ASES ON-CHAIN PROTOCOL

BASELINE FIELD REPORT

Verified Water and Soil Credits (VWC / VSC)

Ecological restoration in Alía, Cáceres, Spain

LT-007-SPA-072023 CÁCERES, SPAIN

Stichting Life Terra

Type B Project

October 2023

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On-Chain Protocol

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EXECUTIVE SUMMARY

The baseline report of the projects is a necessary activity for their certification since it will allow for establishing the initial parameter of the area through the NDVI index, which is an indicator used to evaluate the vegetation and the health of the plants, thus allowing us to establish the scenario before the planting activities. It will also be the comparative basis for the quarterly monitoring of the project, which will be prepared following the ***"aOCP Methodology for satellite monitoring of projects V2.0".*** In addition, the Baseline report allows for establishing the number of credits to which each project may aspire according to the characteristics of the project that has been developed and based on the aOCP calculation Methodologies.

The ecological restoration of a forested area in Alía, Cáceres (Spain) entailed planting a total of 60,717 trees, representing nineteen (19) distinct species mainly native to the region and well-suited for adverse environmental conditions. The primary objective of this initiative was to enhance biodiversity, improve soil quality, and provide resources to landowners. The project area, situated within the Alía municipality, covered 383,421.50 square meters.

The dense planting technique was employed, providing numerous benefits such as increased yield and efficient resource utilization. The average planting density within the plot was one tree per 5.4 square meters, equivalent to an average of 1,861 trees per hectare in the plot.

Reforestation emerges as a powerful tool to combat desertification and soil loss, two environmental problems with serious consequences. Trees act as true natural filters, absorbing rainwater and facilitating its infiltration into the soil. The litter and organic matter of the forest act as a sponge, retaining water and preventing surface runoff, in this way, groundwater is recharged.

In addition, tree roots act as a natural safety net, anchoring the soil and preventing erosion, especially on sloping terrain. The vegetation cover of the forest protects the soil from the direct impact of raindrops and wind, which reduces nutrient loss and desertification.

The ecological restoration of a forested area in Alía, Cáceres, will prevent the erosion of **6,030 tons of soil (VSC)** during its useful life (40 years), calculated using *the "aOCP Methodology for soil and erosion assessment V2.0"*, which will be monitored quarterly as defined in the Project Monitoring Plan. In addition, **167,742 verified water credits (VWC)** will be issued for project benefits in water infiltration that were measured following the *"aOCP Methodology for water balance assessment V2.0".*

The successful reforestation endeavor in Alía demonstrates the positive impact of employing dense planting techniques and strategically selecting native species to reclaim and revitalize degraded landscapes, providing ecological, economic, and social benefits for the region and its communities.

I. Project Design

This section is based on the information compiled in the PSF Format - Project Submission Form prepared by the project developer.

I.1. Project location

The project is located in the Alía municipality, in the province of Cáceres (Spain). The afforested plot lies close to adjoining Coniferous Forest areas and Natural grasslands. A project location map is illustrated in Image 1. Table 1 shows the coordinates of the reforested Plots.

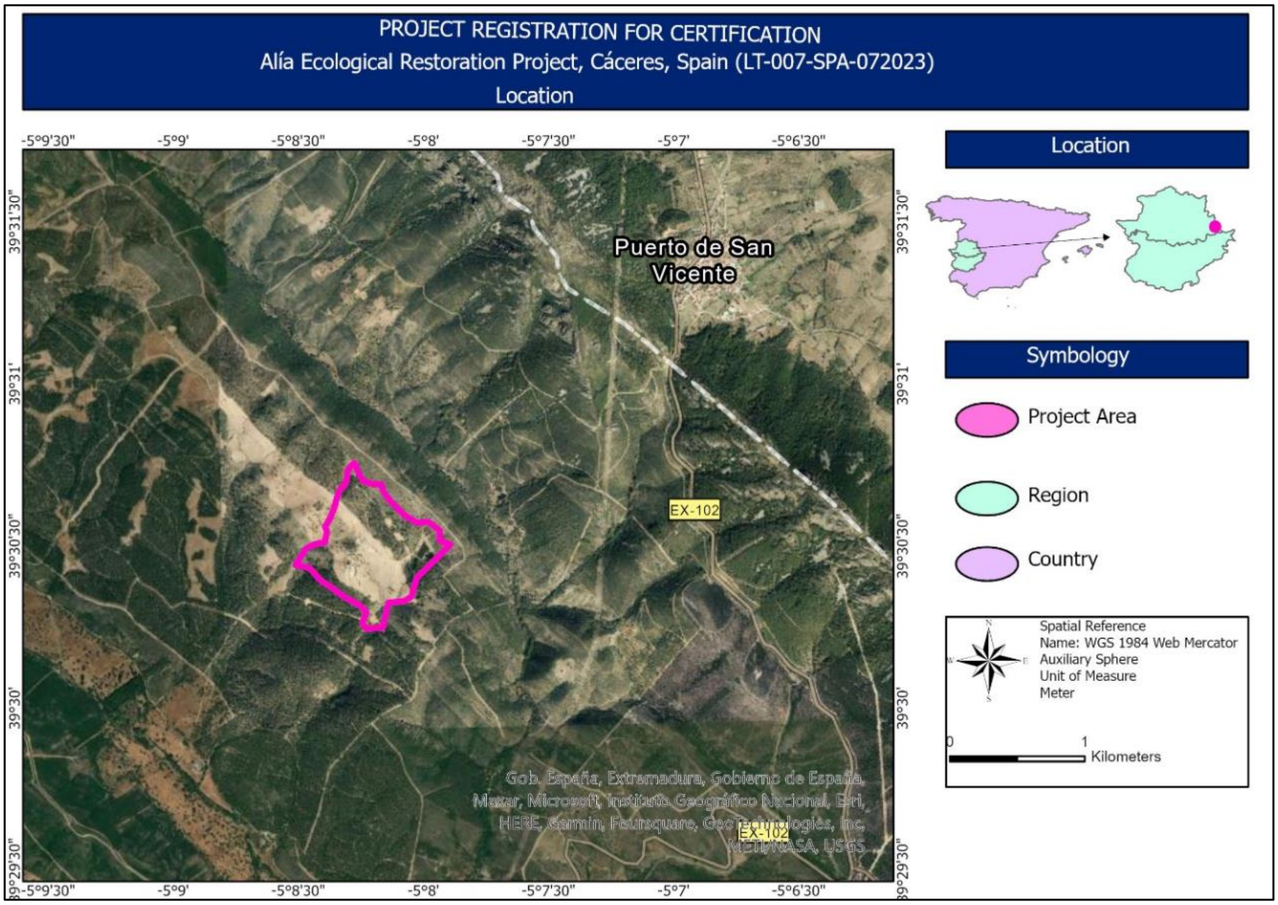

Image 1. Project location

Table 1. Location of Project plot

Plot	Coordinates	
	Latitude	Longitude
1	39.5076876°N	5.1373499°W

I.2. Administrative specifications

This section introduces the project developer and provides a clear understanding of the roles and responsibilities assigned to each party involved. It also addresses the status of land ownership, ensuring transparency and certainty regarding the agreements made with the landowners.

I.2.1. Project developer

Key project	LT-007-SPA-072023 CÁCERES, SPAIN
Title of the project activity	Ecological restoration in Alía, Cáceres (Spain).
Company	Life Terra
Person responsible	Sven Kallen
Fiscal address	1043 CR Ámsterdam – The Netherlands
Mail of the person authorized to receive notifications	sven@lifeterra.eu

I.2.2. Type of project

Type	☒ Forest management ☐ Regenerative agriculture ☐ Silvopastoral management ☐ Individual tree-based climate action / urban forest ☐ Water flow restoration ☐ Biochar

I.2.3. VNPCs the project is applying to

Type of VNPCs the project is applying for	☐ Carbon Removals (VCR) ☐ Biodiversity Based Credit (VBBC) ☒ Water Credits (VWC) ☒ Soil Credits (VSC) ☐ Climate action bond

II. PROJECT AREA BASELINE

According to the Corine Land Cover mapping, the project area falls within Forest and semi natural areas with Scrub and/or herbaceous vegetation, Sclerophyllous vegetation associations, as well as Transitional woodland-shrub and Natural grasslands in the Alía municipality, Spain. Adjoining land covers include Coniferous Forest areas, Natural grasslands, and herbaceous vegetation associations extending a few kilometers from the site. An evaluation of the ESA-worldcover-v200 for 2021, focusing on land use and land cover, revealed that the project site was situated within a predominantly Grassland area with Tree cover areas, Shrublands, and areas with sparse vegetation.

The project area may have transitioned from one land-use category to another in the years prior to the project start date. Using the Dynamic World Land Use/Land Cover (LULC) dataset, we can show how land use change has changed over time (Image 2).

<table>
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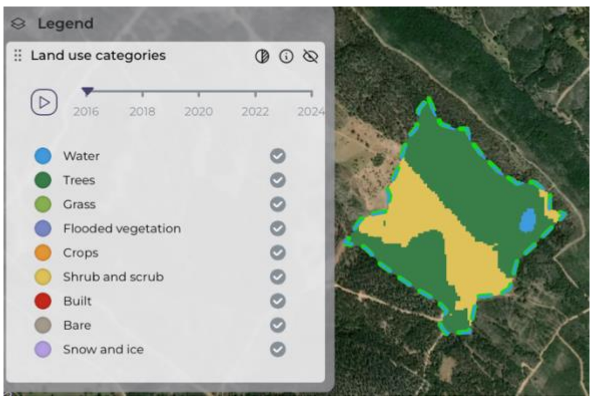
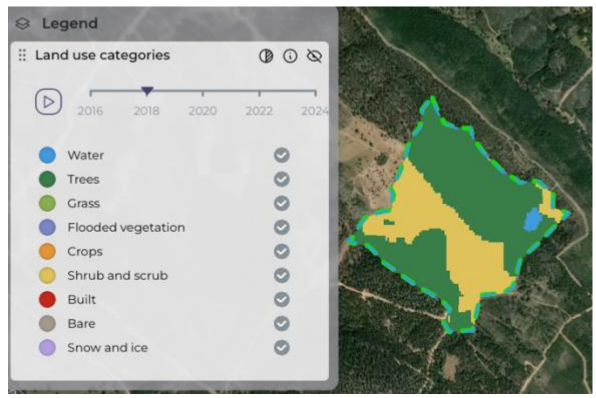
<tr><td>
</td><td>
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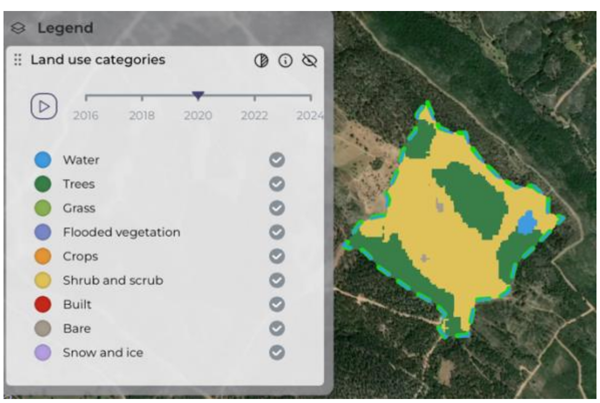
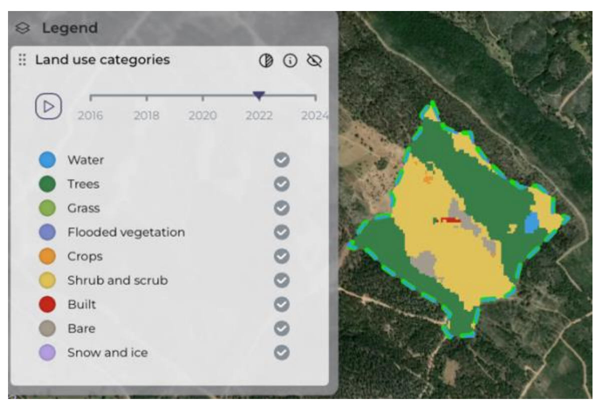
<tr><th>Land use 2020</th><th>Land use 2022</th></tr>
<tr><td>
</td><td>
</td></tr>
<tr><th colspan="2">Land use 2024</th></tr>
<tr><td colspan="2"></td></tr>
</table>

