Carbon Experts Meeting

LIFE 11/ENV/ES/535 Operation CO_2

La Pedrera, 24th October 2016

Agenda

Time	Session
9:30-9:40	Arrival and welcome
9:40-10h	Presentations and program for today
10h–10:15	Brief introduction to the LIFE Operation CO_2
10:15-10:35	Our experience in Site A (La Muntanya d'Alinyà)
10:35-10:50	Coffee-break
10:50-11:10	The views from Oficina Española de Cambio Climático
11:10-13:30	Round table
13:30-14:15	Buffet lunch
14:15-15:30	Visit to la Pedrera (optional)
15:30-17h	Wrap-up and draft of the conclusions document
17h	Departure

Fundació Catalunya La Pedrera

LIFE Operation CO_2 Muntanya d'Alinyà

Carbon Experts Meeting at La Pedrera
24th October 2016



La Muntanya d'Alinyà

Expected Results LIFE Project:

- 10% more carbon sequestered per Ha
- carbon credits being traded at the Voluntary Carbon Offsets Market
- ...

A proof of principle for EU forests

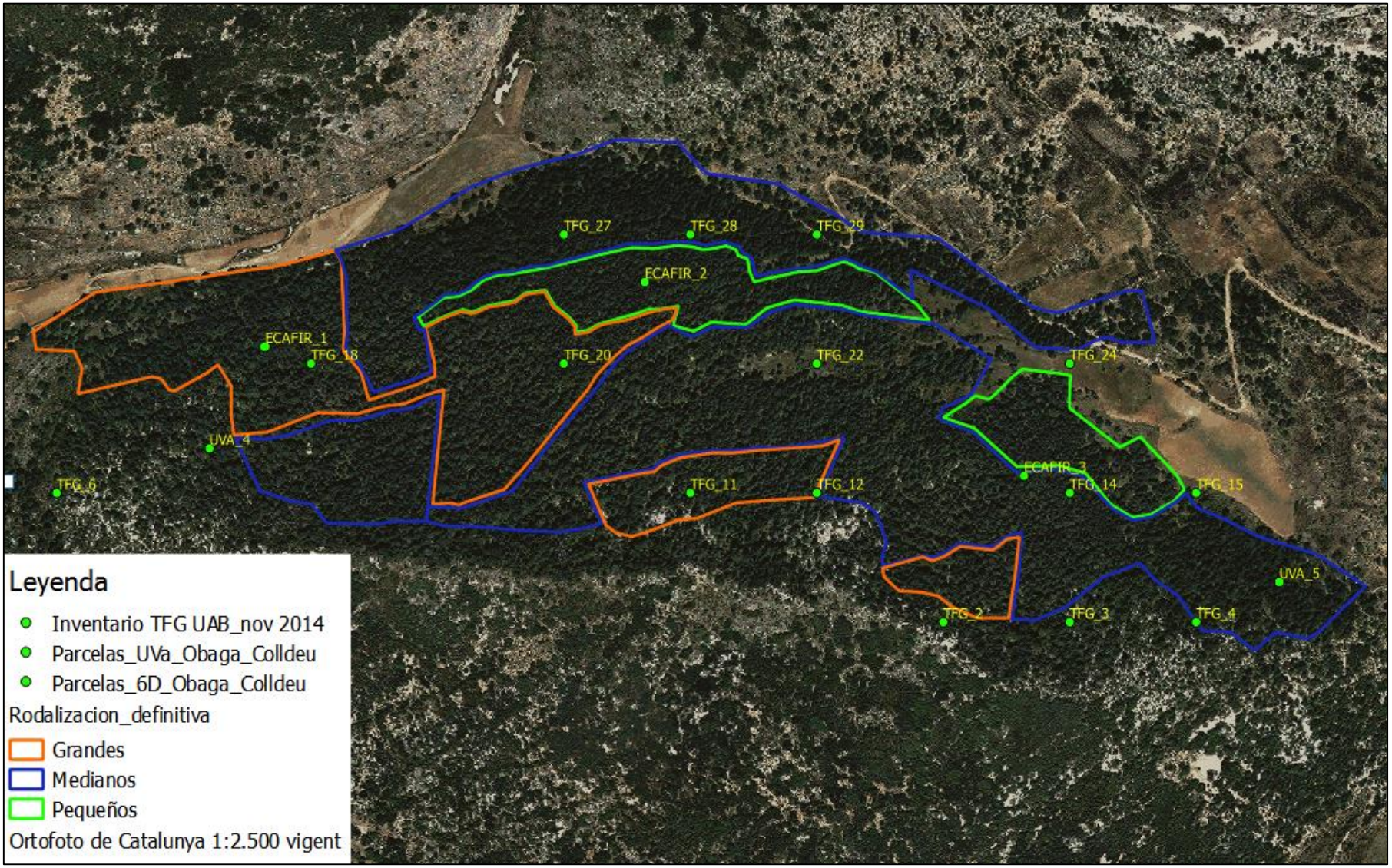
1 of 3 pilot zones

2 VCS-CCB methodologies being tested:

- IFM (Improved Forest Management) – no longer in the PDD
- ARR (Afforestation, Reforestation and Revegetation)

Improved Forest Management (IFM)

18,47ha - *Pinus sylvestris* – Orgest Ps05

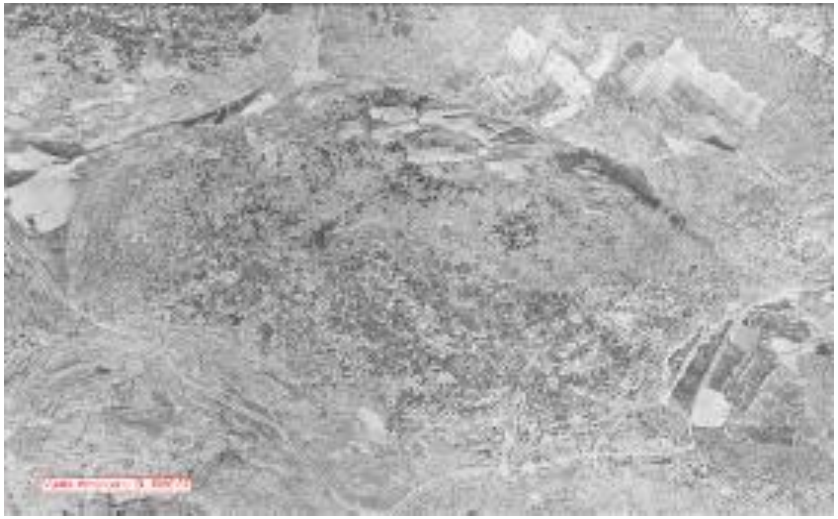


Aerial images of the pilot site

(Obaga de Colldéu)

