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CASE STUDY

Afforestation of the Kastamonu University Campus (Turkey)



Project full title: Enhancing Technical and Vocational Skills for Implementing Nature-Based Solutions (NbS) to Combat Land Degradation

Project acronym: NbS4LD

Project number: 2025-1-TR01-KA220-VET-000357096

Project activity: WP2 Developing Educational Resources on NbS for Combating Land Degradation

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1. INTRODUCTION

This case study has been analysed by [Kastamonu University \(KU\)](#) a partner organisation of the NbS4LD project. KU, founded in 2006, is a rapidly developing Turkish university located on a 237-hectare campus in Kuzeykent. It offers a wide range of academic programs through 15 faculties, 3 institutes, 2 higher education schools, and 13 vocational schools. KU is the only university in Türkiye specializing in forestry and nature tourism, contributing significantly to sustainability and regional development. With 120 international agreements, it promotes student and staff mobility through exchange programs such as Erasmus and Mevlana. The university is recognized globally for academic quality and sustainability, ranking in THE Asia University Rankings, QS Europe Rankings, and UI GreenMetric.

The Kastamonu University Campus Afforestation Project in Türkiye addresses land degradation, erosion, and slope instability in a previously unused earth-fill area located in the upstream part of a micro-watershed. The intervention involved land rehabilitation, drainage improvement, soil enhancement, and afforestation to restore ecological functions and reduce erosion and landslide risks. Implemented through collaboration between the General Directorate of Forestry (OGM), Kastamonu University, and the Kastamonu Regional Forestry Directorate, the project transformed a degraded area into an arboretum and recreational space. The restored site provides ecosystem services, improves vegetation cover, supports biodiversity, and contributes to environmental education for university students. The intervention also strengthened institutional cooperation and demonstrated the application of nature-based solutions for sustainable land management. The project has strong potential for replication on other campuses and degraded landscapes facing similar environmental challenges.

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[Kastamonu University landfill area (2023), before afforestation work - Source: Kastamonu University]



[Kastamonu University landfill site (2023-2024), land preparation, land leveling, soil improvement
- Source: Kastamonu University]

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[View of the afforestation work at the Kastamonu University landfill site (4 April 2024) - Source: Kastamonu University]



[Kastamonu University landfill afforestation efforts (2025) - Source: Kastamonu University]

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[View of the afforestation work at the Kastamonu University landfill after afforestation work (2026) -
Source: Kastamonu University]



[View of the afforestation work at the Kastamonu University landfill site afforestation work (2026) -
Source: Kastamonu University]

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[View of the afforestation work at the Kastamonu University landfill site after afforestation work (2026) -
Source: Kastamonu University]



[View of the afforestation work at the Kastamonu University landfill site after afforestation work (2026) -
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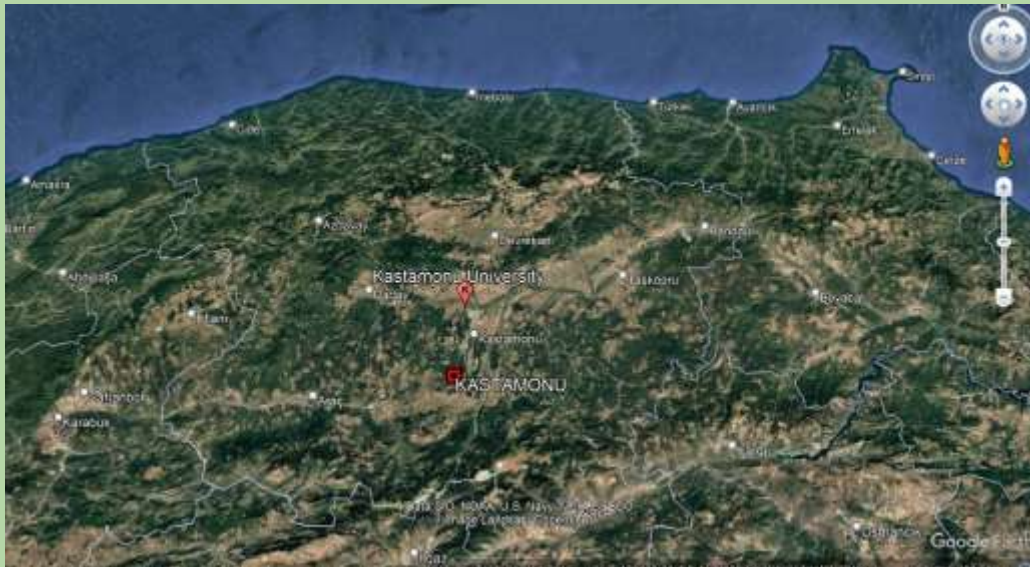