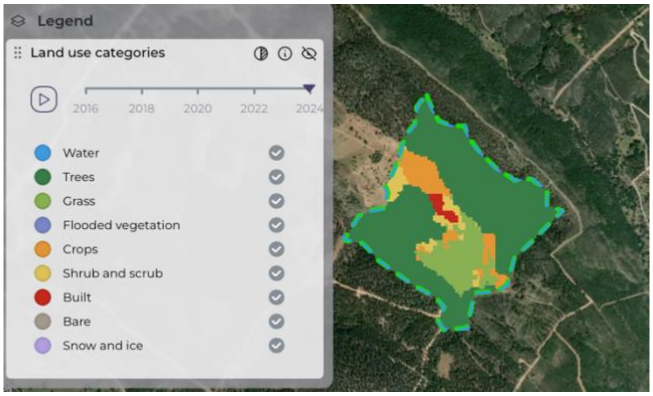


IMAGE 2. LAND USE CHANGE 2016-2024

II.1. ECOLOGICAL ADDITIONALITY

II.1.2. SPECTRAL RESPONSE

When solar radiation interacts with an object, one of three situations can occur, either individually or in combination:

- **Reflection:** The radiation can bounce off the object partially or entirely, resulting in reflection.
- **Absorption:** The object can absorb the radiation, taking in its energy.
- **Transmission:** Radiation can pass through one object and reach another, known as transmission.

The extent to which radiation is reflected, absorbed, or transmitted depends on the specific physicochemical characteristics of the objects involved. However, for object identification purposes, our primary interest lies in the reflected light or radiation at different wavelengths. For instance, vegetation exhibits low reflectance in the visible range, but the presence of chlorophyll in plants increases reflectance in the green channel. On the other hand, plants demonstrate the highest reflectance in the near-infrared region of the electromagnetic spectrum.

II.1.2.1. Index

Vegetation indices (VI) are extensively employed for monitoring and detecting changes in vegetation and land cover. These indices are created by considering the contrasting absorption, transmittance, and reflectance of energy by vegetation across the red and near-infrared portions of the electromagnetic spectrum. Numerous studies have demonstrated that the Normalized Difference Vegetation Index (NDVI) is particularly resilient against the influence of topographic factors. NDVI is commonly utilized as a broad indicator of photosynthetic activity in plants and the corresponding aboveground primary production.

The calculation of NDVI was performed using Sentinel-2 satellite images in the Google Earth Engine platform. Images with the less than 20% cloud cover was selected for each month. The assessment focused on the average monthly NDVI time series spanning from January 1, 2021, to August 13, 2023. The findings are presented in Image 3, which covers both pre- and post-project implementation periods. To delineate the pre- and post-project implementation periods, it is important to note that the reforestation activities took place between January 2023 and May

2023. Consequently, all months prior to these dates are considered as the pre-project implementation period, while months after are regarded as the post-project implementation period for the purpose of this analysis. Analyzing the NDVI values within the plot reveals a spectrum ranging from 0.05 to 0.39 prior to the project's initiation. The absence of any prior deforestation or degradation in this plot clarifies the absence of significant declines in NDVI during this timeframe. However, the sporadic fluctuations can be attributed to seasonal changes or the impact of cloud cover on spectral signals. The average NDVI in this area is reflective of the plot's sparse vegetation, hence the values within 0.05 to 0.39 range.

Given the known information that a healthy, dense vegetation canopy typically exhibits NDVI values above 0.5, while sparse vegetation generally falls within the range of 0.2 to 0.5. The current assessment indicates that the reforestation project has potential in fostering an ascending trend in the plot's NDVI as it transitions to a dense forested area. With the project in place, it is anticipated that the NDVI will continue to rise further, eventually reaching a level indicative of a healthy and thriving vegetation cover.

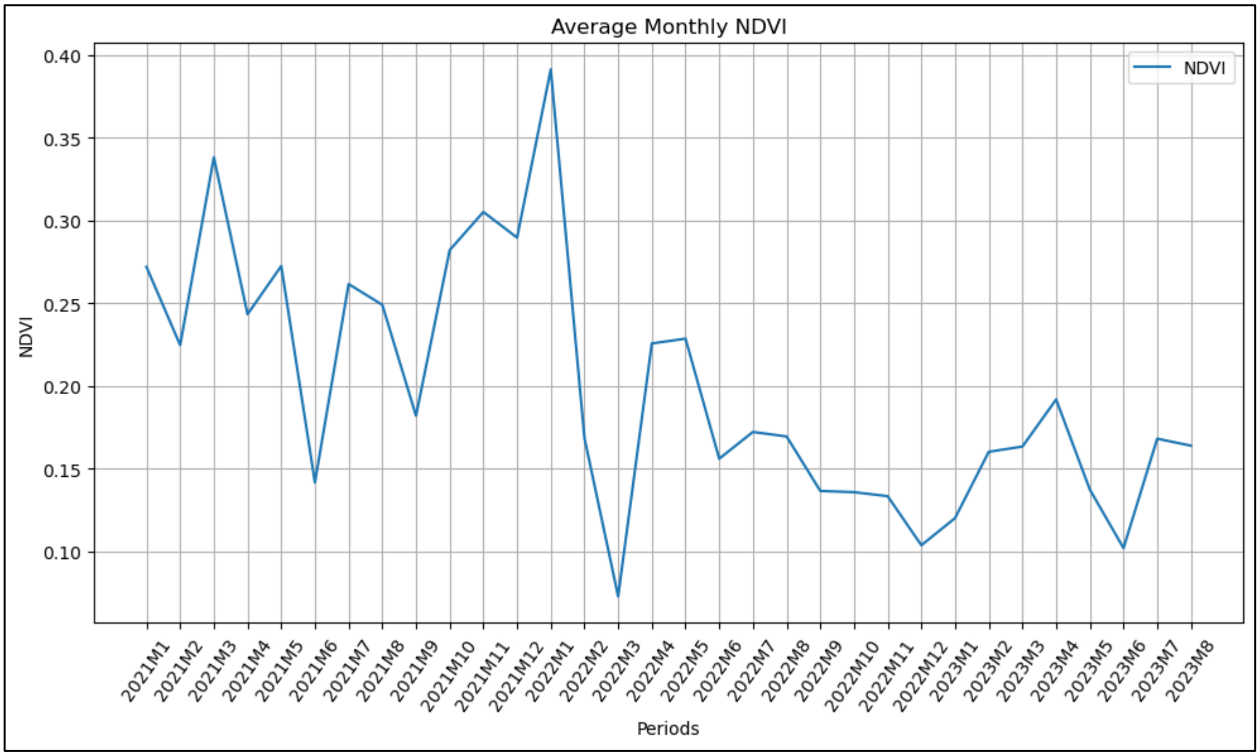


IMAGE 3. NDVI TIME-SERIES IN THE AREA OF INTEREST

II.1.3. IMPACT ON THE LANDSCAPE

Prior to reforestation of the area, it experienced decreased biodiversity, and reduced ecosystem services. The ecological restoration effort however contributes to the conservation of plant and animal species by providing new habitats and restoring corridors for wildlife movement as healthy forests are crucial for the survival of many species. In addition, the reforestation contributes to the reestablishment of natural hydrological cycles, by slowing down runoff, enhancing water infiltration, and reducing soil erosion. This helps regulate water flow, improve water quality, and mitigate the impacts of flooding. An added advantage is the reforested landscapes offering aesthetic beauty and recreational opportunities. They can provide green spaces for leisure activities, such as hiking, wildlife observation, and eco-tourism, enhancing the well-being of local communities and visitors.

Furthermore, there are intentions to construct an eco-friendly hostel within the plot, aligning with sustainability principles. This establishment will serve as a hub for recreation and environmental education, where visitors will be immersed in the understanding of the plantation's advantages and have the opportunity to witness indigenous animal species in their natural habitat.