OPERATION CO_2

American Flight 1956-57, flight 1973-86, flight 1980-86 and present ortophoto





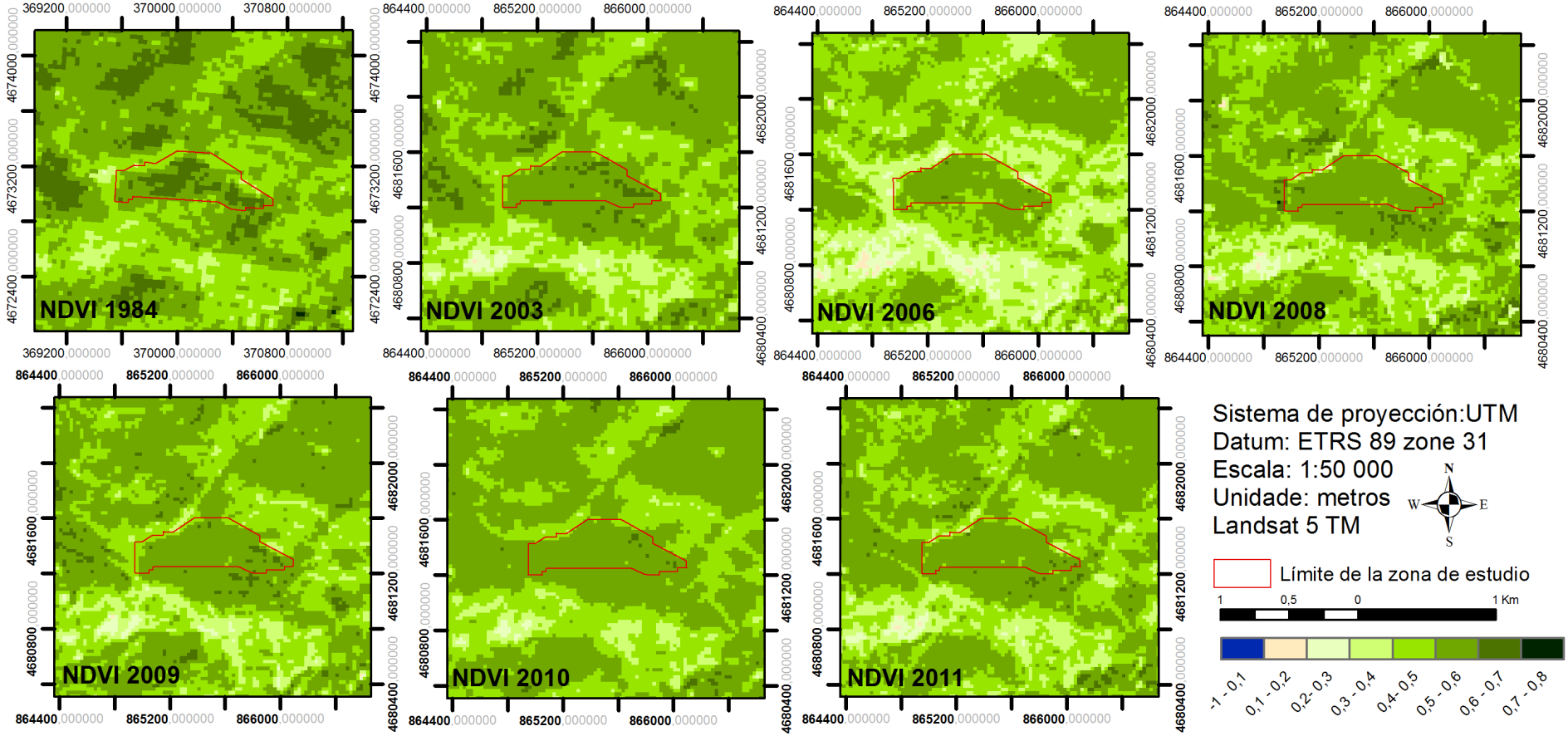




Evolution of the vigor of the forest stand (1984-2011)

OPERATION CO_2

Based on the analysis of LANDSAT V colour images (Univ de Valladolid)



Forest Stand growth model until 2100

LIFE 11 - Operation CO_2

Analysis of the carbon uptake capacity of the Scots pine (*Pinus sylvestris* L.) forests in the La Muntanya d'Alinyà Mountains under several climate and management regimes.

Daniel Nadal-Sala[1,3], Santiago Sabaté[1,2] and Carlos Gracia[1,2]

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(2) CREAF (Centre de Recerca Ecològica i Aplicacions Forestals), 08193 Cerdanyola del Vallès.

(3) Corresponding author: Daniel Nadal-Sala [d_nadal@ub.edu]

Introduction:

Here we try to evaluate the suitability of several Scots pine (*Pinus sylvestris* L.) plots located in La Muntanya d'Alinyà Mountains (Lleida, Catalunya, Spain) as a **sink of carbon during the next 86 years** (until 2100) under different climate change scenarios

Table 2: Climate change scenarios applied to the BTM meteorological series. All climate change scenarios are based on the IPCC (2013).

