**Action D.1: Monitoring and Project performance indicators**

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## 1. Brief

Life Nieblas is a Life Programme financed project provided by the European Commission that support projects involved in climate action, natural habitat restoration and sustainable development. In addition to the European financing, Life Nieblas counts with the financial support from Cabildo de Gran Canaria as the public administration where this project has being developed.

Life Nieblas is a pioneer case study on the use of fog water collection as main source of water supply for the irrigation and maintenance of reforested areas. Reforestation methods will take shape of different technologies that have been observed to be beneficial or that have the potential to be further developed including: Individual Fog Water Collectors, Cocoons (developed in another Life project 'The Green Link'), AFDS (Autonomous Fluid Discharge System) and finally traditional reforestation as control group.

Furthermore, Life Nieblas looks into the transferability and replication potential of the technology tested. Not only will the project focus on the reforestation aspect but also on Fog Water Collectors (FWC) technology as the main (and only) source of water. In this case, technology has been tested in labs to improve FWC design and efficiency, they will not only become easier to install and transport but also will collect more water by surface exposed.

The final objective of this project will be to adapt technology to be exported to different European regions (and out of the EU) where fog conditions have the potential to improve water availability and assist in natural habitat recovery. Eventually, finding its way into the agriculture sector where farmers can take advantage from collecting their own water. Henceforth, Life Nieblas will contribute in climate change mitigation action (by reduction of emissions), carbon capture (by natural habitat recovered) and with the development of sustainable technology.

## 2. Summary

This deliverable is the result of Action D.1 *'Monitoring and project performance indicators'* for both sites; Gran Canaria and Portugal.

During the four years that this action will take place, indicators measured relate to:

- Milestones and deliverables of the project
- Expected results from the project
- Contributions to climatic objectives
- Socioeconomic effects
- LIFE Key Project level Indicators

This document is linked to reports relating to reforestation implementation, use of resources, etc. only excluding action F.3:

- Action A.1 *'Acting zone status analyses. Establishment of protocols'*
- Action A.2 *'Environmental, social and economic indicators selection. Monitoring and evaluation protocol'.*
- Action A.3 *'Equipment evaluation and selection. Monitoring and evaluation protocol'*
- Action A.4 *'Training for partners and staff'*
- *Action A.*5 *'Administrative authorisations for project execution'*
- Action C.1 *'Innovation on fog collectors. Monitoring and evaluation protocol'*
- Action C.2 '*Execution of traditional and innovative reforestation'*
- Action C.3 *'Replications and reforestation by external stakeholders'*
- Action C.4 '*Designing of a reforestation evaluation method. Creation of an Open Web Tool'*
- Action C.5 *'Synergies between the project and environmental, agrarian, energy, and water management sectors and policies'*
- Action D.1 *'Monitoring and project performance indicators'*
- Action D.2 *'Social and economic impact of the project's actions'*
- Action D.3 *'Monitoring and evaluation of the reforestation execution and results'*
- Action D.4 *'Monitoring and evaluation of the equipment execution and results'*
- Action D.5 *'Conclusions and recommendations'*
- Action D.6 '*Monitoring of LIFE KPIs'*
- Action E.1 *'Promotional and dissemination material'*
- Action E.2 *'Information and awareness-raising'*
- Action E.3 *'International Days on Climate Change, Reforestation and Fog Collection'*
- Action E.4 *'Replication and transfer plan'*
- Action F.1 *'Project management'*
- Action F.3 *'POST-Life conservation, monitoring and communication Plan'*

## 3. Deliverables and milestones of the project

By March 2025, the project has encountered several delays in terms of deliverable submission. Mostly due to the 2020-21 COVID19 pandemic and the resulting bureaucratic, logistics and HR limitations rose from the global lockdown. Additionally, some reports such as deliverable for action C.5- *'Synergies between the project and environmental, agrarian, energy, and water management sectors and policies'* has suffered delays due to the overwhelming and unexpected popularity of the project. This resulted in replication actions, consultation and assessment taking place before even this deliverable could be conceived. Nevertheless, project has gone ahead and reports have been delivered at the earliest and most efficient manner possible i.e. Actions:

- A.1 – Acting zone status analysis. Establishment of protocols (17/05/2021).
- A.2 – Environmental, economic and social indicators monitoring protocol (23/4/2021).
- A.3 – Equipment Monitoring protocol (16/04/2021).
- A.4 – Training videos for partners and staff (25/03/2022).
- C.1 – Innovative fog collectors monitoring protocol (31/05/2022) with an update on (03/2025).
- C.1 – How to construct your own wind tunnel and fog collector step-by-step manual and video (10/05/2022).
- D.6 – Extract of the project data from the KPI webtool (18/06/2021) with a later edition and resubmission (17/03/2022). Final snapshot submitted (03/2025).
- E.1 – Information boards (02/11/2021).

