PART IV

CASE STUDIES OF ETHIOPIA, NICARAGUA AND VIETNAM

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COUNTRY CASES: DISASTER PREVENTION AND PREPAREDNESS
Checklist of major issues and institutions

	ETHIOPIA	NICARAGUA	VIETNAM
Major Hazard Types	Droughts (Famine) Desertification Locusts Earthquakes Floods Landslides Wildfires Hailstorms	Earthquakes Volcanic eruptions Cyclonic storms (papagayos) Droughts Floods	Cyclonic storms, typhoons Floods Erosion Salinization/alkalinization (Earthquakes, volcanic eruptions)
Major Disasters (1960-1992)	Droughts: 1962-63; Western Ethiopia 1964-66; Tigray, Wollo 1969; Eritrea 1978-79; Southern Ethiopia 1982; Northern Ethiopia 1984-85; Ethiopia 1987-88; Ethiopia 1990; Wollo, Eritrea, Tigray Floods: 1981 1985 1990; Western Ethiopia Locusts: 1987, 1988, (1993)	Earthquakes: 1968; Cerro Negro 1971; Cerro Negro 1992; Cerro Negro Tsunamis: 1972; Managua 1992; Pacific Coast Tropical storms: 1988; Hurricane Joan Floods: 1983	Floods 1961, 1966, 1971, 1978, 1984, 1991, 1992 Flash Floods 1986, 1990, 1991 Tropical storms 1968; Typhoon Wendy 1977; Typhoon Sarah 1983; Typhoon Kim 1985; Typhoon Cecil 1989; Typhoon Dan 1992; Typhoon Cuck
Legislation	Land Nationalization Act (1975) * Referendum on land tenure promised in 1994 * other environmental legislation under revision	* Environmental legislation under revision (e.g. on land tenure and use)	* A Special Act on Flood and Storm Control under preparation * other environmental legislation under revision (e.g. on on land use and land management, on forest protection)
National Strategies/ Policies/ Programmes	1. National Disaster Prevention and Preparedness Strategy, 1989 2. National Food and Nutrition Strategy, 1989 3. National Conservation Strategy, promised in 1994	1. A Five-Year Plan (1991-95) on Disaster Prevention and Preparedness, 1989 2. The Challenge of the Agrarian Sector, Outline for Recovery, 1990	1. * Strategy on Natural Disaster Prevention and Preparedness under formulation 2. National Conservation Strategy, 1986
Organizations	1. Relief and Rehabilitation Committee (RRC) 2. National Committee for Drought Prevention and Relief 3. Inter-Ministerial Committee for Disaster Prevention and Preparedness 4. Food Information System (FIS) 5. National Meteorological Services Agency	1. Office of National Civil Defense 2. INETER (National Hydro-Geo-Meteorological Institute) 3. IRENA (Institute of Environment and Natural Resources)	1. Central Flood and Storm Control Committee 2. Hydro-Meteorological Service 3. State Committee of Science and Technology

1. NATIONAL STRATEGIES

As pointed out in previous chapters of this study, the following factors are of relevance when reviewing the appropriateness of national disaster prevention strategies and effectiveness of existing early warning systems:

* historical or other available data of major disasters
* socio-economic trends
* national and sectoral policies
* existing administrative practice
* sectoral cooperation

Certain degree of open-mindness is needed in achieving policy coherence. In practice, changes in sectoral policies might be necessary to decrease indirect impacts of regulations or incentives on vulnerable people living in marginal lands. For instance, subsidies used for agricultural inputs in more fertile lands of export production may increase the pressure on high-risk areas in nearhood.

Those sectors that need special attention are agriculture, forestry, water resources development, land use planning, infrastructure development and regional development policies including human settlement development programmes. In the long term, the already commenced but ineffective land reform in many countries e.g. in Africa an Latin America is the only means of risk reduction and overall sustainable development. Hence, the political forum is open for donors to catalyze such initiatives.

The following three country analysis of Ethiopia, Nicaragua and Viet Nam try to seek answers to the following questions:

1) Are sectoral policies directly or indirectly promoting people's migration to risk-prone areas ?
2) Are national development policies or sectoral policies and existing administrative practices directly or indirectly increasing the vulnerability of people and communities at risk ?
3) What kind of policy changes are needed to reduce the vulnerability of people and communities?

