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Federated States of Micronesia

Views on the Possible Security Implications of Climate Change to be included in the report of the Secretary-General to the 64th Session of the United Nations General Assembly

Submitted pursuant to UN General Assembly Resolution A/RES/63/281

Introduction

On June 3, 2009, the United Nations General Assembly unanimously adopted Resolution A/RES/63/281 inviting the relevant organs of the United Nations to intensify their efforts in considering and addressing climate change, especially its security implications. It represents the first time that the security implications of climate change have been brought to the attention of the international community.

Under the terms of operative paragraph 2, the resolution "requests the Secretary-General to submit a comprehensive report to the General Assembly at its sixty-fourth session on the possible security implications of climate change, based on the views of the Member States and relevant regional and international organizations." The Federated States of Micronesia (FSM) fully aligns itself with the submission by the Pacific Small Island Developing States made by Nauru and hereby provides additional views and input for the above-mentioned report.

General description of the Federated States of Micronesia

With its Environmental Vulnerability Index at 392,[1] the future security of the Federated States of Micronesia (FSM) is at high risk from the adverse impacts of climate change. Its four major island groups total 607 islands, 65 of which are populated. While the four centers, namely Chuuk, Kosrae, Pohnpei and Yap are volcanic with the highest point at 791 meters, outer islands are mainly low-lying atoll islands, rising no more than a few meters above sea level.

1 Environmental Vulnerability Index, available at http://www.vulnerabilityindex.net/EVI%20Country%20Profiles/FM.pdf .

FSM's climate is tropical, with heavy, year-round rainfall, especially in the eastern islands. Its islands are located on the southern edge of the typhoon belt, with typhoon season between June and December.

Biophysical Impacts of Climate Change

Sea-Level Rise

Flooding in the FSM has increased in recent years. In December 2008, President Mori declared an emergency following tidal surges that flooded business properties, homes and coastlines, resulting in the need to evacuate the affected areas. The storm washed 200 meters of shoreline with sea and salt water, causing coastal erosion and soil damage, and 29 islands were completely inundated.[2]

With a total of 607 mostly low-lying islands in its jurisdiction, FSM faces the challenge of a widely dispersed population[3] that is vulnerable to climate change and sea-level rise. On the one hand, residents of isolated islands are vulnerable due to proximity to the ocean and their geographic isolation. On the other hand, very densely populated coastal areas in the center themselves are becoming overdeveloped and crowded and are also vulnerable to sea-level rise.[4] While outer-lying islands are difficult to access, central areas are becoming overdeveloped and crowded.

Coral Reefs

The islands of FSM support three types of reef formations: fringing reefs, barrier reefs and atolls. In all states, islanders have a strong dependence on coral reefs and marine resources, both economically and culturally. Coral bleaching in FSM has already been observed in Yap atolls in 2007.[5] In addition, storms can cause reef damage, such as Typhoon Sudal in 2004, which hit Yap, resulting in structural damage to its reefs.[6]

Coral reefs form natural barriers protecting most islands in the FSM. Without healthy coral reefs, low-lying atolls will have no protection from the Pacific Ocean. But even the central islands will be severely affected. Chuuk Lagoon, one of the largest in the world, is densely populated with the vast majority of people living along the immediate coastline. Warming temperatures and ocean acidification are expected by international researchers to have an effect on coral reefs in the FSM, threatening the population.

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2 FSM Information Service. President Mori Declares A National Emergency, Palikir (December 30, 2008), available at http://www.fsmgov.org/press/pr123008.htm; United Nations Office for the Coordination of Humanitarian Affairs (OCHA). Pacific Islands: Abnormally high sea levels OCHA Situation Report No. 2, available at http://www.reliefweb.int/rw/rwb.nsf/db900sid/MYAI-7MD4C8?OpenDocument.

3 Food and Agriculture Organization (FAO). Information on Fisheries in Individual Pacific Island Countries (2002), available at http://www.fao.org/docrep/005/ac682e/ac682e06.htm#bm6.2

4 Pacific Adaptation to Climate Change (PACC), FSM, Kosrae State, Report of in-Country Consultations (2006), p. 10, available at http://www.sprep.org/att/publication/000661_Kosrae_FSM_NationalPACCReport_Final.pdf .