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2. CONTEXT

2.1 LOCATION

Country: Türkiye. Region: West Black Sea Region. Province: Kastamonu. Site: Kastamonu University Campus, Kastamonu. Approximate GPS coordinates: Latitude 41.389° N – Longitude 33.783° E.



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2.3 LANDSCAPE TYPE

Croplands. Forests. Grasslands.

2.4 LAND DEGRADATION CHALLENGE

Desertification. Poor land management.

2.5 BASELINE DATA

Land condition	• Site: The Kastamonu University aeroboratory site is an earth fill area located in the upstream part of a micro-watershed. Within the scope of the project, 350,000 cubic meters of earth fill was constructed. A reinforced concrete slab was also built under the fill to create a single rainwater drainage system. This provides drainage. • Soil: The topography and the presence of fill soil make the area unsuitable for building construction. Furthermore, significant surface runoff and erosion occur in the area, making it susceptible to landslides. • Vegetation: Due to the fill soil nature of the project area, it lacks vegetation. • Erosion Status: The absence of vegetation in the project area makes the soil susceptible to erosion.
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Environmental context	• Climate: The average rainfall in Kastamonu province is around 500 mm. Both continental and maritime climates are observed in the area where the university campus is located. • Hydrology: The insufficient amount of rainfall necessitates studies on rainwater drainage and storage. • Biodiversity: There is no vegetation in the project area. • Ecological pressures: Land degradation and topographical effects create pressure on the area.
Socioeconomic context	• Population: The project area is the campus of Kastamonu University. The campus has approximately 25,000 students and around 1,500 academic and administrative staff. • Land management: Although the project area is the university campus, it is a reclaimed land area.
Policy and governance	• Institutional framework: Prior to the intervention, land, water, forest, and landscape management practices within the Kastamonu University campus area were implemented in a fragmented manner, with limited coordination between institutional actors. Although national policies related to erosion control and sustainable land management exist, their application at the local scale was insufficient. In the project area, which consists largely of fill material located in the upper part of a micro-watershed, inadequate drainage infrastructure and lack of vegetation cover led to surface runoff, soil erosion, and localized slope instability during rainfall events. These conditions reduced the effectiveness of land management practices and limited the ecological functionality of the area (FAO & ITPS, 2015).

3. INTERVENTION

3.1 TIMEFRAME

Implementation: May 2023 – November 2026

3.2 TYPE OF INTERVENTION

Afforestation.

3.3 IMPEMETING ORGANISATIONS

The project is being implemented in collaboration with the General Directorate of Forestry (OGM), the Kastamonu Regional Forestry Directorate, and Kastamonu University. The main

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implementing organizations are the General Directorate of Forestry (OGM) and Kastamonu University, each responsible for different components of the project.

Within the scope of the project, expert academics from the university's academic units participated and created the project's landscape plan. Soil analyses of the project area were carried out in Kastamonu University's central laboratory.

The procurement of plants used in the project, land preparation, and planting operations were carried out with the support of the General Directorate of Forestry (OGM).

3.4 FUNDING SOURCES

Approximately 5 million TL has been spent on the project.

3.5 IMPLEMENTATION ACTIONS AND MEASURES

The following activities were carried out within the scope of the project:

- Filling the upstream part of the micro-watershed with soil Preparing the land for the area;
- Conducting soil analysis for the area;
- Improving the soil by adding sand, leonardite, and manure to soils unsuitable for plant cultivation;
- Preparing the landscape plan for the project area;
- Preparing the land before planting in the project area;
- Planting shrub and woody plant forms in the project area

4. IMPACT

4.1 ENVIRONMENTAL IMPACT

☑ Improved soil health or reduced soil erosion. ☑ Increased vegetation cover or habitat restoration. ☑ Improved biodiversity (species richness, abundance, habitat quality). ☑ Reduced land degradation. ☑ Improved ecosystem services.

