3. LEGISLATION

In disaster prevention land use and land use management are the key topics. For high risk areas landuse regulations should be established, with proper legislation for hazard and risk zonation and clear control, incentives and enforcement mechanisms. Systematic and focused hazard, vulnerability and risk studies at national level can significantly contribute to reformulation of land use policy (and to land reforms) and planning and related environmental legislation. In fact, DHA has recommended that disaster-prone countries should prepare hazard and risk maps for local, national, sub-regional and regional preparedness and risk reduction plans.

As in many other developing countries, also in Ethiopia, Nicaragua and Vietnam the existing environmental legislation is scattered in sectoral laws, and a comprehensive trans-sectoral act is missing. The same weakness is further reflected in law enforcement, as various sectoral institutions may have e.g. overlapping mandates. In the context of disaster prevention, Ethiopia has by far, the most advanced legislation of the three countries comparing whether the overall land use policy or the detailed building codes.

3.1. Ethiopia

A review of legislation pertaining natural resources and their utilization started in 1988. An Environmental Legislation Drafting Committee was established and it consists of representatives from the Ministries of Agriculture, Mines and Energy, Urban Development and Housing, the Water Resources Commission, the Valleys Development Studies Authority, and the Science and Technology Commission. A comprehensive set of legislation dealing with environmental protection and natural resources conservation has not yet been formulated. Provisions for environmental protection are dispersed among various pieces of legislation. The Constitution of 1987 contains 3 paragraphs in Article 10 dealing with environmental protection:

1. The state shall ensure that the ecological balance is maintained, by ensuring the conservation and development of natural resources, particularly land, water, forest and wildlife, it shall guarantee their utilization for the benefit of the working people.

2. The state shall ensure that human settlement patterns correspond to distribution of natural resources in order to create favourable conditions for development.

3. The state shall encourage the scattered rural population to form consolidated communities in order to free rural life from backwardness and to enable the people to attain a better social life.

A new Constitution has been under preparation since 1992.

At present, the land is state-owned. Farmers and individuals hold land on a possessory title. Any person who wishes to personally cultivate land shall be given rural land. The transfer of land by sale, succession, mortgage or lease, is prohibited. A land tenure and land use policy declaration, issued in 1990, provided for the strengthening of land holding rights for individuals and the transfer of land possessions through inheritance. A leasehold of 49 years was defined as a standard form of land possession. " Each Ethiopian head of household 18 years of older is entitled to receive from the government his/her own plot of crop land for which he receive the usufruct for a forty nine year period under conditions elaborated by the government." The time has been considered to be sufficient to guarantee investments in soil and water conservation. This leasehold right can also be extended to concern collectivities which graze herds.

According to the Land Nationalization Act (1975) the Peasant Associations have the right to declare plots of land to individual farmers within their territory. Despite of the Land Nationalization Act traditional tenurial systems still exist. The revisions of land tenure policy have been introduced lately, and a referendum on land tenure has been promised for 1994.

In future, probably the regions will have the autonomy of land reallocation. In the early 1980's FAO supported a study on the Highlands Reclamation. The study included an agro-ecological classification and related zoning. As this zoning covers the whole country, it can be used as a basis for the regionalization of land reallocations.

3.2. Nicaragua

Since the establishment of the Institute of Environment and Natural Resources (IRENA) in 1990, the existing environmental legislation has been under revision. The national programme for the IDNDR Decade focuses on legislative revisions regarding to among others land use, zonation of urban and semi-urban areas and building codes.

3.3. Viet Nam

Also in Viet Nam, the Government has revised the existing land tenure system to catalyze productivity. Farmers or cooperatives have right to acquire for small plots of land or forest holdings (from state forests), cultivate, use and sell freely the products. The pertaining laws of Forest Protection, Use and Management of Land, Exploitation and Conservation of Water Resources have become obsolete because of current trends in the exploitation of natural resources and the population pressure. These acts and related regulations are being reformulated including e.g. zoning of different kind of productional activities in coastal areas and on riverbanks. Also, a special Act on Flood and Storm Control is under formulation in response to the objectives of the IDNDR Decade.