Deliverables which final updates are submitted with Final Report includes:

- C.2 – Execution status report until 31/05/2022, with and update (03/2025).
- C.3 – Execution status report until 31/05/2022. Final update submitted (03/2025).
- D.2 – Socioeconomic impact report from the beginning of the project until 31/05/2022, seeing its final submission on (03/2025).
- D.4 – Equipment execution and monitoring report from the beginning of the project until 31/5/2022, with an extensive and complete update on (03/2025).
- D.6 LIFE Nieblas project performance indicators report from the beginning of the project until 31/05/2022. Final update (03/2025) which includes an annex which has been an add-on not planned in the original project with a complete Life Cycle Assessment of the project itself (03/2025).
- E.1 – Project's website (31/12/2020).
- E.2 – Execution status report until 31/05/2022. Final submission (03/2025).

Deliverables submitted ahead of schedule, include:

- A.5 – Technical project (24/10/2020)
- E.1 – Technical Manual (09/2024) – with corrections made in response to Issue 52 (03/2025).
- E.1 – Layman Report (09/2024) – with corrections made in response to Issue 53 (03/2025).

On the other hand, for Action A.5, permits in Gran Canaria were issued on time however; Portugal experienced certain delays in the bureaucratic processes with the ICNF. Nevertheless this particular case has not caused significant delays in project's implementation overall. An a

final update with annexes has been submitted on Final Report annex 2 as 'Action A.5' which contains the most updated permits submitted by CIM VDL (03/2025).

Milestones delivered on time or minor delays as per project proposal:

- A.1 – Selection of site in Portugal complied with in 2021
- A.5 – Obtaining the pertinent authorisations Gran Canaria (03/2021) and Portugal (between 05/2021 & 10/2021)
- A.5 go/ no go for the continuation of the project (26/11/2020)
- C.1 – Innovative fog collector design (03/2025) saw its final update, due to the requirement for proper data analyses and statistical integration, delaying the submission was deemed necessary. Nevertheless as per other actions, all relevant updates were presented at the final monitoring meetings.
- C.2 – Beginning of reforestation (01/2021)
- C.4 – Start up of the Open Web Tool (10/2023)
- D.6 – Update of project's KPIs at the time of mid-term report (31/05/2022) and final snapshot in 03/2025
- E.1 – Information boards in Gran Canaria (13/12/2021) and Portugal first installation (09/2022) with second installation after wildfire on (12/2024)
- E.1 Website start-up (31/12/2021)
- E.1 Presentation of and distribution of the Layman report (09/2025). Early submission date allowed the team to properly distribute this magazine through the last quarter of the project. This resulted in many key stakeholders and practitioners to be informed in due time through different synergies events, networking meetings, congresses, etc.
- E.3 Celebration of the International Days on Climate Change, Reforestation and Fog Collection (02/2023)
- F.1 – Signature of Partnership agreement – (26/01/2021) with an amendment to add UAB on 26/05/2022.

The following table is a standard representation of the LIFE Key Project level Indicators. The column *'Real Current Impact (%)'* is the parameter indicating the level of completion on this sub-action. Percentages have been calculated from the total in column *'Estimated Impact (absolute values)'*.

**Table 1 completion level for milestones and deliverables indicated up until May 2022**

| Indicators related to milestones and deliverables of the project | Indicators | Estimated Impact (absolute values) | Estimated Impact (in %) | Real Current Impact (%) | Action related to |
|---|---|---|---|---|---|
| **Project execution** | Compliance of the project´s deliverables | 38 | 100% | 100% | All actions |
| | Compliance of the project´s milestones | 13 | 100% | 100% | All actions |

