LIFE GREEN SHEEP : for a low carbon and sustainable sheep farming

1st EU Webinar

3rd of October 2022

LIFE19 CCM/FR/001245 - LIFE GREEN SHEEP

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Life

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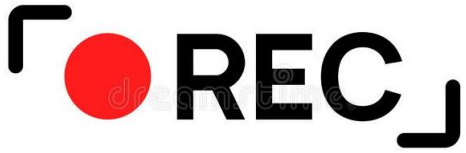
- 

: all the presentations of the webinar will be soon available on the Green Sheep website, as well as the recording of the webinar.
  - An email will be sent later to inform you of the release.
-  : a short survey will be launched at the end of the webinar. Please, spend 2 minutes to give your feedback!

Programme of this webinar

- Implementing carbon farming in Europe
- Overall presentation of the project LIFE Green Sheep
- Simplified LCA in sheep farming : comparison of carbon footprint estimates from different tools
- Training of 143 "carbon" advisors
- Involvement of 1,637 sheep farms at the European scale
- How to disseminate the results of the project and inform farmers and advisers widely ?
- Carbon farming and result based solutions, an innovative scheme for boosting carbon initiatives and developing sustainable agriculture
- Conclusion

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Implementing carbon farming in Europe

Sébastien Bouvatier – French Ministry of Agriculture

sebastien.bouvatier@agriculture.gouv.fr

MINISTÈRE
DE L'AGRICULTURE
ET DE LA SOUVERAINETÉ
ALIMENTAIRE
Liberté
Égalité
Fraternité

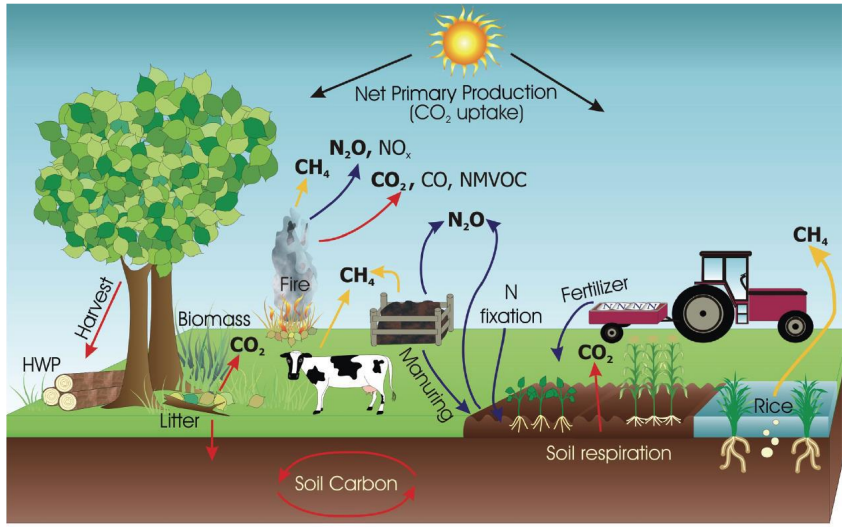
The genesis of carbon farming: a tool within a global strategy to combat climate change

- Paris Agreement (2015) : limit global warming to +1.5°C, achieve climate neutrality by 2050
- European Climate Law (2021) : GHG emissions and removals are balanced within the EU at the latest by 2050 with the aim to achieve negative emissions thereafter
- The "Fit for 55" legislative package (2021) : raises the EU's level of ambition with the objective of reducing, by 2030, net emissions by at least 55%
- Farm to fork strategy → Initiative on "Carbon farming"
- Circular economy action plan → Initiative on "Certification of carbon removals"

Carbon farming : An approach based on several years of work

Initiative on “Carbon farming”

Initiative on “Certification of carbon removals”



Proposition : deployment of <u>natural and technological</u> carbon removal solutions

Publication of a report following a 2-year study on the deployment of carbon farming in Europe (COWI, Ecologic Institute and IEEP, 2021)

April 2021

Publication of a roadmap on « Restoring sustainable carbon cycles»

September 2021

Publication of a communication on « Sustainable carbon cycles »

December 2021

Publication of the proposal for a regulation on the European carbon certification framework

November 2022

Carbon farming : a new green business model

Carbon farming…

- ✓ …a "green business model" that rewards land managers for taking up improved land management practices

- ✓ The financial incentives can come from public or private sources and reward land managers either for their management practices increasing the storage of atmospheric carbon or the actual amount of carbon sequestered.

What types of practices are included in carbon farming ?

Afforestation & reforestation

Use of catch crops, cover crops, conservation tillage etc…

Agroforestry

Conversion of cropland to permanent grassland

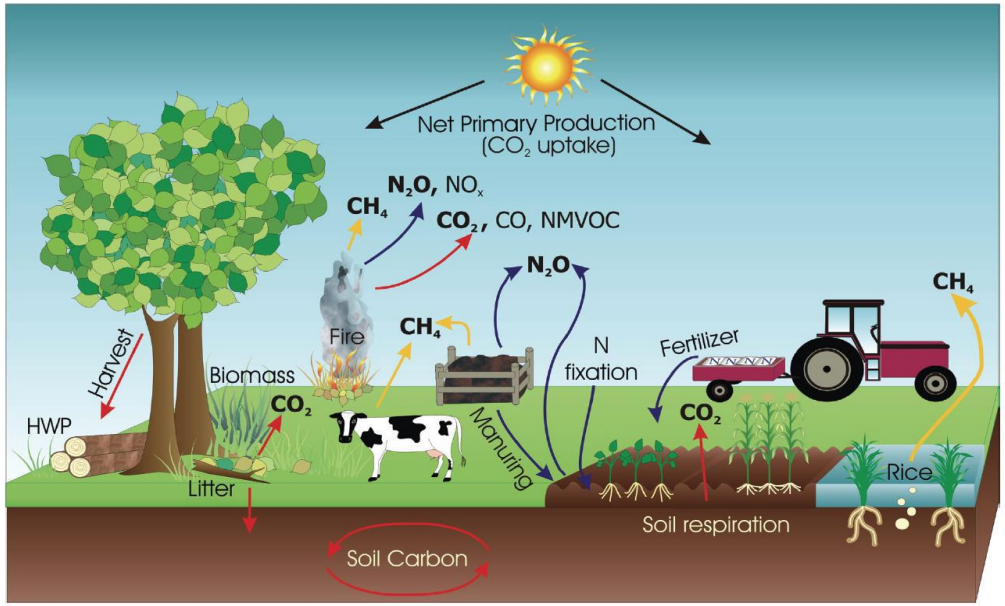
And others…

Restauration of peatlands and wetlands

Carbon farming : an opportunity to support low carbon practices in agriculture ?

- France defends an integrated vision of carbon farming which refers to the management of carbon pools, flows and GHG fluxes at farm level.

- This vision of carbon farming **including both GHG emission reduction (covering CH4, N2O and CO2) and carbon sequestration** is essential for the land sector and agriculture in reaching carbon neutrality in the EU by 2050.

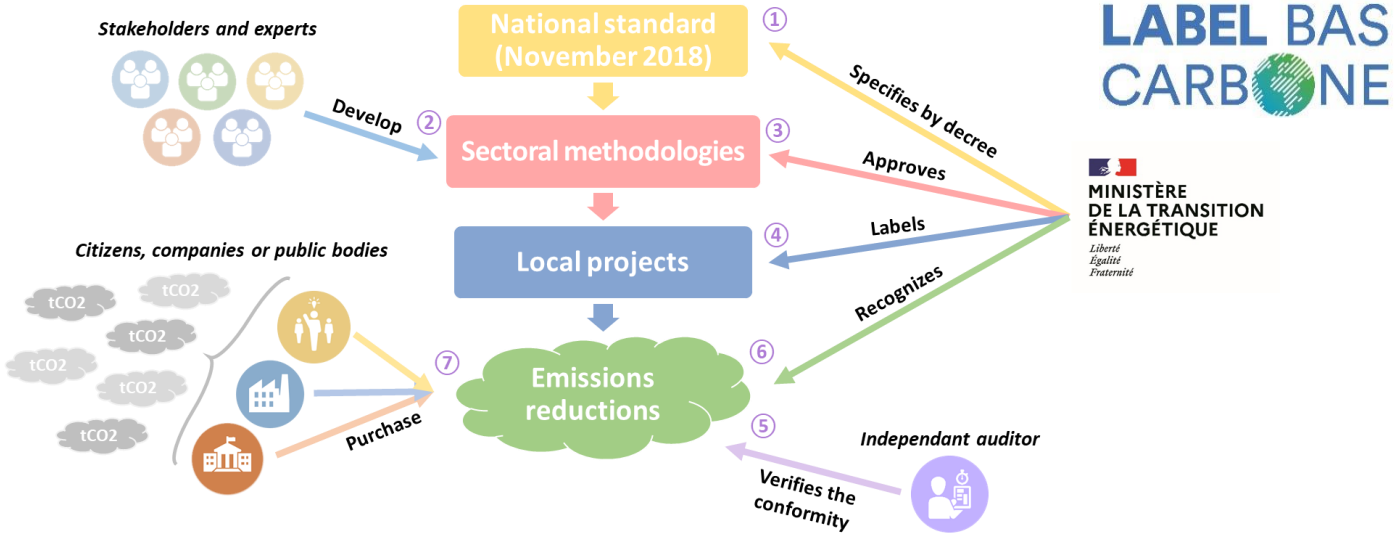


- One of the topics discussed at the European Council under the French Presidency *(carbon agriculture was a priority of the Presidency)*

⇒ **Adoption of Council's conclusion on carbon farming (April 2022)**

https://www.consilium.europa.eu/en/press/press-releases/2022/04/07/council-adopts-conclusions-on-carbon-farming/

The French “low carbon label” and its implementation in agriculture



- **Methodologies available in agriculture :**
- Orchards plantation
- Sustainable management of hedges
- CarbonAgri (livestock-crop farming)
- SOBAC (input management)
- ECOMETHANE (cattle feeding)
- Field crops

Under development : pig farming, agroforestry, winegrowing…

❖ **The scheme is open to all types of investors (public or private, national or foreign) but projects must be located in France (mainland or oversea)**

- Numerous projects in agriculture under development : near 800 farms involved (livestock-crop farming), around **1 million tonnes of carbon credits soon to be labelled** ;

- Financing : a growing number of funders in private and public sectors
  - ✓ Increasingly strong legal obligations to offset emissions:
    - for **domestic airline flights** from 2023
    - for **coal-fired power plants** from 2023

→ A short-term need for approximately **4 to 5 million tonnes of carbon credits**

Carbon farming : what are the next steps ?

- **Adoption of an opinion on the Communication by the European Parliament (October 2022)**

Two opinions will be proposed (Environment Committee leading, Agriculture Committee consulted).

- **Constitution of a group of experts by the Commission**

The group's work should start before the end of the year

➔ Objective of the group : to support the Commission in the implementation of the certification framework, in particular on the operational declination (methods or others)

- **Publication by the Commission of a legislative proposal (November 2022)**

- **Discussion of the text in the Council and Parliament (2023)**

Overall presentation of the project

Sindy Throude – Institut de l'Elevage (France)

sindy.throude@idele.fr

Key figures of the project

LIFE GREEN SHEEP IS:

5 years
European project, from October 2020 to September 2025

€ 4,6 M
budget

1 355
demonstrative farms involved

40 partners from
5 European countries

Reduce by **12 %** GHG emissions while making sure farms are sustainable

282
innovative farms involved in the implementation of action levers





Objectives of the project

Reduce by 12% the carbon footprint of milk and meat produced in sheep farms

- Launch a national and European dynamic progress initiative to reduce greenhouse gas emissions while ensuring sustainability of sheep farms
- Create an national and European observatory of environmental and sustainable performances of sheep production systems
- Train current and future generations
- Promote innovative practices associated with GHG emissions mitigation in order to ensure the techno-economic, environmental and social sustainability of sheep farms

LIFE Green Sheep Partnership

IRELAND

teagasc
Agriculture and Food Development Authority

FRANCE

Institut de l'Elevage idele
interbev Interprofession Bétail & Viande
FBL France Brebis Laitière
La Coopération Agricole Filière Ovine
Agricultures & Territoires Chambres d'Agriculture
France Conseil Élevage

SPAIN

NEIKER
Member of Basque Research & Technology Alliance
LURGINTZA
pastores grupo cooperativo Oviaragón
Instituto Tecnológico Agrario

ROMANIA

IBNA Institutul de Biologie și Nutriție Animală

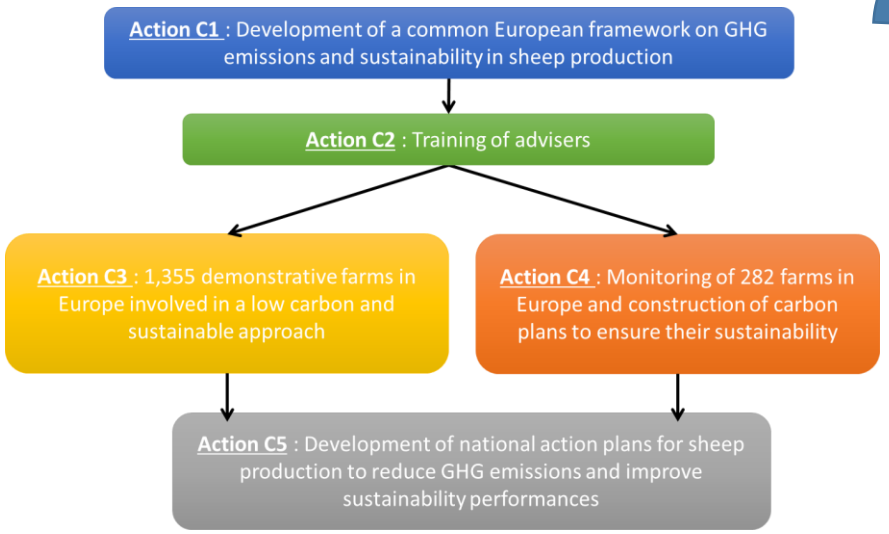
ITALY

Agris
uniss Università degli Studi di Sassari
Laore Agentzia regionale pro s'isvilupu in agricultura / Agenzia regionale per lo sviluppo in agricoltura
Regione Autònoma de Sardigna / Regione Autonoma della Sardegna

Actions foreseen in the project

Actions F : Project management and monitoring of the project progress

Actions C : Implementation actions



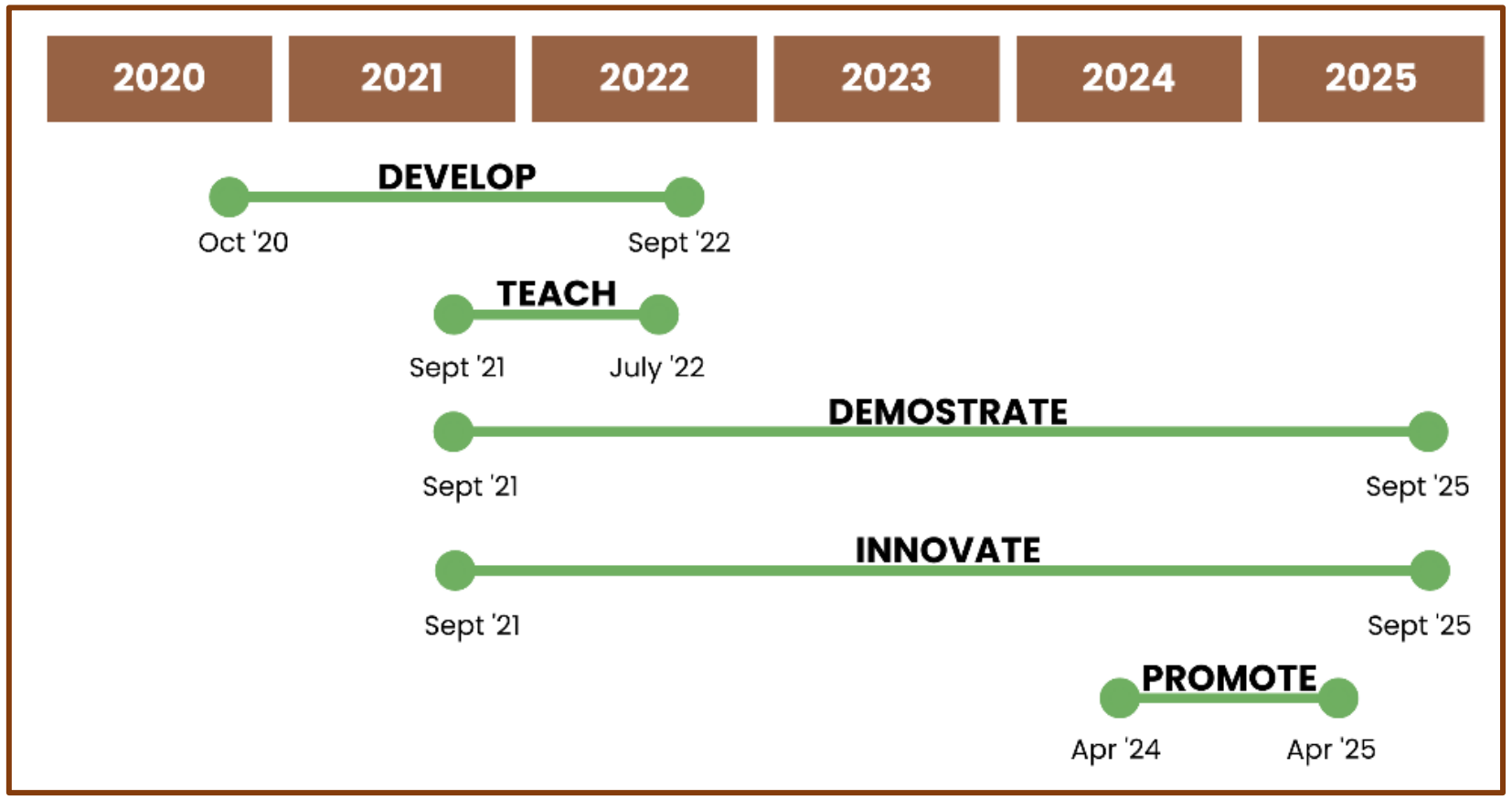
Action D : Monitoring of the impact of the project actions

