

 **FACTSHEET | DEMO6 ARAGON, SPAIN**

FOREST MANAGEMENT AND HEATWAVE RESILIENCE IN ARAGON



The DEMO6

Has two different goals. On the one hand, it is dedicated to tackling the decline of Halepensis and Scots pine forests, a problem largely driven by mistletoe infestations that weaken tree vitality and increase their vulnerability to drought and other stresses. This decline not only threatens forest health but also impacts the ecosystem services these forests provide. On the other hand, efforts are underway to implement renaturalization measures based on Nature-based Solutions (NbS) in two schools in Aragon, aimed at enhancing students' thermal comfort.

sub-DEMO6.1

The first sub-DEMO will concentrate on mapping of mistletoe infestation across affected pine forests, most effective actions to be taken and valorisation of the by-products obtained.

sub-DEMO6.2

The second sub-DEMO shift focus to the educational environment, implementing a variety of Nature-based Solutions in two primary schools.

The NbS system covers about 850,000 ha of Teruel forest and 7,500 m² of Zaragoza land in the Aragon region of Spain, providing a significant area for both ecological restoration and educational activities. Through these combined efforts, this demo aims to address ecological challenges, enhance biodiversity, and instill a culture of sustainability in the next generation.

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Tackling Mistletoe Infestation: Mapping and Control Strategies in Pine Forests

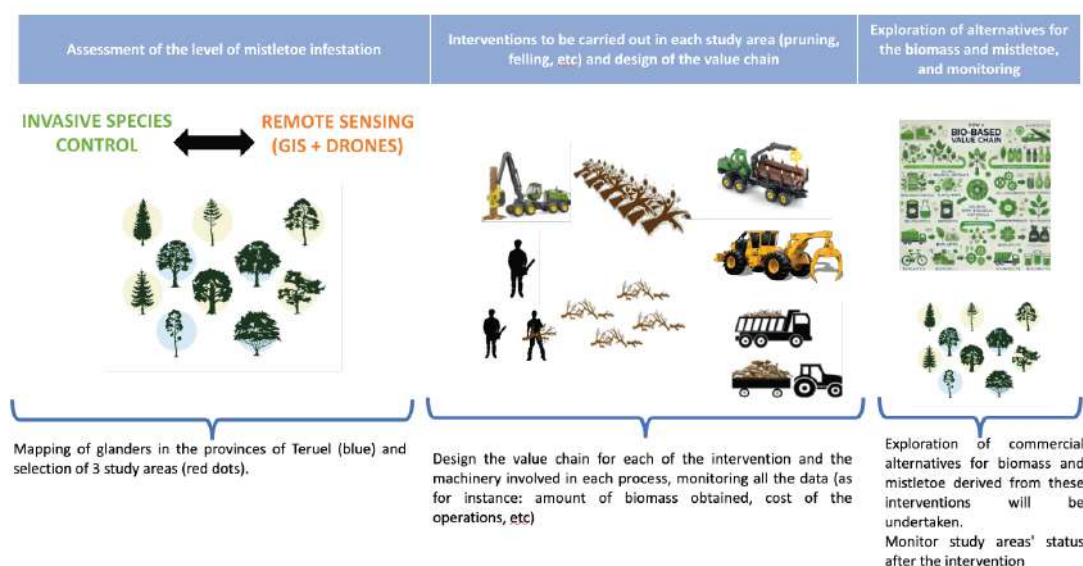


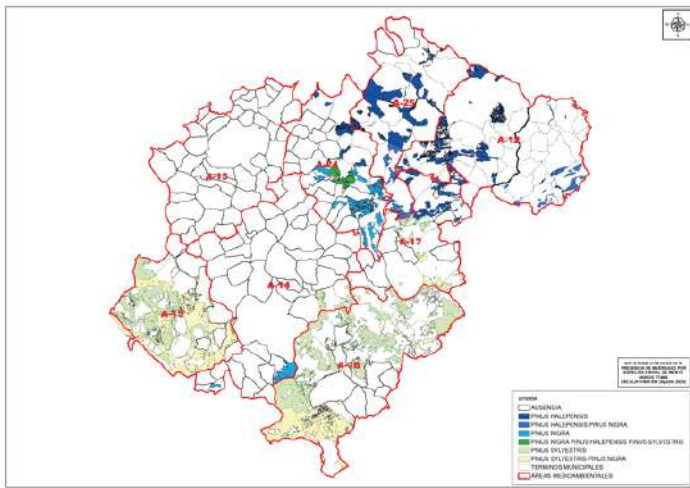
What has been done in sub-DEMO6.1?

This sub-DEMO tackles the detrimental effects of invasive alien species on forest ecosystems through a comprehensive strategy. Central to this effort is the detailed mapping of 850,000 hectares of public land, which will help determine the scope, severity, and distribution of mistletoe infestations. The insights gained from this mapping will guide targeted control measures—such as pruning and thinning—to lower mistletoe density, strengthen forest resilience, and restore overall forest health.

In addition to ecological restoration, the project seeks to find commercial uses for the biomass and mistletoe that are removed, thereby generating economic opportunities and supporting the local community. Environmental education and community participation are also key components, with students and staff actively involved in monitoring and management tasks.

To enhance the effectiveness of these activities, the sub-DEMO employs advanced tools like GIS mapping and drones for remote sensing, improving the precision and efficiency of mapping, monitoring, and control operations. The initiative spans ten pilot plots, each about 625 m², where different management techniques will be trailed. Ultimately, it aims to restore healthy forests, encourage sustainable management practices, and engage the community in environmental stewardship.