Depending on the available documentation - national or international - the analysis is heterogenous, and comparisons perhaps difficult to make, but at least these case studies try to show different aspects of importance in disaster prevention and preparedness. This chapter ends up with screening of development cooperation programmes of Finland in Ethiopia (1985-1993), in Nicaragua (1990-1993) and in Viet Nam (1990-1993) to describe how disaster prevention and preparedness aspects have been integrated into development cooperation.

1.1. Ethiopia

Drought has been a recurring phenomenon in Ethiopia for millennia, having been recorded as early as 253 BC. The Great Famine of 1988-1892, "the cruel days" of late 1880s is known to have had the serious and long-term concequences than any other calamity in Ethiopian history. The massive livestock losses, about 90 percent of the cattle in Ethiopia, led in turn, to the death of an estimated one-third of the total human population of that time.

Despite of droughts and drought-induced famine, the major natural hazards in Ethiopia are soil erosion because of deforestation and agricultural practices, locust infestations, hailstorms, floods, landslides and forest fires and earthquakes. Soil erosion contributes to food deficits and famines in the northern and central highlands. Rapid population growth and high livestock density accelerates land degradation in many areas. Some 55 percent of the land area of Ethiopia, supporting some 25 percent of the rural population and being semi-arid or arid, suffers from severe drought once every few years. Drought and drought-induced famine are the most severe threats to people. In 1992 alone, an estimated 8.73 million people suffered from food deficiency.

The droughts and related famine have been a significant burden to national economy. Between the period of 1973-87 famine-related direct costs have been estimated to the equivalent of 70 percent of Ethiopia's gross domestic product. These huge expenditures were mainly borne by foreign governments, intergovernmental organizations and nongovernmental organizations. During the same period (1973-87) the Relief and Rehabilitation Committee provided at least 2 million tonnes of grain as food aid, as well as other assistance, to some 40 million people.

Since the latest great famine of 1972-74, Ethiopia has been active and responsive in improving national policies and organizational structures of disaster prevention and preparedness. For instance, many of the agricultural development programmes have had disaster prevention aspects as high priority objectives. Such measures as terracing, soil conservation, and reforestation have received much attention and have been relatively widely accepted by rural people. However, unclear tenurial issues have resulted in the decline of the started rehabilitation works in many regions, e.g. in Wollo. Besides, the widely used voluntary participation of rural people that characterized the projects in the early 1980s has been replaced by food-for-work programmes, which might not (have) promote(d) the needed sustainable development in the long-term.

In recent years the efforts concerning disaster prevention and preparedness have been affected by food insecurity throughout the country and the civil war in the north. These two factors are related, and the war has severely obstructed long-term disaster prevention activities. In fact, disaster management institutions have been mainly designed to transfer food and medical supplies required when famine strikes. Because of the conflict the Government have not had access to the most vulnerable people, and has been unable to

effect on the causes of food shortages. The war (ended in May 1991) has also hampered the use of such non-structural drought and famine prevention measures as food banks, pricing mechanisms, and market interventions. Food has been, more or less, a strategic material and food security a powerful policy issue.

As the Government has committed itself in linking disaster prevention and preparedness with macro-economic planning, but has only recently attempted to institutionalize this political will. In late 1988, the National Committee for Central Planning hosted a national conference on integration of disaster prevention and preparedness aspects into development planning. This seminar, funded by UNDP, made several proposals, and consequently in 1989, a National Disaster Prevention and Preparedness Strategy (NDPPS) was issued.

The objectives of the NDPPS emphasize among others policy coherence, enhanced information systems and disaster mitigation. Major components of the NDPPS are likely to include legislation to clarify the responsibilities of different government ministries and agencies, institutional development including an Inter-Ministerial Committee on NDPPS and improved information systems and logistical planning. In particular, close links between the NDPPS and the National Conservation Strategy (1990) are to be developed.

The NDPPS consists of a variety of activities to be implemented that are also worth noting:

* local food security reserves which, beyond serving as reserves for relief purposes, are also intended - consistent with the National Food Security Strategy - to be used as a mechanism for price stabilization in local markets;

* government subsidizes food retail outlets, based upon India's "fair price shops", to guarantee that food will be available to needy people;

* "off-the-shelf" food-for-work/cash-for-work public works programmes to be designed to rapidly absorb labour when alternative forms of income generation (principally agriculture) were threatened. These public works are to be designed to include e.g. soil and water conservation, afforestation, small-scale irrigation, rural road construction and community-based activities;

* cattle camps and animal protection systems as means to protect the assets of vulnerable people, including e.g. veterinary services;

* tax and debt relief are envisioned as a means to reduce vulnerability of people at risk; and

* seed banks are to be established to ensure that farmers could have seed available at affordable prices when conditions force farmers to consume their own food reserves.