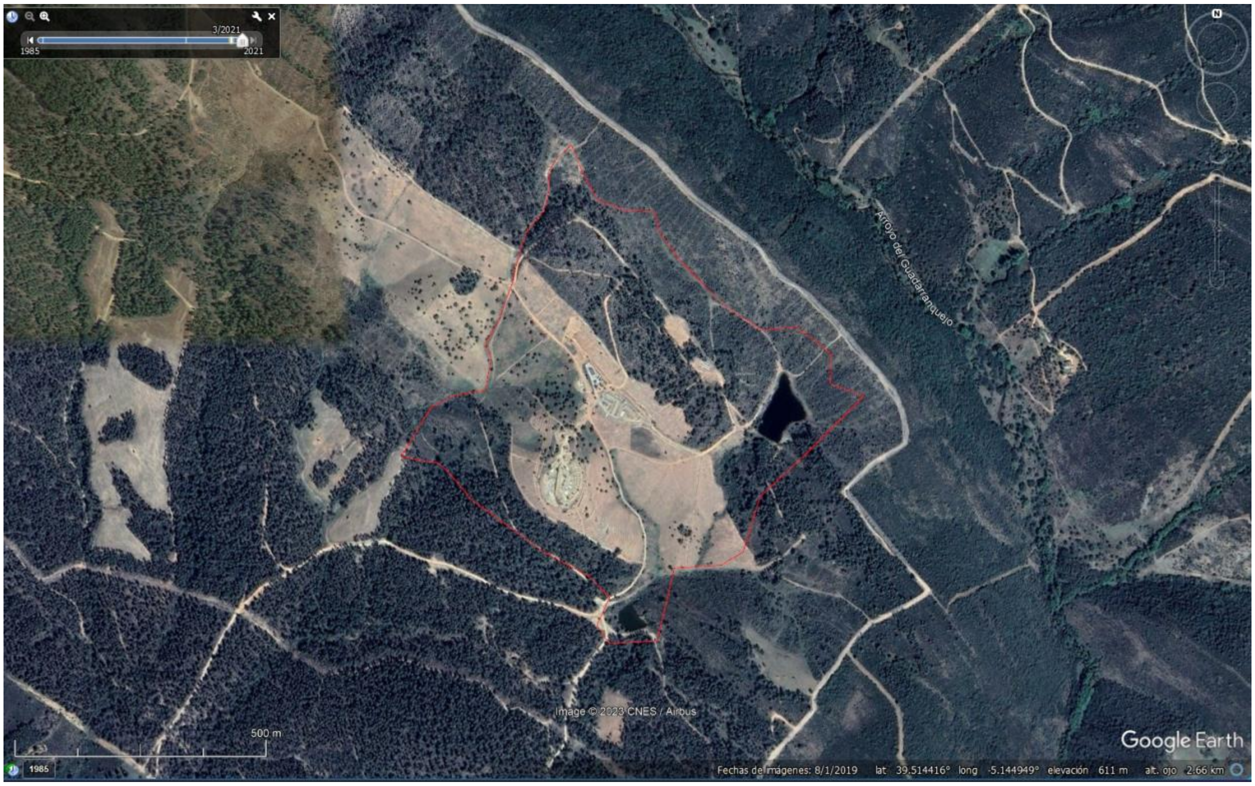


IMAGE 4. SATELLITE AERIAL VIEW OF PRE-AFFORESTATION PROJECT (2021)

III. TECHNICAL SPECIFICATIONS

III.1. REFORESTED AREA

The project encompasses a plot with a total area measuring 38,3421.50 m^2 situated in Alía municipality, in the Cáceres province (Spain). The demarcated plot is shown in Image 6.

III.2. SPECIES

The reforestation project successfully planted a total of 60,717 trees, encompassing nineteen different species. The number of individuals of each species is shown in Table 2. The selection of species was based on a preliminary assessment of the region, considering available bibliographic information, as well as the prevailing climatic, vegetational, and meteorological conditions. All species chosen are indigenous to the area and well-suited to the local climate and environmental conditions.

Out of the total number of trees planted (60,717), the percentage by species is presented in Table 2.

TABLE 2. NUMBER OF TREES BY SPECIES

Species	Number of trees	Percentage (%)
Acer monspessulanum	600	0.99
Acer pseudoplatanus	135	0.22
Castanea sativa	40	0.07
Cupressus arizonica	14040	23.12
Cupressus sempervirens	15266	25.14
Ficus carica	135	0.22
Genista cinerea	2640	4.35
Genista scorpius	1026	1.69
Genista umbellata	3360	5.53
Lavandula angustifolia	7020	11.56
Lavandula stoechas	2025	3.34
Morus nigra	225	0.37
Populus nigra	540	0.89
Prunus avium	12000	19.76
Prunus dulcis	90	0.15
Prunus mahaleb	270	0.44
Quercus pyrenaica	675	1.11
Quercus rubra	540	0.89
Taxus baccata	90	0.15
Total	**60,717**	**100%**

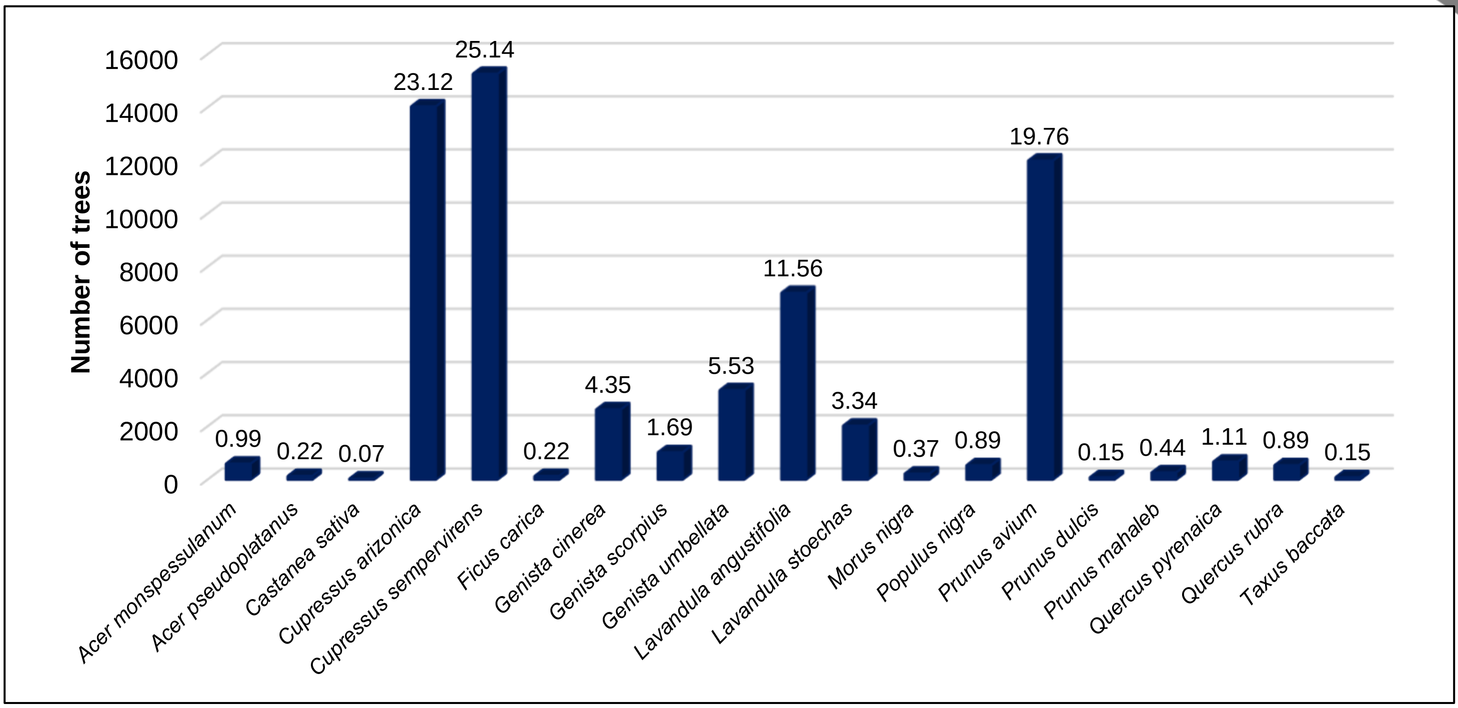


IMAGE 5. NUMBER OF TREES BY SPECIES

The assessment revealed an average planting density of one tree per 5.4 square meters, equivalent to an average of 1,861 trees per hectare in the plot. This high-density approach offers several ecological, environmental, and economic advantages. The increased tree density, combined with the implementation of various tree species, will foster biodiversity and enhance ecological resilience within the restored ecosystem. Moreover, the high density will expedite canopy closure, creating a continuous cover as the tree canopies interlock. This canopy closure plays a crucial role in weed suppression, creating improved microclimates, and moisture retention, and reducing soil erosion. However, it's important to note that high planting densities can also lead to competition for resources among trees, which may result in stunted growth, reduced health, and increased mortality of some trees. In addition, the close proximity between trees can facilitate the rapid spread of diseases and pests. Controlling and managing these issues becomes more complex in densely planted areas.

As a result of this high-density planting strategy, the reforestation project is well-positioned to maximize carbon sequestration potential, promote wildlife habitat, and provide essential ecosystem services. The management of this densely planted plot will be critical to ensure the continued success and long-term sustainability of the reforestation efforts. Image 5 shows the mapped planting density of the geolocalized trees within the plots with the location of each tree represented by dot symbols.

The technical data sheets providing detailed information about the species utilized for the reforestation project are included below, in Table 3. These sheets offer comprehensive insights into the characteristics, growth patterns, environmental requirements, and other relevant details of the selected plant species. These data sheets serve as valuable references for understanding the specific attributes and suitability of each species for reforestation efforts.