- **D1 : Quantifying the GHG emissions mitigation and carbon sequestration gains**
- **D2 : Evaluation of the other environmental gains allowed by the project**
- **D3 : Analysis of the socio-economic impacts of the project**

Actions E : Communication and dissemination of results

- **E1 : Communication Kit**
- **E2 : LIFE Green Sheep Communication**
- **E3 : LIFE Green Sheep project information and awareness**
- **E4 : LIFE Green Sheep results dissemination**
- **E5 : European projects networking**

Objectives of each implementation action



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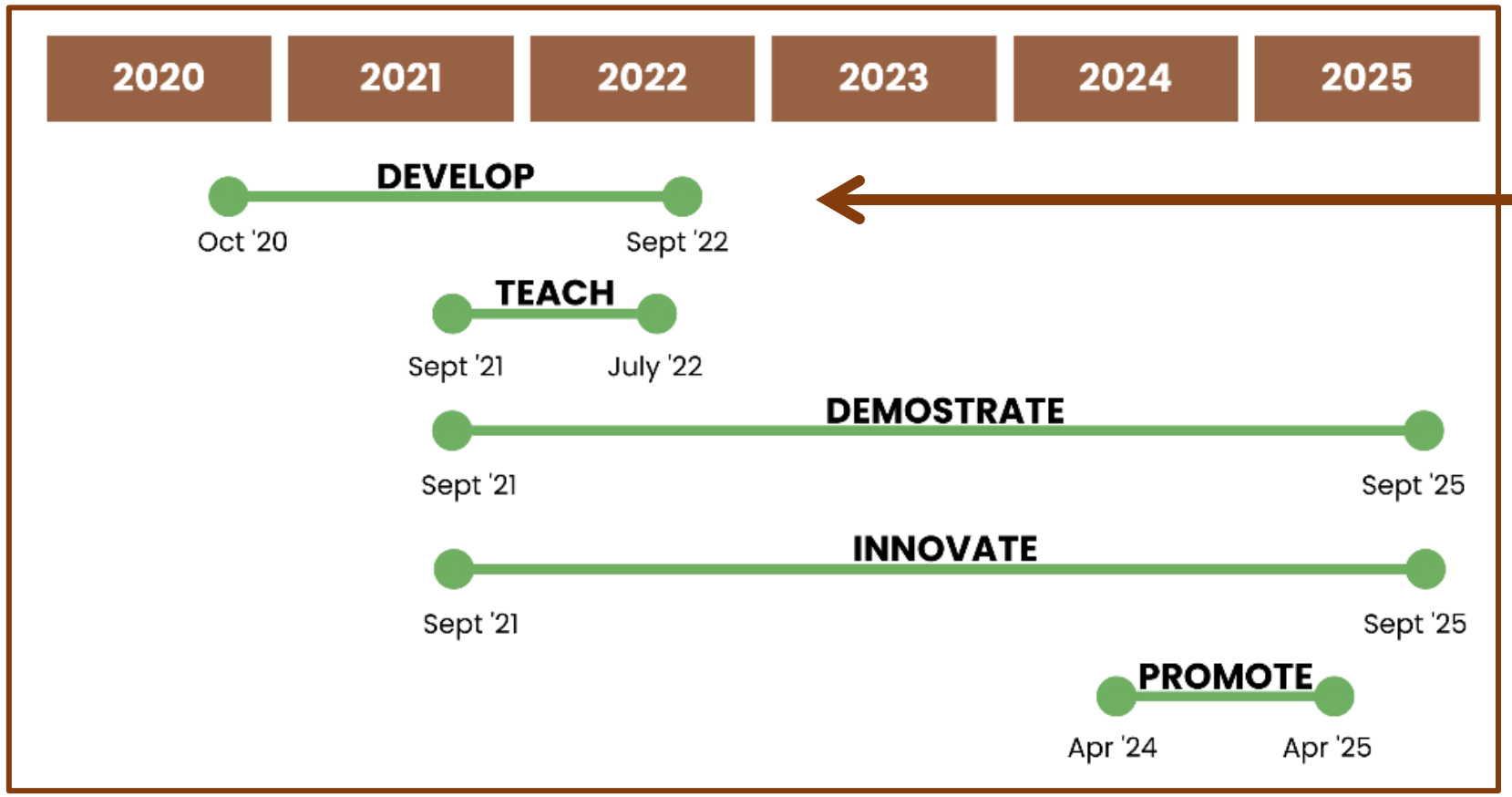
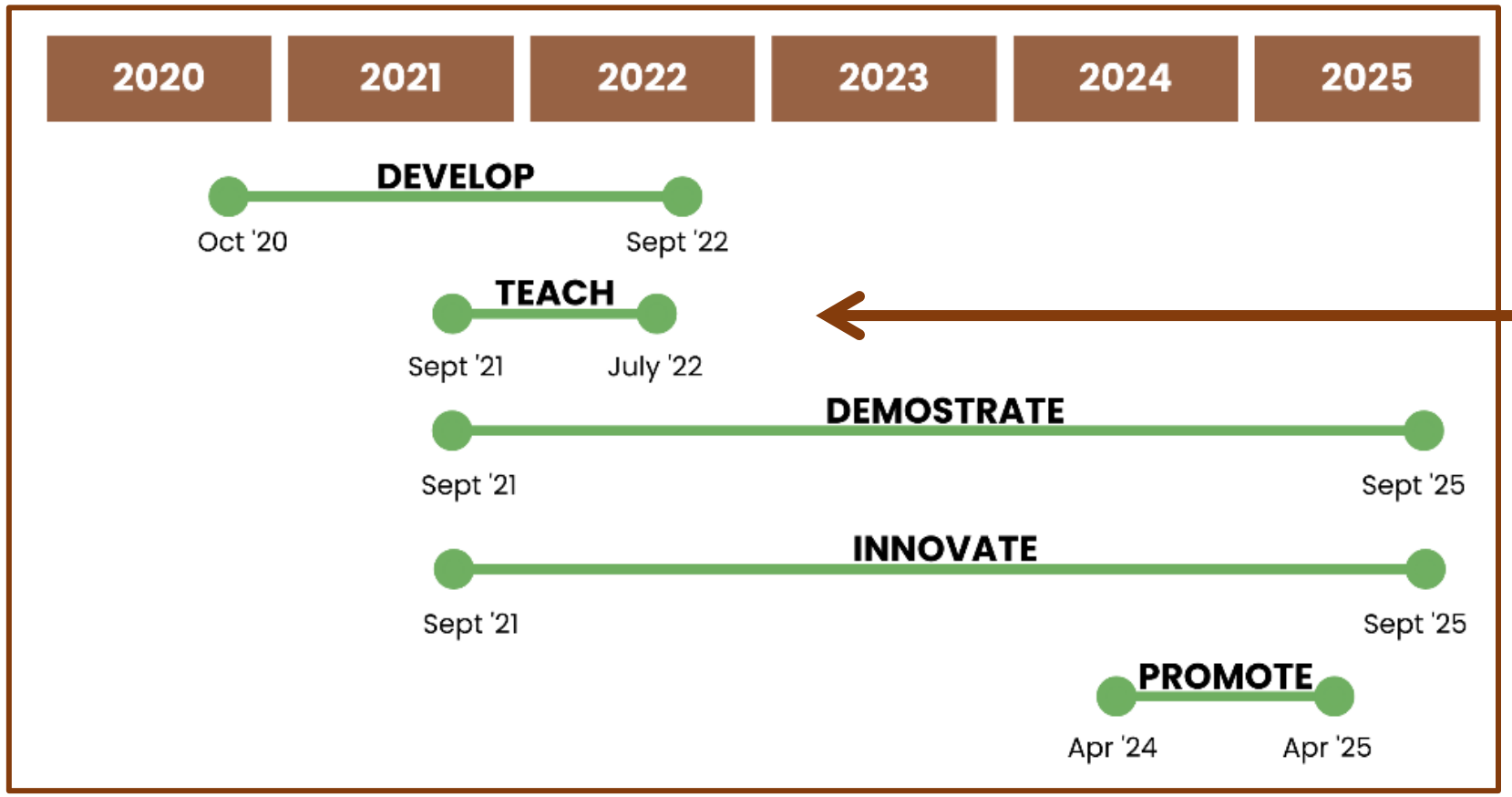


Action 1 : DEVELOP

Review, benchmark and harmonise the tools for evaluating GHG emissions and sustainability indicators at a European scale

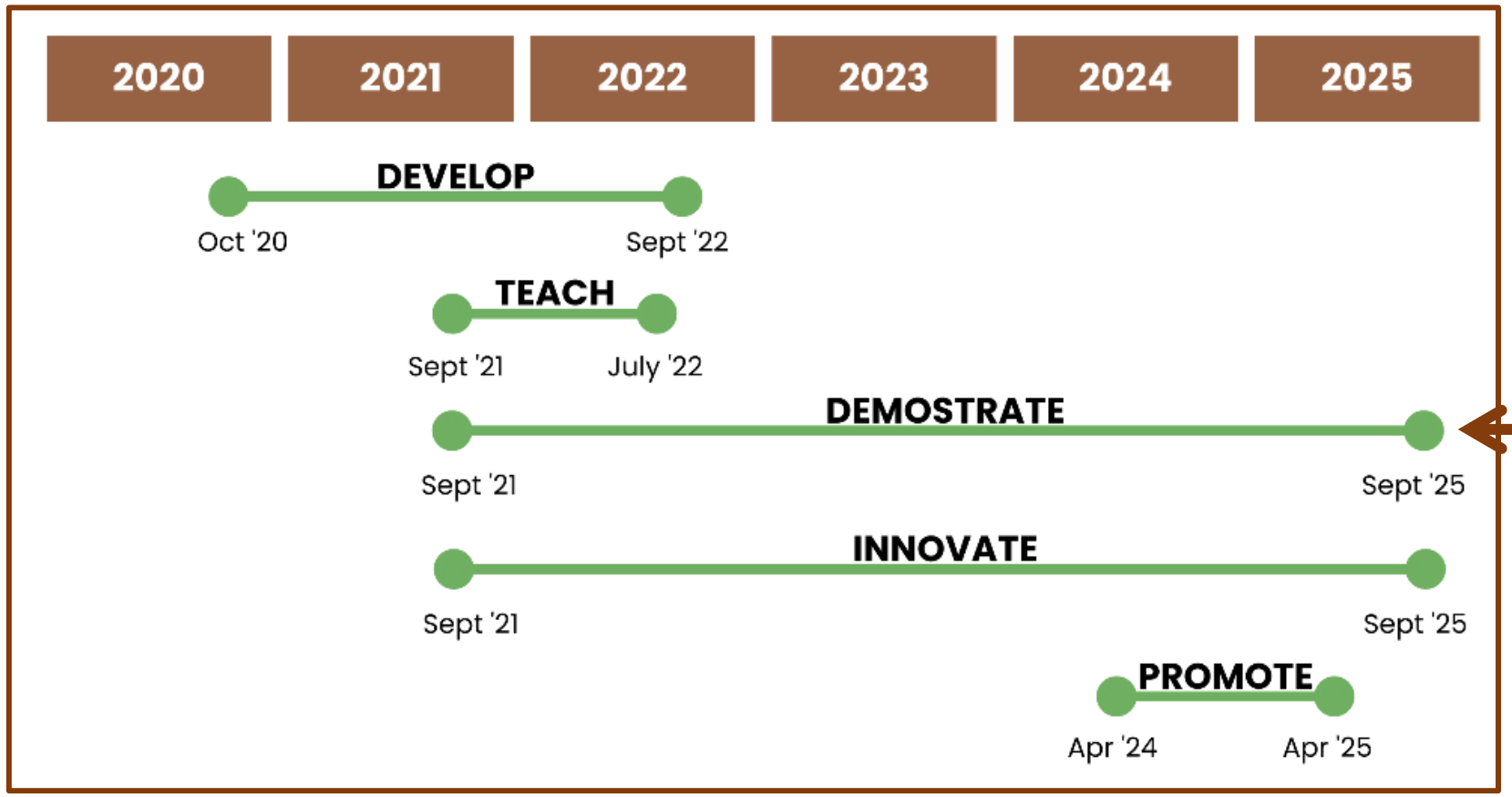
Objectives of each implementation action



Action 2 : TEACH

Raise awareness and train advisors and technicians on the tools: background, methodologies, analysis of the results and construction of action plans

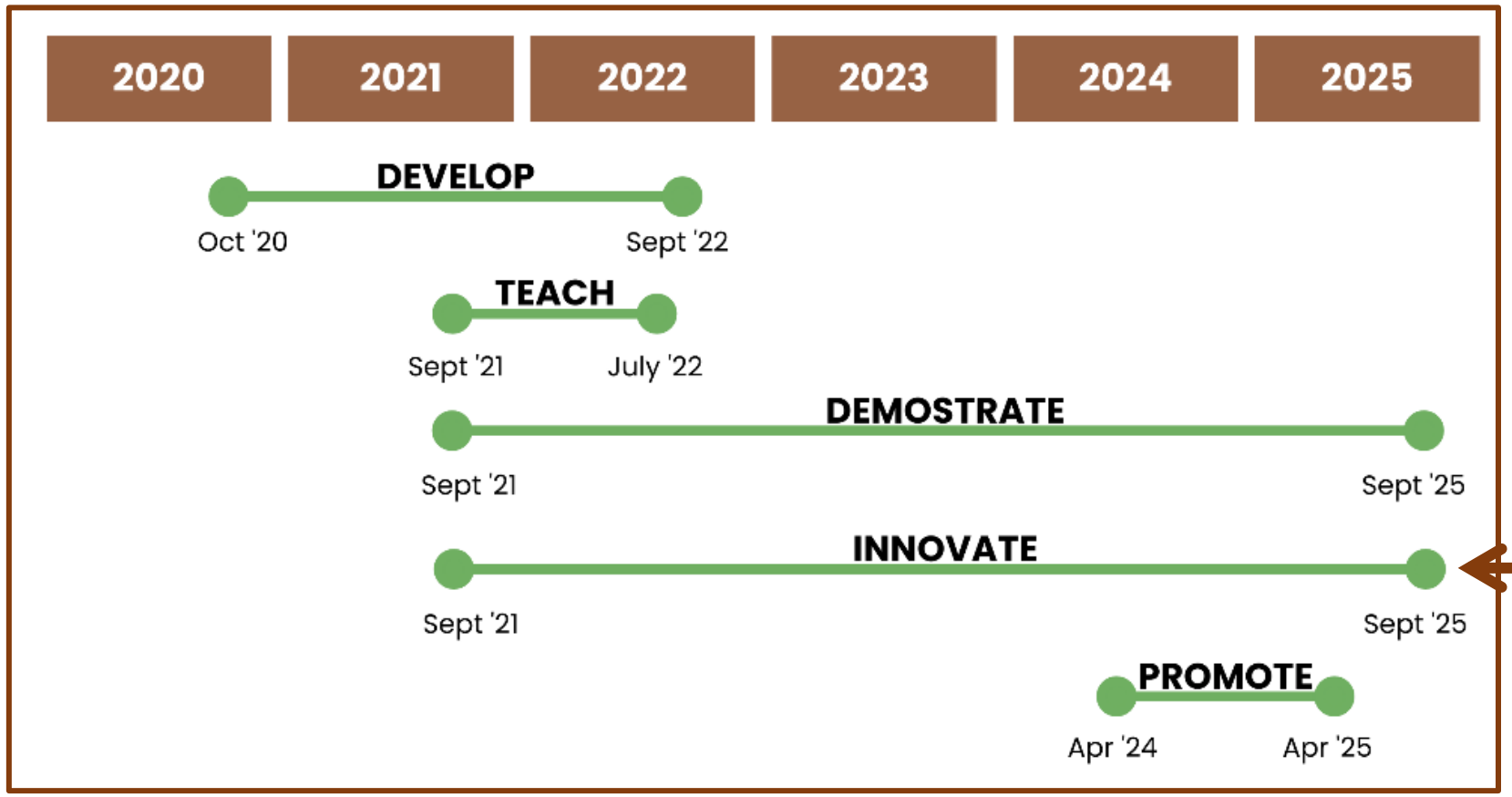
Objectives of each implementation action