5 Ibid.

6 Ibid.

Changing Weather Patterns and Natural Disasters

FSM's economic fragilities are compounded by its susceptibility to increased incidence of cyclones (typhoons) and drought. Typhoons are a particular concern, especially for the States of Yap and Chuuk, as they are directly south of Guam, where 33% of the world's cyclones develop. Between 1900 and 2002, Guam and its surrounding area were affected by approximately 109 tropical cyclones.[7]

Low rainfall months and longer-lasting droughts have become considerably more frequent since the onset of El Niño. During an El Niño year, FSM suffered from drought conditions during the winter and spring months. Because they are further west, Yap and western Chuuk tend to be affected earlier and more harshly.[8] A prolonged, intense drought occurred in 1997-1998. FSM, along with Papua, New Guinea, the Marshall Islands and Fiji, suffered from severe reduction of crop yields and, in some cases, famine.[9] Water rationing for only two hours a day in Pohnpei was necessary.[10]

In recent years typhoons have increased in severity and frequency:[11]

- In April 1997, Typhoon Isa struck Pohnpei, causing numerous landslides, damage to land and infrastructure, and 19 deaths.

- In July 2002, Typhoon Chata'an, the worst storm in a century, hit Chuuk. More than 200 landslides lasted for days, 43 people were killed, and damages to homes, crops, seawalls and critical infrastructure were enormous.

- In early 2004, Typhoon Sudal hit Chuuk and Yap, leaving damage estimated at US$7 million.

Considerable increases are expected for FSM in extreme rainfall events, typhoons, drought, high sea levels, landslides, tidal erosion, and extreme high air temperatures, especially for Yap and Chuuk and their outer islands.[12] Natural disasters are of special concern given FSM's fragmented composition of smaller islands and dependence on subsistence agriculture and tourism. Effects of disasters on the natural environment tend to be long-lasting, with high rehabilitation costs.[13]

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7 South Pacific Regional Environment Programme (SPREP). Pacific Environment Outlook (2004), p. 25.
8 PACC FSM climate profile, available at http://www.sprep.org/att/publication/000681_CCProfileFSM.pdf; PACC Kosrae State Consultation Report, supra, p. 13.
9 SPREP. Pacific Environmental Outlook, supra, p. 38.
10 Semes, H. Jr. Impacts and Management of Extreme Weather Events in the Federated States of Micronesia (May 12, 2003), available at http://unfccc.int/files/adaptation/adverse_effects_and_response_measures_art_48/application/pdf/200305_risk_fsm.pdf.
11 Ibid; SPREP. Pacific Environment Outlook, supra, p. 25.
12 PACC Kosrae State Consultation Report, (2006) supra.
13 Proceedings of the Pacific Regional Consultation on Water in Small Island Countries – Country Briefing Papers (2003), p. 61, available at http://www.sprep.org/att/IRC/eCOPIES/Countries/FSM/28.PDF.

Security Implications of Climate Change

Food Security

Food security is a growing concern in FSM, with increasing land pressures that strain agricultural efforts and food supply, coastal erosion and increased incidence of pests and disease in major crops, such as bananas and taro.[14] States such as Chuuk are particularly vulnerable, because it contains 50 percent of FSM's population yet only 12 percent of its arable soil.[15] Food security is further threatened by the current food crisis, particularly the high prices.

Fisheries

Fishing is one of FSM's most important sectors, if not the most important. In 1998 catch from subsistence fishing was worth $10 million; from coastal commercial fishing, $14.5 million; from locally-based offshore fishing, $12.5 million; and from foreign-based vessels, $144 million. Fish is also the top export from the country (in 1997, exports were $4.6 million or 94 percent of total exports). Fees from foreign vessels fishing in the FSM zone represent a key source of income for the government. Between 1979 and late 2000, the FSM received over $170 million in fees for the rights to fish for tuna.[16]

FSM's EEZ covers almost three million square kilometers and includes some of the richest tuna fishing grounds in the Pacific. FSM states have jurisdiction over waters within 12 nautical miles from islands, while the national government controls the water beyond 12 miles to the outer boundary of the EEZ. Marine resource use consists of inshore fisheries (in mangroves, reef areas, and lagoons), nearshore and bottom fisheries, and offshore fisheries (mainly for tuna). Subsistence and coastal commercial fishing are critically important in the islands most distant from main population centers.[17]

Various problems are putting pressure on FSM's fish stocks, including population growth and a shift from subsistence to commercial harvest over the past 30 years, despite an overall decline in the number of people employed in the industry. The breakdown of traditional management systems throughout FSM has also contributed to overharvesting. Meanwhile, fish stocks remain vulnerable to destructive fishing methods, such as the use of nets and poisonous roots to kill fish in Kosrae.[18] In main population centers, demand for fish is strong and generally exceeds supply, and inshore species are susceptible to over-exploitation.[19] Several native fish species currently hold a "threatened" status.

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14 Murukesan, V.K. and Josekutty, P.C. An overview of banana research and plantparasitic nematode studies in the Federated States of Micronesia, pp. 1, 16 and 17, available at http://musalit.inibap.org/pdf/IN050693_en.pdf.
15 FSM Strategic Development Plan 2004-2023, Vol. 1, pp. 107, 124.
16 FAO. Information on Fisheries in Individual Pacific Island Countries, supra.
17 Ibid.
18 SPREP. The State of Coral Reef Ecosystems of the Federated States of Micronesia (2008), available at http://ww.sprep.org/att/IRC/eCOPIES/Countries/FSM/53.pdf .
19 FAO. Information on Fisheries in Individual Pacific Island Countries, supra.