## 4. Current status on expected results from the project

Table 2 Indicators relating to expected results from the project

| | Indicators | Estimated Impact (absolute values) | Estimated Impact (%) | Real Current Impact (absolute) | Real Current Impact (%) | Action related to |
|---|---|---|---|---|---|---|
| Indicators related to the project´s specific objective 1 | Percentage respect of the total of 45,8 hectares reforested based on fog collection | 100% | 100% | 28.3ha | 62% | C2 |
| | Basic comparative reforestation methodology established? (Yes/No) | Yes | 100% | 4 | 100% | C2 |
| | Basic comparative reforestation methodology transformed into a functional Open Web Tool? (Yes/No) | Yes | 100% | 3 | 100% | C4 |
| | Number of reforestation activities data introduced in the Open Web Tool. | 15 | 100% | 3 | 20% | C4 |
| | Reforestation typologies evaluation study published? (Yes/No) | Yes | 100% | Yes | 100% | C4 |
| | Number of views of the reforestation typologies evaluation study on the project´s website. | 4.000 | 100% | 6.782 | 169% | E1 |
| | Number of companies and professionals linked to climate change, reforestations and fog collection participating on the Technological Market and Services on the International Days on Climate Change, Reforestations and Fog Collection | 10 | 100% | 71 | 710% | E3 |
| | Number of projects and investigations presented on the International Days event. | 10 | 100% | 24 | 240% | E3 |
| | Number of people and entities participating on the International Days event. | 150 people, 30 entities | 100% | 505 & 47 | 333% & 156% | E3 |
| | Economic impact estimation of the International Days event. | 20.000 € | N.A. | 259.038,57 € | N.A. | E3 |
| | Technical manual to replicate the different reforestation typologies based on fog collection published? (Yes/No) | Yes | N.A. | Yes | N.A. | E1 |
| | Number of the technical manual distributed on paper | 500 | 100% | 50 | 10% | E1 |
| | Number of the technical manual downloaded from the project´s website. | 100 | 100% | 150 | 150% | E1 |
| | Number of replications of the reforestation typologies tested on the project. | 15 | 100% | 6 | 40% | C3 |
| | Number of visitors of the project´s website. | 20.000 | 100% | 27.000 | 135% | E1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| **Indicators related to the project´s specific objective 2** | Number of liters of water captured by the fog collectors. | 300.000 | 100% | 119.460 | 40% | C2 |
| | Number of seedlings planted on the acting zone. | 24.300 | 100% | 8,956 | 37% | C2 |
| **Indicators related to the project´s specific objective 3** | Number of sessions celebrated to create synergies between the results of the project and the European policies and sectors. | 4 | 100% | 4 | 100% | C5 |
| | Number of entities represented on each synergy session according to the nature of the entity. | 10 | 100% | 60 | 600% | C5 |
| **Indicators related to the project´s specific objective 4** | Number of dissemination and awareness-raising activities, nature of the activity and number of participants. | 120 | N.A. | 123 | N.A. | E2 |
| | Number of participants on dissemination and awareness-raising activities by target audience | 2.000 | N.A. | 787 | N.A. | E2 |

## 5. Contributions to climatic objectives

Table 3 Indicators related to project´s contribution to climate objectives.

| | Indicators | Estimated Impact (absolute values) | Estimated Impact (%) | Real Current Impact (%) | Action related to |
|---|---|---|---|---|---|
| Contribution to climate objectives | CO2 emissions annual reduction comparison between water collected by fog water collectors in respect to obtaining water through wells and its transport by road to the field. | 254,33 tons of $CO_2$ | N.A. | 1.225 Kg of $CO_2$ | C2 |
| | CO2 emissions annual reduction comparison between water collected by fog water collectors in respect to obtaining water through water bodies that do not require machinery for its extraction (i.e. reservoirs) and its transportation by road to the field. | 100 tons of $CO_2$ | N.A. | 847 Kg of $CO_2$ | C2 |
| | Seedlings survival rate comparing traditional reforestation against innovative reforestations. | 20% | N.A. | 43% | C2 |
| | Innovative and traditional reforestation methodologies efficiency comparison. | 20% | N.A. | 43% | C2 |
| | Innovative and traditional fog water collector's efficiency comparison. | 20% | N.A. | 300% | C2 |

In reference to indicators '*CO2 emissions annual reduction comparison between water collected by fog water collectors in respect to obtaining water through wells and its transport by road to the field'* & '*CO2 emissions annual reduction comparison between water collected by fog water collectors in respect to obtaining water through water bodies that do not require machinery for its extraction (i.e. reservoirs) and its transportation by road to the field'* already in the Mid-term report, it was acknowledge that a unit mismatched had occurred and what is reflected as tons/year was in reality supposed to account for kg/year. This has been taken into account within the Life Cycle Assessment submitted along the Final Report under annex 28.a section 12. Hence, the 'Real Current Impact' is being reflected in absolute saving quantities and not percentage in an attempt to more realistically show the actual impact during the project.

The indicator '*Innovative and traditional fog water collector's efficiency comparison'*, the 300% has been calculated in relation to the results yield in Deliverable for action C.1 '*Innovative Fog Collectors Monitoring Protocols'* where innovative fog water collectors (i-FWC) have been found to increase collection capacity up to three times more when compared to traditional methods.