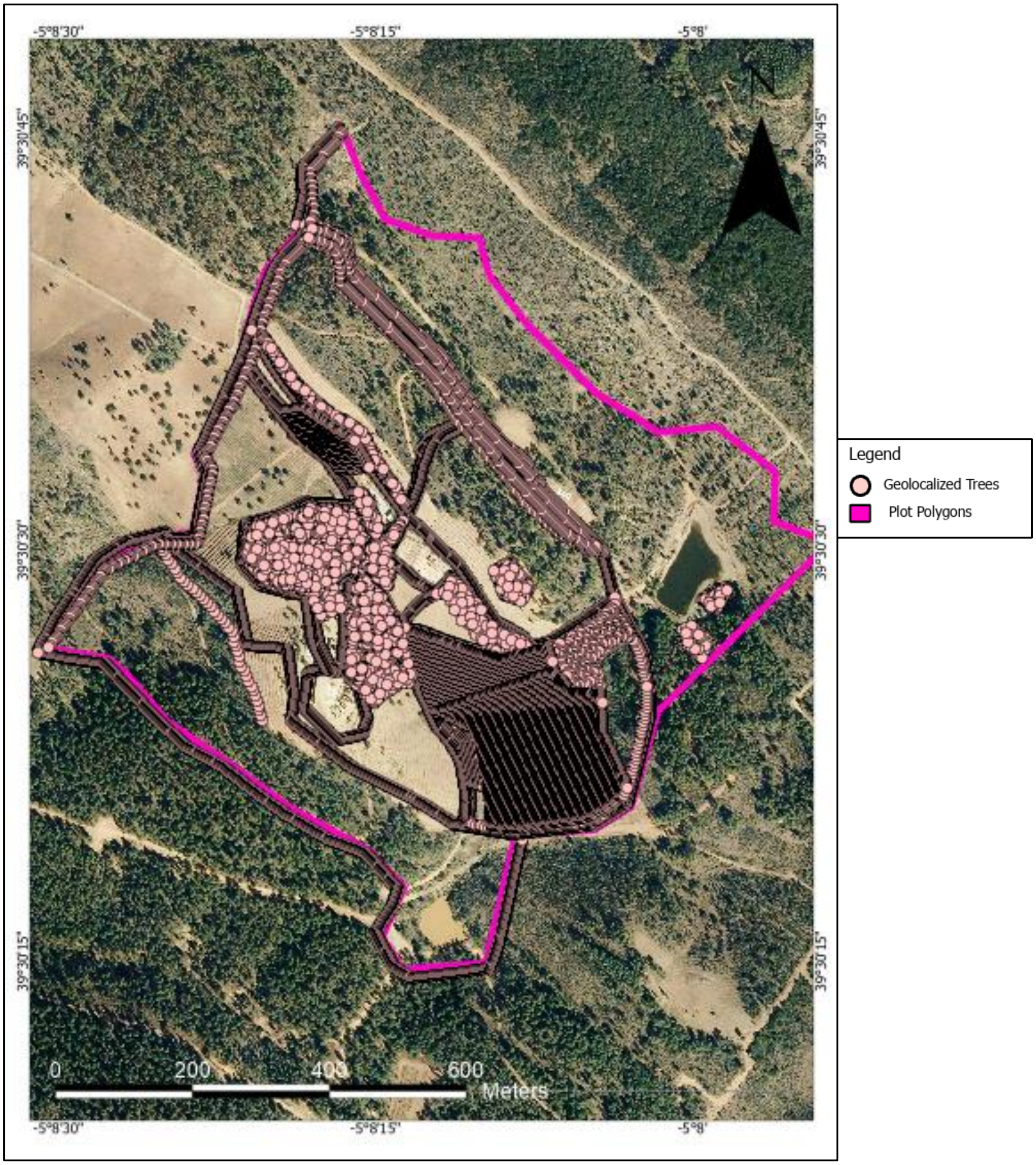


IMAGE 6. TREE PLANTING DISTRIBUTION

TABLE 3. TECHNICAL DATA SHEETS OF SPECIES USED FOR REFORESTATION

Acer pseudoplatanus • Also known as the sycamore is a large deciduous, broad-leaved tree, tolerant of wind and coastal exposure. It is native to Central Europe and Western Asia. • It can grow to a height of about 35 m with branches that form a broad, rounded crown. • It is tolerant of a wide range of soil types and pH, except heavy clay, and is at its best on nutrient-rich, slightly calcareous soils. • Roots of the sycamore form highly specific beneficial mycorrhizal associations with the fungus Glomus hoi, which promotes phosphorus uptake from the soil.	
Acer monspessulanum • Also known as the Montpellier maple, is a species of maple native to the Mediterranean region. • A medium-sized deciduous tree or densely branched shrub that grows to a height of 10-15 meters and a trunk diameter up to 75 cm. • Insensitive to limestone soils but does not support excess water. Thrives exclusively in hot and very dry contexts.	
Castanea sativa • Also known as the sweet chestnut or Spanish chestnut is a long-lived deciduous tree. • it produces an edible seed, the chestnut, which has been used in cooking. • It attains a height of 20–35 meters with a trunk often 2 meter in diameter. • The tolerance to wet ground and to clay-rich soils is very low however, it is a heat-loving tree which needs a long vegetation period. it may tolerate temperatures as low as -15 °C.	

Cupressus arizonica • A coniferous evergreen tree with a conic to ovoid-conic crown which grows to heights of 10–25 m and its trunk diameter reaches 55 cm. • It is widely cultivated as an ornamental tree. • It has proved highly resistant to cypress canker, hence growth is reliable where this disease is prevalent.	
Cupressus sempervirens • Also known as the Mediterranean cypress is a medium-sized coniferous evergreen tree which grows to 35 m tall. • Has been widely cultivated as an ornamental tree.	
Ficus carica • Also known as Fig is a decidious species of small tree in the flowering plant family Moraceae, native to the Mediterranean region, together with western and southern Asia. • Large shrub which grows up to 7–10 meters tall. • They tolerate moderate seasonal frost and can be grown even in hot-summer continental climates. • It prefers relatively porous and freely draining soil, and can grow in nutritionally poor soil.	

Genista cinerea • An ornamental shrub for banks and landscaping that can reach 1.5m. • It likes limestone, poor and well-drained soils.	
Genista scorpius • Genista scorpius is a species of shrub with compound, broad leaves and dry fruit. Individuals can grow to 2 m. • It can be used to create defensive hedges. • It generally grows in scrub in dry places, on clay, gypsum, limestone or marl substrates.	
Genista umbellata • Ornamental shrub for landscaping, Prefers poor stony and dry soils. • It reaches a size of up to 1.5 m in height.	
Lavandula angustifolia • It is a strongly aromatic shrub native to the Mediterranean growing as high as 1 to 2 metres tall. • Commonly grown as an ornamental plant. with its ability to survive with low water consumption. • It does best in Mediterranean climates • It tolerates acid soils but favours neutral to alkaline soils,	

Lavandula stoechas • Also known as the Spanish lavender native to several Mediterranean countries. • An evergreen shrub that usually grows to between 30 and 100 cm tall and occasionally up to 2 m. • it is associated with hot, dry, sunny conditions in alkaline soils.	
Morus nigra • Also known as black mulberry is a deciduous tree growing to 12 metres tall by 15 m broad. • The fruit is edible and the tree has long been cultivated for this property.	
Populus nigra • Commonly known as Black poplars are medium- to large-sized deciduous trees, reaching 20–30 m, and rarely 40 m tall and their trunks achieve up to 1.5 m in diameter, • Used in industrial areas and for row and landscape planting. • This tree is very resistant to cold, can live 400 years.	
Prunus avium ● Commonly called wild cherry, or sweet cherry, is a species of cherry. ● It is a deciduous tree growing to 15–32 meters tall, with a trunk up to 1.5 m in diameter. ● It is often cultivated as a flowering tree.	

Prunus dulcis • Commonly known as Almond is a species of tree native to Iran and surrounding countries however prospers in a moderate Mediterranean climate with warm, dry summers and mild, wet winters. • A deciduous tree growing to 4 –12.2 meters in height with a trunk of up to 30 centimeters.	
Prunus mahaleb • Also known as the mahaleb cherry is a species of cherry tree native to central and southern Europe, Iran and parts of central Asia. • It is a deciduous tree or large shrub, growing to 2–10 m (rarely up to 12 m) tall with a trunk up to 40 cm diameter. • The species is grown as an ornamental tree for its strongly fragrant flowers,	
Quercus pyrenaica • Also known as Pyrenean oak, or Spanish oak is a tree native to southwestern Europe and northwestern North Africa. • A tall deciduous tree, often marcescent in immature individuals, up to 25 metres tall, and has an average lifespan of 300 years. • It is adapted to survive in hot local temperatures.	

Quercus rubra • Also known as the northern red oak native of North America, which grows to to 28 meters tall with a trunk, up to 2 m in diameter. • It prefers good soil that is slightly acidic.	
Taxus baccata • Known as European yew is a species of evergreen tree in the family Taxaceae, native to Western Europe, Central Europe and Southern Europe. • Grows to 10–20 m (exceptionally up to 28 m) tall, with a trunk up to 2 m (exceptionally 4 m) in diameter. • The entire yew bush is poisonous with the exception of the aril (the red flesh of the berry covering the seed).	

III.3. Reforestation technique

The reforestation technique implemented is the Dense Planting/ Intensified Planting technique. Dense planting technique, also known as high-density planting or intensive planting, refers to a method of crop cultivation where plants are spaced closely together in order to maximize productivity and yield. Instead of the traditional practice of leaving significant spaces between plants, dense planting involves reducing the interplant spacing, resulting in a higher number of plants per unit area. The goal of this technique is to optimize the use of available resources, such as sunlight, water, and nutrients, by creating a more efficient growing environment. By reducing the space between plants, several benefits can be achieved which include enhanced resource utilization, weed suppression, and increased yield. Nonetheless, it is important to note that the success of dense planting depends on various factors, such as the specific plants being grown, local climate conditions, soil fertility, and management practices. Adequate irrigation, nutrient management, and careful monitoring of tree health are crucial to ensure optimal growth and prevent issues such as overcrowding, nutrient deficiencies, or increased disease susceptibility.

III.3.1. Methodological process

The operational phase is divided into three steps shown in Image 7.

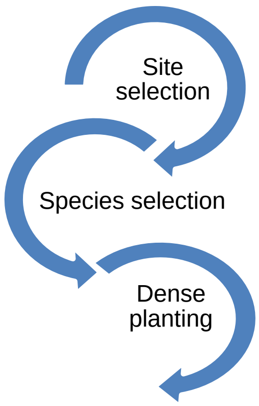


Image 7. Methodological process

The reforestation process involved a well-defined series of steps. Firstly, a thorough evaluation was conducted to select the most suitable reforestation area, taking into account restoration needs, climatic and soil feasibility, permit requirements, and cost considerations. It ensured that the chosen location was conducive to successful reforestation. Previous individuals of Pinus spp. and Eucalyptus globulus were removed to make space for the new selection of species. To preserve the ecological integrity of the region, afforestation was not carried out on scarified ground. This approach aimed to leverage the existing ecosystem to facilitate the growth and development of the newly planted trees, promoting biodiversity and increasing the chances of successful reforestation. Local community stakeholders were actively involved in the process, fostering a sense of ownership and sustainability in the reforestation initiative.

III.3.2. Geolocalization of planted trees

Using Spatial Analyst tools in the ArcGIS Pro environment, a detailed count of geolocalized trees was conducted within the project plot. The results indicate the distribution of 60,717 trees within the reforested plot spaced at approximately 3.6-meter intervals for larger tree species and 0.3-meter intervals for smaller shrubs as illustrated in Image 5 above.

This analysis provides valuable insights into the spatial relative abundance of trees within each plot. The distribution percentages highlight the varying densities and concentrations of trees, indicating areas with higher and lower tree populations in cases where the reforested plots are segmented. These findings help understand tree distribution and estimate the project's carbon absorption capacity. The number of trees and their carbon sequestration capacity are crucial for the estimation of the Project's carbon sequestration potential.

IV. Soil Erosion Assessment

This section presents the outcomes of a soil erosion assessment conducted in the Micro Basin where the Project area is located, including a designated restoration area. The findings from this assessment will have a significant impact on the allocation of soil credits for the project under consideration.

The RUSLE methodology for erosion assessment was used in this analysis. To delineate the pre- and post-project implementation periods, it is important to note that the reforestation activities took place between January and May 2023. Consequently, all months before these dates are considered the pre-project implementation period, while months after are regarded as the post-project implementation period for this analysis.

