

KOSTAEGOKI I PROJECT UPDATE - VULNERABILITY AND RISK ANALYSIS (MARCH 2026)

New information has been incorporated into the [map viewer](#) to make it possible to view risks and impacts as a result of rising mean sea levels due to climate change for climate scenarios RCP 4.5 and RCP 8.5 in 2050 and 2100.

This new geospatial data is also available, partially, in GeoEuskadi.

FLOODING: NEW RETURN PERIODS

Using the same rising mean sea level scenarios and the same methodology as Kostaegoki (2022), the areas potentially affected by flooding on the Basque coast have been determined for levels for **return periods (RP) of 5, 10, 25, 50 and 200 years**. This complements the only areas that have been available up until now, which were for RP = 100 and RP = 500 years.

Flood depths have also been calculated for the RPs incorporated into all simulation scenarios.

In addition to the flood areas and their depth, the population that would potentially be affected was also determined for each of the scenarios for the new RPs studied. Several socio-economic risk indicators were used in the analysis in the Kostaegoki (2022) project, but this update was only applied to the most socially relevant indicator: the population that would potentially be affected.

Moreover, potential areas liable to flooding in the 2100 scenario (RCP 8.5) with a return period of 100 years have been reprocessed in order to bring them into line with the update of the **Sectoral Territorial Plan for the Coastal Region**. These changes include adjustments to the shoreline and smoothing of the contours of flood areas. The predicted flood areas on the island of Zorrozaurre have been removed from the 2100 scenario (RCP 8.5) because the digital terrain model used does not reflect either the current or future situation of the island.

BEACH EROSION: NEW VIEW

The map view of the results of the impact of beach erosion has been modified for each of the sandy areas studied in the Kostaegoki (2022) project. We have moved from providing a dry beach retreat value (i.e. metres of retreat) to plotting the **georeferenced position**

of the dry beach line, in climate scenarios RCP 4.5 and RCP 8.5 for 2050 and 2100, with a RP of 5, 10, 25, 50, 100 and 200 years.

When estimating the position of the dry beach line, several lines were defined that improve the representation of the shape of the beach.

- First, a line was drawn to mark the upper limit of the active beach. For example, on a beach next to a promenade, this line would be the line of the promenade closest to the sea.
- Second, the average position of the current dry beach limit (the part of the beach that does not flood at high tide) was plotted for each future rising sea level scenario (RCP 4.5 and 8.5) and for each of the RPs considered.

As well as the lines showing the position of the dry beach for different return periods, the position of this line was plotted for each climate scenario without the effect of waves (only considering the rising mean sea level). This makes it possible to see how rising sea levels and waves during storms affect the area of the beach.

It also shows the current area of the dry beach, the predicted area for each scenario and the percentage change this implies.

This update includes a major breakthrough, by considering the planform of the rigid beach contour, which is basically the shape and structure of the solid edge of an area. In this case, they are usually coastal structures such as seawalls or promenades. Where erosion is significant (more than 75%), there may be differences between the results published by the Kostaegoki (2022) project and this update. The current approach is more accurate and appropriate in these cases of high erosion.

It should be noted that flood areas shown on beaches (flood beach package) are for guidance purposes only, as beaches are dynamic systems with a changing geometry and their behaviour depends on their profile, which changes with storms. Therefore, for beaches, it would be preferable to look at the erosion layers, which take into account different aspects in their calculation. We will remove this ambiguity in future updates to make this information more user-friendly.