Climate change scenario	Annual CO_2 increment (ppm·any^{-1})	Yearly anomaly in temperature (°·year^{-1})	Yearly anomaly in precipitation (%·any^{-1})
RCP0.0	0	0	0
RCP2.6	0.21	0.019	-0.2
RCP8.5	5.5	0.059	-0.33

Table P3.4: Greenhouse gas emissions reduction compared to the baseline no management procedure (ΔC_{IFM}, in $tCO_2e \cdot ha^{-1}$) of the plot 3 for each management procedures and climate change scenarios.

Management	RCP 0.0 ΔC_{IFM} ($tCO_2e \cdot ha^{-1}$)	RCP 2.6 ΔC_{IFM} ($tCO_2e \cdot ha^{-1}$)	RCP 8.5 ΔC_{IFM} ($tCO_2e \cdot ha^{-1}$)
Ps02	-130.2	-91.7	-128
Ps05	112.1	165.2	208.1
OMP	46.4	101	138.4

General Results:

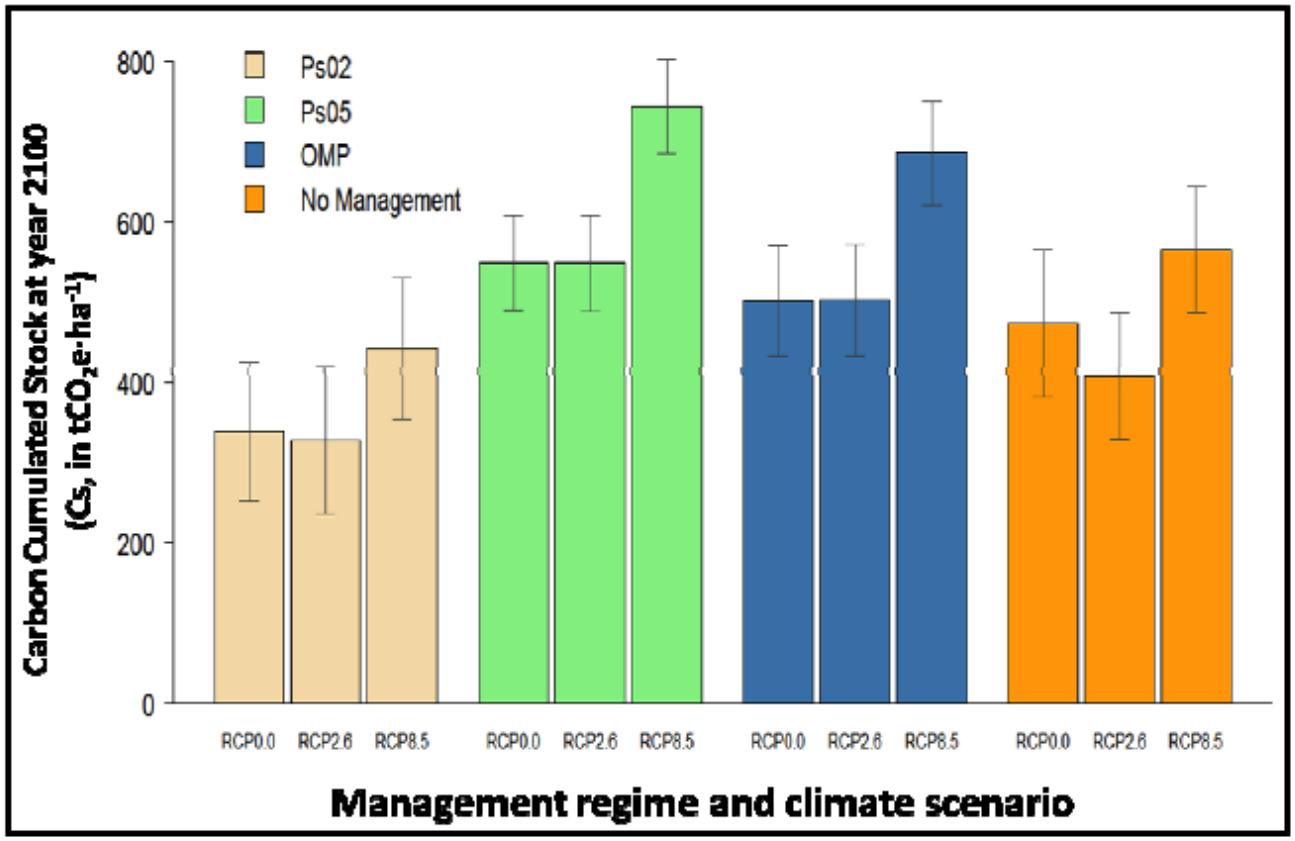


Figure 2: *Total carbon cumulated stock (Cs, in $tCO_2e \cdot ha^{-1}$) at year 2100. Bars represent mean values for all three forest stands analyzed and lines represent the standard deviation. Ps02 is noted in wheat color, Ps05 in green color, OMP in blue color and no management is noted in orange. The three climate scenarios have been considered separately.*

Ps05 is the management regime that maximizes cumulated carbon stocks in all cases, with mean values ranging **548-744 in $tCO_2e \cdot ha^{-1}$** (figure 2). On the other hand, **Ps02 is**