Changes in climate are also affecting the availability of fish. In 1998, the catch of tuna species in FSM was only 18.5 percent of the 1995 catch, a decline that followed a severe El Niño year, where surface tuna schools concentrated more to the eastern part of the central Pacific, away from FSM's EEZ.[20]

Agriculture

Eighty percent of FSM's population has subsistence or semi-subsistence livelihoods. Staple food crops are banana, taro, breadfruit, coconut, citrus and yams.[21] While agricultural products do not constitute a large part of FSM's exports, agriculture is a major contributor to individual incomes and livelihoods. It currently accounts for 28.9% of FSM's GDP, and In 2005, subsistence activities amounted to 18% of total household income.[22]

Because of the country's small size and limited biodiversity, crop substitution abilities are limited, as are abilities to store crops and food. A lack of transportation to and from certain outlying islands can make internal distribution difficult. Rising sea levels have flooded taro crops and scarce land, and destroyed coconut trees, a source of nourishment and shelter for people living on atoll islands.[23] Salt-water resistant crops are not available in the FSM.

Land degradation and conversion of land from forest to agriculture or secondary vegetation, are serious issues on most islands, and have led to rapidly decreasing forest cover (from 15,000 hectares in 1975 to 5,200 hectares in 1995 to 4,200 hectares in 2002 in Pohnpei), soil erosion and siltation of fringing reefs.[24]

Water Security

The primary sources of freshwater in most FSM states are underground, surface water and rainwater. Average rainfall in FSM is 4,928 mm per year. Surface water accounts for 60% of water resources and groundwater accounts for 40%. The small, low-lying islands in each state are fully dependable on rainwater and shallow wells.[25] The adverse impacts of climate change, especially rising salt content with rising sea levels, increased flooding, and droughts are threatening the availability and quality of fresh water in the FSM.

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20 FAO. Information on Fisheries in Individual Pacific Island Countries, supra.
21 FSM, Visitors Center, available at http://www.visit-fsm.org/visitors/culture.html ; Murukesan, V.K. and Josekutty, P.C., supra, p.1.
22 FSM Strategic Development Plan 2004-2023, supra, p. 105.
23 Nakayama M. Speech to at the High Level Conference on World Food Security: The Challenges of Climate Change and Bioenergy, Rome (5 June 2008), available at http://www.fsmgov.org/fsmun/fao08.htm.
24 FSM Strategic Development Plan 2004-2023, supra , pp. 116-117; PACC Kosrae State Consultation Report, supra, p. 7.
25 Integrated Water Resources Management (IWRM) fact sheet, available at http://www.sopac.org/tiki-index.php?page=Federated+States+of+Micronesia+3SC.

Public Health

FSM's health care system, while generally in good condition, is also very dependent on weather and climatic conditions. With its increased exposure to drought and storms, water sanitation is expected to decrease and disease outbreaks to rise. During the ENSO year of 1997-1998, there was increased incidence of skin disease.[26] In April 2000, an outbreak of cholera on Pohnpei infected approximately 3,500 people and caused 20 deaths.[27]

Migration

While FSM's population is spread out among many islands, densities are high along the low-lying coast. About 70% of FSM's population and economic infrastructure are located in the coastal area.[28] Seventeen percent of FSM's total population, or 18,000 people, live in the outer-islands/atolls.[29]

Internal Migration, Relocation and Climate Displacement

Voluntary relocations have already occurred within the State of Yap and other islands as a result of increased sea level rise along the coast and saltwater increase in their wells. Populations have moved from low-lying atolls to more central, higher islands, increasing the density in the centers and leading to a shortage of resources, especially in Chuuk.

External Migration

The FSM currently has an estimated external migration of 2%, effectively lowering the growth rate to about 1%.[30] Population size has only minimally changed since the mid 1990s.

With the adverse impacts of climate change becoming more severe, the FSM might also become a recipient of migration from citizens of immediate neighboring states, many of whom have family relations in the FSM, as it offers some of the few volcanic islands which will survive sea-level rise. Such migration will further increase population pressures on the central islands. It will further heighten population pressures on those islands and can lead to a breakdown of law and order, endangering security.