The evaluation covered four distinct periods:

Table 4. Evaluation periods

Period	Date range (YYYY-MM-DD)
Pre-project	2019-01-01 to 2023-01-01
1st year monitoring	2023-04-01 to 2024-04-01
Year 10 projection	2032-04-01 to 2033-04-01
Year 40 projection	2062-04-01 to 2063-04-01

Of the 5 factors influencing hydric erosion, only the R-, C- and P-factors are considered to considerably change over time. Table 5 shows the combination of these factors used to compute soil loss rate for the assessed periods.

Table 5. Combination of datasets used to represent the four scenarios for erosion modelling

Scenario	C - Factor	P- Factor	R-factor
Before Project	Pre-project	Without soil management practices	Yearly rain in pre-project period
After Project Year 1	Monitoring	With soil management practices	Yearly rain in monitoring period

Scenario	C - Factor	P- Factor	R-factor
After Project Year 10	Pre-project & Maximum*	With soil management practices	Yearly rain in year 10 after implementation
Project's last year	Pre-project & Maximum*	With soil management practices	Yearly rain in year 40 after implementation

*See detailed description on *Vegetation Cover (C) factor* subsection below.

By integrating these RUSLE parameters, the assessment provides valuable insights into the soil erosion dynamics within the study area and offers essential guidance for sustainable land management practices and erosion control strategies.

IV.1. RUSLE Parameters Extraction

All processing was executed in Google Earth Engine using the following code script: https://code.earthengine.google.com/a576a1537ca2e3bc982be1029283fa22

Rainfall Erosivity (R) Factor

R-factor is a measure used to quantify the erosive force of rainfall and its impact on soil erosion. This was computed from the R-factor equation from Torri et al. (2006) for Italy. This was chosen as the project area falls within this region. Annual rainfall for each assessed period was acquired from the CHIRPS database and used in this computation. For the 10 and 40^{th} years projections, rainfall data was obtained from the *NASA Earth Exchange Daily Downscaled Climate Projections (NEX-GDDP-CMIP6)* (Thrasher et al., 2012), retrieved from the GEE catalog. These CMIP6 GC Models were developed in support of the Sixth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC AR6) based on two of the four "Tier 1" greenhouse gas emissions scenarios. The SSP245 CMIP6 scenario was used for the analysis. The SSP245 scenario builds upon the RCP4.5 scenario, with an additional radiative forcing of 4.5W/m^2 by the year 2100, representing the medium pathway of future greenhouse gas emissions. This scenario assumes that climate protection measures are being taken.

Slope Length and Slope steepness (LS) Factor

The effect of topography in erosion processes is represented in RUSLE as the slope length and slope steepness (LS) factor. The LS factor for the area was derived from the Shuttle Radar Topography Mission digital elevation data, SRTM V3 product (SRTM Plus) is provided by NASA JPL at a resolution of 1 arc-second (approximately 30m) (Farr et al., 2007).

The LS-factor method from the "soil-erosion-watch" repository, developed and published by Global Soil Watch (Ouellettev, 2021), was applied.

Vegetation Cover (C) factor

The effect of vegetation cover erosion management is represented by the C-factor. The C_{VK} equation, adapted to European climates, was employed in this case:

$$Cvk = \exp\left(-\alpha \frac{NDVI}{(\beta - NDVI)}\right)$$

It was derived from yearly mean NDVI calculated from Sentinel 2 images acquired for the pre-project and monitoring periods. To determine the future C factor, the maximum pixel value for the annual NDVI found within the microbasin was used to establish the future NDVI that the Project area is expected to achieve once the planted trees mature and the ground works reach their full potential. The rest of the microbasin was assumed to maintain the same yearly NDVI as in the pre-project period.

Conservation Practice (P) Factor

P-factor describes the supporting practices such as terraces, strip cropping, contouring among others which help manage erosion. The P- factor values range from 0 to 1 where a P-factor of 1 indicates no conservation practices in place. A P-factor of 1 was used in this case as soil works were not implemented in this project area.

Soil Erodibility (K) Factor

K-factor represents the susceptibility of soil to erosion by runoff. It incorporates soil properties such as texture, structure, permeability, bulk density and organic matter content, which influence the capability of soil to resist detachment and subsequent transport of eroded particles.

The K-factor method from the "soil-erosion-watch" repository, developed and published by Global Soil Watch (Ouellettev, 2021), was applied.

IV.2. Erosion Assessment Results

Image 8 depicts the 3 polygons used for the assessment: microbasin (yellow), project area (red) and counterfactual (blue).

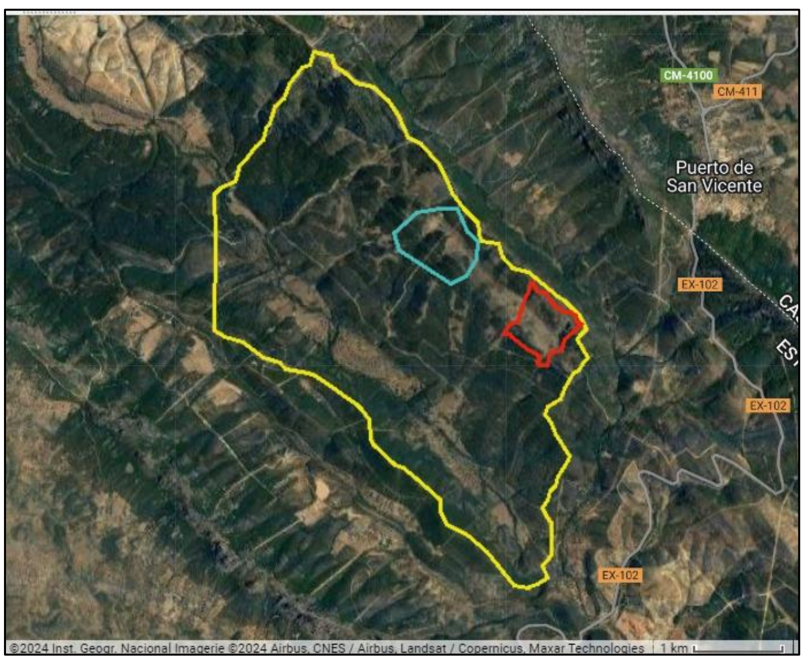


Image 8. Polygons used for the assessment: microbasin (yellow), project area (red) and counterfactual (blue)

Erosion rates and percent change over the years in the microbasin and the Project area are depicted in Tables 5 and 6 respectively. Between the pre-project and monitoring periods, the erosion rate in the Project area decreased by 50.7%, from 20.2 to 2.9 (t ha^{-1} y^{-1}). In the same period, the counterfactual area experienced a decrease, from 14.3 to 8.1 t ha^{-1} y^{-1}, equivalent to 43.5%. The rest of the microbasin also experienced a decrease, from 5.1 to 3.4 t ha^{-1} y^{-1}, equivalent to 32.3%. In the initial year following project implementation, the impact becomes readily apparent, with a notably accelerated reduction in erosion rates compared to scenarios in counterfactual areas without project intervention.

However, when observing the results expected at years 10 and 40, the project's impacts on soil erosion reduction are more evident. The change in soil erosion rate from the pre-project period up to year 40 are 100% decrease in the Project area, a 52.6 % decrease in the counterfactual area, and a 52.2% decrease in the rest of the microbasin. The similarity between the counterfactual and the rest of the microbasin reflects the trend in a business-as-usual scenario, nonetheless differences in vegetation types, soil texture, and slope. On the other hand, the difference between the Project area and the counterfactual, where both have similar ecological characteristics, can be attributed to the implementation of Project activities.

TABLE 6. ESTIMATED SOIL EROSION RATES IN THE PROJECT AREA (38.3 HA), COUNTERFACTUAL (54.64 HA) AND MICROBASIN (1244.23 HA) AT THE ASSESSED PERIODS.

Period	Erosion Rate (t ha^{-1} y^{-1})			Total Soil loss (T y^{-1})		
	Project area	Counterfactual	Microbasin	Project area	Counterfactual	Microbasin
Pre-project	20.2	14.3	5.1	774.5	780.7	6307.5
Monitoring	10	8.1	3.4	382	441.3	4270.6
Year 10	0	6.8	2.4	0	370	3014.2
Year 40	0	6.8	2.4	0	370	3014.2

TABLE 7. PERCENTAGE CHANGE IN TOTAL SOIL EROSION RATE AND SOIL LOSS DIFFERENCE IN THE PROJECT AREA (38.3 HA), COUNTERFACTUAL (54.64 HA) AND MICROBASIN (1244.23 HA) OVER THE ASSESSED PERIODS.

Period	Percent change (%)			Soil loss difference (T y^{-1})		
	Project area	Counter-factual	Microbasin	Project area	Counter-factual	Microbasin
Pre-project to Monitoring	-50.7	-43.5	-32.3	-392.7	-339.6	-2037.3
Pre-project to Y10	-100	-52.6	-52.2	-774.5	-410.7	-3292.5
Pre-project to Y40	-100	-52.6	-52.2	-774.5	-410.7	-3292.5

Notably, project implementation leads to reduced erosion rates, compared to a scenario without restoration efforts. This can be attributed to the project activities leading to an increase in vegetation cover, which has a direct effect on run-off reduction and, therefore, increased infiltration. This enhances ecosystem's resistance to erosion, contributing to the preservation of soil and the ecological functions it supports.

IV.3. Soil credits calculation

As shown in table 7, the modeled change in the project scenario from year 0 to 40 is -100.0 %, whilst in the control area with a BAU scenario it is -52.6 %. Pre-project soil loss rate in the Project area is 20.22 t ha^{-1} yr^{-1}, according to the modeled Project scenario trajectory, its soil loss at year 40 will be 0.0 t ha^{-1} yr^{-1}. Contrastingly, if the Project area follows the modeled BAU trajectory, its soil loss at year 40 will be 9.6 t ha^{-1} yr^{-1}.

Two project scenarios were computed: conservative and optimistic. The conservative scenario assumes that the full impact of the project will be achieved until year 40. It is represented as a lineal progression from the Pre-project (year 0) until the Future (year 40) erosion rate. The optimistic scenario assumes that planted trees will mature and reach the maximum impact since year 10, maintaining the benefits until the end of the project.

Therefore, 3 scenarios were computed as follows:

- Project conservative scenario: linear change from year 0 until 40.
- Project optimistic scenario: linear change from year 0 until 10, then linear change from year 11 until 40.
- No project scenario: linear change from year 0 until 40.

The project's impact was calculated as the difference between the BAU and each of the project scenarios. The additional soil loss reduction that the Project could potentially achieve during its life was calculated as the sum of each year's impact.