4. DISASTER SENSITIVITY OF THE PROJECTS OF THE FINNISH INTERNATIONAL DEVELOPMENT AGENCY

4.1. Ethiopia

All the reviewed co-operation programmes with Ethiopia (1985-1993) have already ended: Refugees Grain Storage Project (Phases 1 and 2, 1985-1991), Selale Peasants Dairy Development Project (1987-1991), Food Security Development Programme (planned for 1989-1993), Energy Programme (Phase 3, 1988-1991), Road Maintenance Project (1989-1992).

1. Refugees Grain Storage Project:

This Project was a disaster relief project, which addressed as acute disaster situation. The Project included construction of altogether 12 warehouses for grain storage in Gambella and Hararge regions, with a total capacity of 24000 metric tonnes of bagged grain. The warehouses were intended to serve refugee camps with refugees displaced by war and famine. The first phase (1985-87) was implemented with the Ethiopian Relief and Rehabilitation Commission (RRC) and United Nations High Commission for Refugees (UNHCR) as recipient organizations, the second phase (1989-1991) with UNHCR as implementing agency. The warehouses were standard types of 2000 tonnes capacity each. Some of them were built with concrete hollow block walls, some were prefabricated steel structures.

2. Selale Peasants Dairy Development Project:

The Project focused on development of peasant dairy farming on Selale region through provision of improved cattle breeds, provision of veterinary and insemination services, development of pasture management, fodder production, support to cooperatives, milk collection and training. The Project had relevance for disaster prevention through improved nutrition, diversification of the rural economy and improved pasture management and introduction of fodder trees and cut-and-carry feeding of cattle. The Project had also a long-term objective to reduce overgrazing by introducing more productive dairy cattle. Until 1992 there has however not been evidence that farmers would decrease their number of local cattle after having started dairy farming with improved breed and cut-and-carry feeding practice. In 1993 the Project has had a follow-up phase.

3. Food Security Development Programme:

This Programme was specifically designed to focus on disaster prevention and relief needs. The Project was planned to support the Ethiopian government on improving the country's food security system by constructing grain silos for 20.000 Mt capacity, developing grain logistics, supporting the formulation of the National Food and Nutrition Strategy and training of grain storage and transport staff. The Project was, however, not approved for the implementation due to a general decision of Finland in 1990, not to

initiate new development projects in Ethiopia. The reason was the escalation of the civil war and the deterioration of internal security.

4. Energy Programme:
The Project included construction of a 106 km transmission line Agaro-Bunno-Bedelle, production of electric poles, rehabilitation of distribution networks and institutional support to the Ethiopian Electric Light and Power Authority (EELPA). The Project has had an indirect connection to disaster prevention, since provision of electricity to rural areas and market centers facilitates diversification of the rural economy by establishment of small industries etc. This can in the long term decrease the human pressure on scarce land resources and reduce vulnerability to famine.

5. Road Maintenance Project:
The Project included rehabilitation of 250 km of roads in Alemgena Road District, provision of machinery and institutional support for the Ethiopian Roads Authority (ERA). The Project has had an indirect link with disaster prevention through: 1) facilitating more efficient disaster relief logistics in the target area in disaster situations, and 2) improving infrastructural prerequisites for the development and diversification of the rural economy.

Conclusion:	*Two of the already ended programmes addressed directly acute disaster situations. Also other cooperation projects can be considered to decrease disaster-vulnerability in the long run. The planned Food Security Development Programme could be re-evaluated.*

4.2. Nicaragua

Finland has the following on-going programmes of development cooperation in Nicaragua: 1) Rehabilitation of the Disabled (1990-1993), 2) Strengthening of Technical, Material. Human and Institutional Resources in Hospital Equipment Maintenance (1990-1993), 3) Support to Generation and Transfer of Agricultural Technology (1992-1995), 4) Integrated Rural Development Program in Region V (1990-1993), and 5) Regional Forestry Programme for Central America (1991-1994). The Integrated Rural Development Programme in Region V is being described in the Chapter 4.4.

