



## **LIFE18 NAT/IT/000972 - LIFE WolfAlps EU**

### **“Coordinated actions to improve wolf-human coexistence at the alpine population level”**

#### **Action D2**

#### **TECHNICAL REPORT**

**Ex-ante assessment featuring the socio-economic and biological background analysis of project areas compared to the project goals**

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**List of abbreviations**

LWA= LIFE WolfAlps

LWA EU= LIFE WolfAlps EU

IT=Italy

AT=Austria

F=France

SI=Slovenia

/=No data available

BP= Baseline situation is the beginning of the project

## Introduction

LIFE projects need to report on their outcomes and be regularly monitored and evaluated based on the outcome indicators defined at project level and based on those defined in the multiannual work-programme at programme level. Therefore, the purpose of this action is to evaluate the usefulness and the success of the project actions implemented to improve the ecosystem and the welfare of the local wolf populations, economy and social welfare in the project area. In the case of LWA EU the overall project goal is to improve wolf-human coexistence at the alpine population level. The main expected results and impacts are:

- Establishment of 5 international alpine working groups: a technical, a scientific, a communication, an administrative and a policy committee with at least one member per partner and country.
- Define common methodologies and criteria to enable efficient transboundary wolf monitoring and conservation at population level.
- Create at least 24 “Wolf Prevention Intervention Unit - WPIU”, with at least 812 WPIU intervention over the Alps.
- Adequate training for wardens and other technicians in techniques of wolf surveillance (88 workshops for at least 2000 trained operators), anti-poaching, assessment of damage to livestock and damage prevention (at least 26 WPIU trainings).
- Capture of at least 2 detected hybrids and recover of at least 2 injured wolves.
- Decrease wolf depredations by 70% where attacks occurred in wolf presence areas, and implementation of preventive measures by WPIU.
- Use of damage prevention methods by at least 80% of the farmers involved in the preventive measure action.
- Formation of at least 7 new anti-poisoning dog units, and maintenance of 5 dog from LWA.
- Overall reduction of wolf mortality rate due to poisoning is expected to be at least 20% in identified "hot spot" areas.
- Develop wolf eco-tourism with at least 16 new wolf-friendly products, 8 wolf-friendly ecotourism packages, 64 wolf-friendly ecotourism events.
- Develop first guidelines for responsible wolf-tourism.
- Involve at least 5.000 kids in the Life Alpine Young Ranger Program and set up an international network of at least 29 Alpine Protected Areas adhering to the Program.
- Conduct 4 local predator-prey-hunter evaluations with at least 1 radio-collared wolf and 10 radio-collared prey each.
- Establish at least 11 platforms of discussion among Institutions and stakeholders, at least one per country.
- Increase the knowledge and attitude scores of stakeholders, in particular hunters, local inhabitants, public opinion and schools by at least 15% from the first poll.
- Increase the number of positive media reports on wolves by at least 10%.
- Collect at least 1000 items for an international Alpine Wolf press review and publish at least 50 project news items.
- Stop conflict rate growing in general public over the years and reduce by 30% in the selected conflict hotspots.

- Consider spatial requirements of wolves in environmental impact assessment studies, protecting key areas for reproduction, in at least 29 Natura 2000 sites, considering the EIA Guidelines.
- Decrease wolf traffic mortality through mitigation measures on traffic routes in identified sink areas (Val Susa, Italy) for at least 50% on mitigated road and railway sections.
- Involve at least 3000 schoolchildren in the 4 countries in kids' education actions and train at least 300 new project ambassadors.

To measure the socio-economics impact of the project and ecosystem functions in the project areas, the project developed 3 different typologies of indicators: social, economic and bio-ecological. These indicators will be measured each year of the project to analyse temporal variations of the selected variables. Therefore, the responsible beneficiary will carry out systematic assessments of agreed indicators. Project teams will be updated on the trends of specific indicators once per year, and the implications for the project will be discussed at the project group meetings with specific attention in assessing the costs and benefits of the conservation actions implemented in the project.

Biological indicators will mainly focus on the conservation status of wolves in the project area and will be based on the estimation of primary population parameters, in the framework of the project conservation actions. The indicators are divided into the two priority areas 1) Nature, Species and Biodiversity and 2) Monitoring the success of wolf conservation actions.

