

**Basic Concepts and Definitions:**

In compliance with the provisions of Directive 1 of 2010, of the President of the National Defense Council, regarding the conduct of Danger, Vulnerability and Risk Studies (PVR) for disaster situations;

Consequently, these studies are carried out in our Province. They have -as their principal function- the identification of the main dangers affecting the Province, the determination of vulnerabilities and the estimation of risks; as well as constituting a tool for decision-making by local governments.

**Hazard Study (P):** Process to estimate the probability, that potentially destructive events will occur in a given time and place; with a degree of severity, capable of creating a situation of possible disaster, due to the degree of damage to the population, economy, infrastructure and other socioeconomic factors.

**Vulnerability Study (V):** Process by which, the level of exposure and predisposition or susceptibility of people, places, material goods or socioeconomic activities of any kind -to be affected by a specific danger of defined parameters- is determined.

**Risk Study (R):** It is the scientifically founded process to calculate (estimate) the level of damage, using appropriate methods and techniques; based on probabilistic analysis and reliable statistics that guarantee an effectively quantified result.

In our Province, the PVR studies for intense rains, penetrations of the sea, strong winds, drought and epizootics (animal diseases) have been concluded. The Popular Councils are reflected in them, by municipalities that are most vulnerable to different manifestations of natural and health hazards.

- In extreme winds, 10.5% of the total territory is affected; the Province has 52,541 inhabitants in such a situation.
- The municipalities with the highest risk are Alquizar, Mariel and Artemisa. In general, there are 51 CP/ZDs that have a high total specific risk; which represents 74% of the total CP/ZD of the Province.

For any intensity of danger due to strong winds, Alquizar, Mariel and Artemisa are the municipalities with the highest total speed. As for the CP/ZD: Rural East (San Antonio de los Baños), Las Cañas

(Artemisa), Caimito CP/ZD de Mariel -Cabañas, Mariel and QuiebraHacha- have the highest values.

- At the municipal level: Güira de Melena, Alquízar, Artemisa and San Cristóbal are the ones with the greatest territory exposed to flooding, for any dangerous scenario. In case of a CT1 event, Güira de Melena is the municipality with the largest area exposed to flooding (67.6 km<sup>2</sup>); while for high intensity hurricanes (CT3-CT5), the affected area of ??Artemisa and San Cristóbal can exceed 150 km<sup>2</sup>.
- At CP/ZD level, the most affected are those of Güira de Melena, Alquízar and Artemisa.
- For the most extreme variant (CT5), there are approximately 17,845 inhabitants exposed to danger, which represents 3.6% of the provincial total.
- From the structural point of view, and for any category of danger, the CP/ZD most vulnerable to sea penetrations are Pulido-Guanímar (Alquízar); and also Lincoln (Artemisa), Cajío (Güira de Melena) and El Morrillo (Bahía Honda). This is mainly due for presenting population settlements on the first coast line, and suffering the direct onslaught of storm surges.
- For any intensity of danger, there are 7 CP/ZDs in the Province, where there is a high total risk of flooding from sea penetrations: Cajío and Junco (Güira de Melena), Pulido (Alquízar), Lincoln and Las Cañas (Artemisa) in the south; as well as El Morrillo (Bahía Honda) and QuiebraHacha (Mariel) in the north.
- 30% of Artemisa province territory presents a flood hazard, due to intense rains during extreme weather events. Obviously, high danger areas are of little significance in extent. The medium and low danger zones prevail, mainly in the southern ecosystem municipalities; some territories of Bahía Honda, Mariel and Bauta should be added.
- The municipality with the highest number of exposed population is Güira de Melena, with more than 14,000 vulnerable inhabitants. It is followed by San Cristóbal, Alquízar and Artemisa; which have from 9,000 to 11,000 exposed inhabitants.
- The CP/ZD with the highest risk of flooding due to heavy rains are: El Corojal, Lincoln and Las Cañas (Artemisa); El Junco and Cajío (Güira de Melena); PulidoGuanímar and Consejo Norte

(Alquízar); as well as Anafe (Bauta).

**Recommendations:**

- Improve the forecast models of extreme meteorological events; since they cause heavy rains.
- Comply with the Civil Defense guidelines.
- Continue completing and updating risk studies.
- Systematize and standardize the information required in risk reduction.

.Determine the current state of the karst ducts.

- In new investments, respect, as much as possible, the natural drainage and establish the floor level above the maximum flood level.
  - Re-evaluate the design of drainage and sewerage systems.
  - Systematize the collection of solid waste and eliminate its accumulation in roads, sewers, rivers and other areas.
- Pay differentiated attention to the territories -according to the magnitude of the risk- and consider it in the housing construction programs.