1. Rehabilitation of Disabled:
The project aims at improving rehabilitation services delivery system especially in Regions I, III, V and VI. In future, different categories of disabled persons are to be detected at the earliest stage, and provided with adequate rehabilitation as near the home community as possible. The project activities consist of the following: 1) institutional strengthening (implementation of national policy, strategies and plans); renovation/construction and equipping of rehabilitation units; 2) operations and

maintenance of rehabilitation units; 3) human resources development (training of trainers, management and technical training); community mobilization, and 4) development of production of orthesis and prosthesis. The target group consist of people who are being disabled because of the civil war and various natural disasters (hurricanes, earthquakes, tsunamis). The project will directly improve disaster prevention and preparedness in the country through such activities like community involvement, training and national policy and strategy level developments. Most activities will, however, be linked with either relief or preparedness, not in long-term prevention of hazards.

2. Strengthening of Technical, Material, Human and Institutional Resources in Hospital Equipment

The project aims at 1) strengthening of hospital equipment maintenance sector in general and in the five project hospitals; 2) at increasing the availability of proper hospital and medical equipment; 3) at developing a comprehensive training programmes; and 4) at supporting the Project of the Rehabilitation of Disabled. This project has no direct links to disaster prevention nor preparedness as it consists of purely technical and managerial aid.

3. Support to Generation and Transfer of Agricultural Technology, Region III

This project in Regions III and IV aims at the following: 1) increase of food security; 2) increase of revenues of farm families; 3) empowerment of farming units; and 4) consolidation and institutionalization of GTAT (i.e. the generation and transfer of agricultural technology). The project has indirect connections also to the longer-term disaster prevention through e.g. on-farm seed production based on local and small-and medium-scale farms (i.e. less than 30 has of arable land); through soil conservation and reforestation; and through on-farm storage of harvest. Thus, the project aims at safeguarding food security on local level. There is no comprehensive risk analysis of all potential natural hazards, nor any estimates of impacts. In the problem analysis the existence of "climatic uncertainty" has been mentioned. In the longer-term the project will probably decrease disaster vulnerability of local people by improving food security.

4. Regional Forestry Programme for Central America

This forestry programme is functioning both on regional and on national level. On regional level three projects are to be-implemented through horizontal cooperation. These are: 1) Forestry and agroforestry training and research in Central America (CATIE), 2) Center for forest management, utilization and small-scale forest-based industry (ESNACIFOR), 3) Central America Forestry Journal (CATIE). These regional projects do not have any direct links to disaster prevention and preparedness aspects. However, the project of Forestry and Agro-forestry Training and Research has the potential to improve the capacity of field level professionals of forestry and natural resources management to generate and transfer technology of various agro-forestry systems, and thus halt the degradation of soils.

The bilateral project in Nicaragua is Rehabilitation of the windbreak system and support to farmer's forestry activities in Lèon, Region II. The geographical area extends from the city of La Paz-Centro to the city of Léon, along the western watershed of the Maribios mountain ridges. The immediate objectives of the project are in brief: 1) institutional strengthening of the Regional Office of IMARENA to establish an extension and training system in the project area, 2) the establishment and management of a network of windbreaks by the farmers of Lèon, 3) the establishment of 2000 ha of plantations or equivalent to produce firewood, charcoal, and other forest products and with agro-forestal or agro-silvo-pastoral aims to be fulfilled by small and medium scale landowners, 4) the creation of prequisites to generate greater aggregated value for forest products, integrating the activities into the economy of rural people. The problem analysis describes the major risk to be seasonal strong winds which accelerate land degradation and erosion. There is no comprehensive risk analysis, even rough one, considering all potential natural hazards, and estimates of the impacts (i.e. flooding and its ecological impacts, or health impacts caused by disasters like food insecurity). Although, the framework of the project is not "disaster-specific", in the long term the planned activities (e.g. establishment and management of windbreaks, establishment of fuelwood plantations) will probably decrease the vulnerability of the target group to natural disasters.