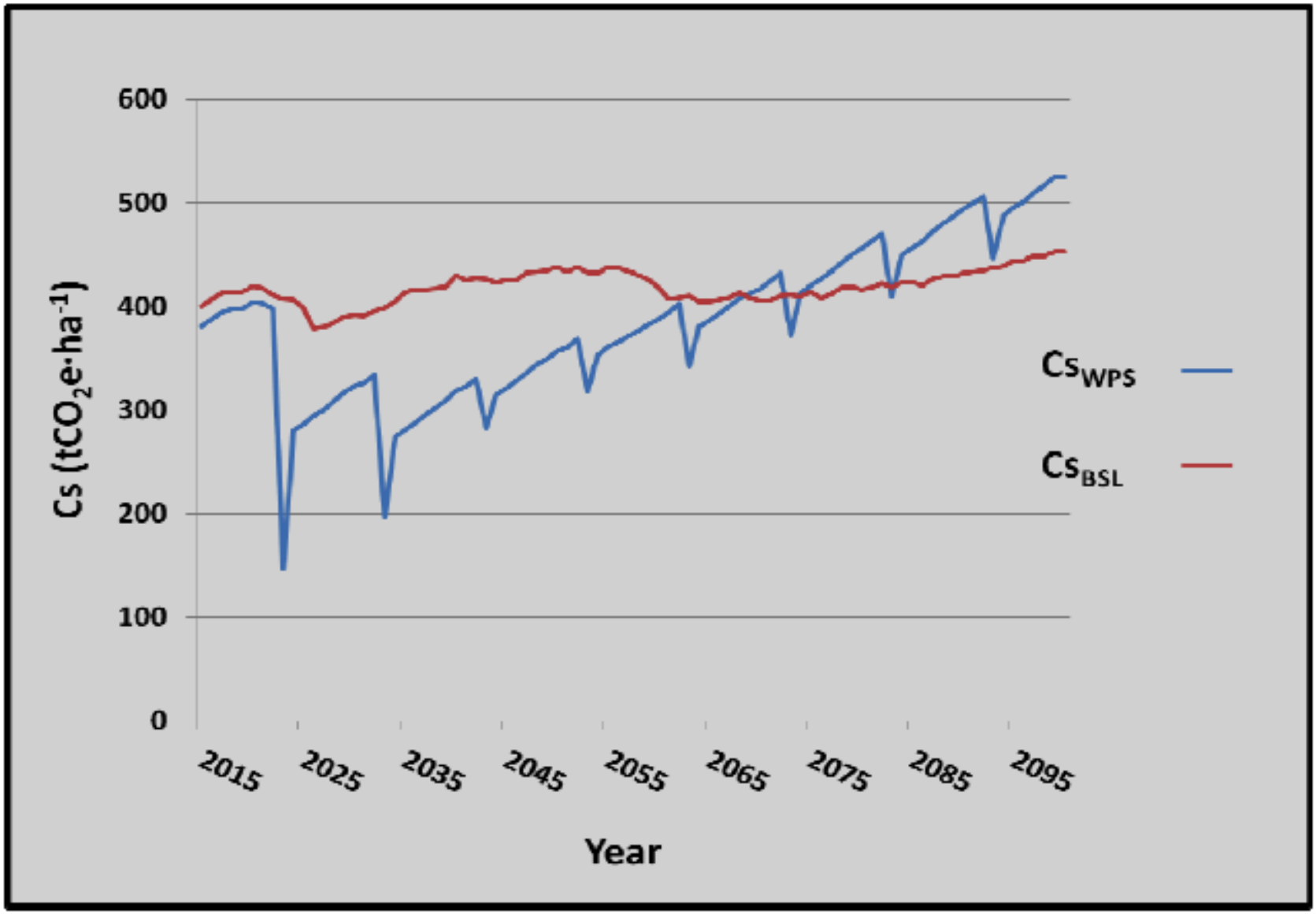
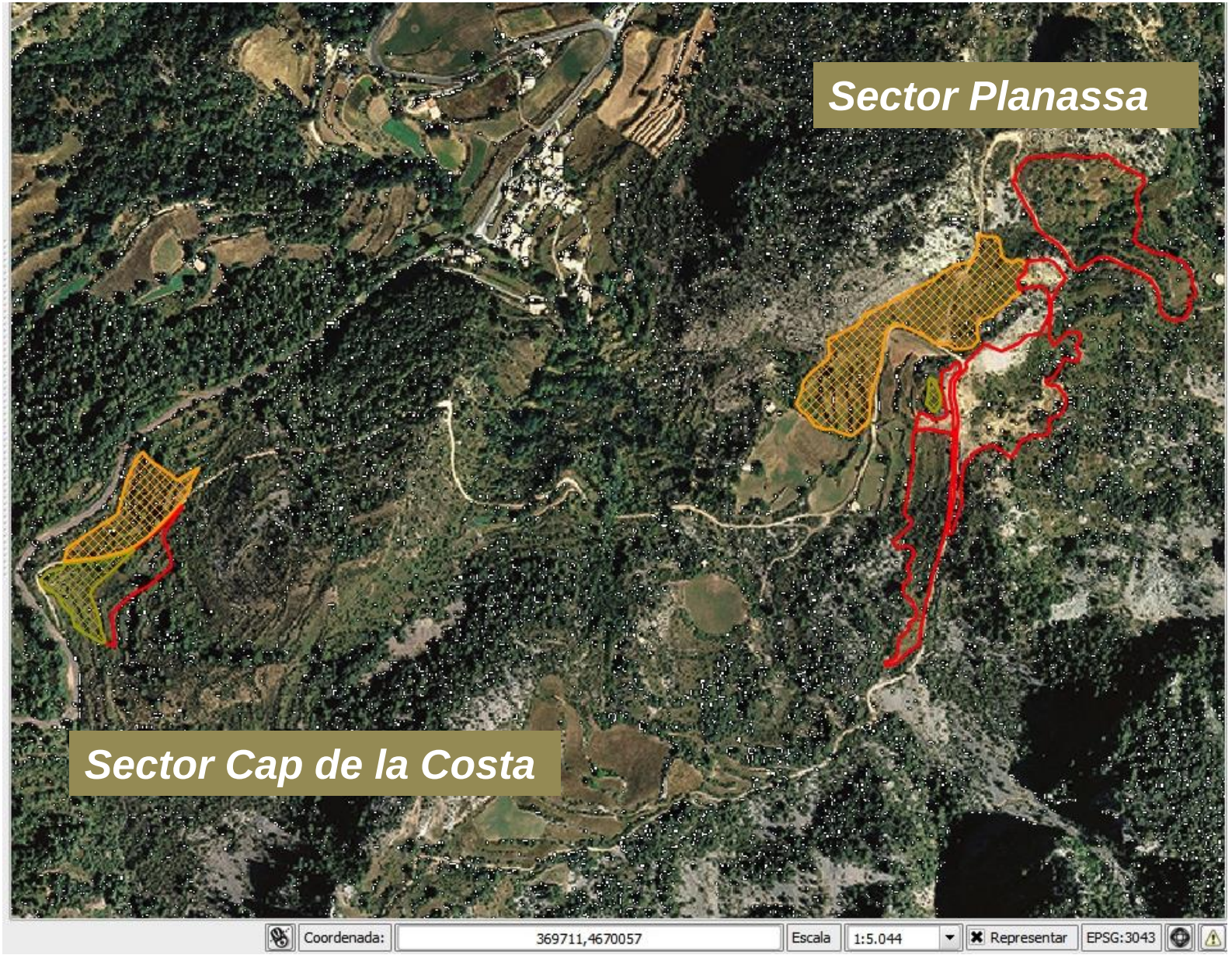


