



OFFICIAL DATA ON CARRYING CAPACITY OF PASTURES IN THE REGION OF ARAGON, SPAIN

Isabel Casasús

Workshop on Carrying Capacity of Rangelands
AGR 61049
TAIEX and Lebanese Ministry of Agriculture
Beirut, Lebanon, 26-28 September 2016



Background

Legislation

1. General technical conditions for pasture use in areas managed by the regional government (2012)
2. Particular conditions for each pasture

1. General technical conditions for pasture use

- Contracts:
 - length of use (years)
 - duties of the user (annual grazing, fire prevention, improvements)
- Price:
 - per ha, according to carrying capacity
 - improvements can be discounted from original price
- Control:
 - periodic visits by forest guards (biodiversity, soil, landscape quality, forest preservation, vulnerability to hazards...)

2. Particular conditions for a given pasture area

Characteristics

- pasture size (ha)
- price
- no. of heads ← **historical uses???**
- period of use

upper limit

Rights of use

- access

Duties of user

- fencing
- maintenance of infrastructures

Compatibility with other uses

- hunting
- timber extraction

GOBIERNO DE ARAGON
Departamento de Estudios, Gestión y Planificación
Servicio Provincial de Agricultura, Ganadería y Medio Ambiente de Huesca

C.I.T.A. AIDA MONTAÑANA 930
50038 ZARAGOZA
ZARAGOZA

LICENCIA DE DISFRUTE
Nº de Licencia: 8891198

En virtud de las subvenciones que me están conferidas, concedo licencia a C.I.T.A., para que proceda a realizar el aprovechamiento resultante a continuación con estricta sujeción a las Pliegos de Condiciones que se rigen:

DATOS DEL MONTE
Código Monte: 2000109 Denominación: PEQUENA
Parque: AYTO DE LABRANZO
Termino municipal: LABRANZO Monte certificado: No

DATOS DEL APROVECHAMIENTO
Año: 2013 Lote: 01 Período de Adjudicación: 01/01/2013 al 31/12/2015
Identificación aprovechamiento: 2013020200010001 Plazo de Ejecución: 01/01/2013 al 31/12/2013
Forma Adjudicación: Concurso Importe Adjudicación: 4.926,99 €
Usos de aprovechamiento: Pastos

Especie	Tip. de ganado	Nº. cab.	Nº. Reg. RTC	Ud. cab.	Precio unitario	Importe tasación
Lanar		930		Ha	5,29	4926,99

Restricciones de disfrute:
Observaciones:
Condiciones:
1º. El interesado, o persona que lo represente, se compromete a cumplir las siguientes Pliegos de Condiciones:
- Pliego General de Condiciones Técnico-Facultativas (B.O.E. nº 200, 21-08-1975)
- Pliego Particular y Especifico del Aprovechamiento. Las observaciones y datos consignados en esta Licencia tendrán este carácter
2º. Asimismo, queda obligado a presentar esta autorización, siempre que sea requerido para ello, al Agente para Protección de la Naturaleza y personal de este Servicio y autoridades competentes.

Huesca, 8 de Mayo de 2013
EL DIRECTOR DEL SERVICIO PROVINCIAL:
FERNANDO FIDALGO CIBRES
Copia para el adjudicatario.