Conclusions: *Most development cooperation programmes in Nicaragua are disaster sensitive, i.e. they directly link with disaster prevention and preparedness, although these aspects might not have been very consciously and comprehensively considered during project identification and planning (e.g. in problem and risk analysis). The on-going projects seem not to have increased the risk of natural hazards. In the long term most programmes seem to decrease disaster vulnerability of local people. The on-going programmes should monitor disaster sensitivity at local level. In near future, the major hazards and high-risk areas should be identified on regional level. This kind of hazard screening and mapping should be used as basis for the planning of cooperation programmes in future.*

4.3. Viet Nam

Finland is supporting the following development co-operation projects in Viet Nam: 1) Hanoi Water Supply Programme (1985-), 2) Haiphong Water Supply and Sanitation Programme (1990-), and 3) Pha Rung Repair Shipyard Project (1976-1991). In addition, a training programme on trade development has been carried out during 1991-93, and a technical transfer programme on transport sector was implemented during 1989-92. As an example, the disaster sensitivity of the Hanoi Water Supply Programme is screened in chapter 4.4.

1. Hanoi Water Supply Programme:

The project aims at improving the water supply services in the urban areas of the city of Hanoi. The programme has included the following components: 1) construction and rehabilitation of pumping stations and treatment plants, 2) construction and rehabilitation of the water supply network, 3) construction of house connections, 4) improvement of operation and maintenance of water supply systems, and 5) improvement of management and financing of water supply services. The target group consists of the entire population of the urban areas of Hanoi as well as industries and services located in the city.

Even though the project has not been planned as a disaster prevention project, it is directly linked with disaster prevention and preparedness in the city, as the impacts of the most common natural disasters in the area - typhoons and floods - threaten especially the safety of water supply services. One of the most acute environmental health risks in the city has been the infiltration of polluted surface water to the underground water tanks and pipelines during heavy rains. The construction of high-pressure pipelines directly diminishes this risk, and secures the safety of water supply during periods when the streets are flooding.

2. Haiphong Water Supply and Sanitation Programme:

Haiphong Water Supply and Sanitation Programme aims at improving the level of water supply and sanitation in the city of Haiphong through 1) preparing a reliable water supply and sanitation master plan for the city, 2) rehabilitation of raw water pumping and treatment, 3) construction and rehabilitation of the water supply network, 4) development of management and financing as well as operation and maintenance of water supply systems, and 5) improving the water supply practices of the population. The target group involves the population, industries and services in the urban areas of Haiphong.

The disaster sensitivity of the city of Haiphong is very much the same as in Hanoi, small floods caused by heavy rains and typhoons being the most common natural disaster risk. Therefore, the improvement of water supply and sanitation services directly reduces the impacts of natural disasters in the city. The disaster sensitivity of the project is also very much the same as with the Hanoi Water Supply Programme.

3. Pha Rung Repair Shipyard Project:

The project has consisted of 1) construction of a repair shipyard in Pha Rung as well as 2) training of the shipyard's staff and management. The project has no direct links with disaster prevention and preparedness. However, as typhoons are rather common in the area, the project involves some risks related to natural disasters. Also exceptionally high sides are a potential risk for the project. These risks were dealt with during the planning and implementation phase as the following:

The risk of typhoons was not dealt with specificly during the planning phase. Some small damages for roofs were actually got in a typhoon during the construction phase. Safety against high sides was secured through taking into account the long-term sea-level

extremes and using adequate risk-margins with safety dams and in structural engineering works.