Figure 1: *Example of comparison between the carbon stock in the baseline (Cs_{BSL}), in red, and the carbon stock in a given management procedure (Cs_{WPS}), in blue.*

Afforestation, Reforestation & Revegetation (ARR)



ARR treatments tested - 6,80ha

Restoration (RE) – 1,44ha
Aim: Restoration of erosion sites and other sites that need vegetation. We will use species that can cover the soils as quickly as possible. RE sites should look like forests.

Timber production (TP) – 2,60ha
Aim: to produce timber in the long run but some species that produce nuts and mushrooms will be included for the medium term income. TP sites should look like a natural forest and biodiversity is also very important here.

Aromatics (AR) – 0,40ha
Aim: to produce Aromatic and Medicinal Plants. This for selling and hand-picking by tourists. These can be planted on thin soil layers (10 cm or less soil). AR sites could look like wild area's with flowering plants and some remaining trees.

Fruits (FR) - 2,20ha
Aim: to produce fruit and sell them. These areas will look like a real orchard where we use grafted (low) and normal trees (high). Fruit trees will grow in rows with grass paths in between.

Fences/hedges – 0,15ha
Aim: natural fence against wild animals and goats. Only around fruit areas. The fences will consist of a mix of species, including ones that will produce forest fruits as well. Fences will be able to grow wild, to increase biodiversity levels.

Existing bigger trees (DBH >10 cm) will not be removed because of the project in any of the land-uses.

Species mixed planted according to treatment

Fruit trees - FR	Mix
Malus communis	100%

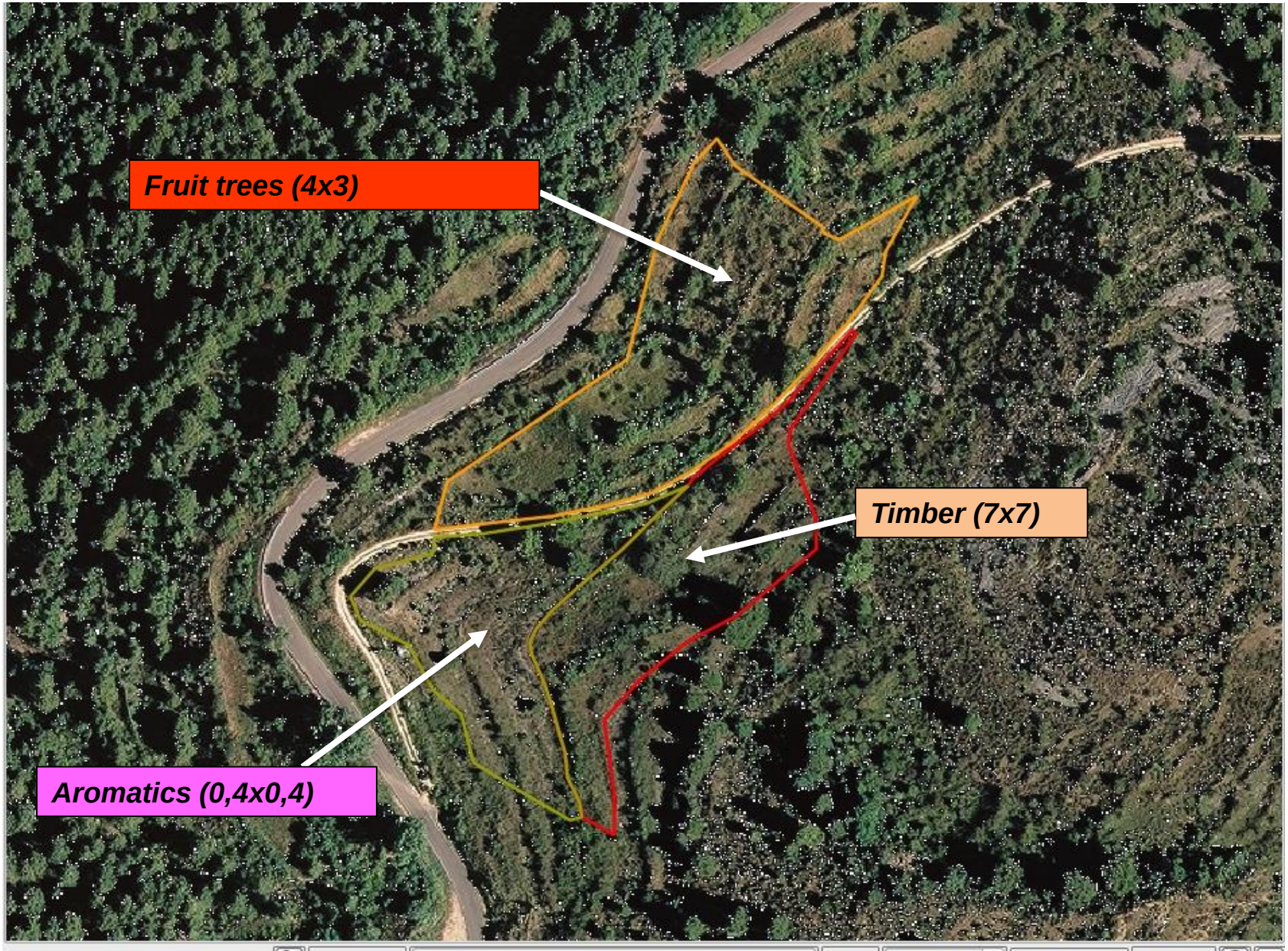
Hedge (0,75x0,75m) - Fence	Mix
Crataegus monogyna	15%
Genista scorpius	15%
Prunus spinosa	35%
Rosa canina	35%

