

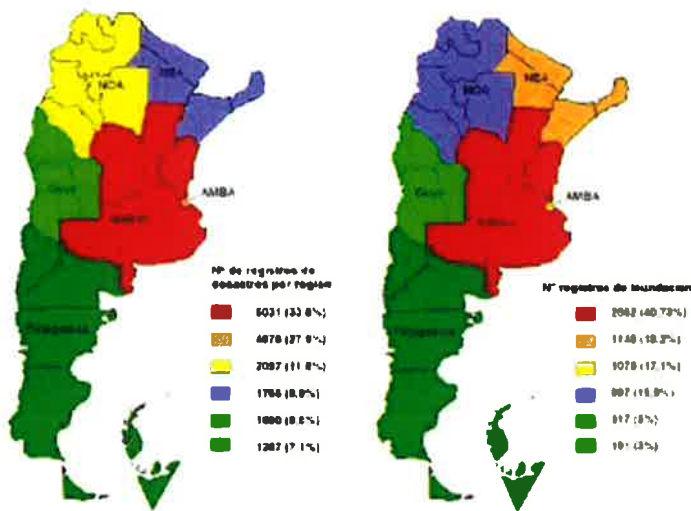
CONSIDERACIONES PREVIAS

Natural Disasters in the Paraguay-Paraná Waterway (River Plate Basin) from Argentina

by the Lic. Alfredo Sese (economist) and Dr. Ricardo Javier Alvarez (maritime lawyer).

The most frequent type of disasters in this region are those caused by weather, because they represent a little more than 87% of the total. These include: flood, alluvium, gale, windstorm, landslide, drought, forest fire, fog, thunderstorm, accidents caused by weather phenomena and the seasonal low waters and/or shallow waters of the Paraná and Paraguay rivers.

Figura 4.24: Registros de desastres (1970-2007) por región



- In this region, the highly predominant types of disaster are floods, which are present in 68.2% of records of weather events, and in 60.1% of all types of disasters.
- The province which concentrates the greatest impacts is Santa Fe, closely followed by Formosa, and then, Chaco.

Adaptation and mitigation

- A trust fund for Hydric Infrastructure (Hydric Fund) has been created that is paid for by a rate on the sale of gasoline and natural gas for automobiles. This Fund's resources are applied to moderate the effects of floods, and to the development of hydraulic work infrastructure projects. The Secretariat of Public Works of the Federal Planning and Infrastructure Ministry has been using the Hydric Fund to carry out the Federal Plan for the Control of Floods.
- Argentina has an early alert system in place to reduce the damages caused by floods. The National Weather Service is responsible for the case of heavy rains, while the Naval Hydrology Service is responsible for the case of risings of the River Plate and its coastal floods; the alert for risings of the great rivers of the Littoral is given by the National Water Institute.

- Weather forecasts, furnished one to three months in advance constitute an important orientation tool for production activities, particularly for the agricultural area.

Adaptation Needs

- Heavy rainfalls and their consequences, particularly floods, are showing the need to hasten the concretion of infrastructure works.
- Greater equipment and new hydrologic models for the adaptation of the early alert systems.
- In the agricultural area, certain management practices, such as crop rotations, agriculture-livestock rotations, the use of cover crops, and conservation tillage, among others, allow to reduce the vulnerability associated to climate and climatic changes.
- The climate of the subtropical Argentine region is prone to transmission of diseases through vectors such as mosquitoes, phlebotomines and winchuca (*triatoma infestans*). The diseases transmitted by these agents of which there is scientific information related to climate changes are Dengue Fever, Malaria and Zika.

CONCLUSIONS

The Paris Agreement COP/21 interpellates us to rethink the conditions for a new Legal Framework System in relation to International Rivers, which suffer the consequences of said climate change and which, due to an omission, are not included in the Agreement wording.

Below, we will include an outline of some general ideas:

- a) A new juridical-legal standard that accompanies the actions for adaptation to and mitigation of climate change.
- b) Transformations and adaptation of infrastructures and river operations. Greater energetic efficiency and green or ecologic vessels (driven by electricity and/or liquefied natural gas).
- c) Technologic innovation, protection of biodiversity.
- d) Go to a smaller scale of hydroelectric dams that are proportionate to the ecosystem, with the opening of dam locks.
- e) Promote sustainable transportation (without emission of CO₂ gases, plus last-generation vessels). Gradually replace road transport by sustainable fluvial transport.
- f) Foster the development of renewable energies along and across the river basin.
- g) Restore contaminated rivers and reconstruct coastal areas.
- h) Foster the social awareness programs of the companies that operate in the river basins, in favor of education, protection of the weakest, and training and work programs for the young.