Licence

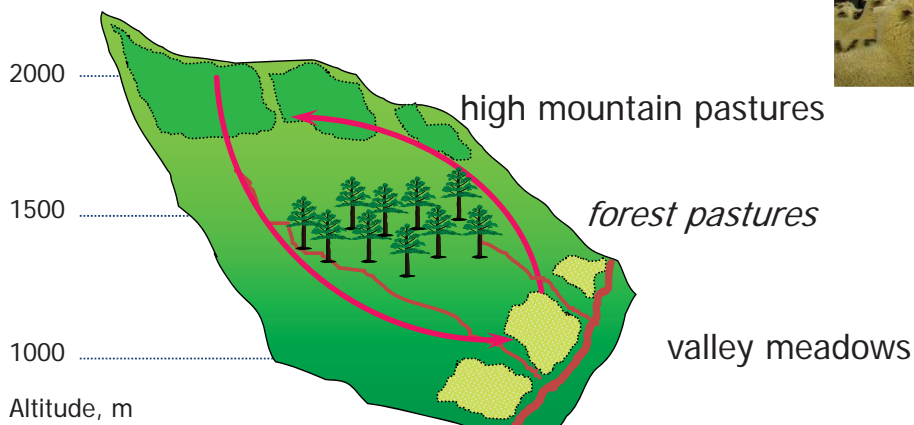
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A practical example

La Garcipollera Research Station

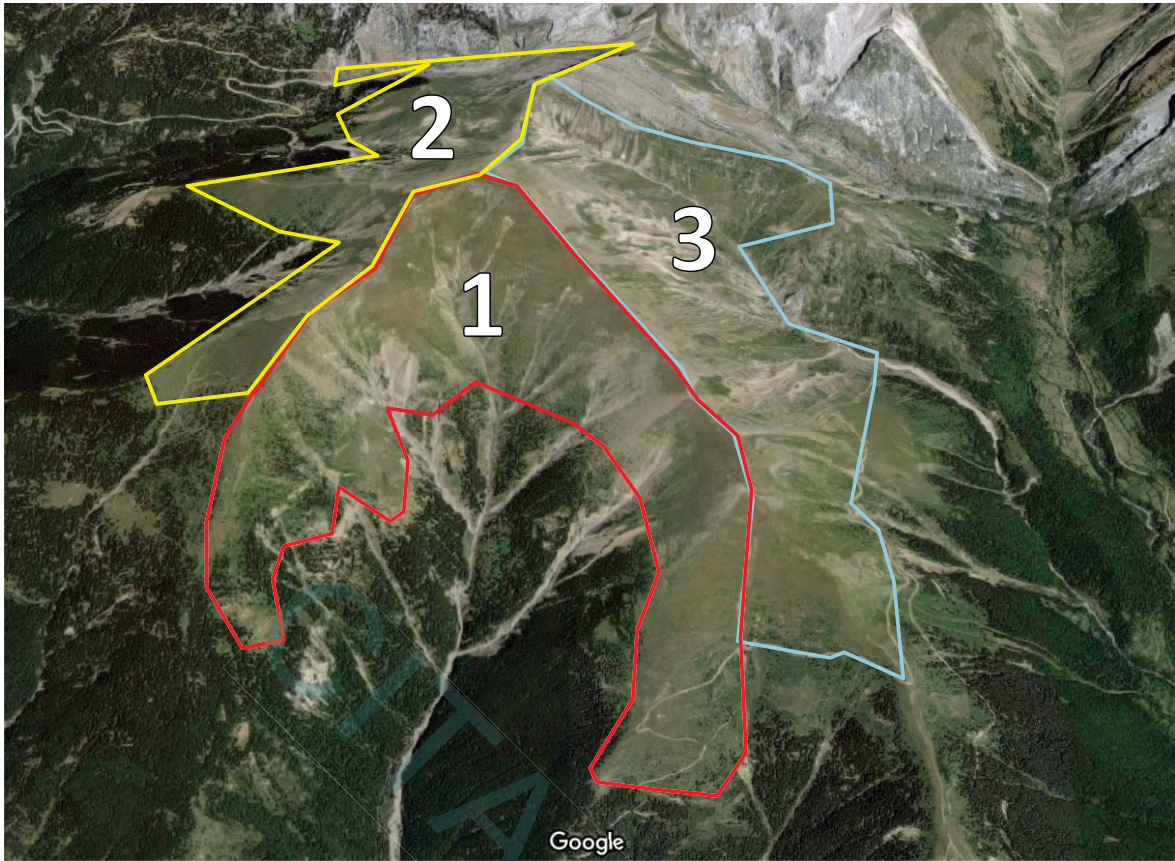
Research station to study mountain livestock production systems (beef cattle and sheep)

