URUGUAY

Source: esri

General

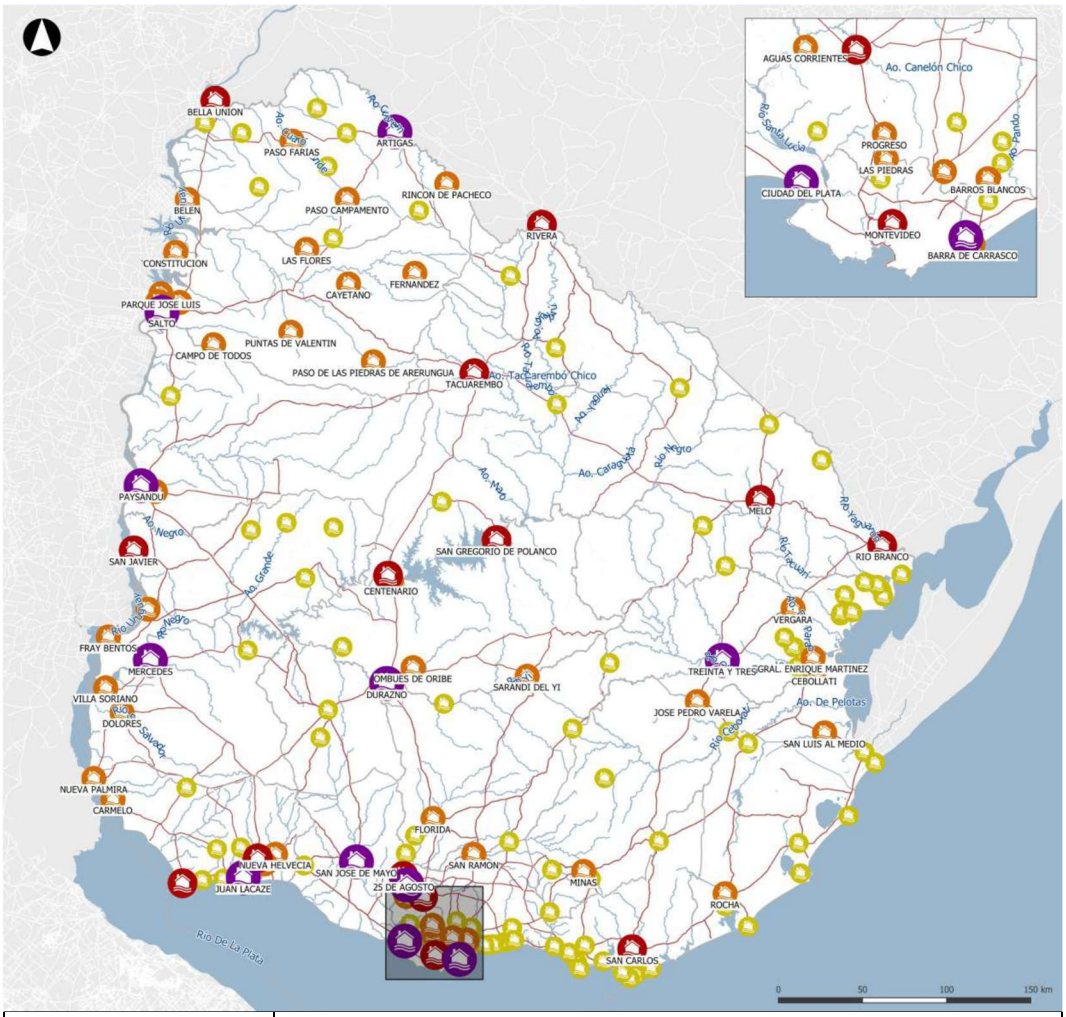
Uruguay - officially the Oriental Republic of Uruguay, or the Eastern Republic of Uruguay - is bordered by Argentina in the West and Southwest and Brazil in the North and Northeast, while bordering the Río de la Plata in the South and the Atlantic Ocean in the Southeast. The country covers an area of approximately 18,1 Mha (million hectares) with, in 2024, a population of 3.39 million, or 0.19 persons per ha (Wikipedia and United Nations, 2024).