Nevertheless, the ecological evidence cannot by itself solve the societal challenge of coexistence with predators, this goal can be achieved only when both scientific and socio-economic evaluations are considered. The inclusion of social and economic aspects in biodiversity conservation has been widely advocated by both conservation biologists and economists to provide policy makers with the necessary tools to evaluate different decisions and to share the project results with the community of residents, and stakeholders.

According to the project goals, the economic indicator can be divided into the three priority areas 1) damage prevention 2) economic growth and 3) jobs created.

From a social point of view, the acquisition of an understanding of the values and concerns of the community is an important first step in developing a sociological impact assessment. This analysis will allow the understanding of the perception of community members on how the LWA EU project will affect their lives. A critical analysis of the factors contributing to current knowledge and social acceptance is essential to support any future decision on how to proceed with the development and protection of the project areas. Following the indications of LIFE projects for qualitative and quantitative outcome indicators at project level, three priority areas were selected: 1) capacity building 2) governance 3) communication, dissemination, awareness rising.

To set the baseline at the beginning of the project, this report presents an ex-ante assessment featuring the socio-economic and biological background analysis of the project areas related to the indicators defined in the first year of the project. These data will be used to compare the situation before, during and at the end of the project and to estimate the projects' impacts. The main references used for the ex-ante analysis are the reports listed from LWA, desk research, information gathered directly from project partners and reports produced within the first year of LWA EU. Reports considered:

- Report\_LIFE WOLFALPS\_ ANNEX FR D4\_6. “Assessment of socio-economic impact of the project and ecosystem functions in the core areas”
- Final technical report LIFE WOLFALPS (2018) Covering the project activities from 01/09/2013 to 31/05/2018
- Wolf Alpine Group (2018): Wolf population status in the Alps: pack distribution and trend up to 2016, with focus on year 2015-2016
- Berce T & Černe R (ed.) (2020) Prevention of damages caused by large carnivores in the Alps. Joint report prepared by: Large carnivores, wild ungulates and society working group (WISO) of the Alpine Convention and the project LIFE WolfAlps EU.

Most activities start with the beginning of the project and do not provide ex-ante data. In these cases, respective cells are empty. Baseline data from LWA were only considered if the respective action is implemented in the same way in LWA EU.

The LWA EU project area includes the LWA project area (see: Final technical report LIFE WOLFALPS 2018), Austria and areas in France (France Provence-Alpes-Côte d'Azur, Rhône-Alpes, Auvergne).

## Biological and ecological indicators

Table 1. List of biological indicators and respective data for the year 2019 and/or before in the project area

Indicator descriptor	Measurement unit	Ex-ante assessment
Areas progressing towards improvement	No. of Natura 2000 sites	BP
Areas progressing towards improvement	km of roads	BP
Wolf packs	No. of packs	Alps <sup>1</sup> : 65 Alps IT <sup>2</sup> : 46 AT <sup>3</sup> : 3 Alps F <sup>3</sup> : 79 SI <sup>3</sup> : 14 SI Alps <sup>3</sup> : 0
Functional wolf territories	No. of territories	Alps <sup>1</sup> : 77 Alps IT <sup>2</sup> : 51 AT <sup>3</sup> : 3 Alps F <sup>3</sup> : 85 SI <sup>3</sup> : 14 SI Alps <sup>3</sup> : 0
Wolf reproductions recorded annually	No. of reproductions	50
Wolf distribution area	Km <sup>2</sup>	Alps IT <sup>2</sup> : 15.600 km <sup>2</sup> Alps AT <sup>3</sup> : 2.500 km <sup>2</sup> AT <sup>3</sup> : 5.000 km <sup>2</sup> Alps F <sup>3</sup> : 55.796 km <sup>2</sup> SI <sup>3</sup> : 4600 SI Alps <sup>3</sup> : 0
Health status and sanitary conditions of population	No. of disease-specific mortality, morbidity, and disability	BP
Inbreeding in the Central Alps as part of the population	No. of inbred packs	BP
Wolf mortality rate caused by traffic accidents in areas with mitigation measures	No. of dead individuals on mitigated road sections	7
Wolf mortality caused by poaching and poisoning	No. of individuals poached/poisoned	LWA area: 13 AT <sup>4</sup> : 1 F <sup>5</sup> : 18 SI <sup>6</sup> : 8 SI Alps <sup>6</sup> : 0
Level of connectivity with the Dinaric, Central European and Apennine population measures with genetic samples	No. of genetic samples referring to non-local population origins	BP
Dog unit interventions against illegal killing and poisoning	No. of interventions	967
Non-invasive genetic samples collected	No. of samples	BP
Wolves and prey equipped with GPS collars in the project area	No. of wolves/prey equipped	BP
Simultaneously inspected sites via camera-trapping in the project area	No. of sites	BP
Hybrids captured and managed	No. of hybrids	BP
Injured animals captured and managed	No. of injured animals	4