Grazing resources



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Our high mountain pastures



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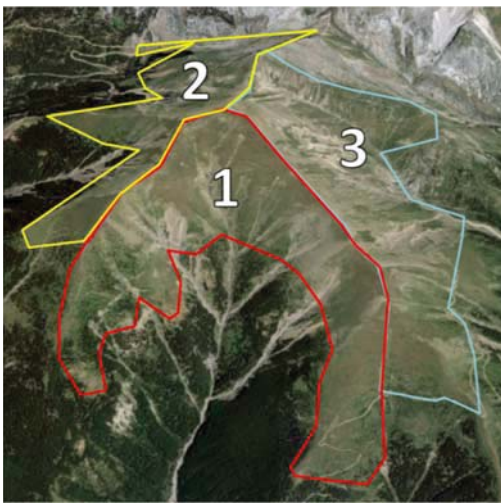


Information in the Grazing Licence

pasture size (ha)
no. of heads
period of use (jan-dec)
price

	Fenero- Iguácel- Vacún	La selva- Espata	Recuasta	Total	
	1	2	3		
	ha	308	150	555	1013
historical use	heads cattle	350	50		400
	heads sheep		1280	920	2200
	heads mares		30		30
	total LU	350	272	138	760
	€	2843	6771	4957	14571
	€/ha	9.23	45.14	8.93	21.10 av. €/ha
	€/LU	8.12	24.89	35.92	22.98 av. €/LU
	LU/ha	1.14	1.81	0.25	1.07 av. LU/ha

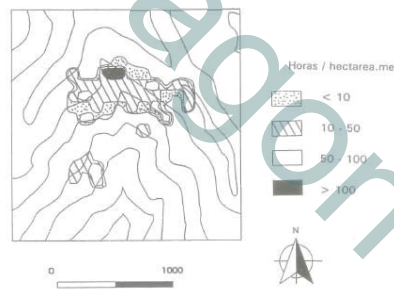
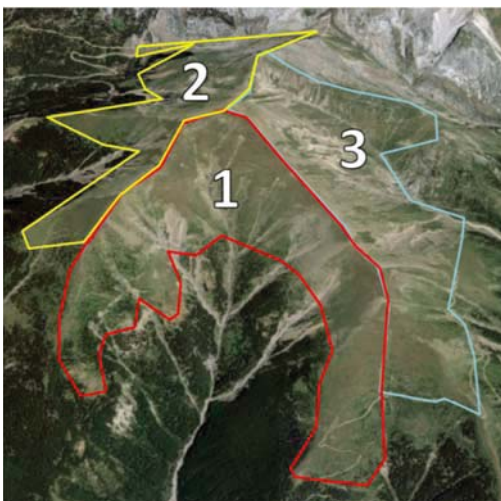
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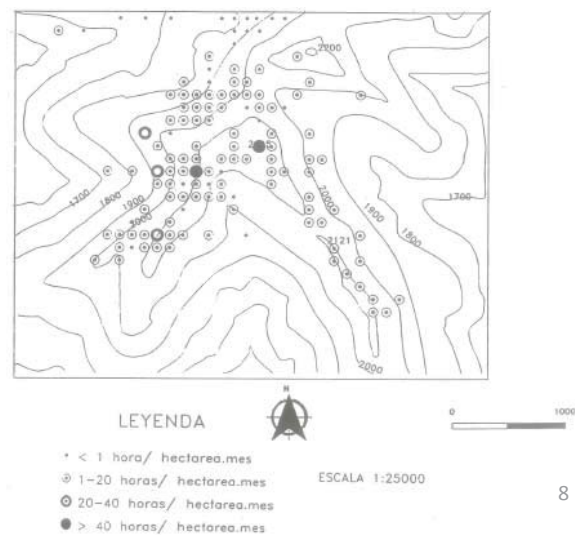
Range no.	1	2	3
ha	308	150	555
heads cattle	350	50	
heads sheep		1280	920
heads mares		30	
total LU	350	272	138
€	2843	6771	4957
€/ha	9.23	45.14	8.93
€/LU	8.12	24.89	35.92
LU/ha	1.14	1.81	0.25

Why the difference?

vegetation cover
slope
other factors?