Climate and geography

Located entirely within the southern temperate zone, Uruguay has a climate that is relatively mild and fairly uniform. According to the Köppen climate classification, most of the country has a humid subtropical climate. Only in some spots of the Atlantic coast and at the summit of the highest hills of the Cuchilla Grande the climate is oceanic. The country experiences the four seasons, with summer being from December to March and winter from June to September. Seasonal variations are pronounced, but extremes in temperature are rare. Summers are tempered by winds off the Atlantic, and severe cold in winter is unknown. Although it never gets very cold, frosts occur every year during the winter months, and precipitation such as sleet and hail occur almost every winter, but snow is rare. The absence of mountains, which act as weather barriers, makes all locations vulnerable to high winds and rapid changes in weather as fronts or storms sweep across the country. These storms can be strong; they can bring squalls, hail, and sometimes even tornadoes. The country experiences extratropical cyclones but no tropical cyclones, due to the fact that the South Atlantic Ocean is rarely warm enough for their development. Both summer and winter weather may vary from day to day with the passing of storm fronts, where a hot northerly wind may occasionally be followed by a cold wind from the Argentine Pampas. Even though temperature and precipitation are quite uniform nationwide, there are considerable differences across the territory. The average annual temperature of the country is 17.5 °C, ranging from 16 °C in the Southeast to 19 °C in the Northwest. Winter temperatures range from a daily average of 11 °C in the South to 14 °C in the North, while summer average daily temperatures range from 21 °C in the Southeast to 25 °C in the Northwest. The Southeast is considerably cooler than the rest of the country, especially during spring, when the ocean with cold water after the winter cools down the temperature of the air and brings more humidity to that region. The South of the country receives less precipitation than the North. For example, Montevideo receives approximately 1,100 mm of precipitation per year, while the city of Rivera in the Northeast receives 1,600 mm. The heaviest precipitation occurs during the autumn months, although more frequent rainy spells occur in winter. But still the difference is not big enough to consider a dry or wet season, periods of drought or excessive rain can occur anytime during the year (source: Wikipedia).

The landscape features mostly rolling plains and low hill ranges with a fertile coastal lowland. Uruguay is home to the Uruguayan savanna terrestrial ecoregion. A dense fluvial network covers the country, consisting of four river basins, or deltas: *the Río de la Plata Basin, the Uruguay River, the Laguna Merín and the Río Negro.* The major internal river is the Black River (*Río Negro*). Several lagoons are found along the Atlantic coast. In the Southwest is the *Río de la Plata*, the estuary of the Uruguay River (the river which forms the country's western border) (source: Wikipedia).

In 2022 the *Dirección Nacional de Aguas of the Ministerio de Ambiente* published an atlas with information on urban flooding risk. One of the maps shows the identified urban areas at risk of flooding (Figure 1). From Figure 1 it can be derived that most risk of flooding is in the area of Montevideo, along the Uruguay River and along the coast.



Legend Risk level localities Very high High Half Low	The level of flood risk of the localities in the country has been derived from the Level index flood risk in cities. This index considers the exposure of people and infrastructure, social vulnerability, the hierarchy of the city in the urban system and the perception of local actors and serves as input for the definition of priorities for the development of tools, implementation of preventive measures, reversal or adaptation focused on flooding

Figure 1. Risk of urban flooding in Uruguay by location
(Ministerio de Ambiente, Dirección Nacional de Aguas, 2022)

Existing polders

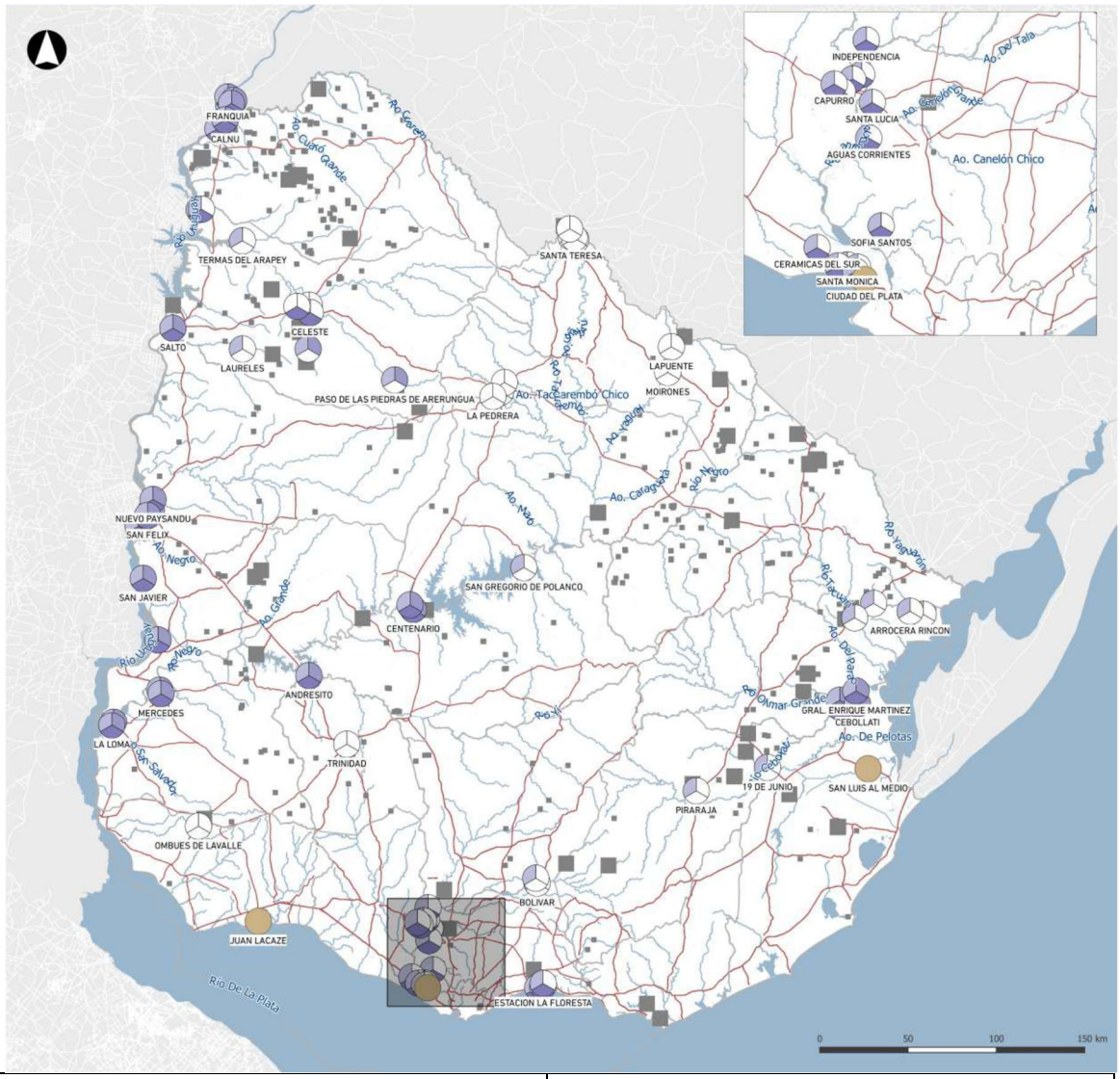
The United Nations Development Programme (UNDP) (2015) stated that in Uruguay polder projects have been implemented. However, they did not mention specific locations.