While these practical proposals were being formulated, there was politically concerted efforts to make other key sectoral policies (e.g. National Food and Nutrition Strategy, National Conservation Strategy) cohere with the relevant components of the NDPPS. However, as mentioned earlier the conflict in the north postponed many important development efforts, policy revisions among others .

The National Conservation Strategy outlines a hazardous development scenario in relation to the current use of natural resources. Soil loss on arable land exceeds soil formation by a factor of 6, and forests are used at twice their replacement rate. By 2025, severe impacts of deforestation will occur, unless any major changes take place in the management of natural resources. By 2010, the total area of degraded land will increase to some 10 million hectares of all cultivable land area. During the next 30 years it is predicted that crop yields will decline by 1-3 % per annum and droughts will have more severe impacts." With today's rate of population growth (3%) these trends are most obviously amplified. Within the next 30 years the population will grow to some 115 million!

Many policy issues have been under reconsideration. National Programme of Forestry, Wildlife, Water and Soil conservation has been lately completed. The Ethiopian Forestry Action Plan (EFAP) is a component of this national programme. National Water Resource Master Plan have been drafted recently. Also a Population Policy have been drafted with the objectives to harmonize rate of population growth with development, to achieve balanced population distribution, to reduce inflow of people to large cities and to reduce current high level of fertility.

On the basis of a new National Food and Nutrition Strategy a number of development projects have been formulated and included in the Five Year Plan. The Strategy reviews the food production, food processing and distributions systems as well as rural energy and transport, rural industries, and health and nutrition. Food self-sufficiency is a central goal, and the Strategy also seeks to establish a National Food Security System and programmes to combat malnutrition.

The Strategy describes the recent food insecurity in Ethiopia as follows:" The average number of people each year who were in need of relief during the period 1981-87 is estimated at 4.6 million, some 10 percent of the total population of the country, with a peak of 8 million persons in 1985". In last year the famine reached again the level of 8 million people. The regions that show year after year evidence on significant chronic food insecurity are those of Tigrai, Welo, Eritrea, Hararge, Bale and parts of Gondar.

The National Food and Nutrition Strategy follows the similar policy priorities as the agricultural policy. The specific objectives include food self-sufficiency and increasing

agricultural production, provision of 2000 Kcal/per cap/per day , increase of rural income, and maintaining of food security reserve system. The major components of the strategy include measures for increasing food production, farmers organization, production incentives and marketing, natural resource and environmental protection.

Technically, the Ethiopian agricultural policy has over the last three decades focussed on increasing yields in the well-watered highland plateaux either for urban consumption or for export. Accordingly, the proposals of the National Food and Nutrition Strategy aim at marketed surplus of foodstuffs in the short term through delivery of high-yielding and quick maturing varieties; and fertilizers and insecticides within the existing Peasant Agriculture Development Programme.

Despite the need for productivity, the National Food and Nutrition Strategy also acknowledges the longer-term objectives of conservation-based development. This strategy was originally elaborated for the low potential, environmentally degraded highlands that had been excluded in the Peasant Agriculture Development Programme (with the support from major donors, e.g. IDA, IFAD, EEC, SIDA). The household level food security is to be promoted through e.g. agro-forestry and other farming systems developments in current food deficit areas. Another opportunity to improve food security is water harvesting and conservation through small-scale technologies. So called Blue Nile Watershed Management Programme will seek solutions to water harvesting and conservation. Probably this programme will cover all major water catchment areas in future.

The question of voluntary or involuntary migration of people has certainly significant impacts on both the potential increase of vulnerability and the risk of hazards. Resettlement of farmers from Tigray, Gondar, Wollo and Shewa regions was organized in 1984-86. About some 600.000 people were resettled at that time. The rational of the resettlement scheme was to reduce the existing pressure on the eroded highlands. However, it is obvious that the previous socio-economic and ecological problems were only transferred elsewhere to the sub-humid lowlands that have a fragile ecology. Also the villagization policy may end up with the same failures: increase in people's vulnerability and serious degradation of natural resources as has happened also in Tanzania as a result of similar kind of programme. Both the resettlement and the villagization programmes were scaled down in 1990. In 1992, a new regional division of provinces was being introduced.