Action 3 : DEMONSTRATE

Creation of an EU observatory of environmental and sustainability performance and reference sheets (results by type of system and by region)

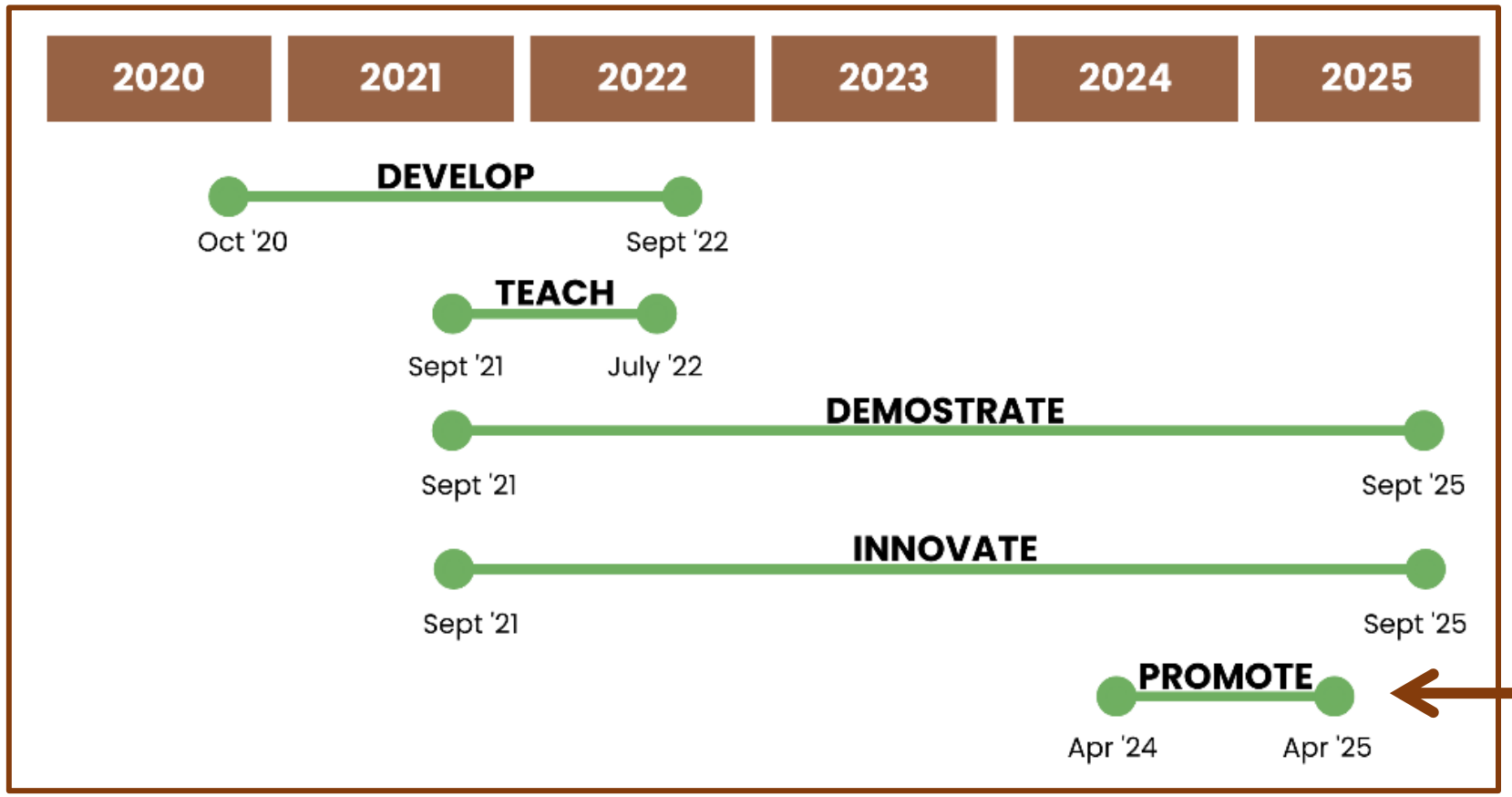
Objectives of each implementation action



Action 4 : INNOVATE

Development and promotion of low-carbon farms by demonstrating the feasibility of action levers in real conditions

Objectives of each implementation action



Action 5 : PROMOTE

Synthesis of all the knowledge acquired through this project

Definition of the national communication strategy and the partnerships to be built for the deployment of a low carbon plan

Simplified LCA in sheep farming : comparison of carbon footprint estimates from different tools

Alberto Stanislao Atzori[1], Oscar del Hierro[2], Catalin Dragomir[3], Mauro Decandia[4], Marco Acciaro, Gabriella Serra, Cathal Buckley[5], Lyubov Bragina, Mihaela Habeanu[3], Jonathan Herron[5], Roberto Ruiz[2], Tim WJ Keady[2], Sindy Throude[6]

asatzori@uniss.it

Objective of the Action 1

Taks 1: To compare different tools available at country level and developed for specific regions:

- Qualitative features of tools
- Quantitative estimates

SIMPLIFIED LCA!!

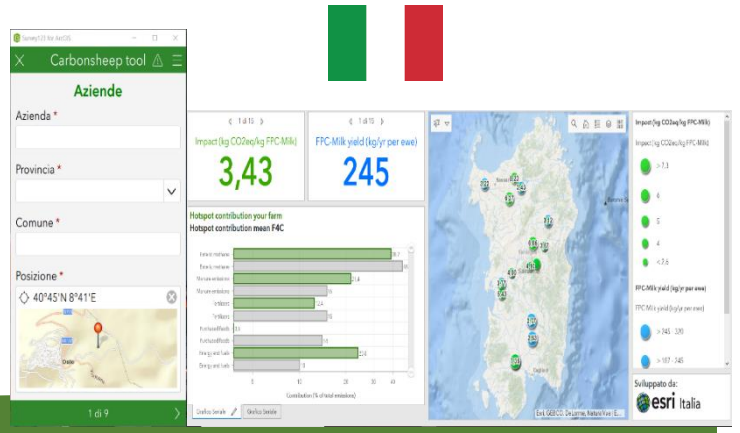
CAP'2ER®
(Institut de L'Elevage)

Figure 1.1. CAP'2ER registration widget.

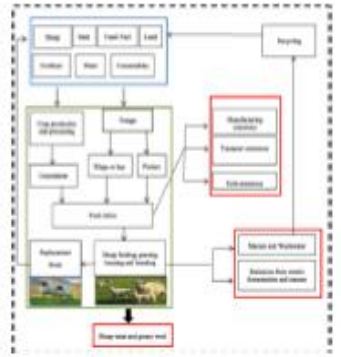
ARDI CARBON
(Batalla et al., 2015)

Figure 1.5 Ardicarbon excel interface.

CarbonSHEEP
(Atzori et al., 2021)



SheepLCA
(O'Brien et al.,2015)



THE TOOLS: qualitative description (Atzori et al., 2021)

	Country	Production	Inputs (LCI), n	Detail Flock profile	Output Impact Categories	Approach IPCC	Crops and GHG coeficiencies	OUTCOMES
CAP'2ER® (Institute elevage)	FRANCE 	Milk/meat	82	Annual	ALL Imp. Cat. including Cseq.	Tier 2, IPCC 2019	Detailled	Software dashboard
ARDI CARBON (Batalla et al., 2014)	Spain 	Milk/meat	83	Annual	ALL Imp. Cat. including Cseq.	Tier 2, IPCC 2019	Detailled	Spreadsheet
CARBON SHEEP (Atzori et al., 2017)	Italy 	Dairy only	**25**	Annual	Only CFP	Tier 2, IPCC 2019	Generic	Webapp and GIS online
SHEEP LCA (O'Brien et al., 2015)	Ireland 	Meat Only	100	Monthly	ALL Imp. Cat.	Tier 2, IPCC 2006	Medium choice	Spreadsheet

All tools perform simplified LCA and are based on spreadsheet calculations

TOOL COMPARISON: data collection and analysis

Tool	Farms
France	3 milk/3 meat
Italy	3 milk/3 meat
Spain	3 milk/3 meat
Ireland	n.a. /3 meat
Romania	3 milk/ n.a.

Farms	Runs (each farm x 4 tools)
12 dairy	48 dairy
9 meat	36 meat
21 total	84 total

Assumptions:

- ✓ Mixed and Specialized farming systems both in milk and meat farms
- ✓ Farms were randomly selected, not country average
- ✓ Comparison w/out a reference values, no complete LCA
- ✓ Equal input and outputs in all tools

Statistical Analysis: PROC GLM SAS: $Yij = \mu + \alpha i + \beta j + \alpha\beta_{ij} + \gamma + \varepsilon i$

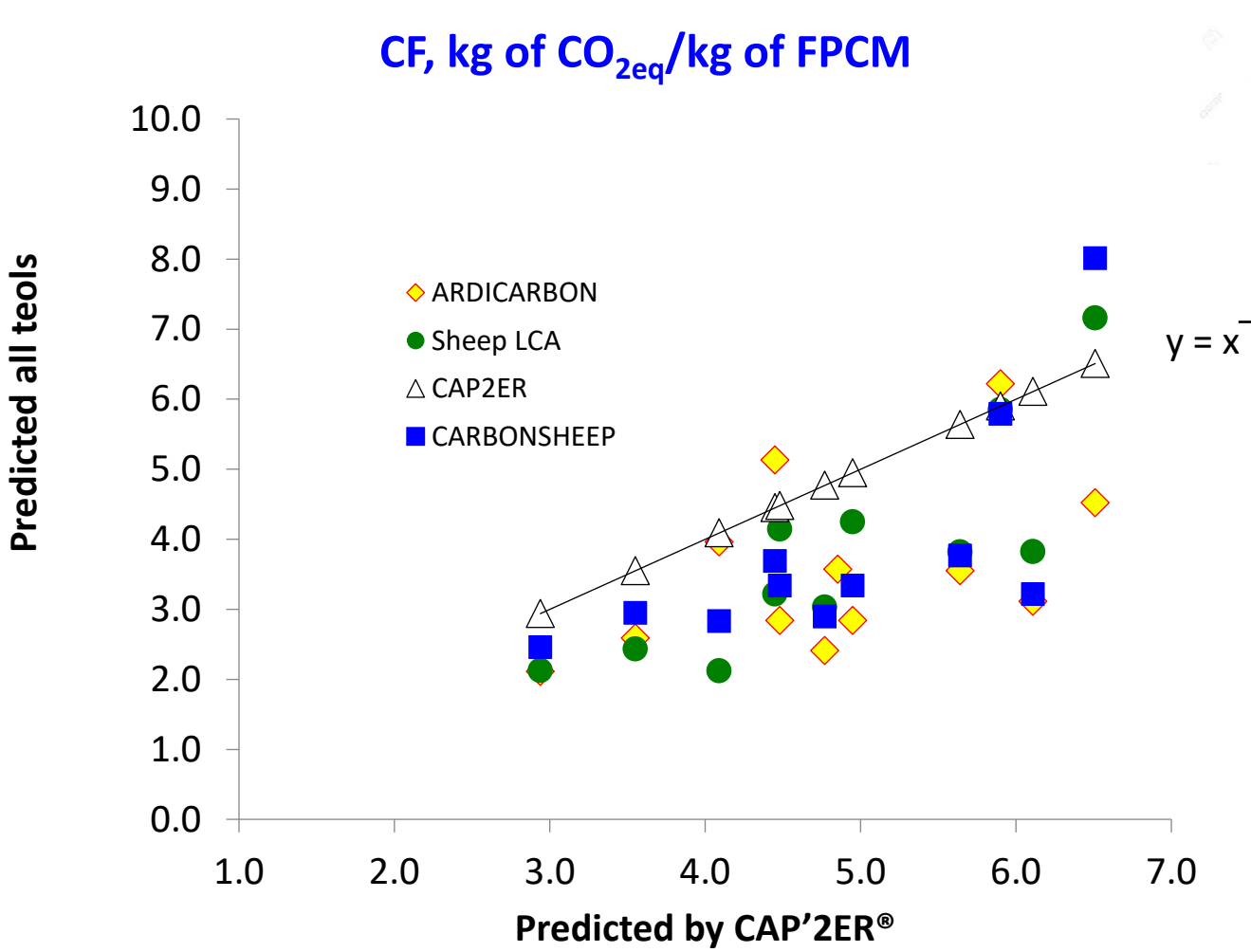
α = Tool (i = 4); β = Country (j= 3 o 4); $\alpha\beta$ = Tool*Country

Estimate evaluation among tools, Mean Bias & RMSPE (Tedeschi, 2006)

DATASET DESCRIPTION

		Ewes n°	Land ha	Milk/ewe L/yr	Stock rate ewe/ha	Purch. feeds kg/ewe	Fertilizers kg/ha	Fuel Kg/ha	Eletricity Kwh/yr
DAIRY FARMS (n=12)	Mean	497	185	202	6.1	137	78	101	10640
	SD	444	426	131	3.0	45	78	120	8850
	Max	1900	1600	479	12.9	205	352	432	27600
	Min	132	14	16	1.2	58	0	1	420
				Meat per ewe, kg/yr					
MEAT FARMS (n=9)	Mean	746	89	33	8.4	112	67	76	2265
	SD	692	56	12	5.4	79	142	122	2743
	Max	2214	172	51	21.1	263	114	136	8925
	Min	104	15	17	1.1	27	0	26	0

RESULTS: Comparison of Carbon Footprint (GW) estimates, Dairy Farms



TOOL	CAP'2 ER®	ARDI CARBON	CARBON SHEEP	Sheep LCA
Carbon footprint	4.85 a	3.57 ab	3.84 b	3.69 b
SD	1.11	1.27	1.64	1.58

P =0.01

RMSPE: 28-35% of CF among all tools

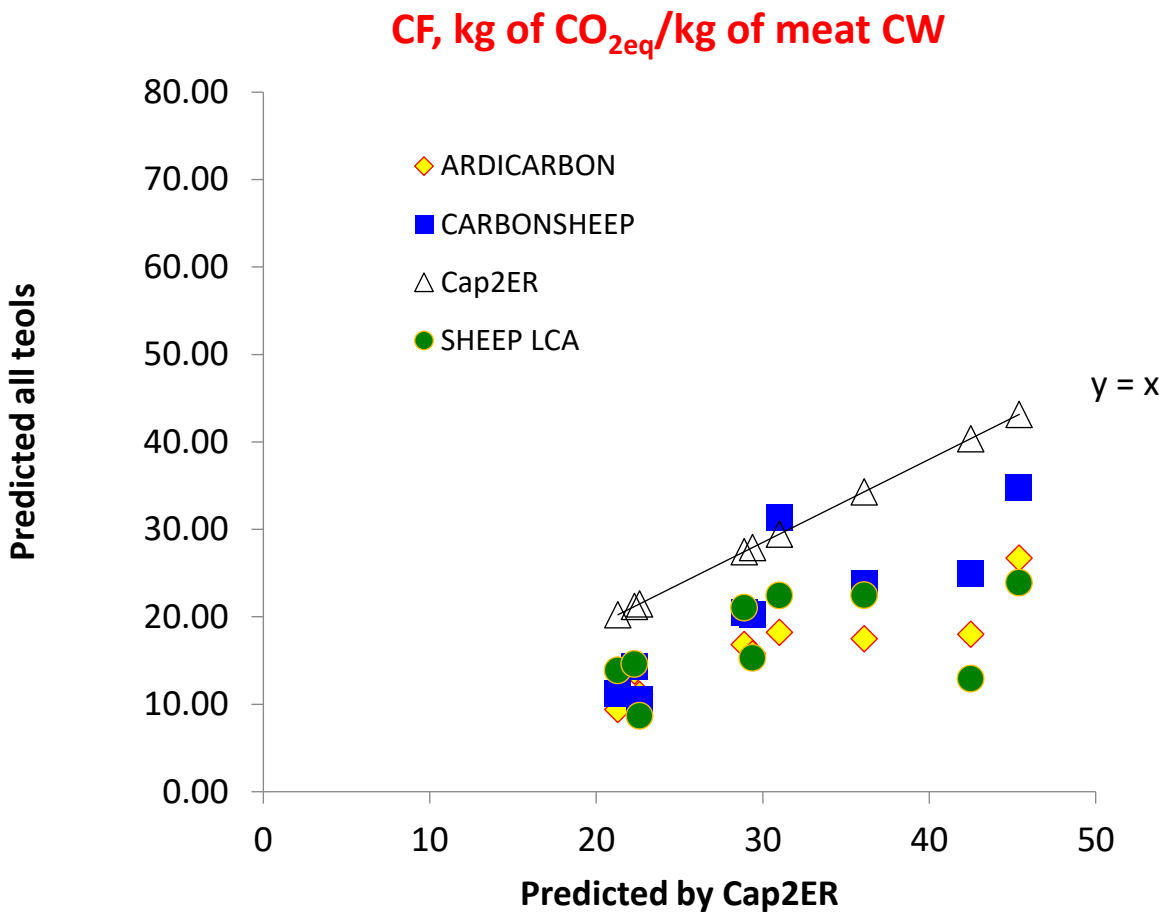
Except: vs.