<sup>1</sup>Data refer to the situation in 2015-16; <sup>2</sup>Data refer to the situation in 2017-18; <sup>3</sup>Data refer to the period of 01.05.2018-30.04.2019; <sup>4</sup>Total number 2019 inclusive; <sup>5</sup>Total number between 2006-2019; <sup>6</sup>Total number between 1999-2020

The project aims at conducting the first coordinated wolf surveillance at an international population level in the Alps. For most indicators there are no data available at the population level yet and the baseline is the starting of the project.

The data of some indicators represent the situation at a national level or refer to the LWA project area. Comprehensive data on an alpine population level will be available as the project develops. Latter will be considered to define the baseline of the project. For now, the data from LWA (2015-16) and national data will provide the baseline situation, as comprehensive wolf number in the overall Alps are not available for 2019.

Baseline data were, if available, collected from the reference documents listed in the introduction. For specific details of national wolf conservation status in the project areas we contacted the University of Veterinary Medicine, Vienna for Austria, the Slovenian Forest Service for Slovenia and the Office National de la Chasse et de la Faune Sauvage for France. For some indicators, the information about the Slovenian project area will be additionally added as soon as the data are available for 2019.

- The indicators *Areas progressing towards improvement* refer to a) No. of Natura 2000 sites considering the spatial requirements of wolves' reproductive sites in their EIA and b) of high-risk roads rendered safe
- *Wolf packs and functional wolf territories*: The last population estimation of pack number and territory in the overall Alps was conducted in 2015-2016. After that, only country estimations are present (not at the population level). In the Italian Alps, the last estimate available is from 2017-18, developed by LWA, with 46 packs and 5 pairs. In Austria, no wolf packs are present in the alpine areas. Here, we list the data considering the national territory. In France, data for the alpine area are available.
- *Wolf reproductions recorded annually*: There is no systematically collected data on reproductions recorded at the population level yet. The 50 reproductions annually are an estimation by experts of the field and can be used as baseline situation.
- *Wolf distribution area*: Until now, there is a lack of knowledge on the overall wolf distribution areas at the alpine population level. Baseline situation is the distribution at national level.
- *Wolf mortality rate caused by traffic accidents in areas with mitigation measures*: Baseline situation for this indicator are 7 individuals found dead on the selected road sections with up to now no mitigation measures in use. In the upcoming years, the LWA EU project will install measures on these sectors and compare the wolf mortality rate before and after the installation.
- *Wolf mortality caused by poaching and poisoning*: The experience from LWA showed the complexity and difficulty to estimate and measure the real amount of poaching and poisoning events. In LWA a total of 13 individuals were found in the project area. In France at total of 18 cases are known, in Austria 1 case. This will serve as a preliminary baseline and can be adapted as the project develops.
- *Dog unit interventions against illegal killing and poisoning*: The projects foresees the formations of at least 7 new anti-poisoning dog units and maintain the 5 units from LWA. In LWA a total of 967 interventions were conducted over the lifespan of the project in the Italian project areas and will be extended in the LWA EU project to new areas.
- *Hybrids captured and managed*: In SI, between 2019-2020, 4 hybrids were legally shot in the Alpine region and 3 in the Dinaric region. For the other project areas, data on hybridisation are incomplete or missing. The baseline for LWA EU is therefore the beginning of the project when coordinated monitoring actions are implemented.
- *Injured animals captured and managed*: During the LWA project 4 injured animals were captured between 2014-2016. This number reflects the baseline for the project as the activity will continue in LWA EU.