Timber (7x7m) - TP	Mix
Juglans regia	15%
Pinus sylvestris	15%
Pinus nigra	15%
Prunus avium	15%
Sorbus domestica	10%
Q. Ilex + Tuber melanosp	15%
Q. Pubescens + Tuber m.	15%

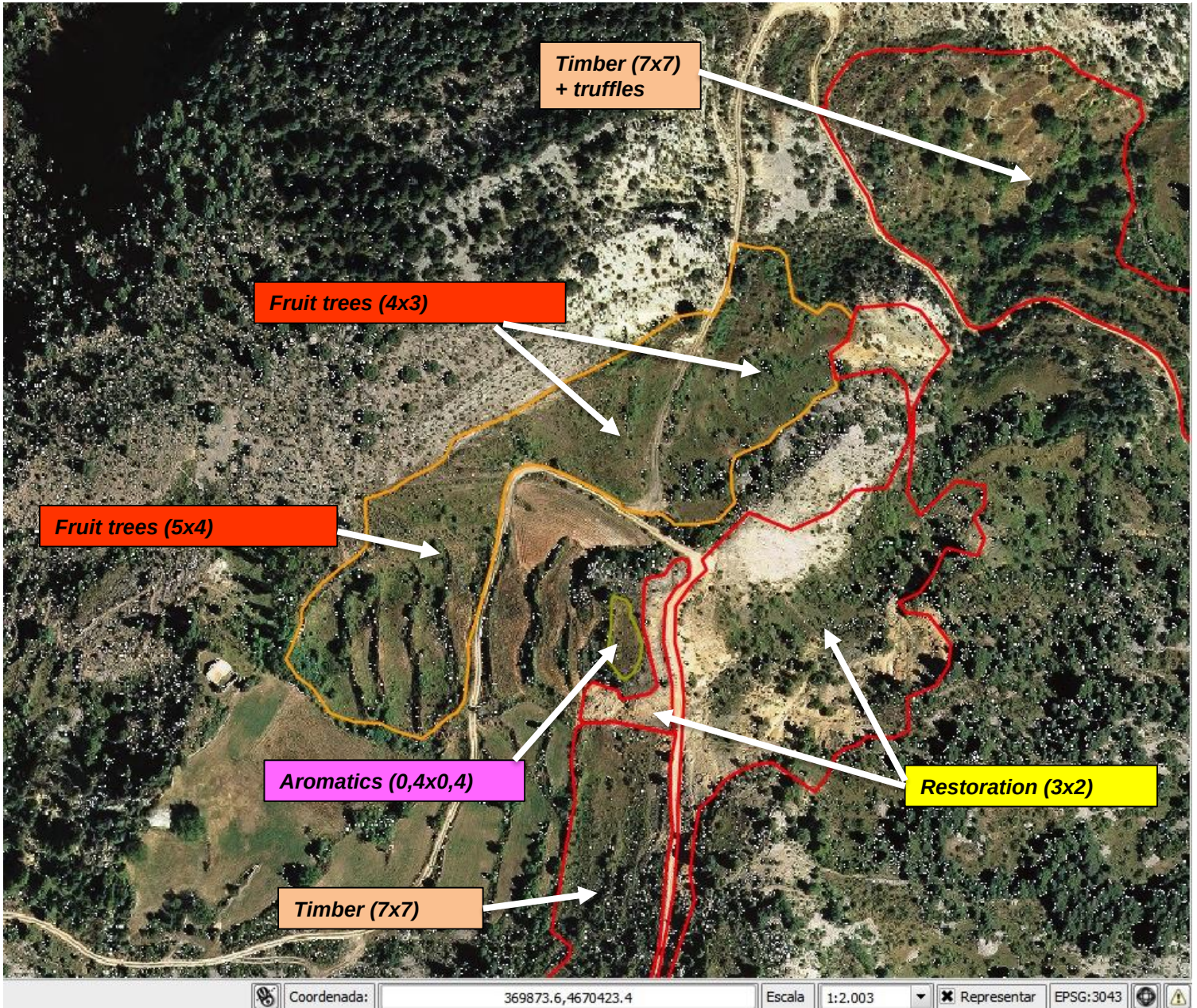
Restoration (3x2m) - RE	Mix
Pinus nigra	15%
Pinus sylvestris	15%
Quercus ilex	15%
Quercus pubescens	15%
Rosa canina	10%
Crataegus monogyna	10%
Genista scorpius	10%
Medicago sativa	10%

Aromatics (0,4x0,4m) - AR	Mix
Lavandula angustifolia	15%
Rosmarinus officinalis	15%
Thymus vulgaris	15%
Satureja montana	15%
Origanum vulgare	15%
Hyssopus vulgaris	15%

Sector Campaposta



Sector La Planassa



VCS Project Development Document

PROJECT "OPERATION CO2 – LA MUNTANYA D'ALINYA"

Project name	Operation CO_2 – La Muntanya d'Alinyà
Project location	Spain, Catalunya, Alinyà
Project proponent	Fundació Catalunya La Pedrera. Contact: Xavier Escuté i Gasulla. Provença 261-265 2on A, 08008 Barcelona. T 932 142 564; M 661 402 678. www.fundaciocatalunya-lapedrera.com
Auditor	TUV Nord Cert Gmbh, Alexandra Nuske. Am TÜV 1; D-30519 Hannover. Phone: +49 511 9986 2631; Fax: +49 511 9986 2555
Project start date, accounting period and lifetime	Start date: April 23rd 2014 Accounting period and lifetime: 80 years.
Type of Validation	Full
History of CCB status	No previous records.
Edition of the CCB Standards	CCB Standards Third Edition
Expected climate, community and biodiversity benefits	• Estimated net GHG emission removals of **1898,72 t CO_2e** after 80 years with an average of **23,7 t CO_2e** per year. • Positive social outcome or impact in the sustainability framework of the Five Capitals Model (Richards and Panfil, 2011) for 19 out of 22 parameters. • Positive impact on birds, diurnal butterflies and soil fauna, benefitting from planted fruit trees and improved structural complexity of vegetation in the applied agroforestry practices.
Gold level criteria	N.A.
Completion date and version of the PDD	August 5th 2016, Vs 2
Schedule for verification	April 2017? (based on availability of Monitoring Report).

