

imperative that rivaling agencies and ministries work together following the pre-established chain of command headed by the National Civil Defense, which is better prepared to cope with disasters than any governmental agency alone. The government must recognize the importance of weather and climate information, not only for disaster response but for development purposes as well.

Ethiopia

Involvement of the Prime Minister's office gave a level of credibility and importance to the 1997–98 El Niño forecasts.

There is a tendency to refer to whole countries when referencing El Niño's impacts. Yet, Ethiopia is known for its local small-scale climate regimes. It is important to better identify the regions and sectors that are vulnerable to the ENSO extremes. There should be an improved capacity of the regions, in terms of skill improvement, access to information and resources capability, to issue their own regional forecasts in order to make the forecast relevant to the local areas that have their own micro-climates. This could reduce the time spent in communication between the regions and the central government.

Fiji

A national drought plan of action would be beneficial for responding effectively to future El Niño-related droughts and other water shortages. An improved El Niño forecast capability would provide the earliest warning about drought. Because the drought tended to magnify chronic nutritional problems caused in part by low income, the lack of food and micro-nutrient deficiencies, there is a need for improved social and economic data collection to identify the at-risk regions and populations in order to improve disaster response.

Indonesia

Generalization of anticipated impacts of El Niño across large geographic areas of the country proved to be counterproductive. There are significant variations in impacts (and in climate-related as well as social and

economic vulnerabilities) across different sectors and geographical locations in the country. Based on historical data and analyses, these variations could be studied and taken into account in dealing with the impacts of future El Niño events.

The role of intermediary organizations (such as agro-meteorological departments, forestry research organizations, crop production forecasting agencies) in translating forecasts into usable or actionable information should be adequately recognized. While the 1997–98 El Niño event brought into focus the role of meteorological agencies in providing timely and accurate forecasts, the intermediary institutions and their capacity for multidisciplinary response coordination have received relatively little attention.

Kenya

The national economic and political conditions at the time of the onset of an El Niño have been a major determining factor for its impacts on society. Roads and bridges in need of constant repair are highly vulnerable to a weather disaster, and the poor have few resources available for responding to disaster. The government needs to identify all of the country's climate-sensitive hazards and design plans to deal with them. Expertise should be channeled into a central coordinating unit to increase the effectiveness of monitoring and early warning.

Mozambique

Investments in weather forecasting are generally neglected because they are perceived to be high in cost and the results do not seem evident – until a disaster strikes. It is important to strengthen international and regional forecasting networks, and to include local participation. Forecasting cannot be considered something which belongs only to the industrialized Western countries.

Papua New Guinea

There is a need to involve a wider range of agencies, both government and non-government, in planning for, monitoring and responding to El Niño events and

not just those agencies focused on disaster-related activities. Also needed is a well-defined emergency management structure from the national to the local level, with clear responsibilities allocated to and accepted by all agencies involved.

Panama

New dams are under consideration as an answer to the need for better storage and provision of water within the Panama Canal's watershed. But for these measures to succeed, they must be accompanied by efficient water management and by early forecasts of warm events. Accelerated changes in land use in the Canal's watershed call for a permanent monitoring of the basin and an ongoing verification of models that simulate the response of the canal system to climate variability.

Paraguay

The reliability of El Niño-related forecasts needs to be improved for governments at all levels to take them more seriously. Even though it appears that El Niño and La Niña events have significant impacts in the country, in this context, human and institutional

capacity to undertake scientific research on El Niño needs to be developed and supported.

Peru

The ENSO cycle must be considered by policy makers as a recurrent event in national planning, civil defense, urban zoning, conservation policies, rather than as an anomalous and temporary condition.

Philippines

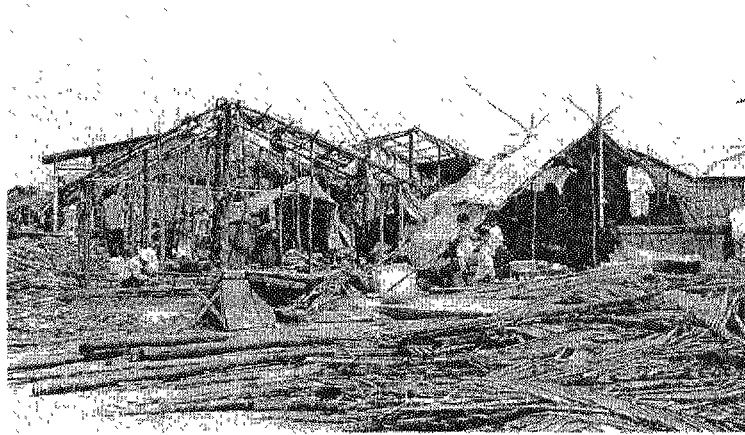
Resources tended to flow for disaster preparedness and response, when the president took an interest in El Niño and set up an Interagency Task Force. However, local level responses are increasingly seen as most effective in reducing the impacts of El Niño. The country is frequently affected by a wide range of natural disasters, but El Niño-induced drought has had the largest impact to its economy, which is largely dependent on agriculture. Early forecasts of El Niño's onset are critical in providing warning to a government with regard to both short-term emergency conditions and to long-term economic prospects.



Viet Nam

El Niño-related impact studies should be undertaken between El Niño events and not only during them when the focus is on disaster relief. There is a need for human and institutional capacity building in climate

and climate related impact assessment and disaster planning. There is a need not only for an improvement in the skill associated with El Niño forecasting but also with the forecasting of El Niño's likely impacts on society and the natural and built environments.



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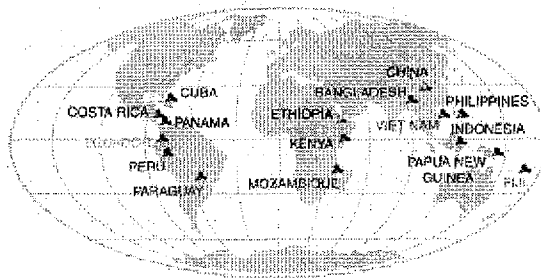
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Graphic on page 20: Locations of fires detected the night of 21 September 1997 in Indonesia and Malaysia (Borneo) using data from the US Air Force Defense Meteorological Satellite Program (DMSP) Operational Linescan System (OLS). The OLS has a unique capability to perform low-light imaging of the Earth at night. Data processing by NOAA's National Geophysical Data Center, Boulder, Colorado. <http://www.ngdc.noaa.gov/ngdc.html>

Graphic on page 23: Climatic impact of warm El Niño event during October 1997 to March 1998. Adapted from Food and Agriculture Organization of the United Nations Fact File on El Niño. <http://www.fao.org/news/lactfile/f19716-e.htm>

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