A long-term phenomen having potential impact on the project is the siltation caused by the Red River. Even though this doesn't directly influence the site of the shipyard, siltation may affect the route to the shipyard, thereby increasing the need for dredging.

Conclusions:	*Heavy rains, typhoons and floods are the most potential environmental hazards in Viet Nam (if the still affecting environmental impacts of war in Central Viet Nam are excluded). Therefore, most development cooperation projects in Viet Nam are directly disaster sensitive. The risks of hard winds and flooding should be taken into account in all physical planning and design of faciliiies. The present water supply projects improve the disaster preparedness in the two most important cities in Northern Viet Nam through securing water supply also during flooding periods. However, the projects involve also risks related to environmental hazards, the most severe being the risk of sinking of ground-level in the city of Hanoi. Additional studies are needed to estimate the level of risk, and some revisions to the designs and strategies of the projects in order to decrease the risks should be considered.*

4.4. Examples of vulnerability screening

The developed matrix for disaster vulnerability (See Annex II) assessment can be used as a guide in risk analysis ("Rapid risk/vulnerability assessment), when planning new projects or programmes. It gives an overview of the potential natural hazards and their impacts on the planned project, of the impacts that the project might have on disaster vulnerability and helps to define necessary mitigation measures for risk reduction. If the vulnerability screening results in a need of more detailed studies these should be integrated in EIA-studies as recommended in the Chapter 2.2.

The following two examples of the projects in Nicaragua and in Viet Nam demonstrate how to make a rapid risk/vulnerability assessment during project planning.

1. Nicaragua: Integrated Rural Development Programme in Region V

Region V is located in north-east of Lake Nicaragua, in the central and southern parts of Nicaragua. The project area is approximately located in 500 - 700 meters a.s.l. The annual rainfall varies between 1500-2000 mm. The topography is undulating, soil varies between

sandy and loamy. The hydrographic conditions are dependant on watersheds of the Rio Grande de Matagalpa and the Rio Malagatoya.

The project aims at 1) improved feeding of livestock mainly through developing better feeding systems, 2) diversified selection of feed stuffs, 3) improved fodder conservation methods; 4) increased production potential of livestock and milk-beef; 5) improved marketing infrastructure of milk and other farm products; 6) establishing a cheese manufacturing plant; 7) improved in-service training of farmers including rehabilitated facilities of a Farmers Training Center in Camoapa; 8) improved environmental conditions through reforestation and wider adoption of silvo-pastoral methods; and 9) increased participation of women in all development activities.

The disaster sensitivity of the programme can be described as follows: flooding and related soil erosion are major risks caused by cyclonic storms and heavier winds in the area. With the present framework of the project, flooding and soil erosion can also threaten the sustainability of the project itself, and increase disaster vulnerability of local people. In the project documentation both problem and risk analysis cover only technical, financial and human resources development issues (like technology transfer. e.g. the functioning of a milk collection center).

The sub-project of farm improvement includes pond construction activities, but there is no assessment of e.g. the technical suitability of the constructions, nor any assessment of the potential risks or impacts of the ponds. The sub-project of agricultural mechanization consists of acquisition and distribution of tractors to the cooperatives, but there is no assessment of necessary soil conservation methods nor any assessment of the impacts on e.g. soil erosion. The training and extension sub-project should be developed to include also disaster prevention aspects. The village reforestation sub-project which can directly promote disaster prevention has suffered from lack of coordination and commitment, which shows that the project is too much technically oriented at present. The sub-project on women includes planting of home gardens and construction of Lorena type wood-saving stoves. Also this vital sub-project has suffered from lack of commitment.

As a conclusion, and in comparison to the earlier mentioned Project of technology transfer, Support to Generation and Transfer of Agricultural Technology this project should redefine its scope and related activities (See: 4.4. (1), screening matrix of disaster sensitivity). Otherwise it will probably increase people's vulnerability and accelerate land degradation and soil erosion. There are plans to gradually change the existing tradition of extensive cattle ranching to semi-intensive cattle ranching.