VCS VERIFIED CARBON STANDARD CCB Standards The Climate, Community & Biodiversity Alliance
PROJECT DESCRIPTION
VCS Version 3, CCB Standards Second Edition



Document Prepared By ***Forestry Service Group***

Project Title	Operation CO_2 – Muntanya d' Alinyá
Version	Version 2
Date of Issue	20th April 2015
Prepared By	Forestry Service Group
Contact	Ronald Poppens; Marco Bijl P.O. Box 17 3886 ZG Garderen, The Netherlands Ronald@nvforest.com; Marco@nvforest.com; www.forestryservicegroup.com

Expected Carbon Fixation by the pilot ARR

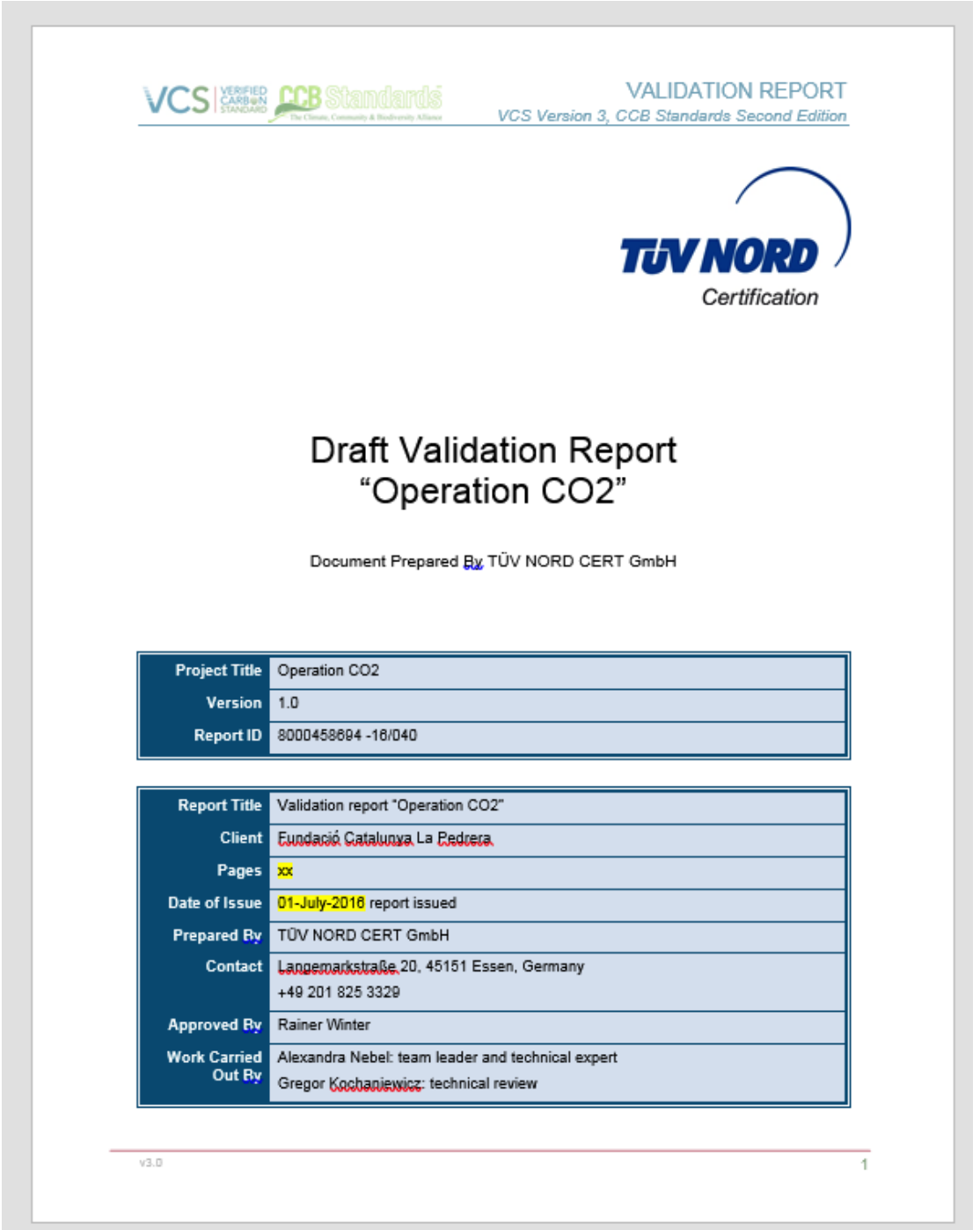
Strata >	Net removal Apple		Net removal Timber		Net removal Restoration	
Carbon sink	t CO_2-e	Permanence	t CO_2-e	Permanence	t CO_2-e	Permanence
$\Delta C_{TREE,PROJ,t}$	119,81	40	170,85	80	189,55	80
$\Delta C_{SHRUB,t}$	453,65	80	518,45	80	318,08	80
Total (t CO2e)	**573,45**		**689,30**		**507,63**	**1.770,39**

Permanence	$\Delta C_{TREE,PROJ,t}$	$\Delta C_{SRHUB,\ PROJ,t}$	$\Delta C_{SOC,\ PROJ,t}$	Clearing	$\Delta C_{P,t}$
Period (yr)	t CO_2-e yr^{-1}	t CO_2-e yr^{-1}	t CO_2-e yr^{-1}	t CO_2-e yr^{-1}	t CO_2-e yr^{-1}
2014	7,50	16,13	6,53	-2,35	27,82
2015-2033	7,50	16,13	6,53	0,00	30,16
2034-2053	7,50	16,13	0,00	0,00	23,63
2054-2093	4,51	16,13	0,00	0,00	20,63