## Economic indicators

Table 1. List of economic indicators and respective data for the year 2019 and/or before in the project area

Indicator descriptor	Measurement unit	Ex-ante assessment
Livestock protected by WPIU interventions	No. of livestock	BP
WPIU interventions over the project area	No of interventions	BP
Livestock killed after WPIU intervention	No. of livestock killed	BP
Wolf depredations after WPIU interventions	No. of wolf depredations	BP
Fence sets distributed in the project areas	No. of fences	135
Guarding dogs distributed in the project areas	No. of guarding dogs	34
Jobs	No. of FTE	BP
Replications of Life Alpine Young Ranger outside the project area during the project period	No. of replications	BP
Wolf friendly products	No. of products	10
Producer of wolf-friendly products	No. of producer	6
Wolf-friendly eco-tourism packages	No. of packages	1
Wolf-friendly eco-tourism events	No. of events	47
Estimated revenues from wolf friendly products	Income in € <sup>1</sup>	BP
Estimated revenues from wolf friendly eco-tourism packages	Income in €	BP
Market size in wolf-friendly ecotourism events	No. of participants	1127
Total material costs at WPIU interventions (cost for fences and/or guardian dogs distributed by LIFE WolfAlps EU)	Total costs in €	BP
Total project related expenditure during the project period (communication actions)	Total expenditure in €	BP
Capital expenditures to acquire equipment for setting up project actions	Total expenditure in €	BP
Profits from selling wolf-friendly products in proportion to economic losses in wolf attack	Profit/losses per farmer in €	BP
Profits from selling wolf-friendly products in proportion to expenses for prevention measures	Income/capital invested in €	BP
Persons employed in activities related wolf friendly eco-tourism packages	No. of person	BP
Overnight stays in areas with wolf friendly eco-tourism packages	No. of overnight stays	BP

<sup>1</sup> based on estimated spending of 100 €/day

For most indicators there are no data available on an alpine level or the specific project area. Therefore in many cases the baseline is the starting of the project. To encounter the conflict issue of damage prevention, innovative WPIU (Wolf prevention intervention unit) will be trained within LWA EU and locally established to act in hot spot areas of conflict for rapidly implementing preventive tool kits, using ad-hoc optimal preventive strategies based on successful experiences, to indicate the correct use of livestock guarding dogs, provide administrative assistance and active listening with a role of mediators. These hotspots areas are defined in the first period of the project and the respective ex-ante situation with no WPIU in use will be assessed and updated in the following project years. The use of fences and guardian dogs is also related to the activities of WPIU, therefore also the baseline situation should refer to the selected intervention areas to allow comparability of WPIU impact.

For now, and for the sake of completeness, we present the national data (status 2019) for the following indicators related to damage prevention for F, SI and AT. In IT the following data refer to the region of Piemonte, Liguria, Valle d'Aosta, Friuli-Venezia Giulia, Provincia Autonoma di Trento, Veneto and Lombardia. Data for the Piemonte region are from 2018.



As shown in Table 2, the baseline will be the beginning of the project or the data from LWA until more detailed data for the project regions with WPIU activities will be available.

- *Livestock killed after WPIU intervention*  
The following data refer to the situation in 2019 before WPIU were installed and include protected and unprotected livestock.  
IT: 1.668; AT: 86; F:12.282; SI: 1.381
- *Wolf depredations after WPIU interventions*  
The following data refer to the situation in 2019 before WPIU were installed and include protected and unprotected livestock.  
AT: 24; F: 3.822; SI: 374
- *Fence sets distributed in the project areas*  
In Austria single federal states provide funding for electric fences or provide intervention kits in case of need. The implementation of electric fencing must be done by farmers themselves and no data are available on the overall number of fences distributed in 2019.  
Data inconsistency and different collection methodologies limit the detection of the total number of fences distributed in the Italian project area. For more information, please refer to Berce T & Černe R (ed.) (2020). The national data from 2019 for F is 1.500 fences and for SI 8 fences.  
For now, the baseline for this indicator is the total number of 135 fences distributed during the LWA project between 2014-18.
- *Guarding dogs distributed in the project areas*  
In Austria, livestock guarding dogs are used by single farmers on private initiatives. So far, there has been no official program in Austria and no further data on private implementations are available.  
In SI and IT the data refer to the total number of dogs distributed between 2011-2019, with 30 dogs in SI and 457 dogs in IT. In France, 536 dogs were distributed on a national level in 2019.  
For now, the baseline for our assessment is the 30 dogs distributed within LWA between 2015-18.

The data for the following indicators refer to actions initiated, and results obtained in LWA over the entire 5 year-project period. These activities will be continued and extended to the LWA EU project areas:

- *Wolf-friendly products*
- *Producer of wolf-friendly products*
- *Wolf-friendly eco-tourism packages*
- *Wolf-friendly eco-tourism events*
- *Market size in the number of customers participating in wolf-friendly ecotourism events*

The indicator *Jobs* will be calculated with one annual FTE equivalent to 8 hours per day as equivalent to one full working day, and 220 full working days per year.

