

MAIN STORIES

THE IPCC REPORT AND ITS IMPLICATIONS FOR THE PACIFIC

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The World's 51 Small Islands Developing States (SIDS) and Territories are amongst the most vulnerable to the impacts of climate change despite the fact that they contribute almost nothing to the growth of global greenhouse emissions - less than 0.02%.

They are characterized by small populations, limited resources, lack of economies of scale and financial and technical resources, remoteness, susceptibility to natural disasters, highly dependence on and vulnerability to international trade. The pressures of climate change, particularly sea level rise and extreme weather events, add to often already stressed social and environmental conditions.

In this article I'll be examining the most recent climate change reports and research, looking at how bad it might become, probing SIDS vulnerability, explaining why electric utilities matter, suggesting new energy investment possibilities and urging immediate action.

At last the public argument about whether climate change is real or fiction has been resolved - it is a threat to man's future. Al Gore's movie, Stern's report, the Intergovernmental Panel on Climate Change (IPCC), Hurricane Katrina have all moved the debate to the conclusion that urgent action is overdue and must be taken immediately.

In February the IPCC Chair, R. K. Pachauri, said:

"Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global mean sea level".

The IPCC Working Group 111 found climate change "irreversible over human timescales and many damages are likely to be irreversible" Chapter 1, p 9). Carbon dioxide concentrations have increased by more than a third since the 19th century and will continue to grow. Growth rates have actually increased significantly over the last decade. By 2100 temperature rises could be as high as 6 degrees Celsius.

Harvard's Professor of Environmental Policy, John P Holdren, says "the UN's goal of avoiding dangerous human interference is already out of reach", that the "current level of interference is dangerous", and "the issue is whether catastrophic interference is avoidable".

Potential impacts are increased temperatures, sea level rise, extreme events and changes in precipitation:

- Health - infectious and respiratory diseases and heat stress.
- Agriculture - lower crop yields and irrigation demands.
- Forest - composition, health, and productivity.
- Water Resources - supply and quality.



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- Coasts - inundation, erosion, loss of coral and mangroves.
- Species and natural areas - loss of habitat and species.

The Tyndal Centre's (UK) Rachel Warren highlights an 80% loss of coral reefs with a 1 degree Celsius rise, the onset of Greenland ice sheet melt (1.5), 97% loss of reefs, sea level rise and cyclones displacing increasing numbers of people (2) and the potential to trigger melting of the West Antarctic Ice Sheet (2-4.5).

Estimates of sea level rise have varied over time and between computer models - the recent IPCC report suggested a rise of up to 50 cms as



A woman gathers shellfish on April 25, 2007, on an eroded beach on Majuro Atoll in the Marshall Islands.

a result of thermal expansion and melting glaciers. Rahmstorf suggests a metre this century and NASA's James Hansen has talked of metres resulting from the melting of part of the Greenland and West Antarctic sheets. Standing on this Marshall Islands atoll a metre rise would see almost total immersion.

The tsunami wave was about 60cms when it rolled through the Maldives - a century of climate change in an afternoon - destroying one tenth of the land mass, displacing 1000's, destroying natural water supplies and salinating vital gardens (still effected 2 years later).

Dr. G. Sem speaking at a UNFCCC February meeting in Jamaica said that a 50cm rise would result in a loss of up to 60% of beaches in some areas. Most economic and social activity in the islands is within 2 metres of sea level. More than half the SIDS population live within 1.5 kms of the shore.

Vaitoto Tupa, Director of the Cook Islands Environmental Service, wrote (Tiempo, (July, 2007) "this could be devastating for the Cook Islands as all our population is dependent on the coastal areas in one way or another".

The results for SIDS according to the IPCC Summary for Policy Makers (p. 11) are:

- Deterioration in coastal conditions through erosion of beaches and coral bleaching will affect local resources.
- Sea level rise will exacerbate inundation, storm surge, erosion and other coastal hazards, threatening vital infrastructure, settlements and livelihoods.



- By mid century water resources will be reduced to where they are insufficient to meet demand during low rainfall periods
- With higher temperatures, increased invasion by non native species and diseases will occur.

Coral reefs and mangroves provide coastal defenses, encourage fishing and promote tourism. Coral is under threat with higher water temperatures, and in July UNEP reported that over half of the Pacific mangroves could be steadily lost.

Natural disaster numbers are on the rise from 50 in 1970 to 400 in 2000 according to the UNEP - GRID table. The Red Cross estimates that more than 200 million people are affected annually.

The cost of extreme weather events in the Pacific in the 1990's exceeded US\$2 billion (ECF, Buenos Aires, and December, 2004). Cyclones accounted for 76% of the reported disasters 1950-2004, followed by earthquakes, droughts and floods - an average of \$75.7 million per cyclone (2004 value - World Bank, 2006) Damage in some cases has exceeded the national GDP of countries such as Samoa in 1990/1 and Niue in 2004. In April 2004 Cyclone Sudal destroyed or damaged 90% of homes in Yap.

Global warming will probably not result in more cyclones but it is likely that they will become more powerful (10%), produce greater rainfall (20% more), higher storm surges and greater human and infrastructure damage. Their power is influenced by warmer water, and storm strength could increase by half a category, for instance a mid category 4 would become category 5 - from 142mph to 157. Storm surges present an often greater threat with waves in recent cyclones 12 metres higher than normal levels.

Model-based studies suggest that by 2080 the number of people flooded by these 'super storm surges' will be more than 5 times higher than present. The islands of the Caribbean and the Indian and Pacific Oceans face the largest relative increase in flood risk, with the number of people at risk being some 200 times higher than in most other parts of the world (Prof. John Hay, University of Waikato, Tiempo issue 36/7)".

The Tuvalan people are already discussing resettlement and refugee

Defending the Islands

- Reduce your own emissions – set an example
- Plan for the inevitable threat by hard and soft measures including the rehabilitation and conservation of natural sea defenses and moving and strengthening infrastructure



status (Ambassador Sopoanga). Papua Guinea's Carteret Islanders are the first direct climate change refugees with islands inundated and damaged, gardens and water supplies destroyed by salt water intrusion and evacuation announced in 2005.

Can the SIDS be defended? The first action, even if symbolic, is to reduce their own emissions, tiny though they are, to set an international example.

Island people and communities have been resilient in the face of disasters but that capacity is now being undermined. National plans for the inevitable threats include the 'soft' measures of conserving natural sea defenses and 'hard', moving and strengthening infrastructure.

SPREP's Espen Ronneburg points out that the "costs of overall infra-

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