Consequently, coordination between government policies and policy practice is still needed. The existing two draft national strategies for Food and Nutrition, and for Disaster Prevention and Preparedness coordinated by the Ministry of Planning have started essential inter-agency work that in practice can give more means for development planning than the Ten Year Plan.

1.2. Nicaragua

Major natural disasters affecting Nicaragua are earthquakes, volcanic eruptions, cyclonic storms (called Papagayos), droughts and flooding. Nicaragua is one of the world's most active centers of seismicity. The circumpacific belt of seismic activity passes through Western Nicaragua and forms an active fault zone along the southwestern and northwestern boundary of the Rift Depression. Hence, seismic activity pose a continuous risk for natural hazards in the Western Nicaragua.The western part of the country is also a center of volcanic activity while a line of young volcanoes between the Gulf of Fonseca and the Lake Nicaragua are still active.

The eastern part of the country is yearly subject to heavy flooding. Cyclonic storms cause yearly considerable damage to agriculture exacerbating also soil erosion in the Central Highland.

In 1992 alone, two major disasters affected tremendously the lives of people and infrastructure. The historically active volcano Cerro Negro erupted in April 1992 affecting the lives of about 150 000 people. The national economy as well local people's lives were further harshened by a tsunami in September 1992 flowing along the Pacific coast. Altogether 40 500 people suffered from the damage and total economic loss has been estimated to 25 million USD. The costs of rehabilitation and reconstruction caused by the tsunami have been estimated to reach some 8.5 million USD.

These two calamities have persuaded the Government to review its disaster prevention and preparedness policies and practice. The reports evaluating the damage caused to affected people, national economy and to different sectors openly confess that Nicaragua has not (had) any legal base, nor institutional base nor financial resources to invest in long-term disaster prevention and preparedness. Further, the made conclusions emphasize that disaster prevention need to be prioritized also in macro-economic planning.

In response to the objectives of the international IDNDR Decade, the Government has formulated a five-year plan (1991-1995) and special programmes to strengthen mitigation and preparedness systems, and established a national committee for natural disaster prevention. One central part of the five-year plan is to prepare a national strategy for mitigation and preparedness.

The special programmes include the following:

* communication network incorporated into national defense system
* establishment of special committees for prevention, mitigation and preparedness of disasters
* establishment of special brigades (e.g. forest fire protection)
* formulation of natural hazard maps
* preparation of emergency plans

* training and extension
* strengthening the Office of National Civil Defense (del Estado Mayor Nacional de Defensa Civil)
* strengthening the early-warning systems of seismic, volcanic and hydrologic hazards.

Nicaragua suffers from seasonal food insecurities. According to recent estimates, the food crop supply should increase by 65 percent within the next five years to meet the demand of people. Major political changes initiated also sectoral policy revisions. Agricultural policies (The Challenge of the Agrarian Sector, Outline for Recovery, November 1990) among others are aiming at stabilization of the economy. Although structural adjustment scheme also in Nicaragua means radical changes in e.g. agricultural markets, the Government has maintained strong market intervention in last years (e.g. agricultural price freezing, control over basic food imports and exports). The Government has started land tenure reforms to guarantee increased security for landholders.

1.3. Viet Nam

In Viet Nam, cyclonic storms and floods are the major natural phenomena that cause yearly damage. Viet Nam belongs to the tropical monsoon region and it is a typhoon center of the West Pacific Ocean. During the years 1954 - 1991 altogether 234 cyclonic storms and tropical depressions directly or indirectly influenced Viet Nam. Altogether 130 major floods were experienced during the same period. In geologic and seismic terms Viet Nam is rather stable. However, there is historical data on light earthquakes. There is also a risk of volcanic activity in the Truong Son range.

Wind erosion is a serious risk during dry season. For instance, in coastal areas, sand dunes are blown into hinter land, filling up rice fields (e.g. in Central Viet Nam). Dust storms and strong winds in the Central Highlands and the Plain of Reeds blow away the most fertile surface soil layers resulting in soil degradation.

In North Viet Nam there are large laterized areas in the mountainous and midland regions. Deforestation and soil erosion are major risks. Soil erosion is estimated to be some 240 - 300 tons per hectare every year. In the most fertile lands (of alluvial soils) intensive farming has resulted in a decline of soil fertility.