Image 9 illustrates the Project area’s modeled erosion rate for the 3 scenarios. The accumulated additional soil loss prevention at year 40, attributable to Project activities, is estimated to be between 196.8 and 500.1 t ha^{-1}.

Considering the whole Project area (38.3 ha), the total mass of soil that can be prevented from eroding due to the implementation of Project activities is between 7537.4 and 19153.83 tons. Since 1 ton of soil prevented from being lost to erosion equals 1 Soil Credit, the total number of Soil Credits the Project can generate is between 7,537 and 19,153 (Image 9).

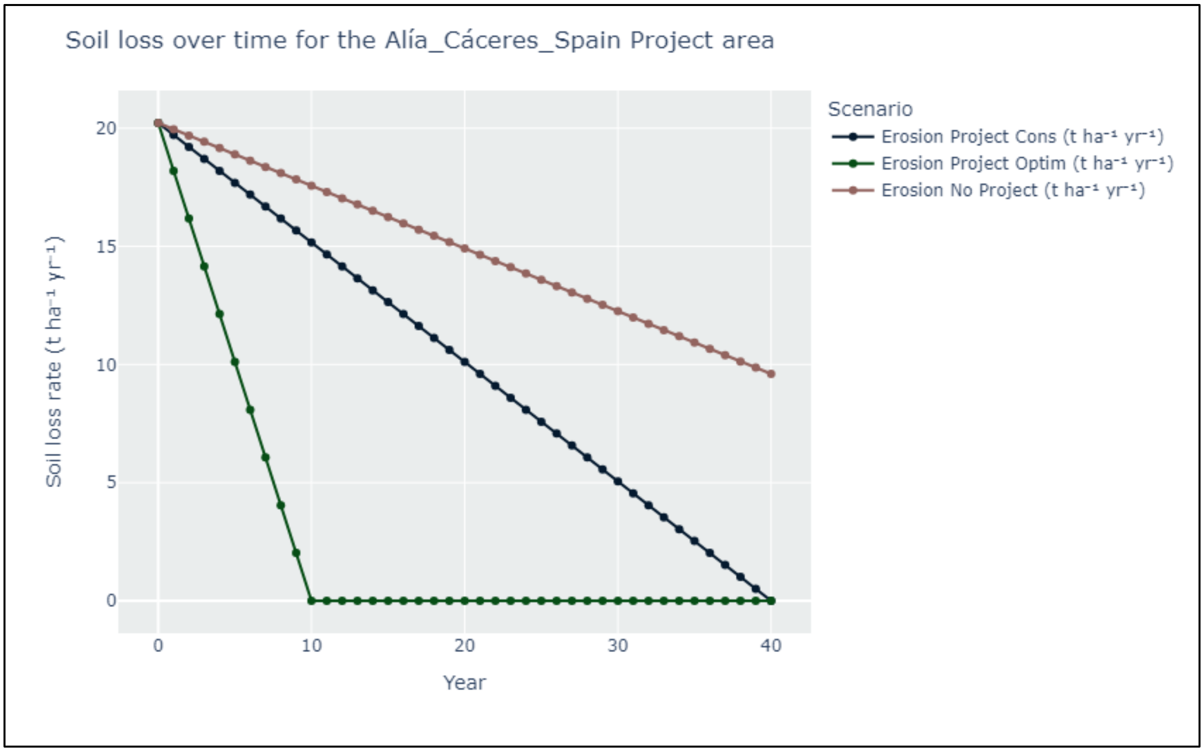


IMAGE 9. PROJECT AREA'S MODELLED EROSION RATE FOR THE 3 SCENARIOS

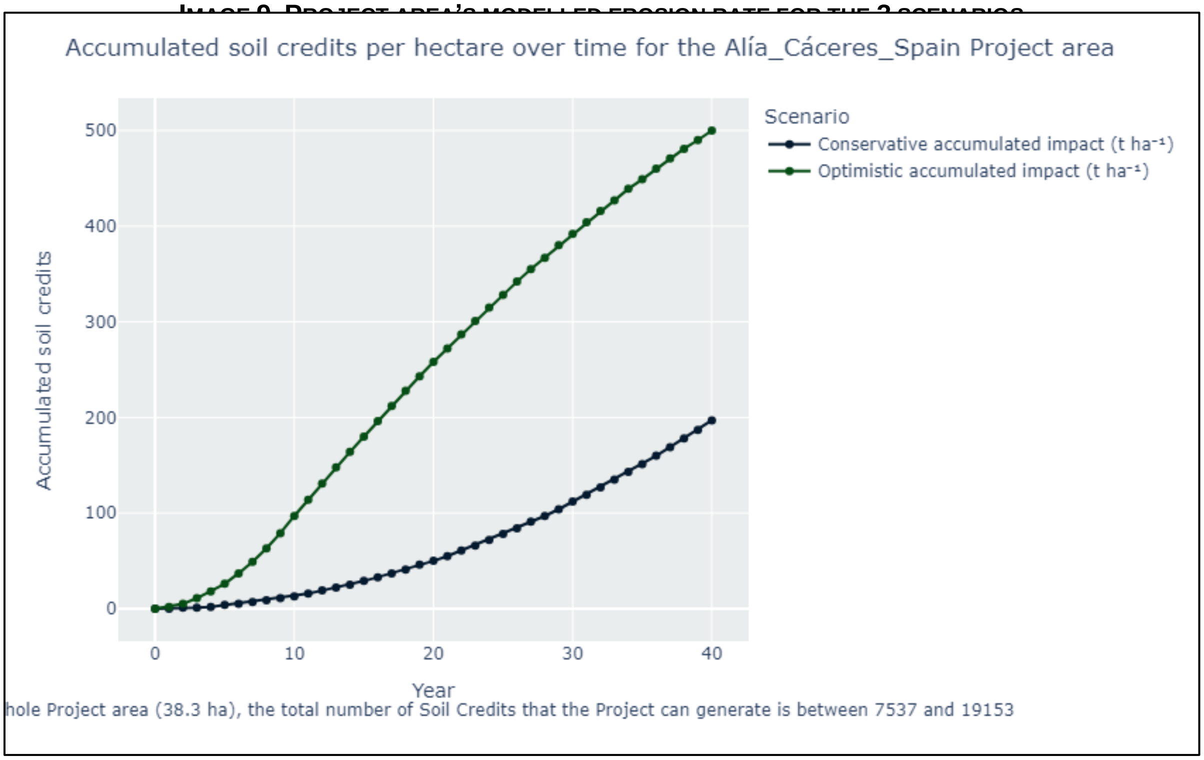


IMAGE 10. YEARLY ACCUMULATED NUMBER OF SOIL CREDITS PER HECTARE FOR BOTH THE CONSERVATIVE AND OPTIMISTIC SCENARIOS

TABLE 8. MODELLED YEARLY SOIL EROSION RATES IN THE PROJECT AREA AND ACCUMULATED NUMBER OF CREDITS PER HECTARE

Year	Erosion Project Cons (t ha^{-1})	Erosion Project Optim (t ha^{-1})	Erosion No Project (t ha^{-1})	Impact Cons (T ha-1)	Impact Optim (t ha-1)	Conservative accumulated impact (t ha^{-1})	Optimistic accumulated impact (t ha^{-1})
0	20.22	20.22	20.22	0	0	0	0
1	19.71	18.2	19.95	0.24	1.76	0	2
2	19.21	16.18	19.69	0.48	3.51	1	5
3	18.7	14.15	19.42	0.72	5.27	1	11
4	18.2	12.13	19.16	0.96	7.03	2	18
5	17.69	10.11	18.89	1.2	8.78	4	26
6	17.19	8.09	18.63	1.44	10.54	5	37
7	16.68	6.07	18.36	1.68	12.3	7	49
8	16.18	4.04	18.1	1.92	14.05	9	63
9	15.67	2.02	17.83	2.16	15.81	11	79
10	15.17	0	17.57	2.4	17.57	13	97
11	14.66	0	17.3	2.64	17.3	16	114
12	14.15	0	17.03	2.88	17.03	19	131
13	13.65	0	16.77	3.12	16.77	22	148
14	13.14	0	16.5	3.36	16.5	25	164
15	12.64	0	16.24	3.6	16.24	29	180
16	12.13	0	15.97	3.84	15.97	33	196
17	11.63	0	15.71	4.08	15.71	37	212
18	11.12	0	15.44	4.32	15.44	41	228
19	10.62	0	15.18	4.56	15.18	46	243
20	10.11	0	14.91	4.8	14.91	50	258
21	9.6	0	14.64	5.04	14.64	55	272
22	9.1	0	14.38	5.28	14.38	61	287
23	8.59	0	14.11	5.52	14.11	66	301
24	8.09	0	13.85	5.76	13.85	72	315
25	7.58	0	13.58	6	13.58	78	328
26	7.08	0	13.32	6.24	13.32	84	342
27	6.57	0	13.05	6.48	13.05	91	355
28	6.07	0	12.79	6.72	12.79	97	367
29	5.56	0	12.52	6.96	12.52	104	380
30	5.06	0	12.26	7.2	12.26	112	392
31	4.55	0	11.99	7.44	11.99	119	404
32	4.04	0	11.72	7.68	11.72	127	416
33	3.54	0	11.46	7.92	11.46	135	427

Year	Erosion Project Cons (t ha^{-1})	Erosion Project Optim (t ha^{-1})	Erosion No Project (t ha^{-1})	Impact Cons (T ha-1)	Impact Optim (t ha-1)	Conservative accumulated impact (t ha^{-1})	Optimistic accumulated impact (t ha^{-1})
34	3.03	0	11.19	8.16	11.19	143	439
35	2.53	0	10.93	8.4	10.93	151	449
36	2.02	0	10.66	8.64	10.66	160	460
37	1.52	0	10.4	8.88	10.4	169	471
38	1.01	0	10.13	9.12	10.13	178	481
39	0.51	0	9.87	9.36	9.87	187	490
40	0	0	9.6	9.6	9.6	197	500

Such significant reductions in soil loss are of paramount importance for the overall health and sustainability of the basin's ecosystem. By mitigating erosion rates, the restoration project contributes to the protection of valuable soil resources, supports sustainable land use practices, and helps maintain water quality in the region. These results underscore the effectiveness of the implemented conservation practices and provide valuable evidence for guiding future land management decisions and restoration initiatives in similar regions.

Moreover, the modeled changes in erosion rates serve as crucial data for monitoring and evaluating the long-term success of the restoration project and its influence on the local ecosystem.

To maintain a conservative scenario, the project will be granted 7,537 Verified Soil Credits (VSC). As established in section *III.1.2.* of the *Procedures document version 2.0*, **20%** of the credits generated by the project will be withdrawn for the buffer pool as a measure to guarantee the permanence of the project benefits (1,507 credits), resulting in a total of **6,030 VSC** to be issued according to the Contingency Table (Table 9).