Specific area of municipalities where infection has been detected and type of pine



Identification of mistletoe with aerial imaging

Identified Nature-based Solutions



The identified Nature-based Solutions are those mentioned above, specifically:

- Invasive alien species control

Co-benefits

Improving the health of forests through sub-DEMO6.1 brings several important co-benefits. Firstly, healthier forests are able to capture and store more carbon, which helps mitigate climate change. Secondly, restored forests contribute to better air and water quality by filtering pollutants and supporting natural water cycles. Thirdly, by reducing invasive species and encouraging native growth, the project enhances habitats, supporting greater biodiversity and healthier wildlife populations. Additionally, finding commercial uses for the biomass removed during management activities can create new economic opportunities and support the local economy.

Sustainable Development Goals



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Sustainable Learning Spaces: NbS Implementation in Zaragoza's Primary Schools

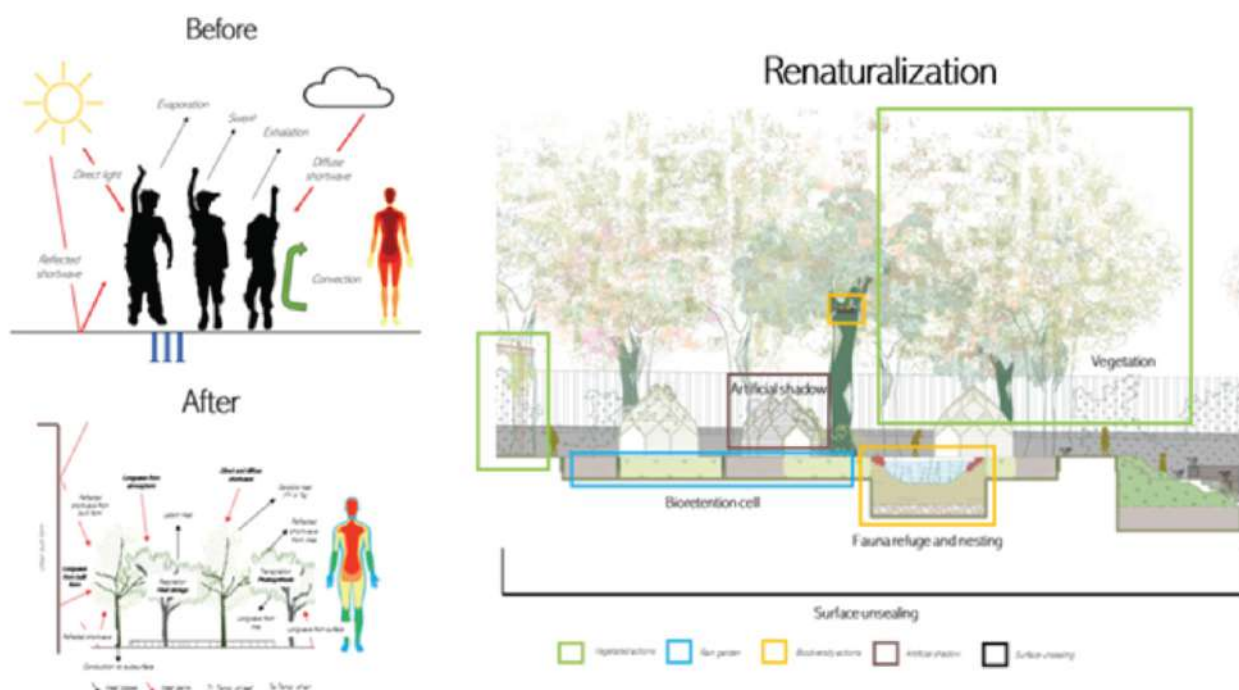


What is being done at sub-DEMO6.2?

This sub-DEMO is implemented in two primary schools, focusing on the integration of various Nature-based Solutions (NbS) to enhance environmental education and promote sustainability among students and staff. At CEIP Maria Moliner, the project includes bioretention cells (rain garden) and surface unsealing, which serve as buffers for effective water management.

Meanwhile, CEIP Vadorrey will implement a vegetated pergola to support the growth of shading vines and plants, enhancing aesthetic appeal while providing natural cooling. In both schools, sensors have been installed to effectively monitor atmospheric conditions.

Additionally, a thermal comfort tool is being developed for schools to provide tailored recommendations based on daily weather conditions.





Identified Nature-based Solutions



The identified Nature-based Solutions are those mentioned above, specifically:

- Bioretention cells (rain garden)
- Vegetated pergola
- Surface unsealing

Co-benefits

This sub-DEMO aims to use nature-based solutions to improve outdoor thermal comfort in schoolyards, making them cooler and more comfortable for children. By adding trees, green roofs, and shaded areas, the project helps reduce heat during hot days. Cooler schoolyards encourage children to spend more time outside, promoting physical activity and social interaction. Vegetation also improves air quality by filtering pollutants, creating a healthier environment. The green spaces support local biodiversity, offering learning opportunities about nature. Sustainable water management features, like permeable surfaces, help absorb rainwater and reduce runoff. These elements prevent flooding and keep the areas greener. Greener schoolyards also benefit children's mental well-being by reducing stress and improving focus. The improved outdoor spaces can serve as cool community areas during heatwaves. Involving students, staff, and local authorities fosters a sense of ownership and raises awareness about sustainability. Overall, the demo enhances thermal comfort while supporting children's health and education.

Sustainable Development Goals



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