PROJECT LEVEL SCREENING OF DISASTER VULNERABILITY

COUNTRY: NICARAGUA
PROJECT/COMPONENT: INTEGRATED RURAL DEVELOPMENT PROGRAMME IN REGION V **YEAR: 1990-1993**

RISK CATEGORY: L= low risk, M= medium risk, H= high risk, ?= unknown risk, more information needed

PHENOMENON	IMPACTS ON PROJECT Direct (L, M, H, ?)	Long-term (L, M, H, ?)	POTENTIAL INCREASE IN DISASTER VULNERABILITY CAUSED BY THE PROJECT (L, M, H, ?)	RECOMMENDATIONS FOR ACTIVITIES (describe)
(Climatic) Strong winds Cyclonic storms	M	?	M	- further risk assessments needed - formulate mitigation plan for impacts
(Seismic/Geologic) ?				- study historical seismic/geologic data
(Hydrologic) Erosion Floods	M	?	M	1. study appropriate technology for soil conservation, erosion and flood control 2. study means to minimize the potential negative impacts of mechanization and agricultural practises 3. study nutritional and health aspects related into disaster prevention
(Volcanic) none				
(Wildfires) ?				(- study fire prevention methods)
(Pests)				
Conclusions:				* redifine project scope and activities

INSTITUTIONAL AND SOCIO-ECONOMIC FACTORS AFFECTING VULNERABILITY	TRENDS (describe)	POTENTIAL IMPACT ON DISASTER VULNERABILITY (describe)	RECOMMENDATIONS FOR ACTIVITIES (describe)
(Socio-Economic) * target groups: farmers * risk groups: women, children, small farmers	- High population growth - Increasing poverty	- Increases the vulnerability of target and risk groups	- Socio-economic needs assessment - Analysis of appropriate participatory methods to be used
(Cultural) - agro-silvopastoral practises - food storing at household level - traditional diets and nutrition - traditional income-generating activities	- Decrease of cultivable land per household - Decrease of possibilities for traditional income-gener. activ.	- Increases the vulnerability of target and risk groups	1. Study existing agro-silvopastoral systems 2. Study improved food storage systems 3. Study nutritional conditions and local diets 4. Study possibilities of income-generation of risk groups
(Legislative) * Environmental legislation under review	- Not known	- Low impact	- Study potential impacts of revised legislation
(National Strategies) * National Disaster Prevention and Preparedness Strategy under formulation	- Disaster prevention and preparedness taken more adequately into account	- Improves the preparedness	
(Sectoral Policies) - Agricultural Policy * Land Use Policy	- Situation unclear	- May have significant impact; situation not known	
(Organizational/Institutional) - inter-sectoral cooperation at national, regional and local level			
Conclusions:			- Socio-economic needs assessment including gender aspects, nutritional issues, diversified local level income-generation etc.

2. Viet Nam: Hanoi Water Supply Programme

The city of Hanoi is located in the delta of the Red River, about 100 kilometres from the coast. The topography of the area is very flat, the elevation being from 5 to 11 meters above the average sea level. An extensive flood protection embankment, combined with other protective measures, is constructed to prevent flooding of the Red River to the city. The urban city area is about 49 km^2 with a population of over 1 million inhabitants. The annual rainfall is rather abundant, varying from 1,200 mm to 2,200 mm in average. A water supply project funded by the government of Finland initiated in Hanoi in 1985. The project is shortly described in chapter 4.3.

The natural disaster sensitivity of the project is mainly related to the flooding caused by heavy rains. The daily maximum rain recorded during the rainy season is above 300 mm, and rains over 100 mm occur almost each year. As the terrain is extremely flat, even smaller rains than the afore mentioned extremes cause flooding in the streets. As the old water supply network includes several underground water tanks located by the streets and in the yards, and as the pressure-level is very low, polluted surface water very easily penetrates into the old water supply system during heavy rains. Besides creating several technical problems, the infiltration of flooding water endangers the hygienical safety of the water supply system as such. The project has tackled the risk mainly through constructing new high-pressure pipelines and disconnecting the leaking old pipelines when the new pipelines have been constructed. The process of disconnection of old pipelines has, however, been surprisingly difficult, and in many areas the new network has been connected with the old one, thereby endangering the safety of water supply.