Main differences:

- Manure estimates
- Feed purchased coefficients

CAP'2ER® was assumed as equivalence line

RESULTS: Comparison of Carbon Footprint (GW) estimates, Meat Farms



	CAP'2 ER®	ARDI Carbon	Carbon Sheep	Sheep LCA
Carbon footprint	31.1 a	16.4 b	21.3 b	17.2 b
SD	8.8	5.0	8.5	5.3

P =<0.001

RMSPE: 28-35% of CF C2ER vs others

Main differences:

- Methane emissions
- Manure estimates
- Feed purchased coefficients

CAP'2ER® was assumed as equivalence line

RESULTS: Comparison of estimates per each hotspot,

Kg of CO_2eq/kg of FPCM

Kg of CO_2eq/kg of Carcass Weight

	Country*	Tool*	Country*	Tool*
CF	<0.001	**0.01**	<0.001	**<0.001**
Allocation	NS	**<0.001**	-	-
Enteric methane	0.05	**NS**	<0.001	**<0.001**
Manure emiss.	**NS**	**<0.001**	**<0.01**	**<0.001**
Crop& fertilizers	NS	<0.01	<0.01	0.03
Feed purchased	**<0.01**	**0.01**	**NS**	**NS**
Electricity	0.05	<0.001	0.01	NS
Fuel	0.06	NS	<0.001	NS

Relevant Differences for approach

Small Differences due to emission coefficients

*Interaction Country x tool: not significative

DIFFERENCES: Methane and manure emissions

	CAP'2ER®	ARDI CARBON	CARBON SHEEP	SHEEP LCA
Methane GEI x Ym	Sauvant and Noziere (2013) Intake Level and PCO; dairy data	Geographical approach (Fedna, Cambra Lopez et al., 2008)	IPCC, 2019; Vermorel (2008)	IPCC 2019
Intake	Forage intake + Purchased concentrates	NE req/NE diet value	Pulina et al., 1991	INRA, 1989

Main differences depended on:

Intake estimations / N Excretions which depend directly fron animal intake

Emission coefficients from manure

NEXT (Task 2 and 3): Tool update for improvement

Input: → Combine input collection

Animal: → Align intake algorithms → N excretion

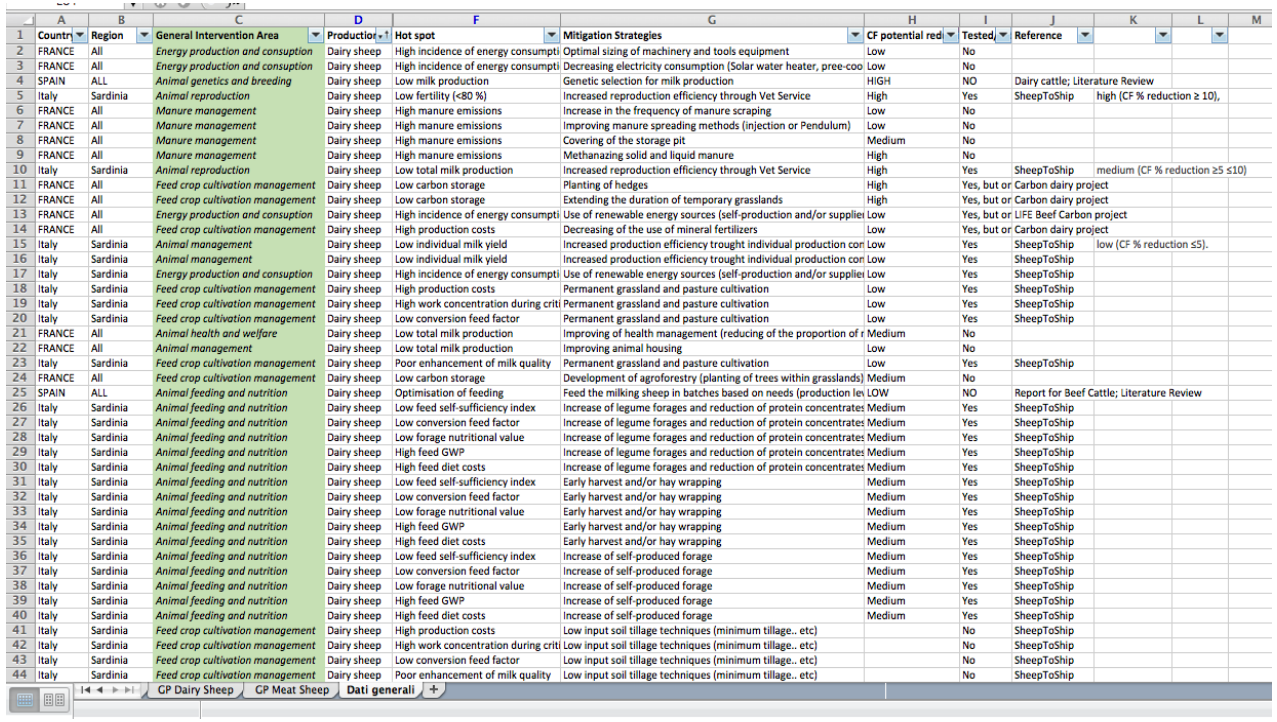
Fuel, **Crops**, **Fertilizers,** **Purchased feed**, **Energy** → Align type and emission coefficients

Implications for territorial application (demonstration) and Environmental plan

- ✓Alingned tools → comparable estimates across countries with different tools for territorial inventories with farm level inputs
- ✓Common estimation approach to assess effectiveness of good pratices
- ✓Put the basis for environmental observatory on good practices, flexible tools at European level → Territorial inventories → planning for effective mitigation.

Next (Task 4): Test tools for Common GHG mitigation

- Each national leading partner brought up a list of action levers



	A	B	C	D	F	G	H	I	J	K	L	M
1	Country	Region	General Intervention Area	Production	Hot spot	Mitigation Strategies	CF potential red	Tested	Reference			
2	FRANCE	All	Energy production and consuption	Dairy sheep	High incidence of energy consumpti	Optimal sizing of machinery and tools equipment	Low	No				
3	FRANCE	All	Energy production and consuption	Dairy sheep	High incidence of energy consumpti	Decreasing electricity consumption (Solar water heater, pree-coo	Low	No				
4	SPAIN	ALL	Animal genetics and breeding	Dairy sheep	Low milk production	Genetic selection for milk production	HIGH	NO	Dairy cattle; Literature Review			
5	Italy	Sardinia	Animal reproduction	Dairy sheep	Low fertility (<80 %)	Increased reproduction efficiency through Vet Service	High	Yes	SheepToShip	high (CF % reduction ≥ 10),		
6	FRANCE	All	Manure management	Dairy sheep	High manure emissions	Increase in the frequency of manure scraping	Low	No				
7	FRANCE	All	Manure management	Dairy sheep	High manure emissions	Improving manure spreading methods (injection or Pendulum)	Low	No				
8	FRANCE	All	Manure management	Dairy sheep	High manure emissions	Covering of the storage pit	Medium	No				
9	FRANCE	All	Manure management	Dairy sheep	High manure emissions	Methanazing solid and liquid manure	High	No				
10	Italy	Sardinia	Animal reproduction	Dairy sheep	Low total milk production	Increased reproduction efficiency through Vet Service	High	Yes	SheepToShip	medium (CF % reduction ≥5 ≤10)		
11	FRANCE	All	Feed crop cultivation management	Dairy sheep	Low carbon storage	Planting of hedges	High	Yes, but or	Carbon dairy project			
12	FRANCE	All	Feed crop cultivation management	Dairy sheep	Low carbon storage	Extending the duration of temporary grasslands	High	Yes, but or	Carbon dairy project			
13	FRANCE	All	Energy production and consuption	Dairy sheep	High incidence of energy consumpti	Use of renewable energy sources (self-production and/or supplie	Low	Yes, but or	LIFE Beef Carbon project			
14	FRANCE	All	Feed crop cultivation management	Dairy sheep	High production costs	Decreasing of the use of mineral fertilizers	Low	Yes, but or	Carbon dairy project			
15	Italy	Sardinia	Animal management	Dairy sheep	Low individual milk yield	Increased production efficiency trought individual production con	Low	Yes	SheepToShip	low (CF % reduction ≤5).		
16	Italy	Sardinia	Animal management	Dairy sheep	Low individual milk yield	Increased production efficiency trought individual production con	Low	Yes	SheepToShip			
17	Italy	Sardinia	Energy production and consuption	Dairy sheep	High incidence of energy consumpti	Use of renewable energy sources (self-production and/or supplie	Low	Yes	SheepToShip			
18	Italy	Sardinia	Feed crop cultivation management	Dairy sheep	High production costs	Permanent grassland and pasture cultivation	Low	Yes	SheepToShip			
19	Italy	Sardinia	Feed crop cultivation management	Dairy sheep	High work concentration during criti	Permanent grassland and pasture cultivation	Low	Yes	SheepToShip			
20	Italy	Sardinia	Feed crop cultivation management	Dairy sheep	Low conversion feed factor	Permanent grassland and pasture cultivation	Low	Yes	SheepToShip			
21	FRANCE	All	Animal health and welfare	Dairy sheep	Low total milk production	Improving of health management (reducing of the proportion of a	Medium	No				
22	FRANCE	All	Animal management	Dairy sheep	Low total milk production	Improving animal housing	Low	No				
23	Italy	Sardinia	Feed crop cultivation management	Dairy sheep	Poor enhancement of milk quality	Permanent grassland and pasture cultivation	Low	Yes	SheepToShip			
24	FRANCE	All	Feed crop cultivation management	Dairy sheep	Low carbon storage	Development of agroforestry (planting of trees within grasslands)	Medium	No				
25	SPAIN	ALL	Animal feeding and nutrition	Dairy sheep	Optimisation of feeding	Feed the milking sheep in batches based on needs (production lev	LOW	NO	Report for Beef Cattle; Literature Review			
26	Italy	Sardinia	Animal feeding and nutrition	Dairy sheep	Low feed self-sufficiency index	Increase of legume forages and reduction of protein concentrates	Medium	Yes	SheepToShip			
27	Italy	Sardinia	Animal feeding and nutrition	Dairy sheep	Low conversion feed factor	Increase of legume forages and reduction of protein concentrates	Medium	Yes	SheepToShip			
28	Italy	Sardinia	Animal feeding and nutrition	Dairy sheep	Low forage nutritional value	Increase of legume forages and reduction of protein concentrates	Medium	Yes	SheepToShip			
29	Italy	Sardinia	Animal feeding and nutrition	Dairy sheep	High feed GWP	Increase of legume forages and reduction of protein concentrates	Medium	Yes	SheepToShip			
30	Italy	Sardinia	Animal feeding and nutrition	Dairy sheep	High feed diet costs	Increase of legume forages and reduction of protein concentrates	Medium	Yes	SheepToShip			
31	Italy	Sardinia	Animal feeding and nutrition	Dairy sheep	Low feed self-sufficiency index	Early harvest and/or hay wrapping	Medium	Yes	SheepToShip			
32	Italy	Sardinia	Animal feeding and nutrition	Dairy sheep	Low conversion feed factor	Early harvest and/or hay wrapping	Medium	Yes	SheepToShip			
33	Italy	Sardinia	Animal feeding and nutrition	Dairy sheep	Low forage nutritional value	Early harvest and/or hay wrapping	Medium	Yes	SheepToShip			
34	Italy	Sardinia	Animal feeding and nutrition	Dairy sheep	High feed GWP	Early harvest and/or hay wrapping	Medium	Yes	SheepToShip			
35	Italy	Sardinia	Animal feeding and nutrition	Dairy sheep	High feed diet costs	Early harvest and/or hay wrapping	Medium	Yes	SheepToShip			
36	Italy	Sardinia	Animal feeding and nutrition	Dairy sheep	Low feed self-sufficiency index	Increase of self-produced forage	Medium	Yes	SheepToShip			
37	Italy	Sardinia	Animal feeding and nutrition	Dairy sheep	Low conversion feed factor	Increase of self-produced forage	Medium	Yes	SheepToShip			
38	Italy	Sardinia	Animal feeding and nutrition	Dairy sheep	Low forage nutritional value	Increase of self-produced forage	Medium	Yes	SheepToShip			
39	Italy	Sardinia	Animal feeding and nutrition	Dairy sheep	High feed GWP	Increase of self-produced forage	Medium	Yes	SheepToShip			
40	Italy	Sardinia	Animal feeding and nutrition	Dairy sheep	High feed diet costs	Increase of self-produced forage	Medium	Yes	SheepToShip			
41	Italy	Sardinia	Feed crop cultivation management	Dairy sheep	High production costs	Low input soil tillage techniques (minimum tillage.. etc)		No	SheepToShip			
42	Italy	Sardinia	Feed crop cultivation management	Dairy sheep	High work concentration during criti	Low input soil tillage techniques (minimum tillage.. etc)		No	SheepToShip			
43	Italy	Sardinia	Feed crop cultivation management	Dairy sheep	Low conversion feed factor	Low input soil tillage techniques (minimum tillage.. etc)		No	SheepToShip			
44	Italy	Sardinia	Feed crop cultivation management	Dairy sheep	Poor enhancement of milk quality	Low input soil tillage techniques (minimum tillage.. etc)		No	SheepToShip			

GP Dairy Sheep | GP Meat Sheep | Dati generali

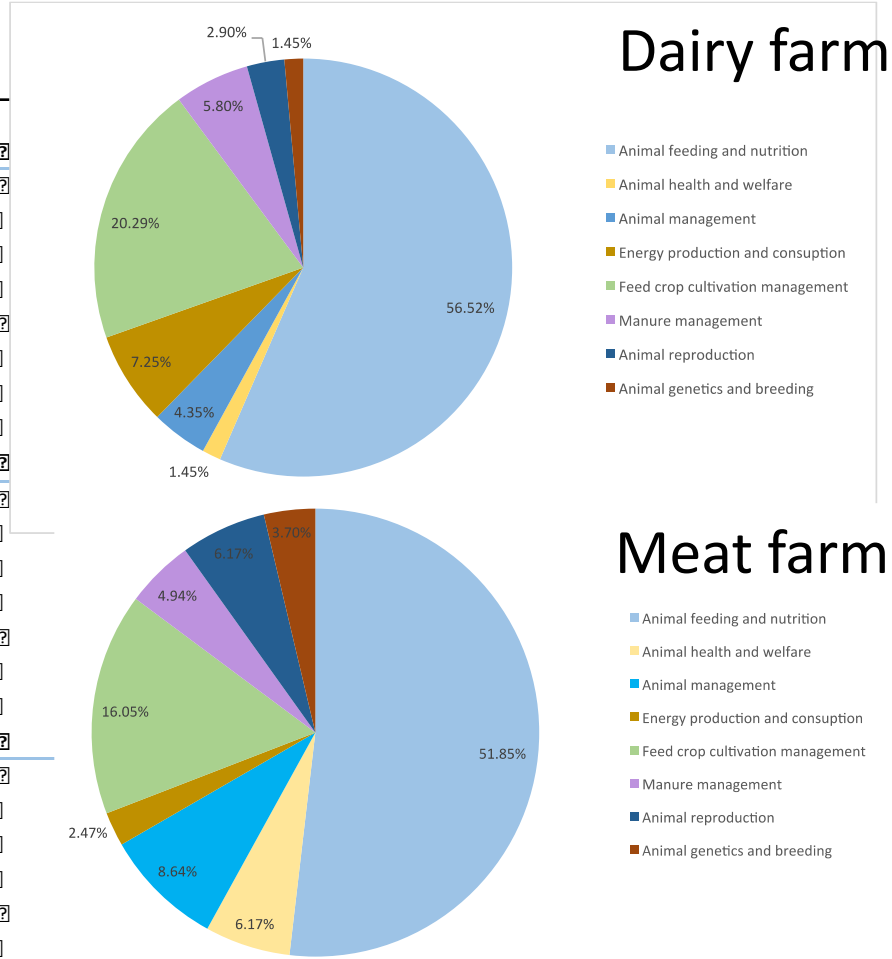
high (CF % reduction ≥ 10),
medium (CF % reduction ≥5 ≤10)
low (CF % reduction ≤5).