TÜV Nord
Validaton process

Only 1 pending issue to enter verification process:

Double Counting



VCS VERIFIED CARBON STANDARD | CCB Standards The Climate, Community & Biodiversity Alliance

VALIDATION REPORT
VCS Version 3, CCB Standards Second Edition

TÜV NORD Certification

Draft Validation Report "Operation CO2"

Document Prepared By TÜV NORD CERT GmbH

Project Title	Operation CO2
Version	1.0
Report ID	8000458694 -16/040

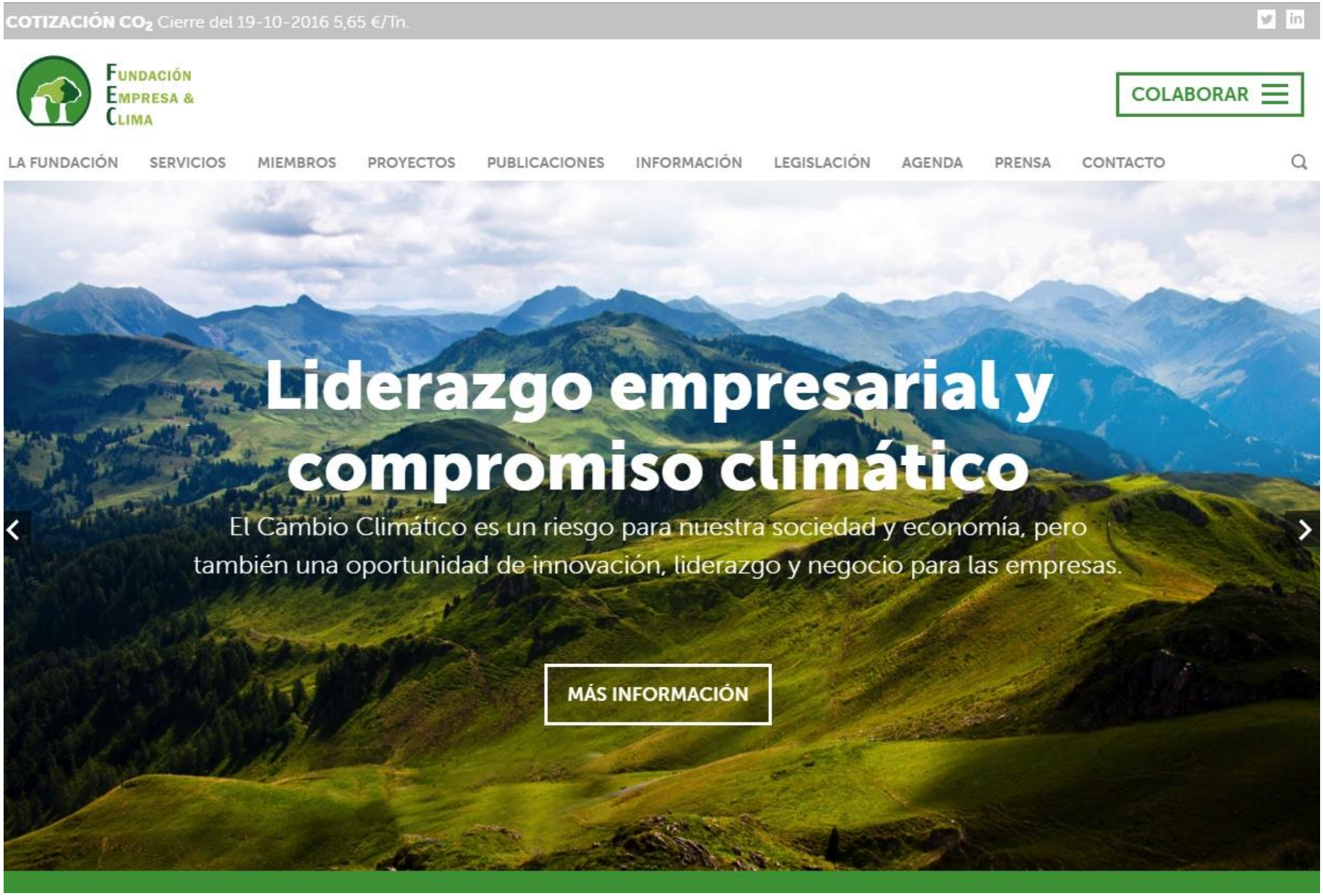
Report Title	Validation report "Operation CO2"
Client	Fundació Catalunya La Pedrera
Pages	xx
Date of Issue	01-July-2016 report issued
Prepared By	TÜV NORD CERT GmbH
Contact	Langemarkstraße 20, 45151 Essen, Germany +49 201 825 3329
Approved By	Rainer Winter
Work Carried Out By	Alexandra Nebel: team leader and technical expert Gregor Kochaniewicz: technical review

v3.0 1

Expressions of Interest (April 2016)



Expressions of Interest (September 2016)



Registro de Huella de Carbono (MAGRAMA)

Registro



Registro



Información general sobre el registro de huella de carbono, compensación y proyectos de absorción CO2

+info

Proyectos de absorción de CO2



Sección de proyectos de absorción de dióxido de carbono

+info

Conócenos en dos minutos

- Folleto del registro
- Registry brochure
- Vídeo resumen

Potential if certification is possible

Region	CO_2 emissions (2013)	Potential ARR areas (ha) - Abandoned farm land -	Potential IFM areas (ha) - Forest area-
Catalunya	43 milion Tn CO_2 [1]		1,6 million ha [4]
Spain	322 milion Tn CO_2 [1]		18 milion ha [5]
EU-28	4.481 milion Tn CO_2 [2]	30 million ha [3] (expected in 2030)	180 milion ha [2]

[1] Data from the Fundación Empresa y Clima 2014 yearly report
[2] Data from the EU Environmental Agency
[3] Data from Rewilding EU / IIEP / EC
[4] Data from Idescat (2001)
[5] Data from Inventario Forestal Nacional 3