TABLE 9. VSC CONTINGENCY TABLE

Soil credits issued annually												
Number of credits	**After project implementation**	**Y1**	**Y2**	**Y3**	**Y4**	**Y5**	**Y6**	**Y7**	**Y8**	**Y9**	**Y10**	**Total**
Percentage of VSCs issued on each year (%)	25%	20%	15%	5%	5%	5%	5%	5%	5%	5%	5%	**100%**
Number of VSCs issued each year	1,507	1,206	904	301	301	301	301	301	301	301	301	**6,030**

V. Groundwater Recharge

V.1. GroundWater Recharge Method

The project area has been assessed according to the *aOCP Methodology for the assessment of groundwater recharge restoration*. Groundwater storage was assessed for the same periods as soil erosion.

The methodology establishes the Soil Conservation Service Curve Number (SCS-CN) Method for the assessment of infiltration, which is then used as input for the Thornthwaite-Mather water balance model. The process of implementing the SCS-CN is outlined below, including its integration with the water balance method. This approach has the potential to track the evolution of restoration projects since it is based on satellite imagery from Sentinel-2, which has a temporal resolution of 5 days.

The methodology was implemented in Google Earth Engine (GEE), using the following code script https://code.earthengine.google.com/f1cce4fcd7ed6d05579e99a6232333c4. The method follows the next steps for the calculation of groundwater storage (GWS):

1. Use the LSMA method to calculate the proportion of impervious surface, vegetation, and soil of each pixel in a Sentinel-2 image of the microbasin where the study area is located. This step is performed with the "unmixing" function, which is a supervised *soft classification.* To train the classifier polygons were hand-drawn for soil and vegetation, using as reference NDVI and BSI (bare soil index); for impervious surfaces, training polygons were drawn on impervious surfaces within the subbasin of interest and used in the unmixing classification process.
   The bands/layers used for the unmixing classification were 'B2', 'B3', 'B4', 'NDVI', 'BSI', 'BRBA', 'NDWI', and 'DEM'.
2. Calculate the composite curve number (CNc) (Fan et al., 2013), as the weighted* average of:
   a. Soil CN: based on the hydrologic soil group, defined by soil texture. Hydrologic soil group is defined following soil texture classification and values of CNsoil in AMC-I by Li et al. (2018), based on sand and clay content retrieved from OpenLandMap (Tomislav Hengl, 2018; Tomislav Hengl., 2018).
   b. Impervious CN: given a fixed value of 98, according to literature (USACE Hydrologic Engineering Center, n.d.).
   c. Vegetation CN: determined by NDVI class and percentage of vegetation in the pixel, according to Bera et al. (2022).

*The weights correspond to the proportion of each land cover class, obtained from the LSMA.

3. Calculate slope corrected CN (CNsc) (Huang et al., 2006).
4. Calculate runoff and infiltration.
5. Obtain evapotranspiration (ET) from the *MOD16A2 Version 6.1 Evapotranspiration/Latent Heat Flux product* (Running et al., 2021) in the GEE catalog.
6. Mean annual precipitation for the pre-project and monitoring periods was calculated on Google Earth Engine from the *CHIRPS Daily: Climate Hazards Group InfraRed Precipitation With Station Data (Version 2.0 Final)* dataset (Funk et al., 2015). For the

future scenarios (years 10th and 40th), rainfall was obtained by averaging the 34 *NEX-GDDP-CMIP6* models (Thrasher et al., 2012), retrieved from the GEE catalog.

7. Compute delta groundwater storage (dGWS), using runoff from step 4, ET from step 5, and mean annual precipitation (P) from step 6.

dGWR assessment covered four distinct periods:

TABLE 10. DGWR ASSESSMENT PERIODS

Period	Date range (YYYY-MM-DD)
Pre-project	2019-01-01 to 2023-01-01
1st year monitoring	2023-04-01 to 2024-04-01
Year 10 projection	2032-04-01 to 2033-04-01
Year 40 projection	2062-04-01 to 2063-04-01

NDVI, land cover fractions, precipitation and ET are the independent variables considered to significantly change over time. Table 11 and 12 shows the combination of these factors used to compute dGWR for the assessed periods.

TABLE 11. COMBINATION OF DATASETS USED TO REPRESENT THE FOUR SCENARIOS FOR DELTA GROUND WATER STORAGE (DGWS) MODELLING, PART 1

Scenario	NDVI	Land cover fractions (LCF)
Before Project	Mean annual NDVI from pre-project period	Unmixing on S-2 image from 2021-01-16
After Project Year 1	Mean annual NDVI from monitoring period	Unmixing on S-2 image from 2023-01-31
Year 10 projection	Monitoring & Maximum*	Based on LCF from monitoring: • Impervious: unchanged • Vegetation: Multiplied 2x and limited to 1.0 • Soil: computed as 1-impervious-vegetation
Year 40 projection	Same as Year 10	Same as Year 10

* Mean annual NDVI for future scenarios was assumed to remain the same as in the monitoring period for the rest of the microbasin, while in the project area it would reach up to the highest (mean annual) NDVI value found in the microbasin.

TABLE 12. COMBINATION OF DATASETS USED TO REPRESENT THE FOUR SCENARIOS FOR DELTA GROUND WATER STORAGE (DGWS) MODELLING, PART 2

Scenario	Precipitation	ET
Before Project	Yearly rain in pre-project period from CHIRPS	ET from pre-project period
After Project Year 1	Yearly rain in monitoring period from CHIRPS	ET from monitoring period
After Project Year 10	Yearly rain in year 10 after implementation from NASA *NEX-GDDP-CMIP6*	ET from monitoring period
Project's last year	Yearly rain in year 40 after implementation from NASA *NEX-GDDP-CMIP6*	ET from monitoring period

V.2. GroundWater Recharge Results

The polygons used for this assessment were the same as for the erosion assessment (see Image 8). GroundWater Recharge and percent change over the years in the microbasin and the Project area are depicted in Tables 10 and 11, respectively. Between pre-project and monitoring periods, infiltration in the Project area increased 65.2%, from -1245.9 to -433.4 mm. In the same period, the counterfactual area also experienced an increase, from -1347.4 to -464.5 mm, equivalent to 65.5%. Infiltration in the rest of the microbasin also increased, from -1468 to -447.7 mm, equivalent to 69.5%. Negative values indicate that the area is subject to water deficit, where the volume of water that is lost due to runoff and evapotranspiration is higher than the volume of precipitation. This situation is leading to depletion of the aquifer, jeopardizing ecosystem functions and the satisfaction of peoples' vital needs.

At this first year after project implementation, the impact becomes readily apparent. However, when observing the results expected at year 10 and 40, project's impacts on rainfall water infiltration are more pronounced. The change in dGWR from the pre-project period up to year 40 is a 67.2% increase in the Project area, 65.1% increase in the counterfactual area and 69.2% increase in the rest of the microbasin. The difference between the counterfactual and the rest of the microbasin, considering both remain "unchanged", can be due to vegetation types, soil texture and slope. On the other hand, the difference between the Project area and the counterfactual, where both have similar ecological characteristics, can be attributed to the implementation of Project activities. It is expected that, as planted trees grow and natural regeneration takes place, vegetation will reduce runoff, increasing the volume of water being infiltrated underground. According to the modelling results, it is expected that when the restoration reaches maturity, the Project area will infiltrate an additional volume of 320,713.5 m^3 per year, compared to the pre-project period, depending also on the volume of rainfall for each given year.

Table 13. Estimated dGWR in the project area (38.3 ha), counterfactual (54.64 ha) and microbasin (1244.23 ha) at the assessed periods

Period	dGWR (mm = L m^{-2})			Total Infiltration (m^3)		
	Project area	Counterfactual	Microbasin	Project area	Counterfactual	Microbasin
Pre-project	-1245.9	-1347.4	-1468	-477252.3	-736159.5	-18265144.4
Monitoring	-433.4	-464.5	-447.7	-166008	-253766.7	-5570056
Year 10	-407.8	-469.5	-451.1	-156197.4	-256520.8	-5612274.1
Year 40	-408.1	-470	-451.4	-156301.5	-256802.7	-5616739.1

Table 14. Percentage change in infiltration and dGWR in the project area (38.3 ha), counterfactual (54.64 ha) and microbasin (1244.23 ha) over the assessed periods

Period	Percent change (%)			dGWR change (m^3)		
	Project area	Counter-factual	Microbasin	Project area	Counter-factual	Microbasin
Pre-project to Monitoring	65.2	65.5	69.5	311168.5	482184.5	12694275.4
Pre-project to Y10	67.3	65.2	69.3	321190.8	479976	12657745.1
Pre-project to Y40	67.2	65.1	69.2	320713.5	479239.8	12639479.9

V.3. WATER CREDITS CALCULATION

The modeled change in the project scenario from year 0 to 40 is 67.2%, whilst in the control area with a BAU scenario it is 65.1%. Pre-project dGWR in the Project area is -1246.0 mm, according to the modeled Project scenario trajectory, its dGWR at year 40 will be -408.0 mm. Contrastingly, if the Project area follows the modeled BAU trajectory, its dGWR at year 40 will be -435.0 mm.

Two project scenarios were computed: conservative and optimistic. The conservative scenario assumes that the full impact of the project will be achieved until year 40. It is represented as a linear progression from the Pre-project (year 0) until the Future (year 40) infiltration. The optimistic scenario assumes that planted trees will mature and reach the maximum impact since year 10, maintaining the benefits until the end of the project.

Therefore, 3 scenarios were computed as follows:

- Conservative scenario: linear change from year 0 until 40.
- Optimistic scenario: linear change from year 0 until 10, then linear change from year 11 until 40.
- No project scenario: linear change from year 0 until 40.

The project's impact was calculated, in mm, as the difference between the BAU and the project scenario. Then it was converted into m^3/ha by multiplying by 10 the impact in mm, since mm = L/m^2. The additional water infiltration the Project can potentially lead to was calculated as the sum of each year's impact. Table 14 compares annual infiltration in the Project area for the 3 assessed scenarios over the 40 years following project implementation.

Image 11 illustrates the Project area’s modeled infiltration for the 3 scenarios. The accumulated additional water infiltration at year 40, attributable to Project activities, is estimated to be between 5,474.0 and 131,205.0 m^3/ha. Considering the whole Project area (38.3 ha), the volume of water that is expected to be infiltrated due to implementation of Project activities is between 209,678 and 502,5724. Since 1 water credit equals 1 m^3 of water that is infiltrated due to the implementation of Project activities, the number of Water Credits the Project can generate is between 209,678 and 5’025,724 (Image 12).

