

Reforestation using native species through land stewardship mechanisms in Bakio

The climate change adaptation plan for the municipality of Bakio establishes the need to adapt the territory and its productive management to forecast climate scenarios as one of its main lines of intervention. In the area of forestry, the plan proposes identifying the risks and vulnerabilities of the Bakio forests and adapting how they are managed in response to the foreseeable increase in temperatures and decrease in rainfall.

In this context, Bakio Town Council sought to recover municipal forest land that has historically been used for forestry plantations, and to restore them using native tree and shrub species. The initiative sought to restore the ecological functionality of the forest, minimise soil erosion processes, and enhance carbon absorption by plant biomass and soil.

Bakio Town Council signed a land stewardship agreement with a land stewardship organisation to carry out this intervention. The organisation provides technical advice on forest restoration and facilitation, guaranteeing the sustainable use of the land under stewardship at all times.

The reforestation was carried out on a total area of 5.7 hectares divided into two plots previously used for eucalyptus (*Eucalyptus globulus*) that had already been harvested.



Location of the plots of land subject to intervention.

Type of NBS implemented in the intervention



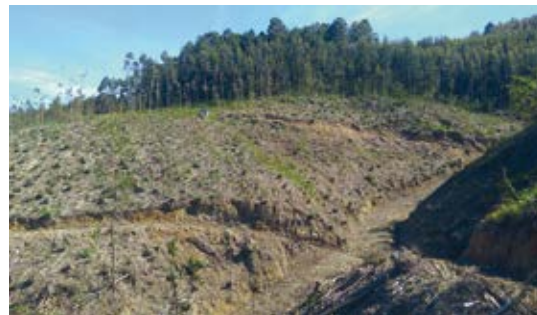
Restoration / reforestation with native species

PHASE 1: Land stewardship agreement

A land stewardship agreement was reached between Bakio Town Council and the Lurgaia Fundazioa Foundation, through which the Foundation provides technical advice and shares their accumulated experience in forest restoration and facilitation to achieve the objectives pursued. The agreement also guarantees that the plots of land to be reforested will be permanently maintained as forests (this requirement being one of the Foundation's by-laws), so that there will be no alterations that could divert the project to other purposes, ensuring long-term carbon capture in both the soil and aerial biomass.

PHASE 2: Characterisation and preparation of the two municipal forest plots selected for action

The lithology, topography, hydrology, access, and erosion processes of the plots are analysed, in addition to detecting the presence of invasive alien species. Before the reforestation work began, the resprouted specimens in both plots were controlled manually by cutting and girdling the specimens.

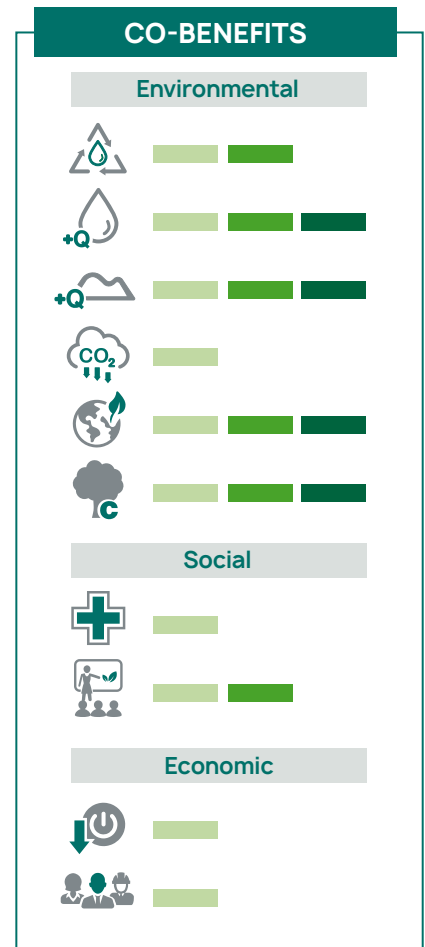
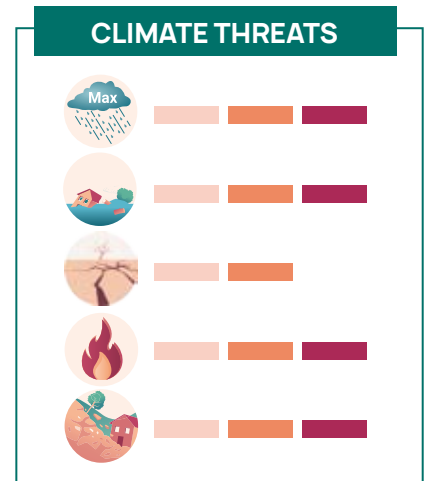