List from previous projects (tested, surveyed)

- Life Beef carbon
- Carbon Dairy project
- Sheep To Ship
- Forage4 Climate
- Report for Beef Cattle
- Latxa Energy Project
- Interbev project
- Kitindic Project
- Life Seed Capital

Test tools for Common GHG mitigation synthesis

Mitigation practices and production System	France	Ireland	Italy	Apain	ALL
Dairy sheep	**18**		**49**	**2**	**69**
Animal feeding and nutrition	3		35	1	39
Animal health and welfare	1				1
Animal management	1		2		3
Energy production and consuption	3		2		5
Feed crop cultivation management	6		8		14
Manure management	4				4
Animal reproduction			2		2
Animal genetics and breeding				1	1
Meat and Dairy Sheep				**44**	**44**
Animal feeding and nutrition				17	17
Animal health and welfare				4	4
Animal management				2	2
Energy production and consuption				4	4
Feed crop cultivation management				14	14
Manure management				2	2
Animal reproduction				1	1
Meat sheep	**44**	**37**			**81**
Animal feeding and nutrition	30	12			42
Animal health and welfare	1	4			5
Animal management	2	5			7
Energy production and consuption	2				2
Feed crop cultivation management	5	8			13
Manure management	1	3			4
Animal reproduction	3	2			5
Animal genetics and breeding		3			3
All total	**62**	**37**	**49**	**46**	**194**



Join Green Sheep for networking or to test the tools in your region!

sindy.throude@idele.fr

asatzori@uniss.it

Training of 143 “carbon” advisors

Catalin Dragomir - IBNA (Romania)

Training of 143 "carbon" advisors (C2 action)

among the project' activities & objectives:

- **assessing DEMO farms (1st round, 2nd round)**
- **assessing & monitoring INNO farms**
- **interacting with the farmers** (data collection, interpretation, communication)
- **identifying suitable mitigation measures & convincing the farmers**
- **setting & applicating the action plans in the INNO farms**
- **communicating, promoting / raising awareness, sharing knowledge, ...**
- **building partnerships, gaining the trust** (e.g. of the farmers)**...**

Training of 143 "carbon" advisors (C2 action)

among the project' activities & objectives:

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people are essential for this

C2 - an entire action dedicated to the people:

- to build a **common knowledge**

+ to deliver on

- farm assessments
- on-farm demonstrations (GHG mitigation)
- dissemination (GHG mitigation)

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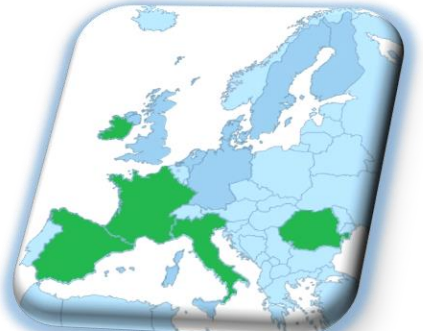

- to provide a **harmonized training kit**

  (1+4 languages; to be used by the advisers; on environmental & sustainability farm assessments)

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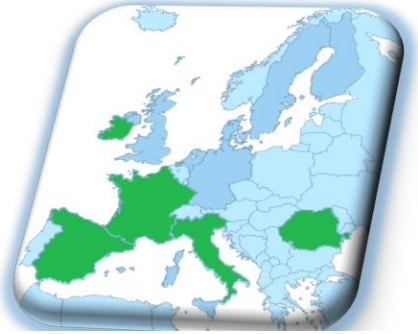


- to provide a **harmonized training kit**

(1+4 languages; to be used by the advisers; on environmental & sustainability farm assessments)

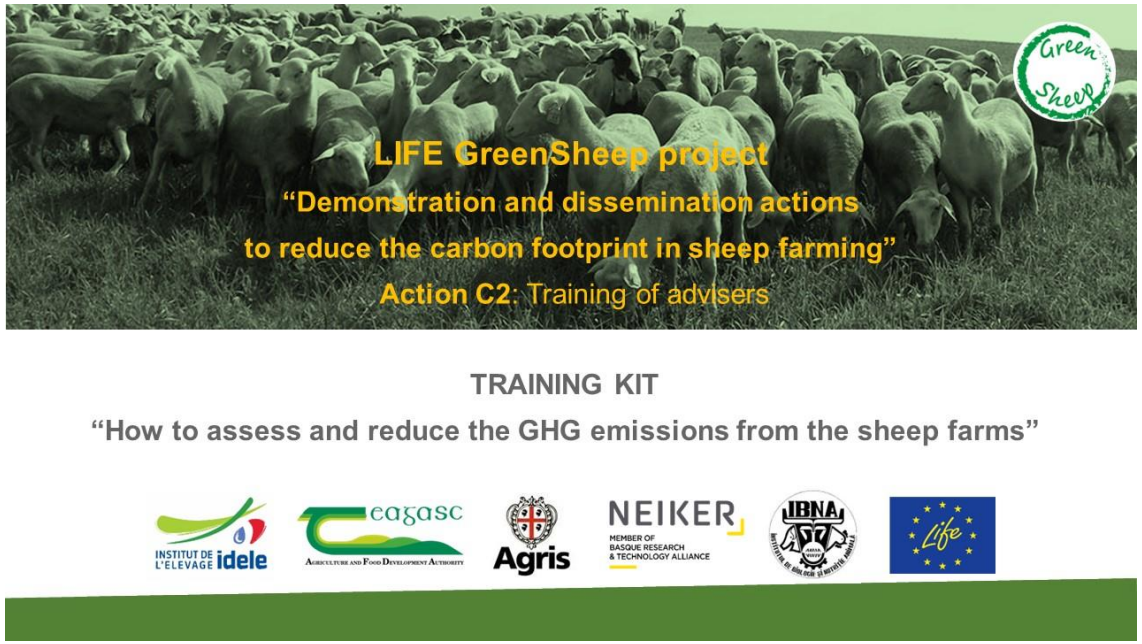
- ~ to obtain the raise of the **awareness** &

the **commitment** of the trainers / **advisers**

143 advisers

THE TRAINING KIT

41 + 16 slides;
+ >100 pages of various info



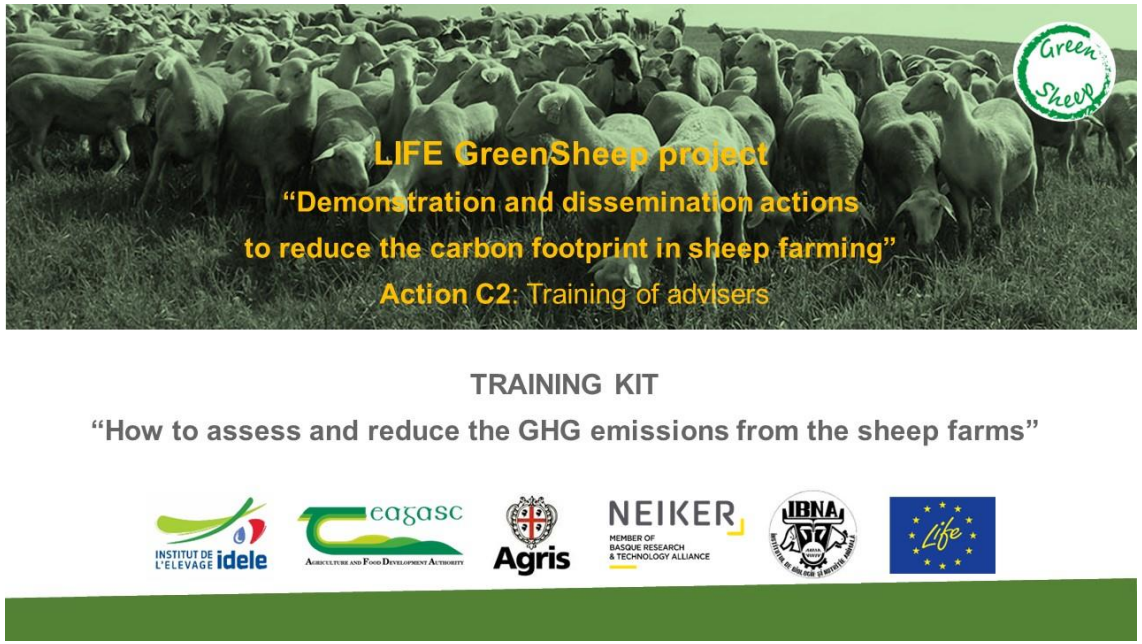
THE TRAINING KIT

41 + 16 slides;
+ >100 pages of various info

outputs & knowledge derived from C1 action

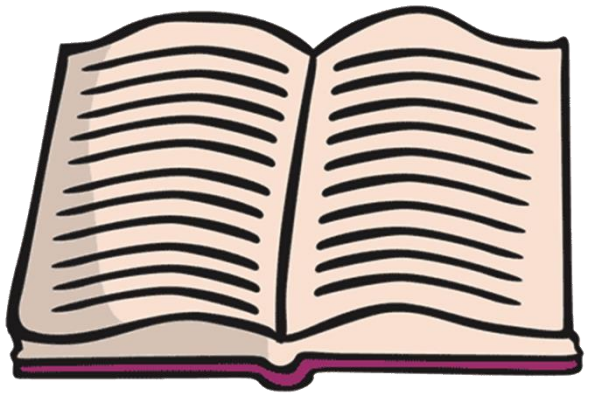
literature, previous projects, reports...

specifics of the five countries



specifics of the 12 production systems

TRAINING KIT - table of contents



Chapter 1. GHG & animal production activities

Chapter 2. The need for GHG mitigation

Chapter 3. Presentation of the GreenSheep project

Chapter 4. Presentation of the project tools for GHG evaluation and monitoring

Chapter 5. Potential GHG mitigation techniques

Annex 1. Cap2ER tool

Annex 2. ArdiCarbon tool

Annex 3. Teagasc Sheep LCA tool

let's have a glance…

Chapter 1. GHG & Animal production activities

GHG = GREENHOUSE GASES

Because of their molecular structure they trap heat or longwave radiation released in the atmosphere and re-emit it back to the earth.

This heat trapping phenomenon is known as the **GREENHOUSE EFFECT.**

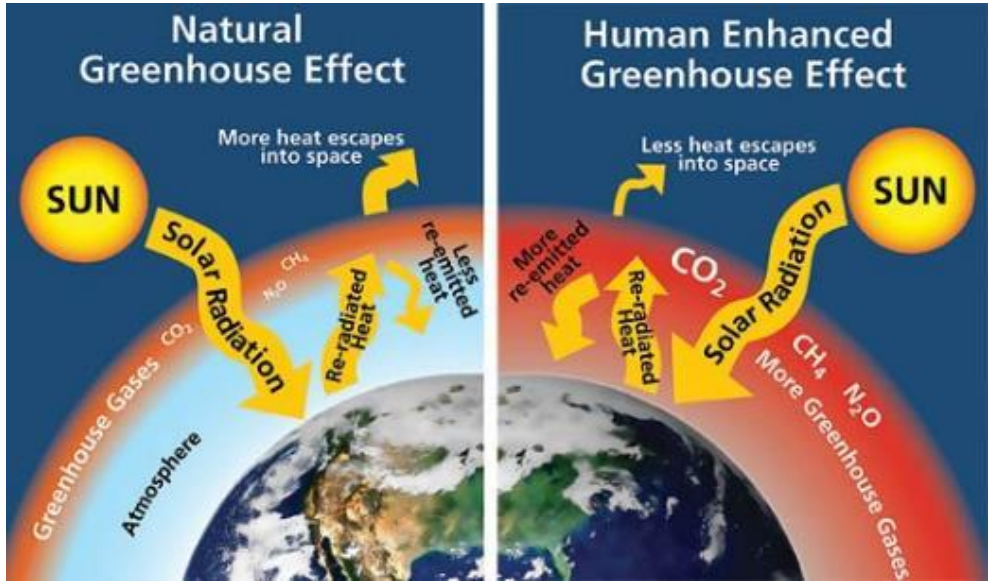
more GHG

↓

stronger greenhouse effect

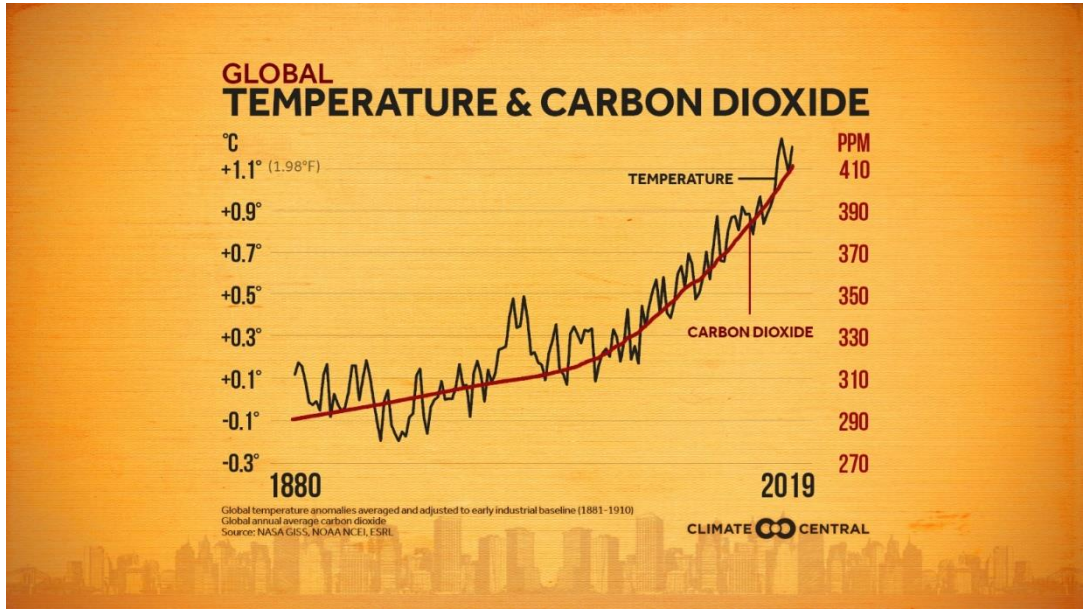
↓

more global warming



natural GH effect = actually allowed the life on Earth

human GHG effect = too hot



strong correlation between GHG (for example %CO2) and the average temperature

Livestock production is indispensable...

(growing needs...)