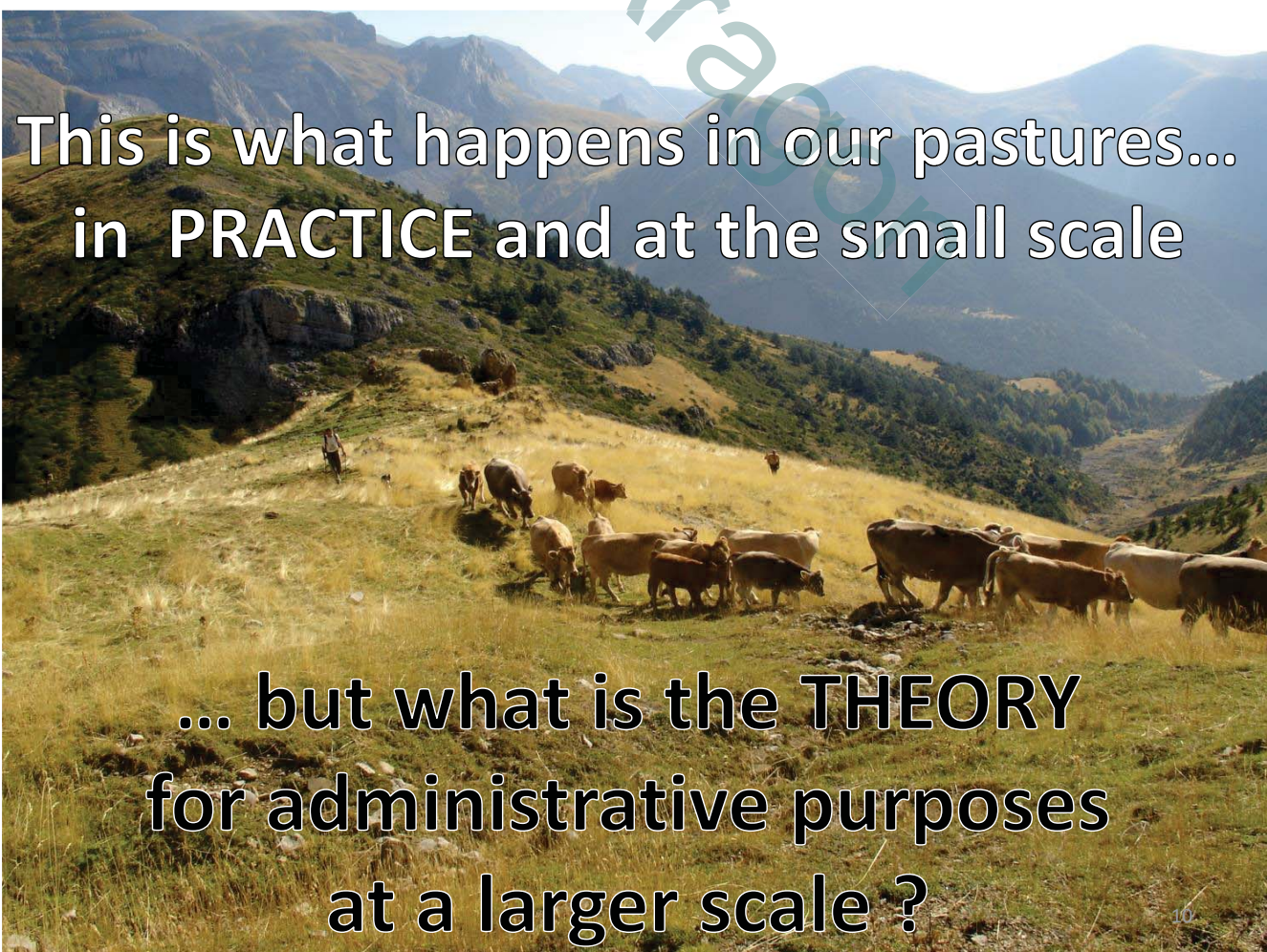


Actual use by cattle (Villalba et al., 1995)
around 100 cows in 100 ha = 1 LU/ha

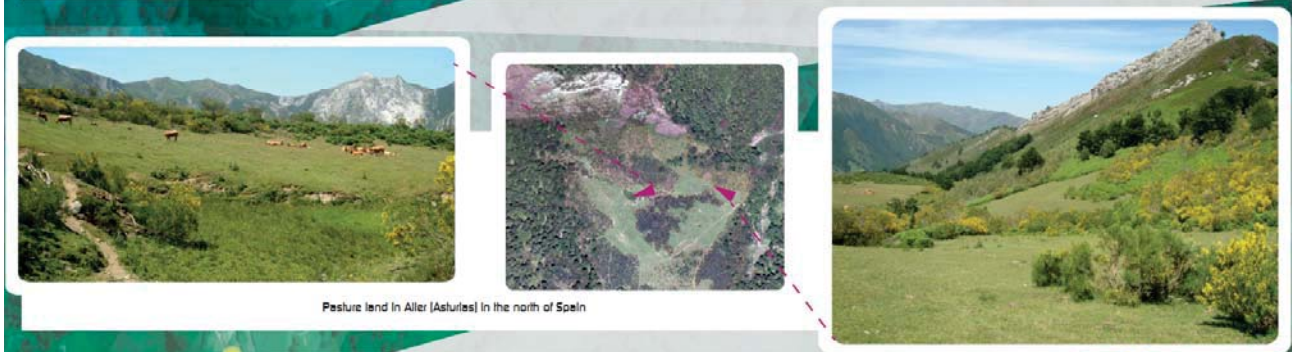


Actual use by sheep (Blanch et al., 1995)
around 750 sheep in 450 ha = 0.25 LU/ha

	TOTAL	ACTUAL USE	
ha	1013	450	→ Villalba, Blanch, 1995
heads cattle	400	190	
heads sheep	2200	280	
heads mares	30	0	→ historical use = upper limit
total LU	760	232	→ Actual census
€	14571	14571	
€/ha	17.76	32.38	
€/LU	18.83	62.81	
LU/ha	1.06	0.52	but 232 LU / 1013 ha = 0.23 LU/ha considering the whole range