The northern midland parts of Central Viet Nam are yearly subject to cyclonic storms and tropical rains. Approaching sand dunes poses also considerable risks. The coastal areas of Central Viet Nam suffer early from typhoons and related flooding and waterlogging, which pose problems to rice cultivation.

In the densely populated Central Highlands deforestation is a major risk. At national level, estimates for forest loss reach 200.000 hectares per year. About 50.000 hectares are lost because of agricultural land clearance. The Ministry of Forestry has tried to mitigate the impacts by establishment of 4 million hectares of hydrological protection forests. These include also planting of mangrove species into the coastal areas. Because of forest fires, uncontrolled land clearance and pests only half of the reforested areas are currently covered by forests. The Central Highlands has been a priority region in reforestation activities.

The Mekong Delta, which is the major rice production area, 1 to 2 million hectares of land is being flooded during 2 to 4 months period every year. Some 40 % of the total area is alkaline and 703 000 hectares affected by salinization. The arable land areas in the Mekong Delta are especially at risk due to salinization and alkalinization of the soil, estimated to be in total some 3 million hectares. In the Red River the water level of the main stream is 2-5 m above the surrounding terrain during the flood season. The Red River is formed by three tributaries: rivers Da, Lo and Thao. The catchment area flows across the boarders to China and Laos. Thus, the risks of hazards are not only local origin as most of the rivers flow across national boarders. Deforestation of upstream catchment areas has direct adverse impacts on agricultural production and people's safety. For instance, in the upstream areas of the Red River the forested area has decreased since 1960, from 42 % to 5 % as covered percentage. The erosion of soil has increased respectively, reaching concentrations of 1 g/l or more suspended solids in the river water during the rainy season. Thus, inter-regional cooperation should have a priority in future policies.

The country has arable land potential from 10 to 11 million hectares, out of which some 8 million hectares are already cultivated and some 2 million hectares are covered with trees. The potential areas for expansion of cultivation are located in North Viet Nam (44 %), Central Viet Nam (76 %), Central Highlands (76 %) and in the Eastern region of South Viet Nam (34 %). However, this land potential is already eroded and degraded, and requires investments and careful planning in order to be successfully developed.

As many of the existing ecological and socio-economic problems are being manifested in the Central Regions the Government has recognized the following development needs for the zone:

* closure of protection forests from further destruction
* resettlement of families cultivating too high up the steep slopes or inside of conservation areas
* birth control programmes to reduce population growth

* reforestation of non-productive barren lands
* development of agro-forestry projects for village welfare
* research towards improved design of agro-forestry and intercropping systems
* research into various methods of regreening bare hills and reforesting in Imperata grasslands (i.e. Imperata cylindrica)
* greater efficiency in fire prevention and fire fighting
* improved communications to facilitate better marketing of midlands products in exchange for cropland grain.

As attempts to increase food production aggravated by the increasing population have more or less exaggerated flood damages, siltation, salinization of fields and increased incidence of storms several actions on policy level have been agreed on:

* all land of clear and marginal potential for permanent agriculture should be brought into production with the necessary irrigation development, contouring etc.

* new human settlements and industrial or other developments should be sited on land of only low agricultural use

* efficiency of irrigation networks should be improved so that maximum crops per year can be produced

* fuel plantations should not be made on agricultural land but every square meter of available non-crop land should be used for fuel production, e.g. in villages, along dikes and beside roads

* additional fuel needs should be met from forest areas in the Central Regions rather than to rely on agricultural wastes for fuel

* special research should be aimed at solving agricultural problems on acid sulphate soils (in Mekong delta, totalling 1.8 million has)

* agricultural research must continue to select for more productive and vigorous strains of crop

* over-reliance on single species or single varieties of crop is dangerous,... farmers must be encouraged to maintain a wide range of crops and crop varieties and develop intercropping techniques

* fuel needs could be reduced through efficiency in energy use and through alternate energy sources

* expensive mechanization of farming should not be made solely to save human and animal energy

* upstream reforestation must be given a high priority as a tool of attaining increased agricultural production

* reliance on pesticides and chemical fertilizers should be reduced.