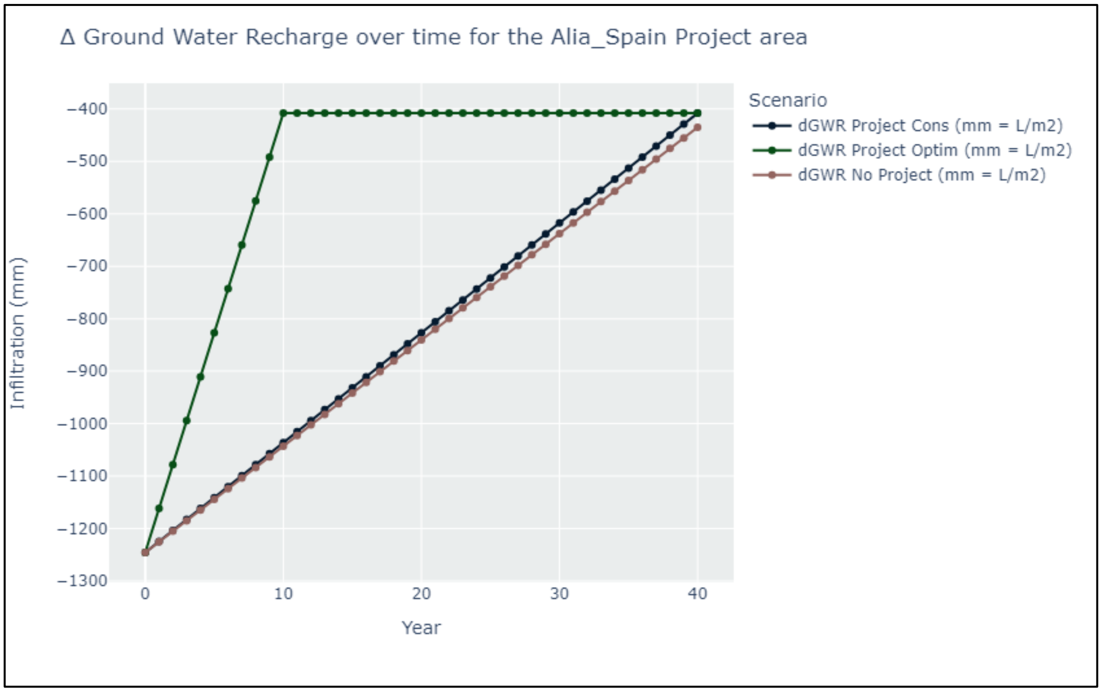


IMAGE 11. PROJECT AREA'S MODELLED INFILTRATION FOR THE 3 SCENARIOS

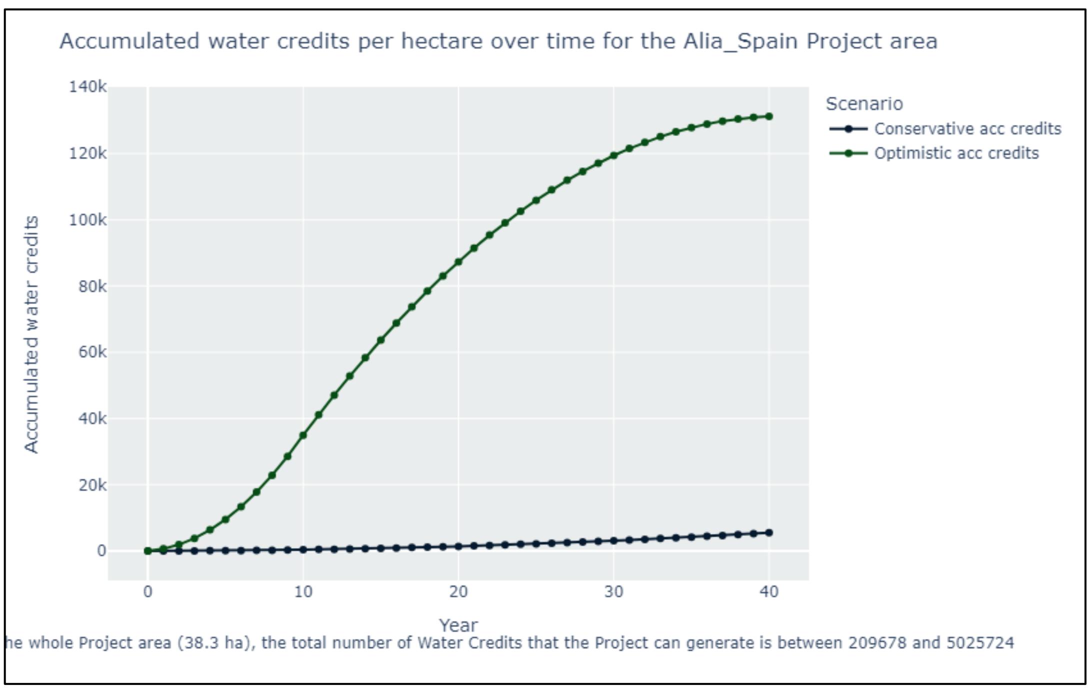


IMAGE 12. YEARLY ACCUMULATED NUMBER OF WATER CREDITS PER HECTARE FOR BOTH THE CONSERVATIVE AND OPTIMISTIC SCENARIOS

TABLE 15. MODELLED YEARLY INFILTRATION FROM PRECIPITATION IN THE PROJECT AREA AND ACCUMULATED NUMBER OF CREDITS PER HECTARE. (SEE NEXT PAGE)

Year	dGWR Project Cons (mm = L/m2)	dGWR Project Optim (mm = L/m2)	dGWR No Project (mm = L/m2)	Impact Cons (mm = L/m2)	Impact Optim (mm = L/m2)	Impact Cons (m3/ha)	Impact Optim (m3/ha)	Conservative acc credits per hectare	Optimistic acc credits per hectare
0	-1245.9	-1245.9	-1245.9	0	0	0	0	0	0
1	-1225	-1162.1	-1225.6	0.6	63.5	6	635	6	635
2	-1204	-1078.3	-1205.3	1.3	127	13	1270	19	1905
3	-1183.1	-994.5	-1185.1	2	190.6	20	1906	39	3811
4	-1162.1	-910.7	-1164.8	2.7	254.1	27	2541	66	6352
5	-1141.2	-826.8	-1144.5	3.3	317.7	33	3177	99	9529
6	-1120.2	-743	-1124.2	4	381.2	40	3812	139	13341
7	-1099.3	-659.2	-1104	4.7	444.8	47	4448	186	17789
8	-1078.3	-575.4	-1083.7	5.4	508.3	54	5083	240	22872
9	-1057.4	-491.6	-1063.4	6	571.8	60	5718	300	28590
10	-1036.4	-407.8	-1043.1	6.7	635.3	67	6353	367	34943
11	-1015.5	-407.8	-1022.8	7.3	615	73	6150	440	41093
12	-994.6	-407.8	-1002.6	8	594.8	80	5948	520	47041
13	-973.6	-407.8	-982.3	8.7	574.5	87	5745	607	52786
14	-952.7	-407.8	-962	9.3	554.2	93	5542	700	58328
15	-931.7	-407.8	-941.7	10	533.9	100	5339	800	63667
16	-910.8	-407.9	-921.5	10.7	513.6	107	5136	907	68803
17	-889.8	-407.9	-901.2	11.4	493.3	114	4933	1021	73736
18	-868.9	-407.9	-880.9	12	473	120	4730	1141	78466
19	-847.9	-407.9	-860.6	12.7	452.7	127	4527	1268	82993
20	-827	-407.9	-840.4	13.4	432.5	134	4325	1402	87318
21	-806.1	-407.9	-820.1	14	412.2	140	4122	1542	91440
22	-785.1	-407.9	-799.8	14.7	391.9	147	3919	1689	95359
23	-764.2	-407.9	-779.5	15.3	371.6	153	3716	1842	99075
24	-743.2	-407.9	-759.2	16	351.3	160	3513	2002	102588
25	-722.3	-408	-739	16.7	331	167	3310	2169	105898
26	-701.3	-408	-718.7	17.4	310.7	174	3107	2343	109005
27	-680.4	-408	-698.4	18	290.4	180	2904	2523	111909

Year	dGWR Project Cons (mm = L/m2)	dGWR Project Optim (mm = L/m2)	dGWR No Project (mm = L/m2)	Impact Cons (mm = L/m2)	Impact Optim (mm = L/m2)	Impact Cons (m3/ha)	Impact Optim (m3/ha)	Conservative acc credits per hectare	Optimistic acc credits per hectare
28	-659.4	-408	-678.1	18.7	270.1	187	2701	2710	114610
29	-638.5	-408	-657.9	19.4	249.9	194	2499	2904	117109
30	-617.6	-408	-637.6	20	229.6	200	2296	3104	119405
31	-596.6	-408	-617.3	20.7	209.3	207	2093	3311	121498
32	-575.7	-408	-597	21.3	189	213	1890	3524	123388
33	-554.7	-408	-576.7	22	168.7	220	1687	3744	125075
34	-533.8	-408	-556.5	22.7	148.5	227	1485	3971	126560
35	-512.8	-408	-536.2	23.4	128.2	234	1282	4205	127842
36	-491.9	-408.1	-515.9	24	107.8	240	1078	4445	128920
37	-470.9	-408.1	-495.6	24.7	87.5	247	875	4692	129795
38	-450	-408.1	-475.4	25.4	67.3	254	673	4946	130468
39	-429	-408.1	-455.1	26.1	47	261	470	5207	130938
40	-408.1	-408.1	-434.8	26.7	26.7	267	267	5474	131205

To maintain a conservative scenario, the project will be granted 209,678 **Verified Water Credits (VWC)**. As established in section *III.1.2.* of the *Procedures document version 2.0*, **20%** of the credits generated by the project will be withdrawn for the buffer pool as a measure to guarantee the permanence of the project benefits (41,936 credits), resulting in a total of **167,742 VWC** to be issued according to the Contingency Table (Table 16).

TABLE 16. VWC CONTINGENCY TABLE

Water credits issued annually												
Number of credits	**After project implementation**	**Y1**	**Y2**	**Y3**	**Y4**	**Y5**	**Y6**	**Y7**	**Y8**	**Y9**	**Y10**	**Total**
Percentage of VWCs issued on each year (%)	10%	10%	10%	10%	10%	10%	10%	10%	10%	5%	5%	**100%**
Number of VWCs issued each year	16,774	16,774	16,774	16,774	16,774	16,774	16,774	16,774	16,774	8,387	8,387	**167,742**

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