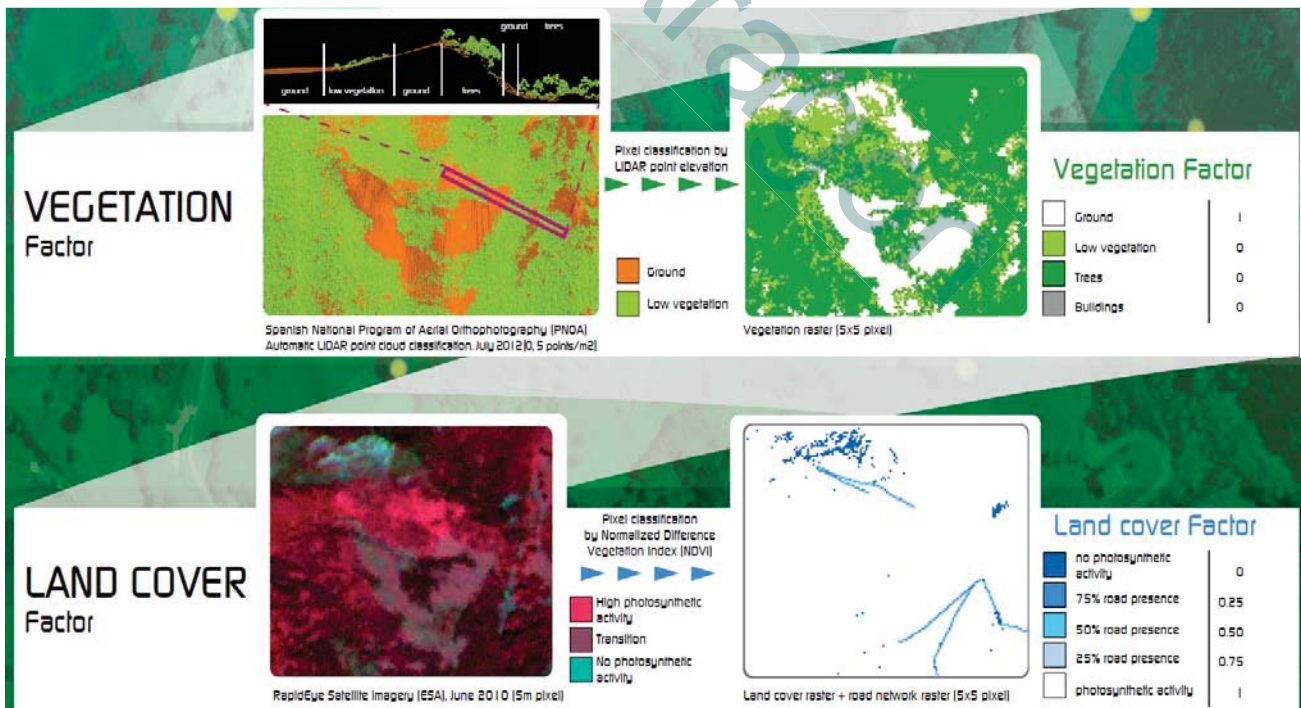


Eligibility Coefficient in Permanent Pastures



Eligibility of pastures for CAP basic payments
 UE agricultural subsidies
 calculated at the farm level
 on a per ha basis
 Coefficient $\cong f(\text{slope} * \text{land cover} * \text{vegetation type})$

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Vegetation type:

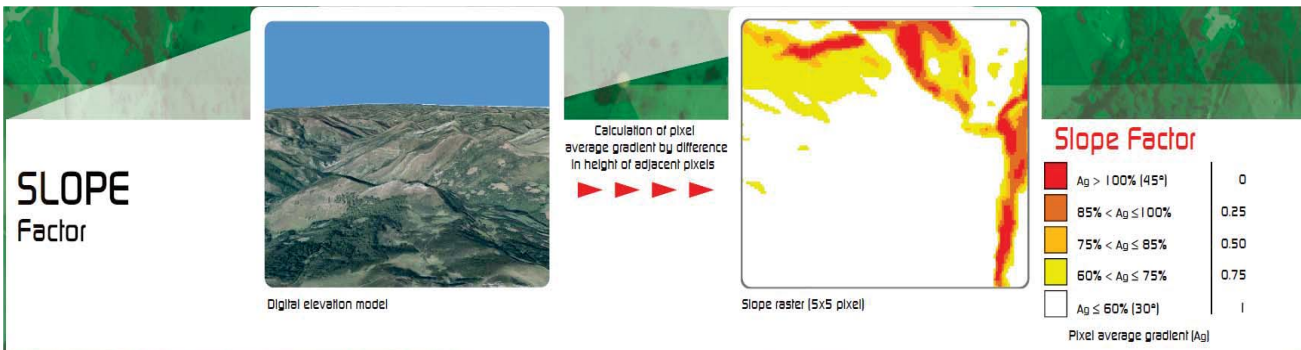
0, 1 (admissible , not admissible)

Land cover:

0 - 1 (NDVI vegetation, not vegetation) (Aragón)