The strategy of the project is to construct a reliable high-pressure water supply system instead of making small, temporary improvements to the present system. Therefore, no measures, for example, to protect the existing old underground water tanks from flooding have been made. As the progress of the construction of new pipelines is, however, rather slow, the environmental health risk caused by the floods remains high for the majority of the population. If disaster vulnerability has been taken as a planning criteria in the beginning of the project, it might have influenced the implementation strategy by including also temporary measures to improve the safety of the water supplies against flooding already within the old water supply network. Even though major revisions for the strategy at this stage of the project are unnecessary, the designs of house-connections could be reviewed in terms of flood protection. Guidelines for preventing the impacts of flooding could also be prepared and the issue be included to the consumer education programmes.

The project involves also an aspect of a long-term environmental hazard. The raw water pumping is made from the abundant groundwater reservoir located beneath the city. During the recent years it has been noticed that in some areas there has occurred soil subsidence. Doubts have been raised whether the cause for this is the sinking of the level of groundwater which is due to the increased raw water pumping. This phenomenon has

concrete technical impacts to constructed facilities and might in some places even endanger the constructional safety of buildings. Soil subsidence also worsens the impact of floods, as the drainage becomes more and more difficult and as easily flooding areas are created. According to a study made on the matter in 1992, the risk area is relatively large covering a 4-6 km wide and 10 km long zone parallel to Red River with a total area of 30-40 km^2.

The project has made some studies on the risk of soil subsidence, and a computerized model for the management of the groundwater resources has been developed, as well. However, as the potential risks created by soil subsidence are exceptionally high in Hanoi, the matter should be studied more seriously and strictly according to the recommendations made in the soil subsidence study (1992), and clear guidelines for raw water pumping be developed.

PROJECT LEVEL SCREENING OF DISASTER VULNERABILITY

COUNTRY: VIETNAM
PROJECT/COMPONENT: HANOI WATER SUPPLY PROGRAMME **YEAR: 1985 -**
RISK CATEGORY: L= low risk, M= medium risk, H= high risk, ?= unknown risk, more information needed

PHENOMENON	IMPACTS ON PROJECT Direct (L, M, H, ?)	Long-term	POTENTIAL INCREASE IN DISASTER VULNERABILITY CAUSED BY THE PROJECT (L, M, H, ?)	RECOMMENDATIONS FOR ACTIVITIES (describe)
(Climatic) * Strong winds * Heavy rains	 L H		 L L	- Follow-up of climatological data
(Seismic/Geologic) * Sinking of ground-level		H / ?	H / ?	- Detailed studies are needed on the risk of sinking of ground-level caused by pumping of groundwater - Clear and strict guidelines on pumping of groundwater should be prepared
(Hydrologic) * Floods	M	M	H / ?	- The risk of increasing flooding is connected with the sinking of ground-level. Same actions as above
(Volcanic)				
(Wildfires)				
(Pests)				
Conclusions:				

INSTITUTIONAL AND SOCIO-ECONOMIC FACTORS AFFECTING VULNERABILITY	TRENDS	POTENTIAL IMPACT ON DISASTER VULNERABILITY (describe)	RECOMMENDATIONS FOR ACTIVITIES (describe)
(Socio-Economic) * Population growth * Industrial growth	High growth expected	High growth increases the need of water. This increases the risk related to sinking of ground-level.	* Based on the results of studies on the risk of sinking of ground-level, the water supply master plan should be revieved.
(Cultural)			
(Lægislative)			
(National Strategies)			
(Sectoral Policies)			
(Other organizational/ institutional factors)			
Conclusions:			

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