should address and integrate responses to climate change in their work.
Integration	Participate in the Development Partners on Climate Change (DPCC) meetings in Suva, the SPREP Pacific climate change roundtable, and UNDAF meetings on climate and environment.	Work with UNESCO and UNEP to develop strategy and DRR protocols and curriculum on CC and DRR to map out the program. Increase work on food and water security (e.g. through participation in the SPC/FAO food security initiative).	Develop a systematic program for regional and national agencies to substantively integrate children's issues into NAPAs, PIFACC and the regional disaster framework. Promote this agenda through the Climate Change Cross-Cutting Group (below).
Research	Initiate discussions with UNIFEM, UNESCO and UNDP Pacific Centre on joint research and documentation initiatives. Where feasible, include climate change-related aspects in planned studies.	Develop a research agenda to work with national governments and local communities on impacts of climate change relating to all of the core work areas (health, child protection etc)	Strengthen government monitoring and surveillance for physical and mental health impacts of climate change that is disaggregated to take account of the diversity of children, especially gender and age experiences.
Advocacy	Produce articles and advocacy materials on Pacific children and climate change for use in the lead up to COP16 in Mexico.	Develop advocacy materials on children and climate change in appropriate languages and formats (for lobbying, advocacy and in coordination with proposed regional forum, below)	Establish a " <i>Climate Change Cross-Cutting Group</i> " under the United Nations Sub-Regional Development Assistance Framework (UNDAF) for the Pacific
Participation	Follow up activities with youth and children's' ambassadors to COP15 in Copenhagen, and plan a process to support COP 16 ambassadors (with resources allocated for pre- and post-forum work with children).	Convene a regional workshop on Children and Climate Change, preceded by a Pacific Children's Climate Forum, in co-operation with other relevant agencies.	Flowing out of the 2011–2012 workshop, establish a regional working group on climate change and children (involving CROP agencies, relevant government ministries, NGOs and youth reps).

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