## **Social indicators**

Table 3. List of social indicators and respective data for the year 2019 and/or before in the project area

Indicator descriptor	Measurement unit	Ex-ante assessment
Additional project supporters	no. of additional supporters	98
Project stewards	No. of stewards	BP
Person involved in the international Alpine wolf population working group	no. of person involved	BP
Networking with other projects for exchange of knowledge and experience	no. of projects contacted for exchange	BP
Potential actions elaborated within the thematic platforms for an improved and more widely accepted management of wolves	no. of potential actions elaborated	BP
WPIU trained and established	no. of WPIU	BP
Anti-poisoning dog units	no. of dog units	5
Operators and professionals trained in courses or workshops to contribute the project actions and output continuation	no. of operators trained	BP
Training courses or workshops for operators and professionals	no. of courses/workshops	BP
Quality/Sufficiency of skills trained to the teachers and nature guides	Level of sufficiency	BP
Improved wildlife hunters' management plans for management of key wolf's prey species	no. of management plans	BP
Entities/decision makers/duty holders involved	no. of entities involved	BP
Hunters involved in the predator prey evaluation in all project areas A4	no. of hunters involved	BP
Hunters involved in the predator prey evaluation in all project areas C3	no. of hunters involved	BP
Unique visits to the website	no. of unique visits	BP
Visit duration on website	Average of minutes spent on website	BP
Project videos	No. of videos	BP
Downloads from project website	no. of downloads	BP
Likes on Facebook page	no. of likes	7.000
Effectiveness of training for ambassador teachers on knowledge level	Ratio results knowledge ex ante / ex post surveys	BP
Effectiveness of eco-tourism packages to increase the ecological knowledge of participants	Ratio results knowledge ex ante / ex post surveys	BP
Ambassadors teachers trained	no. of ambassadors trained	867
Children involved in education actions (nursery and primary school)	no. of school children involved	BP
Children involved in education actions (secondary school)	no. of school children involved	BP
Students in higher education (university) involved in education actions	no. of students involved	BP
Participants at stakeholder platforms	no. of participants	BP
Public events/exhibitions	no. of events	BP
Participants/visitors at public events or exhibitions organized by the project	no. of participants	BP
Views of the project video	no. of views	BP
Kids involved in the Life Alpine Young Ranger Program	no. of kids	BP
Publications concerning wolves and project activities	no. of publications	BP
Articles or intervention in the media about the project	no. of interventions	BP
Project press releases produced and released by the partners	no. of press releases	BP
Newsletter subscriptions	no. of subscription	BP
Positive media reports on wolves	% positive reports	BP
Attitude about/toward wolves among the general public	% positive responses	53
Fear toward wolves among the general public	% of responses indicating fear	33
Knowledge about wolves among the general public	% of responses	65

Attitude about/toward wolves among person working in tourism	% positive responses	57
Fear toward wolves among person working in tourism	% of responses indicating fear	28
Knowledge about wolves among person working in tourism	% of responses	69
Attitude about/toward wolves among hunters	% positive responses	22
Fear toward wolves among hunters	% of responses indicating fear	54
Knowledge about wolves among hunters	% of responses	68
Attitude about/toward wolves among farmers	% positive responses	10
Fear toward wolves among farmers	% of responses indicating fear	66
Knowledge about wolves among farmers	% of responses	62
Attitude about/toward wolves among environmentalists	% positive responses	88
Fear toward wolves among environmentalists	% of responses indicating fear	10
Knowledge about wolves among environmentalists	% of responses	75
Attitude about/toward wolves among education professionals	% positive responses	65
Fear toward wolves among education professionals	% of responses indicating fear	26
Knowledge about wolves among education professionals	% of responses	67
Attitude in ambassador teacher trained	Ratio result attitude ex ante / ex post surveys	BP
Volunteers, students, interns involved in the project actions	no. person	BP
Protocols/guidelines published within the project for national and international use	no. of documents	BP
Scientific publications and presentations	no. of publications	BP
Farmers assisted by the WPIU intervention teams	no. of farmers	BP
Number of discrete project reports drafted	No. of reports	BP

Most social indicators listed lack an ex-ante reference as the activities are implemented for the first time in the project areas. The baseline for the indicator “Additional project supporters” is the 98 support letters in the LWA EU project application file.