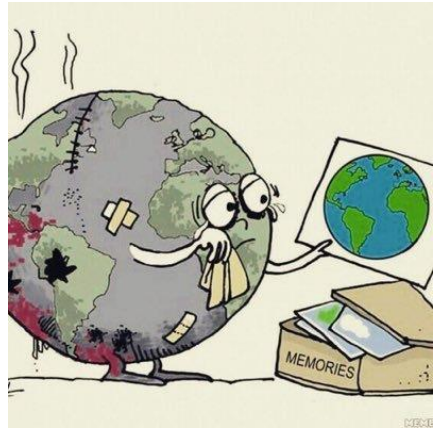
but it has its costs

- financial costs,
- resources costs (land, cereals,...)
- environmental costs

it also has an environmental footprint

... organic wastes, packing wastes, plastics, Nitrogen leakages, GHG...

which has to be reduced



"Environmental pollution adversely affect the ecosystem. For many years, animals farming (although recognized as being necessary) raises a lot of policy concerns in terms of economic, environmental, and social aspects of sustainable agriculture"

GHG from livestock production:

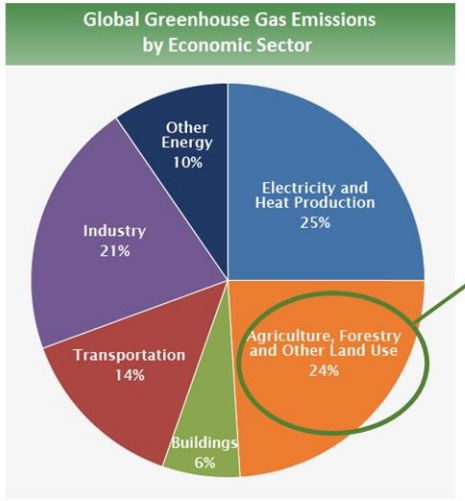
- CO_2 (32%)
- CH_4 (25%)
- N_2O (31%)
- others (water vapors, fluorinated gases)

(worldwide values, Moran, 2011)

expressed by a single parameter:
CO_2 equivalent (CO_2 eq),
using **GWP** values:
CO_2 = 1; CH_4 = 28; N_2O = 265
(GWP = Global Warming Potential)

 # tons of emitted CO_2

 # tons of CO_2 to be reduced

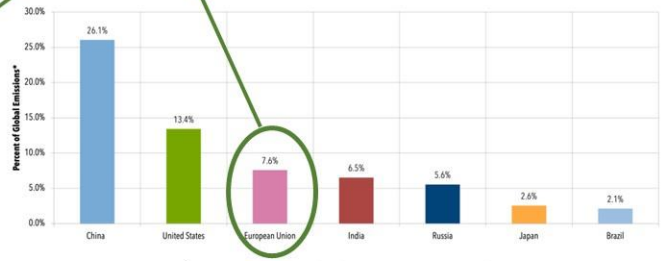


reference (Mihai .....)

there is room for improvement / mitigation

24%

7.6%

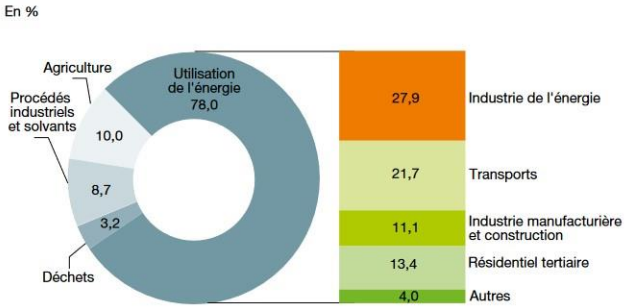


Greenhouse Gas Emissions By Top Emitters, 2018

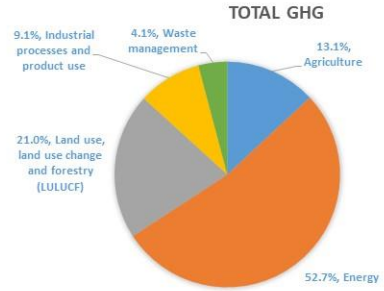
Agriculture contribution to the EU / national emissions of GHG

E.U.: 10% contribution of agriculture

ROMANIA: 13.1% contribution of agriculture

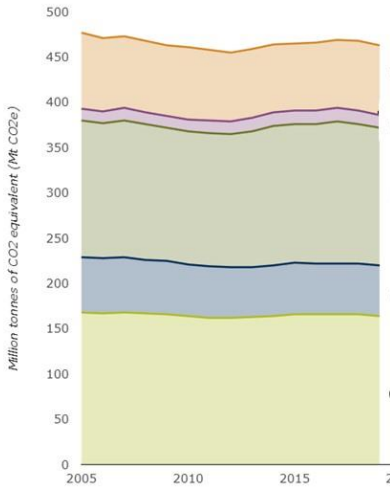


***Source :** AEE, 2018*



Source: Eurostat, 2019

Livestock contribution to the agricultural emissions of GHG



energy consumption for agri &

others

N2O from agricultural soils

manure management

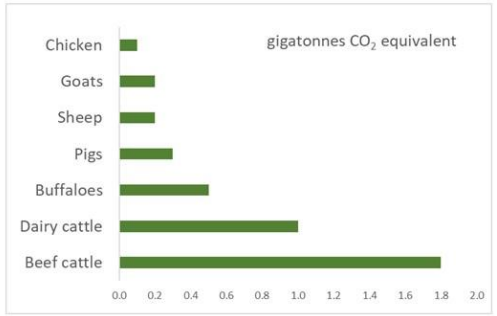
CH4 from **enteric fermentations**

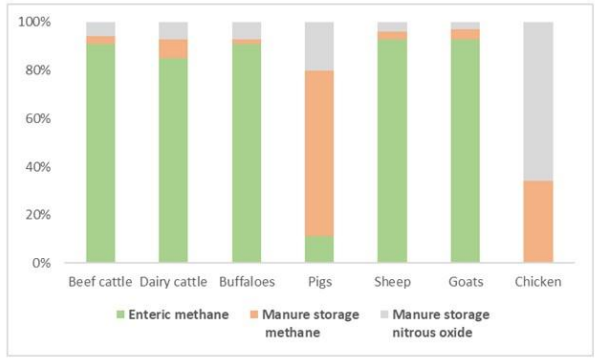
an important part of agricultural GHG is originating from the agriculture

with two main mitigation directions

https://www.eea.europa.eu/ims/greenhouse-gas-emissions-from-agriculture

Details on the GHG emissions from the livestock production



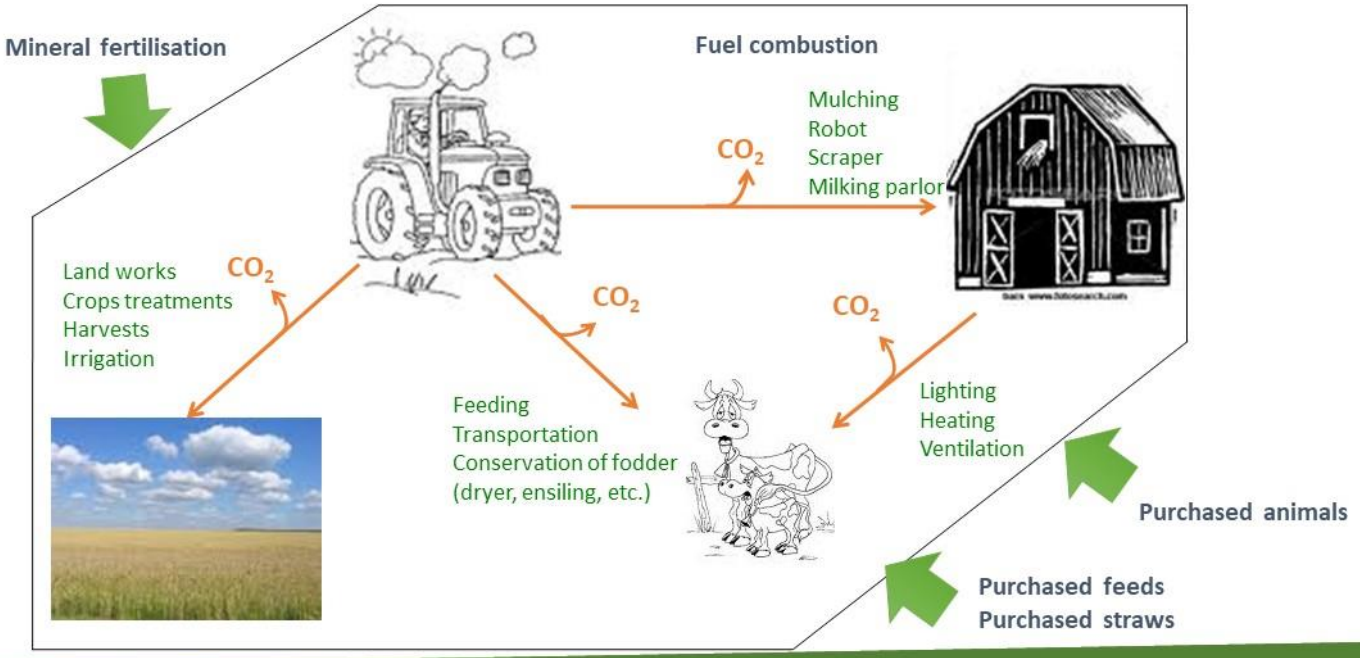


the time has come to focus on **sheep too**...

source: Grossi, 2019 (citing FAO data / 2010)

enteric fermentations = very important in ruminants

Livestock CO_2 emissions (GWP 1)



11

Livestock CO_2 emissions (GWP 1)

Mineral fertilisation

Land works
Crops treatments
Harvests
Irrigation

CO_2

Livestock CH4 emissions (GWP 28)

Rumination

Enteric CH_4

Manure

Building Storage Pasture

Manure CH_4

4 emissions'zones = animals (enteric fermentation) / building / storage / pasture

12

Livestock CO_2 emissions (GWP 1) ≡ CO_2

Mineral fertilisation

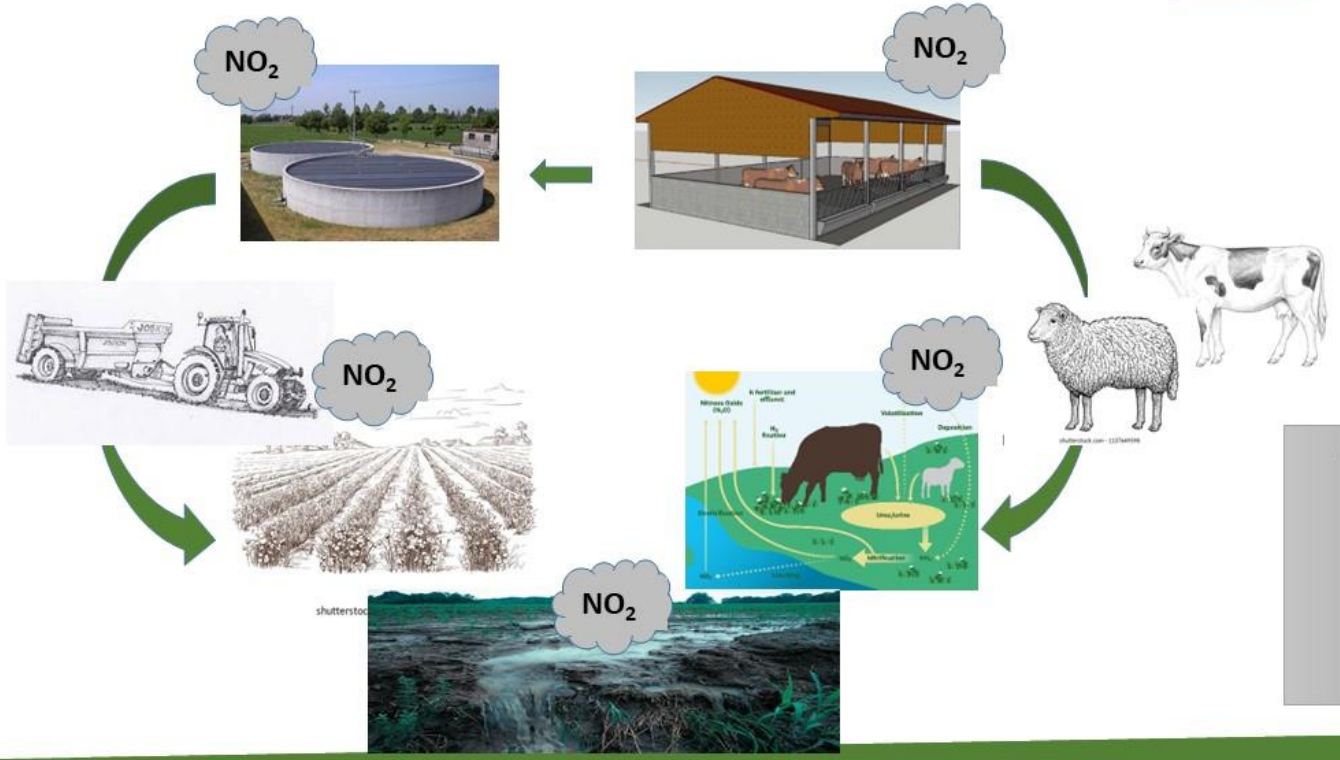
Land works
Crops treatments
Harvests
Irrigation
CO_2

Ruminati

Enteric C

Livestock CH4 emissions (GWP 28) ≡ CO_2

Livestock N2O emissions (GWP 265) ≡ CO_2



5 emissions' zones:
- buildings
- storage
- pasture
- spreading
- soil

Conclusion: the impact of livestock production is both negative and ….positive

Land use

Valorising the less accessible surface' waters

Landscape maintenance

Biodiversity

Air

Greenhouse gases emissions

Ammonia (Acidification)

Land

livestock production

Soil / Natural respurces

Fossile and renewable energies

Carbon storage

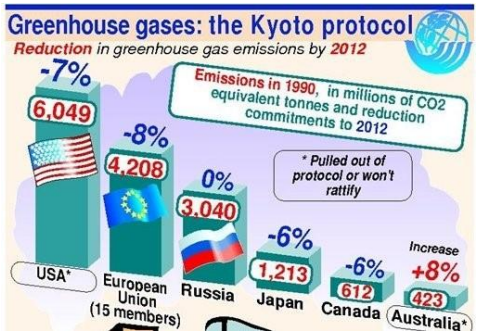
Fight against errosion

Water uptake

Water quality

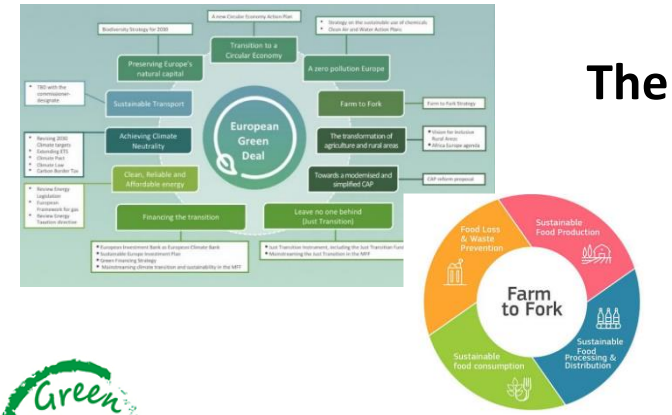
Water

Chapter 2. The need for GHG mitigation



Kyoto Protocol

Paris Agreement



The EU Green Deal

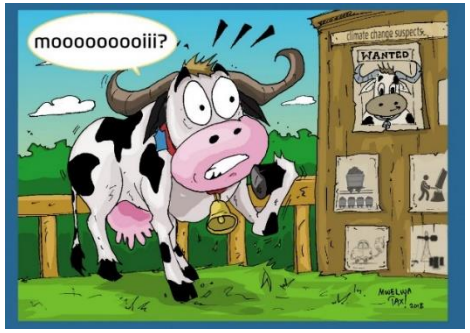
various nations committed to implement measures
that lead to various degrees of decreasing
the impact of the human activities on environment

this includes GHG
mitigation measures...

....even
"farms' climate neutrality"
is envisaged

There’s a negative perception of the society regarding the livestock sector

(mainly cattle, but... extensive livestock production may also be targeted)



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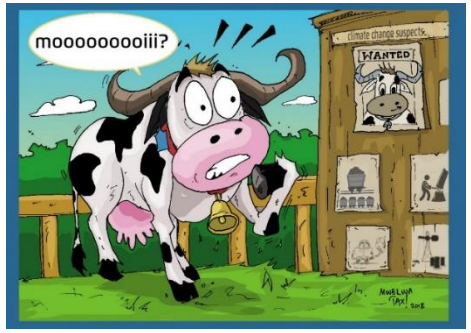

- public info measures...
- mitigation measures...
- RDI & training / education...

... are necessary

to counter-balance it

(solving the issues, informing the society, etc.)

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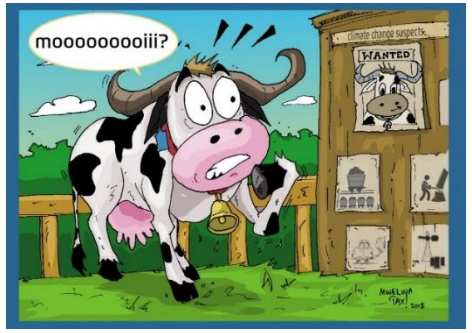


- public info measures...
- mitigation measures...
- RDI & training / education...