The National Conservation Strategy (1986) outlines the following future scenario for Viet Nam: "there will be no natural forest left in the country (with the current trend),...the resulting loss of water penetration into to the watershed regions will result in increasingly severe floods and droughts causing massive damage to property, losses of agricultural production, seasonal failure of water supplies in some areas, heavy siltation that will frustrate the country's costly efforts to develop and lack of fuel for domestic use. The country will no longer be able to feed its population and will have little else to sell in return for food on an international market also facing food shortages." The main recommendations of the National Conservation Strategy for priority action include tight population policies, a massive reforestation programme, and establishment of a cross-sectoral administrative body to formulate and enforce environmental legislation and regulations. The same central issues have been emphasized also in the National Plan on Environment and Sustainable Development of Viet Nam for the period of 1991-2000. This Plan has been formulated for the Rio Conference in 1992.

According to the recent plans of the Government, disaster prevention on both national and local level will mean in near future concentrated efforts on revision of the existing land use regulations. For instance, construction and cultivation in coastal areas and river banks will be restricted. Also the current economic liberalization of the previous centrally-planned economy of Viet Nam will most likely result in further sectoral policy changes.

The National Committee on International Decade for Natural Disaster Reduction has declared a specific Plan of Operations for the IDNDR Decade. Special attention is to be paid to the work on guidance and instruction of disaster preparedness in three stages: preparation, emergency and post-disaster restoration. Scientific research programme for disaster preparedness and mitigation is to be organized in order to identify disaster types and analyze damage levels, study ecological aspects of disasters and formulate regulations for disaster mitigation and protection of environment. Strategies for disaster preparedness and mitigation are to be formulated both at national and regional levels. Each year of the Decade will have a separate plan of action.

2. ORGANIZATIONAL FRAMEWORK

2.1. Ethiopia

In a Study in Institution-Building, Disasters and Development in Ethiopia prepared for the UNDP in 1990, the author (Gebre Amassu) in his analysis asks: "Why so little seems to have been done?" and gives the following reasons for the failure of incorporating disaster prevention and preparedness aspects into national planning and sector policies: differing policy priorities between sectors and within the country, and among the donors (which supported only relief and rehabilitation programmes), poor policy coordination, institutional constraints and conceptual conflicts. He claims, despite of the different sectoral attempts mentioned above, that different sectoral bodies (e.g. ministries) have approached the task of policy coherence as a matter of low priority in their respective agendas. Disaster mitigation has primarily been considered as the responsibility of the Relief and Rehabilitation Commission.

The Relief and Rehabilitation Commission (RRC) was established immediately after the great famine (1972-74) in 1974. By several proclamations the role of RRC was then enhanced from sole relief operations, and since 1979, RRC has had authority over disaster prevention and preparedness. The Commission has a country-wide network of regional offices and sizeable manpower. Various departments of the RRC are functionally inter-related. Direct horizontal communications exist between and among functional departments of the Commission. Also a National Committee for Drought Prevention and Relief was created after the great famine, but to date, it has remained an organization on paper, only.

The Early Warning and Planning Services Department of RRC was created in 1974. Today, it comprises of three divisions, one of which is responsible of collecting and analysing information on emerging crop failures, one with assessing the effects of disasters on local level, and one with the task of planning resettlement schemes. RRC publishes monthly Early Warning Reports (on crop and pastoral situation, food availability and price trends) and when necessary releases special prospects for food security situation. The most important Report is that of September, in which the harvests can be predicted with some accuracy. These regular reports regular reports review the current data on rainfall, prices, crop conditions and impending and existing food shortages.On local level the information is being gathered through local officials and Peasant Associations. RRC sends also regular assessment teams to all regions to make pre-harvest surveys to forecast the overall food supply. These teams report cases of malnutrition, famine related migration and deaths.

Although, the Early Warning System at national level functions rather efficiently, regular information down-wards to regional, district and local level is needed. Consequently, a more comprehensive Food Information System has been established with the support from FAO. With the help of its field crop assessors, the FIS collects data and provide

information on crop production, market situations and prices and food availability in general, and special reports on crop assessments. Together with the Ministry of Agriculture, the National Meteorological Services Agency and the RRC, the FIS has the mandate to give and maintain crop availability information and forecasts. At present, the National Meteorological Services Agency (NMSA) is technically advanced and for instance forecasts for short term are relatively reliable.