State of the plots subject to intervention prior to the action.

PHASE 3: Repopulation with native species

Due to the proximity to the sea and the orientation of the plots, species and densities typical of a mixed oak forest were selected, as well as Cantabrian holm oak species.

Pioneer species such as birch, ash, alder buckthorn, blackthorn and common hawthorn are specifically selected to accelerate vegetation cover, soil formation, and fruit development for wildlife.



On the other hand, along the banks of the stream, species typical of this type of ecosystem such as alder, ash, hazel, etc., were encouraged.

In total, **3,563 specimens** were used including trees and shrubs, which is equivalent to a **planting density of approximately 625 specimens per hectare**. The replanting was completed by placing nursery stakes and protections, and some forest trodden paths were removed in areas where accessibility is not required.



Repopulation carried out in the area of action.

PHASE 4: Campaigns to control new shoots and invasive species

The regrowth of any specimens in the plots are controlled by manually cutting and girdling them, as a continuation of the preparatory work and prior to repopulating the area. This work will also continue for three more seasons. The non-reproductive parts of this regrowth are spread on the ground to allow them to decompose, providing organic carbon to the soil, improving soil health, and enhancing the absorption capacity of the forest land.

An existing outbreak of Australian blackwood (*Acacia melanoxylon*) was also controlled, uprooting numerous young specimens both on the forest paths and in the areas being restored. As was done with the eucalyptus regrowth, the non-reproductive parts are added to the soil to retain the maximum possible biomass in the plot.



Work to control the regrowth of eucalyptus trees in the area of action.

PHASE 5: Monitoring and maintenance plan

A monitoring plan is implemented until 2026. The condition of the fallen trees and eucalyptus regrowth is checked annually. During maintenance work, the non-reproductive parts of exotic species being treated (eucalyptus, mimosas, etc.) will be left on the ground to decompose, improving the amount of organic carbon in the soil.

Other transversal actions that contribute to the correct development of the intervention

Environmental volunteering campaign

Four environmental volunteering days were organised where an explanation of the project was given to provide context and raise awareness on climate change and biodiversity. In this sense, the recovery of native forests is presented as a tool to mitigate the effects of climate change and as a mechanism for sequestering CO₂. The workshops were attended by a total of 106 people and were practical in nature. Activities were carried out on the plot to control the regrowth of eucalyptus and blackwood, and 375 native trees of selected species were planted.



People participating in environmental volunteering campaigns.

“ This initiative is a good example of collaboration between a land stewardship organisation and two public entities (Bakio Town Council, as the owner of the land and promoter of the intervention, and the Basque Government, as the economic facilitator) for the common good of the natural environment. ”

Land Stewardship Organisation Representative.



Agents involved

- Bakio Town Council
- Bizkaia Provincial Council
- URA - Basque Water Agency
- Land Stewardship Organisation
- Citizenship



Economic data

Approximate cost of the intervention:
€ 25,000

Funding: € 23,290
(aid programme for local authorities carrying out actions to promote sustainable development, 2020).



Barriers encountered

Presence of invasive exotic species that hinder the conservation and development of native species



Reduction of environmental impacts

With the actions carried out, **498 tn of CO₂** is expected to be captured over **30 years** (estimate made using the Basque Country CO₂ ex ante absorption calculator).



Success factors

Land stewardship agreement between an accredited **entity and the municipal council** as the landowner.

Mobilisation of citizens through **environmental volunteering campaigns**.

Implementation of a **monitoring plan up to 2026**.