... are necessary

to counter-balance it

(solving the issues, informing the society, etc.)

so the perception can be this one

(at least for the sheep sector)

Chapter 4. The tools used for GHG assessment & monitoring

Carbon Sheep : the Italian tool

ArdiCarbon : the Spanish tool

Teagasc Sheep LCA: the Irish tool

CAP'2ER® / DEO : the French tools

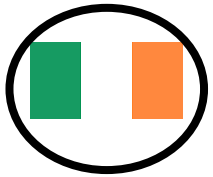
Chapter 4. The tools used for GHG assessment & monitoring

Carbon Sheep : the Italian tool

ArdiCarbon: the Spanish tool

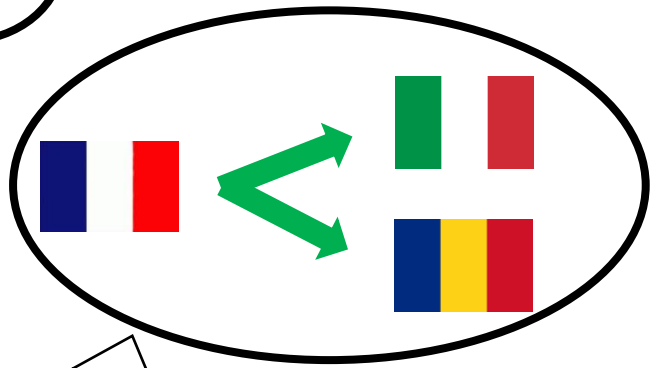
see the ARDICARBON section

Teagasc Sheep LCA: the Irish tool



see the SheepLCA section

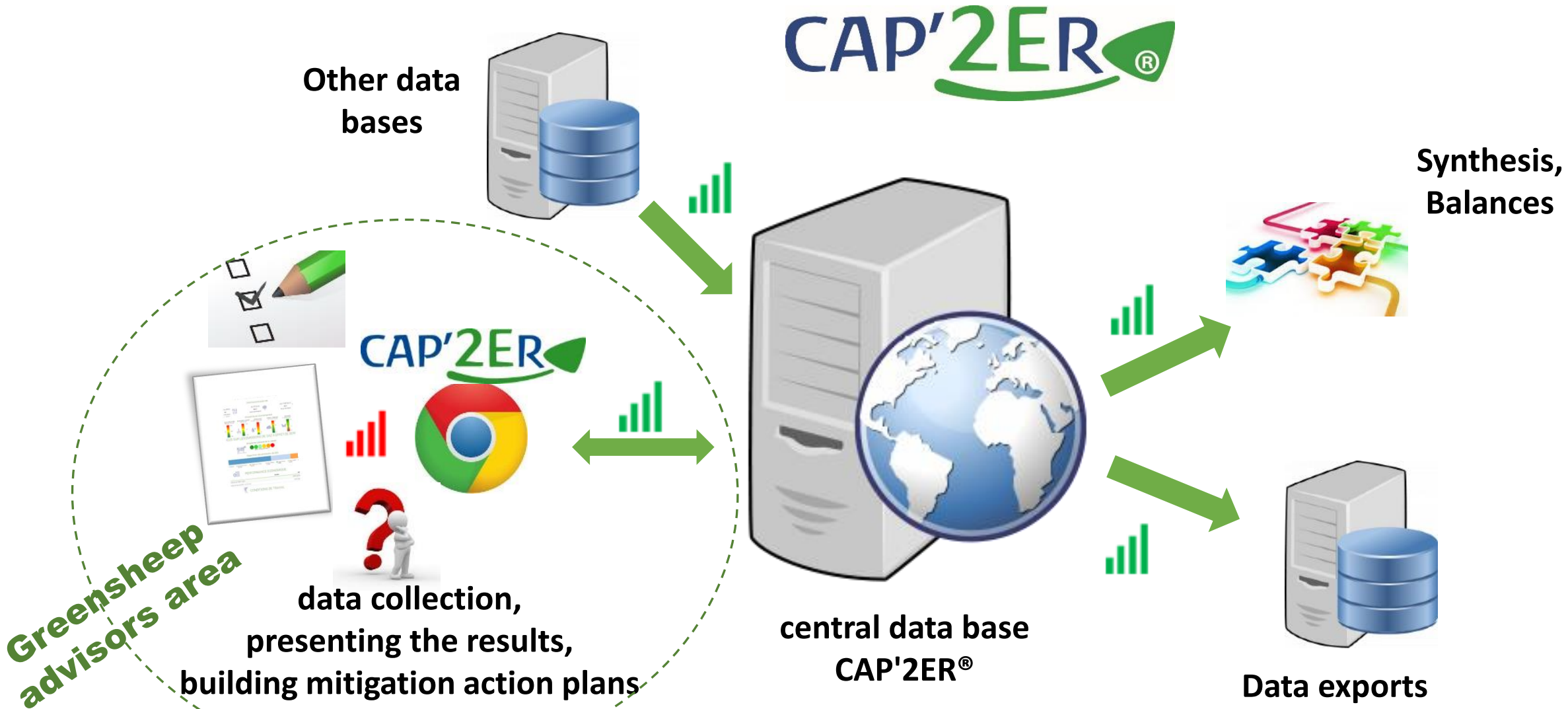
CAP'2ER® / DEO : the French tools



see the CAP2'ER section

adapted for the Italian & Romanian specifics (breeds, production systems, input data availability, etc.)

a glimpse on CAP’2ER (ANNEX 1):

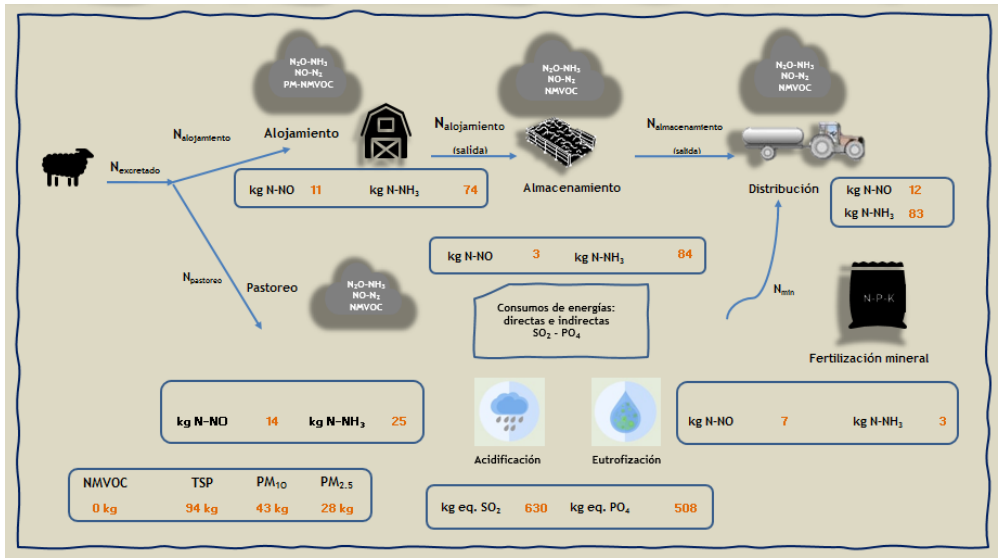


a glimpse on ARDICARBON (ANNEX 2):

INPUT DATA …

… Excel based tool …

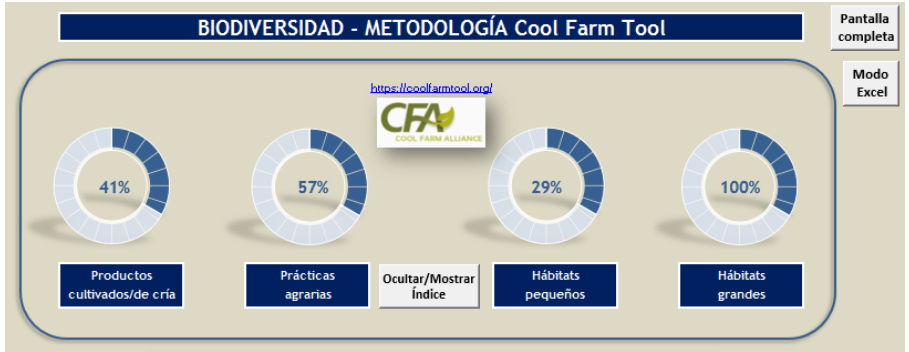
	- del Hierro - ARABA - Leche				MTDs			
	IPCC 2006		IPCC 2019		IPCC 2006		IPCC 2019	
Emisiones/Método IPCC	Incluye	NO incluye	Incluye	NO incluye	Incluye	NO incluye	Incluye	NO incluye
Fermentación entérica	62,43 %	62,43 %	67,63 %	67,63 %	62,43 %	62,43 %	67,63 %	67,63 %
Gestión del estiércol	7,51 %	7,51 %	10,27 %	10,27 %	7,51 %	7,51 %	10,27 %	10,27 %
Emisiones del suelo	15,10 %	15,10 %	5,88 %	5,88 %	15,10 %	15,10 %	5,88 %	5,88 %
Alimentación	10,11 %	10,11 %	10,95 %	10,95 %	10,11 %	10,11 %	10,95 %	10,95 %
Compra de fertilizantes	1,07 %	1,07 %	1,16 %	1,16 %	1,07 %	1,07 %	1,16 %	1,16 %
Consumo eléctrico	0,10 %	0,10 %	0,11 %	0,11 %	0,10 %	0,10 %	0,11 %	0,11 %
Consumo combustibles	3,62 %	3,62 %	3,92 %	3,92 %	3,62 %	3,62 %	3,92 %	3,92 %
Otras compras	0,00 %	0,00 %	0,00 %	0,00 %	0,00 %	0,00 %	0,00 %	0,00 %
Maquinaria-Edificaciones	0,00 %		0,00 %		0,00 %		0,00 %	
Huella de carbono	kg CO_2e/kg FPCM		kg CO_2e/kg FPCM		kg CO_2e/kg FPCM		kg CO_2e/kg FPCM	
Allocation to milk: 100 %	5,03	5,03	4,64	4,64				
Allocation to milk: 96,73%	4,87	4,87	4,49	4,49				
Huella de carbono	kg CO_2e/kg PV		kg CO_2e/kg PV		kg CO_2e/kg FPCM		kg CO_2e/kg FPCM	
Allocation to meat: 100 %	54,40	54,40	50,21	50,21	4.351	4.351	4.016	4.016
Allocation to meat: 8,47%	4,61	4,61	4,25	4,25	0	0	0	0



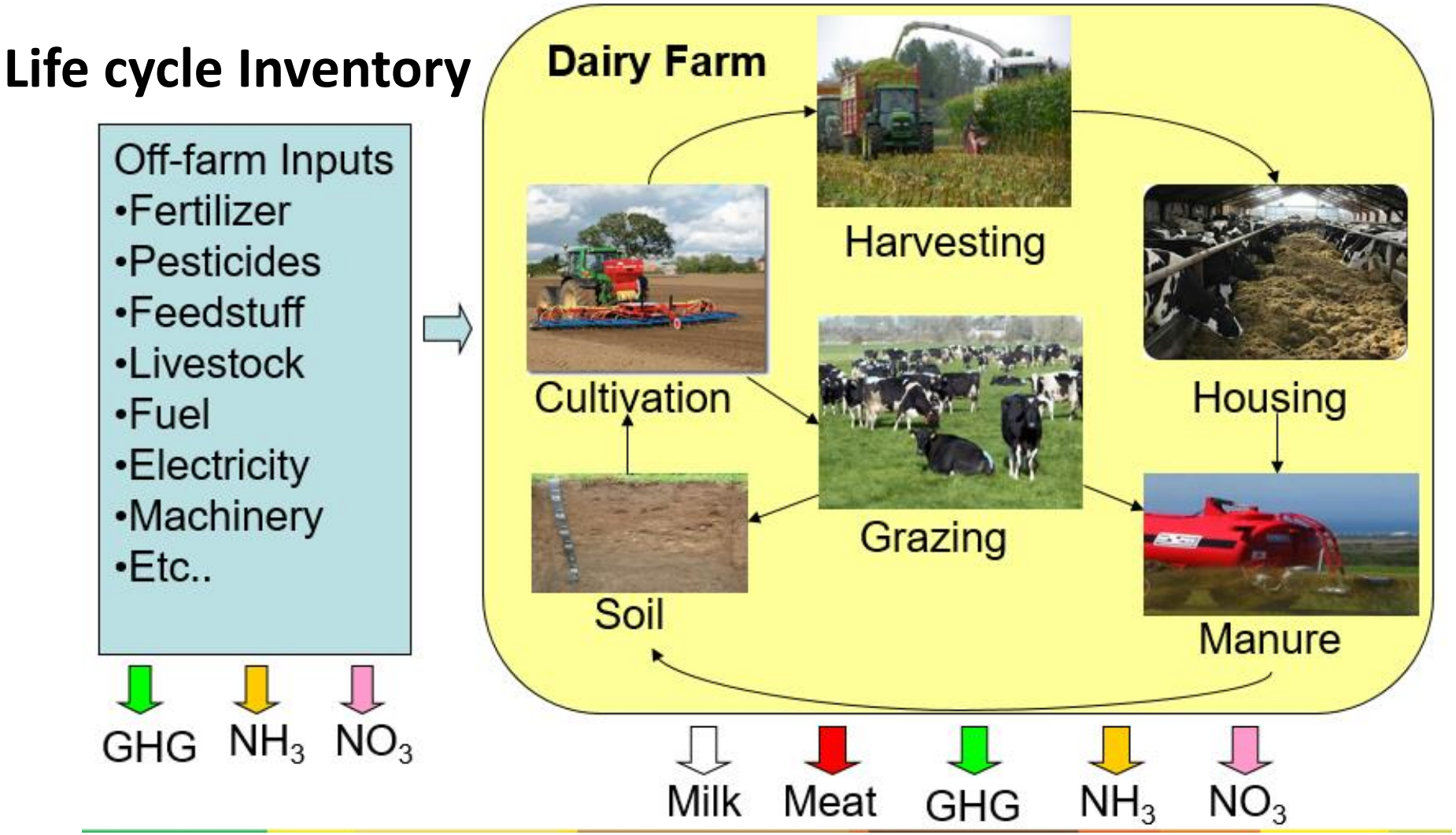
It also allows tailor made and ex ante assessments (What if..?)

… sustainability, LCA and carbon sequestration assessment from a holistic approach …

… and dashboards to present results.



a glimpse on Teagasc Sheep LCA (ANNEX 3):



Potential mitigation directions (drivers)

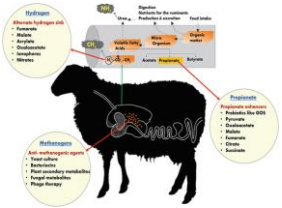
The European Union has strongly highlighted the importance of GHGS mitigation practices in the Directives and Common Agriculture Policy (CAP) measures 2014-2020.

«Herd management & performance» driver

«Manure storage & use» driver

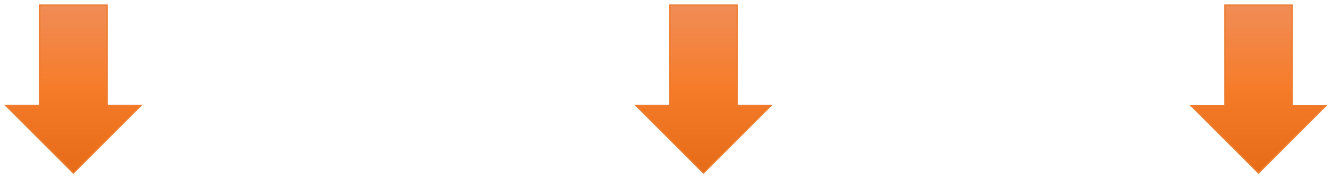
«Feed production, storage & use» driver

«Enteric fermentation» highlight



CONCLUSION: It is possible to obtain both GHG mitigation and livestock production efficiency / farm profitability

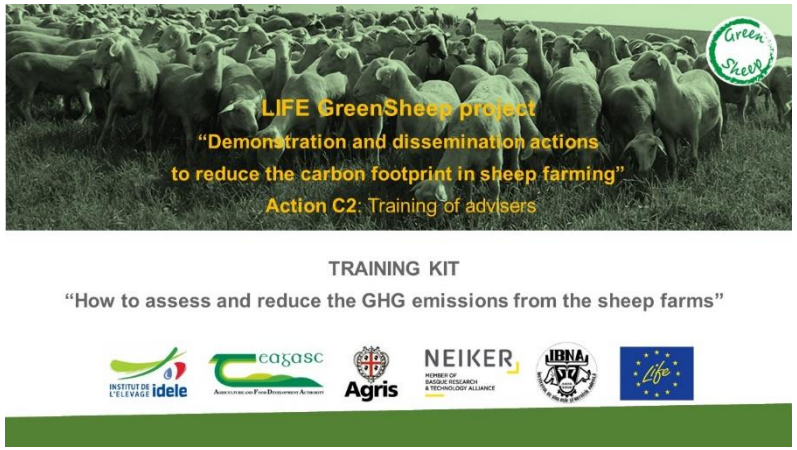
Optimising the overall farm management
feeding, herd management, manure / fertilisers, use of energy….