The Ethiopian Seed Corporation has developed with the Plant Genetic Resources Centre a strategy for seed distribution during or after emergencies, based on stocks of seed of proven local varieties. Seed reserves shall in future be upgraded with emphasis on crop research on local varieties, extension services and improved seed distribution.
Also the Ministry of Natural Resources and Environmental Protection (1991) has responsibilities that directly relate to disaster prevention and preparedness. For instance, forestry and soil conservation tasks are being extended to zone and wareda level.

The proposals of the National Disaster Prevention and Preparedness Strategy has resulted in the establishment of the Inter-Ministerial Committee to ensure the general coordination of programmes and activities of disaster prevention and preparedness with more general aspects of development.

2.2. Nicaragua

As the changes towards incorporation of disaster prevention and preparedness into national planning are only starting, the existing organizational framework is still weak. Clear sectoral or cross-sectoral responsibilities and operational mandates do not exist.

To date, the Office of National Civil Defense has had the overall responsibility of disaster preparedness, relief and rehabilitation. Disaster prevention has not been a priority at operational level.

The national hydro-geo-meteorological institute, INETER, has the overall responsibility of forecasts and early-warnings. INETER is being said to have the most advanced seismic warning system in the Central America. The facilities of INETER as well as the closer technical cooperation with the Institute of Natural Resources and the Environment (IRENA), and with the national research institute of el Instituto de Estudios Territoriales are to be supported under the special programmes of the IDNDR Decade.

The special programmes of the IDNDR Decade on strengthening preparedness systems focus partly on creation of municipal preparedness bodies (i.e. brigadas de defensa civil) and partly on strengthening of existing national institutions (Ministerio de Salud, Cruz Roja Nicaraguense, Direccion de Bomberos del Ministerio de Gobernacion, Benemerito Cuerpo de Bomberos de Nicaragua y las Alcaldias Municipales). Altogether 33 municipalities have a priority status in the programme.

2.3. Viet Nam

In 1990, the Government organized together with UNEP an International Seminar on Environment and Development. This Seminar resulted in various recommendations on a National Action Plan and environmental protection.

Sectoral cooperation in relation to disaster prevention and preparedness has initiated quite recently. In fact, in 1992 several national seminars were held to promote cross-sectoral hazard and disaster management. For instance, the Ministries of Transportation and Construction organized jointly a workshop on "Impacts of typhoons and floods on transportation". UNDP and DHA sponsored a seminar on "Flood mitigation". These training events have aimed also on improvement of regional cooperation in the field. Viet Nam participated on a regional workshop titled "Changing climate and its impacts on the environment in the South-East Asia". Another regional seminar was organized in April 1992 handling the theme "Improving Cyclone Warning Response and Mitigation".

Partly as a result of the IDNDR Decade the Government has revised the organization of the Central Flood and Storm Control Committee, and started closer cooperation with the State Committee of Science and Technology. This collaboration has brought up a special research programme on prevention of floods and storms in Viet Nam. The National Committee on IDNDR Decade works closely with the Central Flood and Storm Control Committee on policy level developments.

The Hydro-meteorological Service is responsible for the preparation of cyclone, storm surge and flood forecasts and early-warnings. Tropical cyclone prediction is based on data provided by weather satellites and existing radar stations in the three major cities of Hanoi, Danang and Haiphong. However, accurate forecasts of cyclone intensity and movement have been hampered because of inadequate links of the weather service with the neighbouring countries and inadequate monitoring equipment.

The Hydro-meteorological Service prepares short-term flood forecasts for all the major river systems: Mekong, Black River, Red River, Jiang, Nam San and Song Ca. However, the Service has not capacity to prepare detailed forecasts of flash floods for the major agricultural areas in the Central Regions (midlands) although floods cause massive damage there yearly.

On local level the responsibility of forecasts and early-warnings lies on the shoulders of province and district level administration. The local level information is then further send to the Central Flood and Storm Control Committee which coordinates all operational flood control activities. On local level traditionally the effectiveness of the preparedness system has been held up through village level dike management teams or forest protection brigades. Also formal and non-formal school system has been promoting disaster prevention and preparedness. Thus, agricultural extension workers have advised farmers on e.g. necessary changes in planting and harvesting times of crops.

At least the following governmental bodies should be more closely linked with the disaster prevention and preparedness: the Ministries of Agriculture, of Transport and Communications, of Food, of Forestry, of Aquatic Products, of Power, of Public Health, of Water Conservation, the State Committee of Science and Technology, the Committee for the Rational Use of Natural Resources and the Institutes of Science and of Climatology and Hydrology.