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26 Aron, J. L. Climate Variability and Change and their Health Effects in the Caribbean, available at http://www.chiex.net/documents/iaisummer2003-Aron.ppt.
27 IWRM fact sheet, supra.
28 PACC Kosrae State Consultation Report, supra, p. 10.
29 Pretrick M. E. Health Impacts of Climate Variability and Change in the Federated States of Micronesia (2007), available at http://www.wpro.who.int/NR/rdonlyres/372E1B54-F276-4842-8280-F591DCAADE44/0/Micronesia.pdf
30 Federated States of Micronesia, Visitors Center, available at http://www.visit-fsm.org/visitors/people.html

Loss of islands

Because the FSM contains a high number of low-lying atoll islands rising no more than two to three meters above sea level, they are at high risk of total submergence due to sea-level rise. Those islands are typically located away from the central islands and often define the borders and EEZ of the FSM.

The adverse impacts of climate change alter the physical landscape of the FSM. Whole islands are at the danger of disappearing entirely or of becoming uninhabitable. No amount of adaptation to climate change can be sufficient to prevent the loss of islands.

The loss of islands will not only result in the loss of physical territory but could also have an impact on Exclusive Economic Zones (EEZs) and could lead to border disputes between neighboring countries. Some islands are already partially submerged and have lost land along low-lying coastal areas. For low-lying atolls, the likely impacts can be catastrophic, even requiring population evacuation to other islands or adding to population pressures in the centers and to external migration, with the subsequent social and cultural disruption having unknown proportions. Once the islands are lost to sea-level rise, the people will never be able to return to their homelands.

Territory, Sovereignty and Legal Rights

FSM's 200 nautical mile EEZ and control of 12 nautical miles of sea are its most important environmental and economic resource. In light of this, FSM has signed and ratified a number of international treaties on oceans, including the United Nations Convention on the Law of the Sea (UNCLOS),[31] and is a key signatory of the FSM Arrangement for Regional Fisheries Access, along with the Marshall Islands, Nauru, Palau, Papua New Guinea and Solomon Islands. The Arrangement, which entered into force 23 September 1995, was developed as a way for domestic vessels of the Parties to the Nauru Agreement (PNA) to access the fishing resources of other parties; to secure maximum sustainable economic benefits from tuna resources; to promote greater participation by nationals of Parties in fisheries; to assist in development of national fisheries industries; and to allow access to vessels on terms consistent with the Arrangement.[32]

In June 2009, FSM, Papua New Guinea and the Solomon Islands submitted a Joint Submission for an extension of the outer limits of the Continental Shelf beyond their 200 nautical mile EEZs, in accordance with UNCLOS.

FSM is not involved in any international disputes either with its neighbors or third countries. However, the disappearance of islands both in the FSM and in its immediate neighbors could result in uncertainties over the demarcation of the EEZ and possibly lead to disputes.

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31 Tuqiri, S. Overview of an Ocean Policy for the Pacific Islands (2001), p. 40, available at http://www.spc.int/piocean/forum/Info%20papers/1%20Overview%20of%20Ocean%20Policy%20-%20Seremaia%20Tuqiri.pdf

32 Text of the Arrangement for Regional Fisheries Access, available at http://www.ffa.int/system/files/%252Fhome/ffaadmin/%252Ffiles/ffa/FSM%20Arrangement.pdf; Overview of the Nauru Agreement, available at http://www.ffa.int/nauru_agreement.

Conclusion

Climate change has already shown a wide variety of negative impacts on the FSM. Sea levels are rising, coasts are eroding, natural resources are being depleted, waters are increasingly contaminated, and extreme weather events are increasing in severity and frequency. At the same time, resettlements have already been triggered by these adverse impacts. Together with population pressures on the central islands, the functioning of government and the delivery of basic services can be threatened.

These impacts have implications for national security and are on the threshold of endangering regional and international peace and security in the wider Pacific island region. Countries like the FSM are on the frontlines of these impacts, with our survival at stake. The security challenges will increase in the future and be felt around the world. All relevant organs of the United Nations must engage holistically and immediately to address the security implications of climate change.

Recommendations

While the FSM is already faced with the security implications of climate change, the international community has been slow to respond or has responded in an ad hoc manner. The international community should, in our view, take a more systematic and holistic approach when dealing with climate change.

The United Nations, in adopting GA Resolution A/RES/63/281 has thus far only acknowledged the *possible* security implications of climate change. Given the arguments above, the security threats posed by climate changes are, in our view, no longer a *possibility* but a reality, both in present terms and in their future implications - this fact must be formally recognized by the United Nations if decisive progress is to be made in adapting and mitigating the adverse impacts of climate change.

Furthermore, given the growing nature of the threat posed by climate change, the linkage between climate change and security needs to be a permanent focus of deliberations in the United Nations. In this regard, it is recommended that this question be regularly addressed via an annual agenda item in the United Nations.

The FSM further recommends that a focal point within the United Nations be established to keep track of the growing security implications of climate change.

Urgent consideration should be given to immediate actions which can reduce security implications of climate change.