The following social indicators refer the baseline data to the previous LWA project, in which single actions were implemented for the first time and find continuation and expansion to new project areas. These indicators are foreseen in the current project:

- *Anti-poisoning dog units*: 5 dog units from the LWA are the baseline for this project
- *Ambassadors teachers trained*: During the entire period of the project, the LWA project trained 867 teachers (2014-2017). Building on the experiences of LWA, LWA EU will continue this activity and extend it to new project areas.

The activities for school children will be extended and differ from LWA, therefore here the baseline is the beginning of the project.

LWA EU will create a new project website and integrate some contents from LWA. Here, the baseline is the beginning of the project.

The LWA-Facebook page will be updated to the new project content and include the information of the previous LWA. Therefore, the baseline for this project is the situation at the end of the LWA project:

- *Likes on Facebook page*: The baseline situation is current 7.000 likes (30/01/2019) on the LWA Facebook page.

The level of support for wolf conservation will be tested with questionnaire analyses twice during the project (Action D1.1 “Ex-ante assessment of attitudes and perceptions about wolves among general public and key stakeholder groups”). After a delay of the D1 action, the indicators could finally be collected in 02/2022. Further details on the collection and analysis that produced those results can be found in the D1 Deliverable “Report on ex-ante assessment of knowledge and attitudes of wolves”.

The impact of training activities for ambassador teacher will also be assessed by measuring the attitudinal change before and after the training starting with 2021.

## Report Update 2022

In the milestone 12/2020 a total of 77 indicators were defined to collect during the project. During the process of the project and especially during the D2 indicator collection period in 2021 adjustments were made to improve the assessment of project activities. In most cases, one initial indicator was split into two or more indicators to deepen the data collection. Five indicators were added. The following adjustments were made:

<b>Original indicator from 12/2020</b>	<b>New indicator introduced in 2021</b>
Additional project supporters, requests to participate in project actions	Additional project supporters
	Project stewards
Hunters involved in the predator prey evaluation in all project areas	Hunters involved in the predator prey evaluation in all project areas A4
	Hunters involved in the predator prey evaluation in all project areas C3
Schools’ children involved in education actions	Children involved in education actions (nursery and primary school)
	Children involved in education actions (secondary school)
	Students in higher education (university) involved in education actions
Attitude about wolves and wolf conservation among key stakeholder groups	Attitude about/toward wolves among person working in tourism
	Fear toward wolves among person working in tourism
	Knowledge about wolves among person working in tourism
	Attitude about/toward wolves among hunters
	Fear toward wolves among hunters
	Knowledge about wolves among hunters
	Attitude about/toward wolves among farmers
	Fear toward wolves among farmers
	Knowledge about wolves among farmers
	Attitude about/toward wolves among environmentalists
	Fear toward wolves among environmentalists
	Knowledge about wolves among environmentalists
	Attitude about/toward wolves among education professionals
Fear toward wolves among education professionals	
Knowledge about wolves among education professionals	
No indicator	Fear toward wolves among the general public
	Knowledge about wolves among the general public
	Project videos
	Farmers assisted by the WPIU intervention teams

	Number of discrete Project Reports drafted
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The following 2 indicators were deleted in 2021 as the project partners were not able to gather these data from the regional and national authorities due to privacy issues or the unwillingness of livestock farmers to share that information:

- Total cost of damages reimbursed to breeders using livestock protection by public bodies
- Economic loss/wolf attack in the project area using WPIU

The following indicators were reformulated without changing their meaning or collection target:

<b>Original indicator from 12/2020</b>	<b>New indicator introduced in 2021</b>
Jobs created within the project	Jobs
Flocks/cattle in the project area protected with electric fences, and other preventive methods by WPIU	Livestock protected by WPIU interventions
Protected livestock (by WPIU) killed in the project areas	Livestock killed after WPIU intervention
Wolf depredations on (by WPIU) protected livestock documented in the project areas	Wolf depredations after WPIU interventions
Total costs for prevention measures installed during the project (fences, guardian dogs)	Total material costs at WPIU interventions (cost for fences and/or guardian dogs distributed by LIFE WolfAlps EU)

At the end of 2021 the D2 assessment considers 98 socio-economic and bio-ecological indicators to evaluate the project impacts.