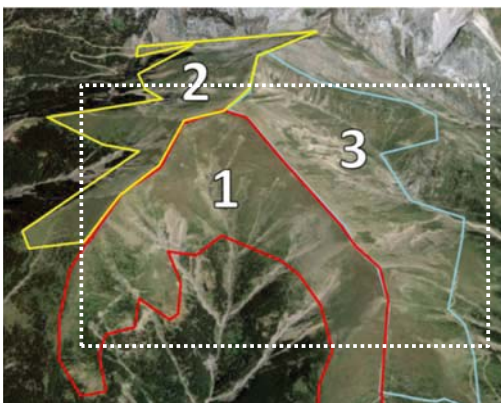
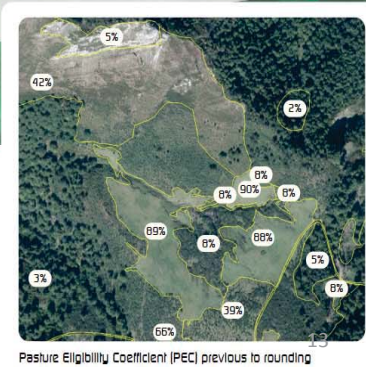
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SLOPE: average slope ≤ 60%	1
60% < average slope ≤ 75%	0.75
75% < average slope ≤ 85%	0.5
85% < average slope ≤ 100%	0.25
average slope >100% (45°)	0

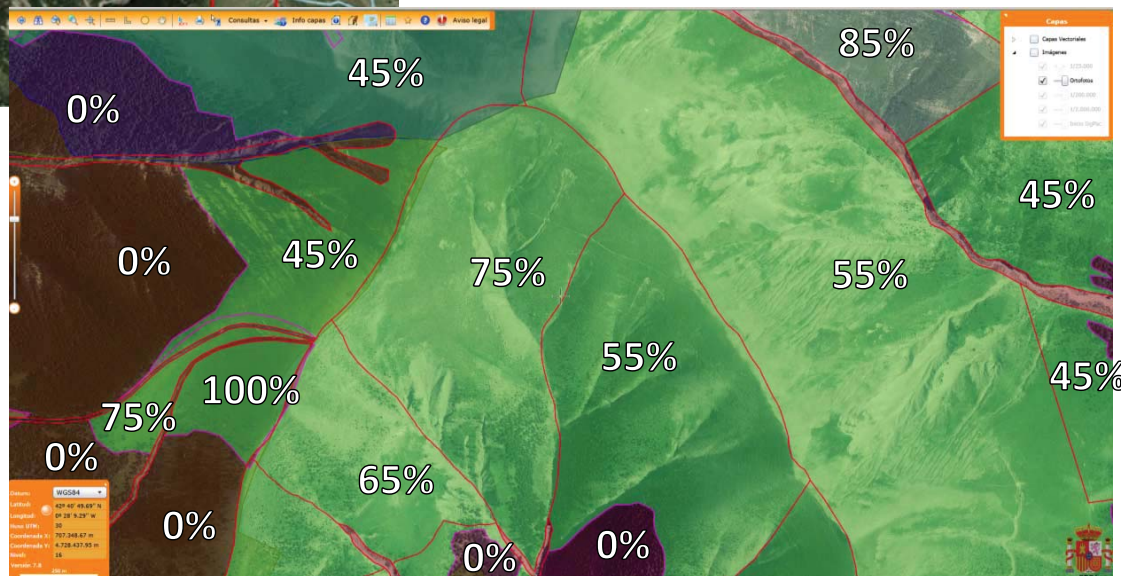


Pasture Eligibility Coefficient (PEC)

$PEC = \text{Vegetation Factor} \times \text{Land cover Factor} \times \text{Slope Factor} \times 100$
 Eligible area = Total area \times PEC



Each pasture range is a sum of polygons with different eligibility index according to SLOPE, LAND COVER & VEGETATION TYPE





How do we concile the low eligibility of the pastures in higher environmental risk with their preservation by livestock use??

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