This intervention in the project area reduced the risk of erosion and landslides in the university campus area through afforestation, rehabilitation, and erosion control measures. In particular, afforestation and planting efforts in the bare area increased vegetation density, improving the soil conservation functions of the vegetation. These improvements reduced pressure on natural resources and supported habitat recovery. The recreational value of the area was increased, benefiting academic and administrative staff and students at the university. Furthermore, the area's use as an arboretum contributed to the education of students at the university..

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4.2 COMMUNITY IMPACT

☑ Reducing erosion and flood damage. ☑ Increasing the recreational value of the area. ☑ Strengthened community resilience. ☑ Increased local capacity or skills.

The project supported income-generating activities in agriculture and livestock farming, including fruit and vegetable cultivation, mushroom production, and animal husbandry. These interventions increased household income and diversified livelihoods in rural communities. Financial support and targeted investments improved local economic conditions and reduced reliance on natural resource exploitation. Community-based activities and training contributed to strengthening local capacity and resilience.

The project work primarily had a preventative effect on land degradation by reducing the risk of erosion and landslides in the area. Furthermore, the use of the area as an arboretum will significantly contribute to the education of university students.

The activities carried out in the project area have provided a significant recreational space for academic and administrative staff and students at the university, transforming the previously unused landfill into a recreational area.

4.3 INSTITUTIONAL IMPACT

☑ Strengthened institutional coordination. ☑ Increased community participation in decision-making. ☑ Establishment of new management structures or partnerships. ☑ Capacity building for institutions or communities.

The project strengthened coordination between the General Directorate of Forestry (OGM) and Kastamonu University. It enabled both institutions to gain experience in land degradation.

4.4 SUSTAINABILITY OF THE RESULTS

☑ Integration into policies or development plans. ☑ Strong local community ownership. ☑ Institutional support or partnerships. ☑ Local technical capacity for maintenance. ☑ Monitoring and adaptive management systems.

The project ensures long-term sustainability through continuous coordination between institutional actors and implementing organizations. Erosion control measures are expected to provide long-term environmental benefits, including reduced soil loss and improved ecosystem stability. A combination of structural measures (e.g., sediment retention and drainage improvements) and ecosystem-based interventions (e.g., afforestation and vegetation establishment) aims to stabilize the site and maintain its functionality over time. In addition, the

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use of the area as an arboretum will contribute to environmental education and provide a recreational space for students and staff. These interventions contribute to long-term resilience and sustainable land management, consistent with the principles of the Sendai Framework for Disaster Risk Reduction (UNDRR, 2015).

5. CONCLUSION

- **Community relevance:** mostly.
The intervention addressed local community needs by creating a multifunctional arboretum that serves as both a recreational space for university staff and students and a practical learning environment for students in nature-related disciplines.
- **Technical effectiveness:** mostly.
The intervention effectively restored a degraded area through afforestation and erosion-control measures, reducing flood and erosion risks while improving ecosystem stability and environmental quality on the campus.
- **Economic efficiency:** mostly.
The project transformed previously unused land into a valuable educational and recreational asset. Its implementation was cost-effective due to the joint financial and institutional support provided by Kastamonu University and the General Directorate of Forestry (OGM).
- **Institutional support:** fully.
Strong collaboration between Kastamonu University and the General Directorate of Forestry (OGM) ensured effective planning, implementation, governance, and long-term management of the intervention.
- **Innovation:** mostly.
The intervention applied nature-based solutions by combining afforestation, erosion control, ecosystem restoration, and educational functions within a university setting, enhancing both environmental resilience and social benefits.
- **Replication & Scaling Potential:** fully.
The intervention can be readily replicated on other university campuses and in areas facing similar land degradation, erosion, or recreational space challenges, while maintaining the principles of nature-based solutions.

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