## 6. Socioeconomic effects

Table 4 Indicators related to socioeconomic impact of the project.

| | Indicators | Estimated Impact (absolute values) | Estimated Impact (%) | Real Current Impact (absolute) | Real Current Impact (%) | Action related to |
|---|---|---|---|---|---|---|
| Project´s direct impacts in the LIFE period | Jobs generated directly by the project | 10 jobs | N.A. | 11 | 110% | A1, A2, A3, A4, C1, C2, C3, C4,C5, D1, D2, D3, D4, D5, E1, E2, E3, E4, F1 |
| | Permanent jobs sustained by the project | 15 jobs | N.A. | 17 | 113% | A1, A2, A3, A4, A5, C1 C2, C3, C4, D1, D2, D3, D4, D5, D6, E1, E2, E3, E4, F1 |
| | Expenses on external assistance and subcontractors services, equipment, travel and maintenance, consumables, other costs and overheads. | 823.351 € | N.A. | 751.989,37€ | 91% | A1, A2, A3, A4, C1 C2, C3,C4,C5, D3, D4,E1, E2, E3, E4, F1,F2 |
| | Accommodation, maintenance and transport cost of the beneficiaries travelling to the different countries for the Steering Committee Meetings, coordination travels, to attend the training course and networking for the implementation of the actions. | 35.916 € | N.A. | 40.775,16 € | 113% | A4, E2, F1 |
| | Accommodation, maintenance and transport cost of the people who will travel to visit the different working sites | 4.000 € | N.A. | 11.120 € | N.A. | E2 |
| Project´s indirect impacts in the LIFE period | Jobs generated or the maintenance of the pre-existing ones among Europe by the replication of the innovative reforestation methods tested on the project. | 6 jobs | N.A. | 70 | N.A | C3 |
| | Jobs generated by the expenses on external assistance and subcontractors services, equipment, travel and maintenance, consumables, other costs and overheads. | 6 jobs | N.A. | 6 | 100% | A1, A2, A3, A4, C1 C2, C3,C4,C5, D3, D4,E1, E2, E3, E4, F1,F2 |
| | Accommodation, maintenance and transport cost of the assistants to the International Days on Climate Change, Reforestation and Fog Collection. | 3.000 € | N.A. | 22.995,06 € | N.A. | E3 |

## 7. LIFE Key Project level Indicators

Table 5 Indicators related to KPIs established in the project

| Objective | Indicators | Estimated Impact (absolute values) | Estimated Impact (%) | Real Current Impact (absolute) | Real Current Impact (%) | Action related to |
|---|---|---|---|---|---|---|
| **Improved Environmental and Climate Performance (including resilience to climate change)** | Reduction of greenhouse gas emissions (GHG) per year | 254,33 | 10% | 1.225 Kg of $CO_2$ | N.A. (refer to point 5 above) | C2 |
| | Improved resilience to flooding (inhabitants affected) | 188 | 100% | 188 | 100% | C2 |
| **Better use of natural resources** | Reduced water consumption | 250 $m^3$ | 100% | 676.04 m3 | 270% | C2 |
| **Sustainable land use, agriculture and forestry** | Reforested areas; increase in area under sustainable forest management | 45,8 hectares | N.A. | 28.3ha | 62% | C2 |
| | Soil Surface improved | 45,8 hectares | N.A. | 28.3 | 62% | C2 |
| **Improved Nature, Species and Biodiversity** | Habitats | Areas progressing towards improvement or restoration or in a favourable conservation status | 45,8 ha | 28.3ha | 62% | C2 |
| **Economic Performance, Market Uptake, Replication** | Jobs created | 10 FTE | <1% | 11 | 110% | D2 |
| | nº of replication/ transfer | 30 (15 reforestation data input into Web Tool + 15 replications) | N.A. | 18 | 60% | C3 |
| **Communication, dissemination, awareness rising** | Website | 30.000 visit | N.A. | 27.000 | 91% | E1 |
| | Number of entities/individuals reached/ made aware | 2.000 people | 50% | 4.524 | N/A | E2 |

As per indictor '*Number of entities/individuals reached/ made aware'*, numbers extracted from social media adherence and people directly involved in dissemination actions of the project such as talks, conferences, round tables, etc.

- People from general public and students in awareness-raising presentations = 459
- Technical staff and politicians in awareness-raising presentations = 188
- Instagram follower from @lifenieblas = 938
- Facebook follower from @life+grancanaria = 2939

All details can be found in Deliverables for Actions:

- Action C.5 Synergies between the project and environmental, agrarian, energy and water management sectors and policies - Final Report annex 17
- Action E.1 Promotional and dissemination material - Final Report annex 6 & 7
- Action E.2 Information and awareness raising - Final Report sub-annex (12.a, 12.b, 12.c & 12.d)
- Action E.3 International Days on Climate Change, Reforestation and Fog Colelction - Final Report annex 30

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