In the *Atlas Nacional de inundaciones y drenaje pluvial urbano* as published by the *Ministerio de Ambiente, Dirección Nacional de Aguas* (2022) many locations where a risk of flooding exists are shown. In Figure 2 three locations with provisions for flood protection are shown, being: a coastal area in Montevideo, Juan Lacaze and San Luis al Medio. These locations have been checked on Google Earth. Based on this only the coastal area in Montevideo has been included as a polder so far.

General characteristics of the polders in Uruguay are shown in Table I.

Proposed polders

No proposed polders could be identified.



Legend	This map identifies the localities that are under dams or have civil protection infrastructure against flooding. Together with the National Dam Safety Committee, they are defined as dams potentially dangerous those whose height is greater than 15 m, reservoir volume greater than 10 million m^3 and basin area greater than 10,000 ha. Those localities that are under potentially dangerous dams are identified as priorities for DINAGUA to carry out studies and make the follow-up.
Localities downstream of dams or with retaining dikes Reservoir volume greater than 10 million m^3 Height highr than 15 m Basin area greater than 10,000 ha. Prioritized by DINAGUA With flood protection provisions Dams priority dams	

Figure 2. Locations downstream of dams or with flood protection provisions (Ministerio de Ambiente, Dirección Nacional de Aguas, 2022)

Location of the polders in Uruguay as shown on the World polder map

The locations of the polders in Uruguay are shown in Figure 3.

Figure 3. Locations of the polders in Uruguay (source: esri – Batavialand)

References

Ministerio de Ambiente, Dirección Nacional de Aguas, 2022. *Atlas Nacional de inundaciones y drenaje pluvial urbano*. Montevideo, Uruguay. (in Spanish)

United Nations Development Programme (UNDP), 2015. Informes de consultorías 6. Generación de conocimientos en Gestión Integral del Riesgo. (in Spanish)

United Nations, Department of Economic and Social Affairs, Population Division. 2024. *World population prospects, medium prognosis. The 2024 revision*. New York, USA.

Note

A group of Sanduceros proposed that the entire area west of Colon, which is flooded by the Uruguay River between Washington Street and the Independence Bridge over the Sacra, be surrounded by a dike that prevents water from entering. For this idea, they take as an example the defense that was built in Concepción del Uruguay and that protects a good part of the city from the effects of floods (El Telegrafo, 22 june 2017). It is not clear whether this would imply polder development, or just flood protection.

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Lelystad, May 2025

Table I. General characteristics of existing polders in Uruguay

Name	Reclamation	Area in ha	Type *)	Latitudes	Longitudes	Elevation in m+MSL	Land use
Coastal area in Montevideo			RLL	34º 47' S	56º 19' W	2	Rural area
Total							

*) RLL = reclaimed low-lying land; LGS = land gained on the sea; DL = drained lake