Improving the production performances

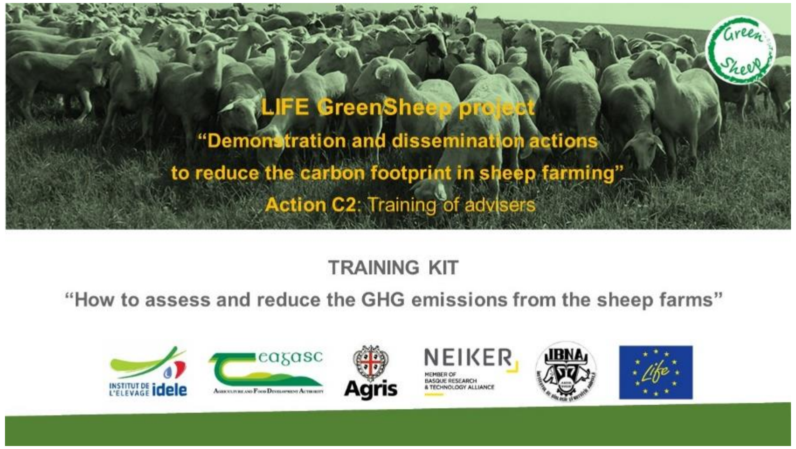
Controlling the production costs

Reducing the environmental footprint (including GHG)


LIFE GreenSheep project
"Demonstration and dissemination actions
to reduce the carbon footprint in sheep farming"
Action C2: Training of advisers
TRAINING KIT
"How to assess and reduce the GHG emissions from the sheep farms"
INSTITUT DE L'ELEVAGE idele
cegasc
Agris
NEIKER
IBNA
Life

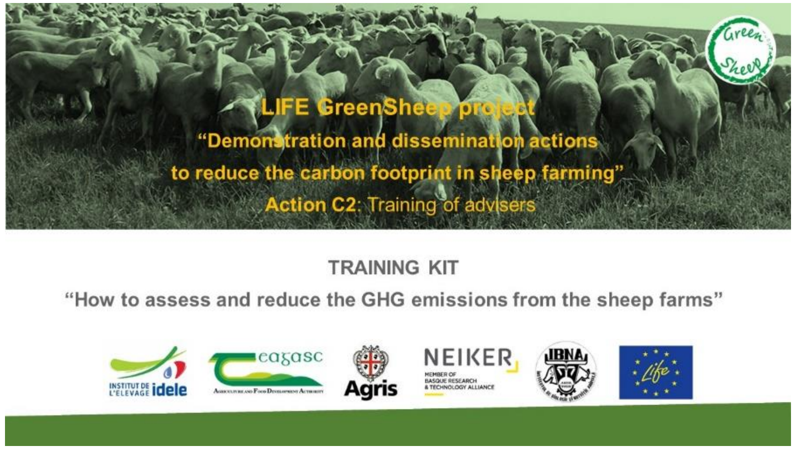
translations

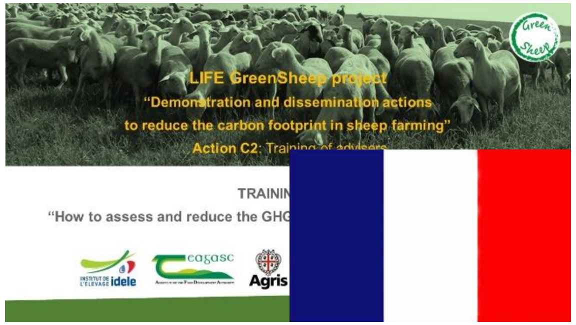
translations

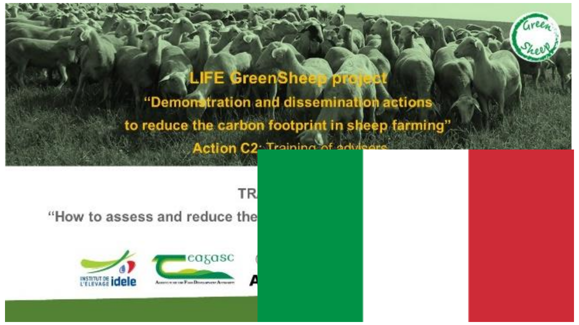


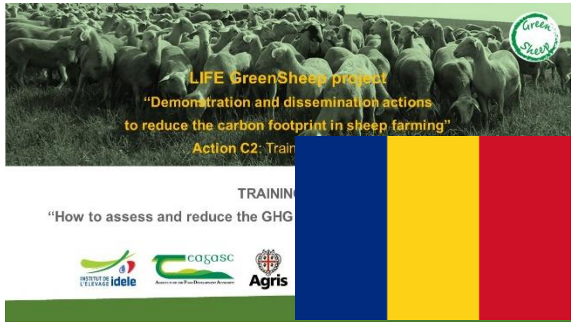
translations

translations









for example:

+ **auxiliary files: software handbooks, guidelines, ...**

CAP'2ER®- A TOOL TO EVALUATE AND REDUCE ENVIRONNMENTAL IMPACT FROM FARMS: METHODOLOGY

+ **"local" files: good practices, reports, ...**

some examples (slides) from the auxiliary / local files

= lots of figures, graphs, explanations, screen captures, worksheets, ...

4.b. Data collection (sheep data only)

Demo farms

Utilised Agricultural Land (UAL)	parameter # 1
Natural grasslands	parameter # 2
Temporary grasslands	parameter # 3
	.
	.
	.
Including dehydrated forages	parameter # 30
Purchased straw	

Focus ON

Innovative farms

parameter # 1
parameter # 2
parameter # 3
.
.
.
parameter # 150

GENERAL ADVICES during data collection:
- be **prepared to cope** with misunderstandings
- **focus on** essential inputs
- **be efficient** (don't interview **longer** than needed)
- **collect as much** as possible (esp. Level 2)

& after the data collection:
- **hand your data** to the person doing data processing

or

- proceed with the **software run**
- don't forget to **give the farmer a feed-back**

5

Pay attention – input data are clustered

SURFACE DATA:

Utilised Agricultural Land (UAL)	25.4	ha
Natural grasslands	25.4	ha
Temporary grasslands	0.0	ha
Forage crops	0.0	ha
Annual crops	0.0	ha
Other areas	0.0	ha
Individual pastoral areas	13.6	ha
Collective pastoral areas	9.2	ha
Additional areas	0.0	ha
Total livestock Unit (LU) on farm	47.0	

WARNING:
- **only** surface for **sheep**
- clarify **collective** areas

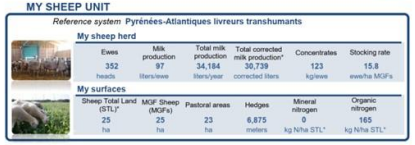
ANIMALS DATA:

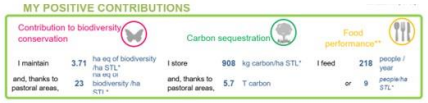
WARNING:
check whether the values are within the range of breed / production system:
- male/female **ratio**
- culling **rate**
- **prolificacy**

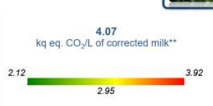
Milk sheep herd		
Main breed	Manech tête rousse	
Number of ewes	352	heads
Number of rams	0	heads
Number of renewal ewe lambs	50	heads
ncluding number of purchased ewe lambs	0	heads
Number of sold milk lambs	189	heads
Average weight of milk lambs	11.0	live weight/lamb
Prolificacy rate	103%	%
Total annual sheep milk production	34,184	liters/an
Fat content	65.7	g/l
Protein content	51.2	g/l

4.c. guidelines on the results analysis and interpretation (Cap2ER)
(Results and Solutions)

User friendly inputs' recap

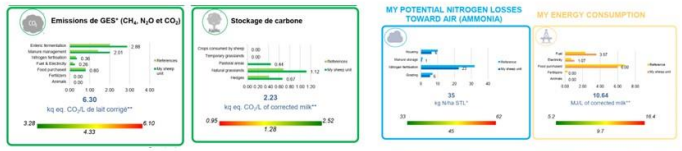






Positive results check

Be aware of the values here

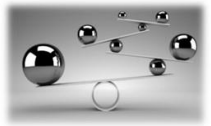


9

INPUTS
Concentrates and forages
Fertilizers
Imported manure
Purchased ewe lambs
Symbiotic fixation
Atmospheric deposition

Balance for:

OUPTPUTS
Milk
Sheep meat
Wool
Exported manure



Minimizing the GHG emissions

Maintaining or (even better) improving the farm efficiency

SWOT analysis:
=> FIND THE BEST SOLUTION FOR THE FARMER, e.g:

Change feeding strategy
=> higher efficiency
⇓
less GHG / unit of product

Improve reproductive performances
=> higher efficiency
⇓
less GHG / unit of product (e.g. milk)

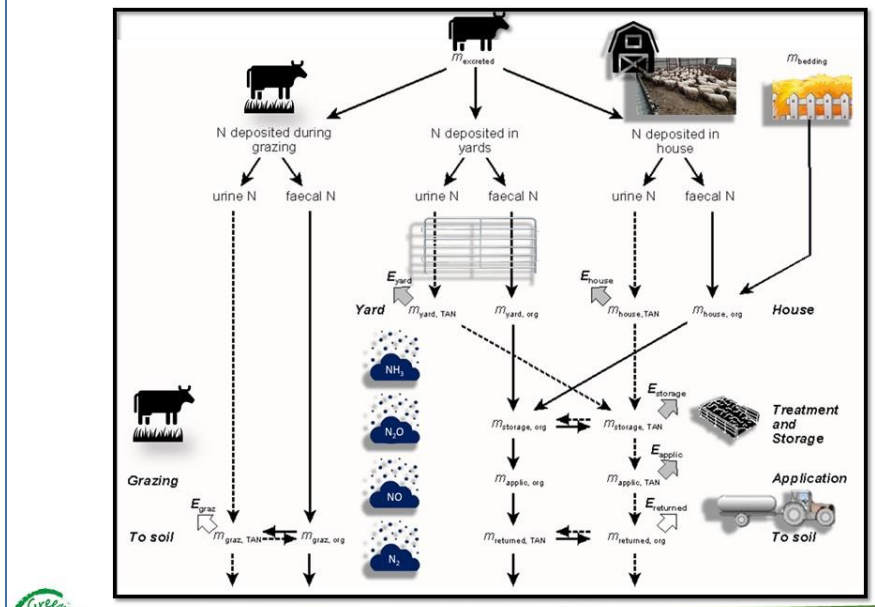
Investment in manure equipment
=> no headaches & ...
⇓
reduce GHG (e.g. bio-fuel)

10

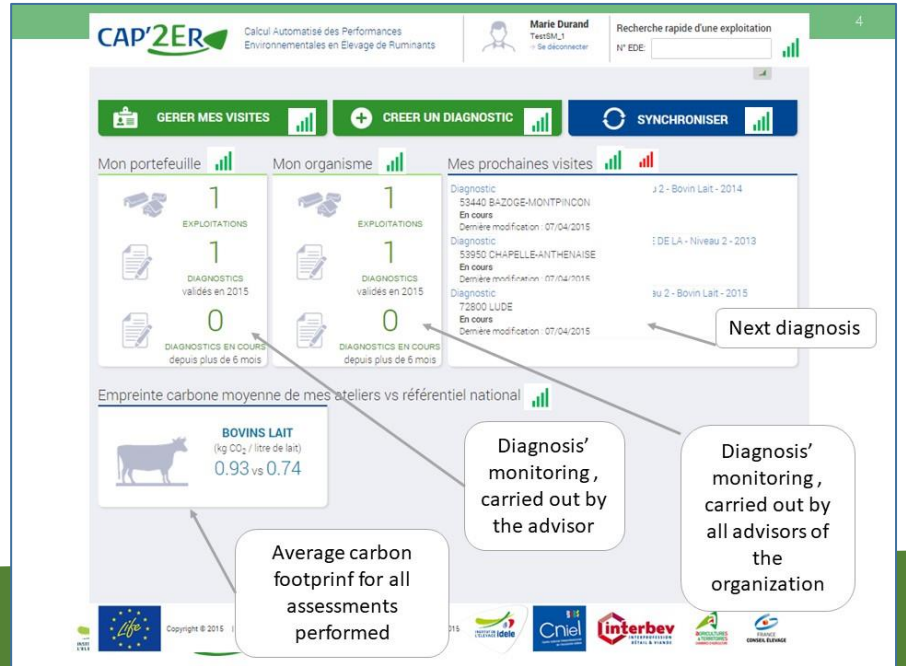
European Web

Use of CAP'2ER tool

CAP'2ER®



Balance de N Emisiones

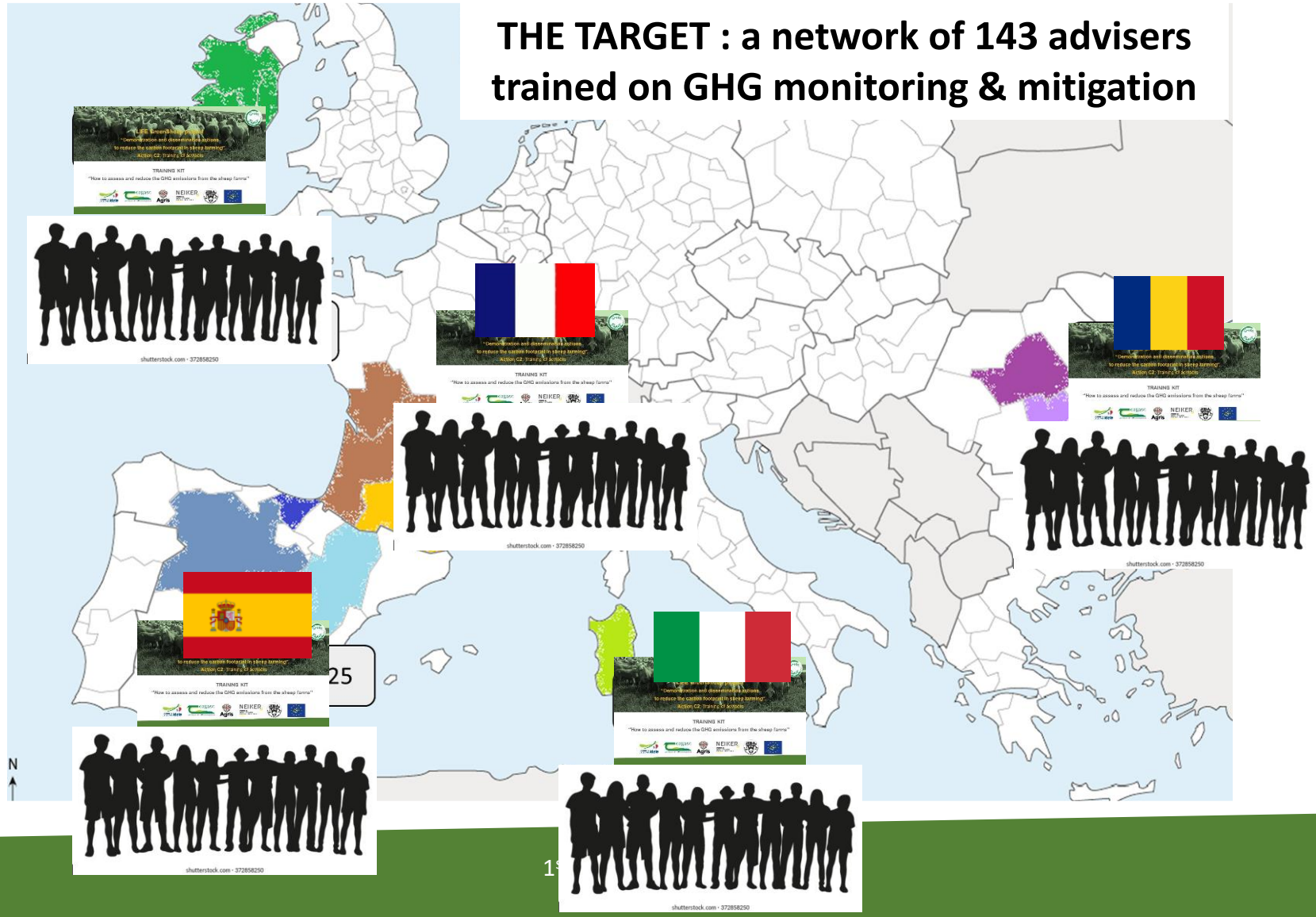


Model Input Interface – Part 2

			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Farm Name														
Purchase		Total												
Mature ewe	no.		0	0	0	0	0	0	0	0	0	0	0	0
Lambs (0-12 months)	no.		0	0	0	0	0	0	0	0	0	0	0	0
Year old (13-24 months)	no.	9	0	0	0	0	0	0	0	0	10	0	0	0
Rams	no.	1	0	0	0	0	0	0	0	0	1	0	0	0
Sales		Total												
Mature ewe	no.	9	0	0	0	0	0	10	0	0	0	0	0	0
Lambs (0-12 months)	no.	140	0	0	0	0	0	0	140	0	0	0	0	0
Year old (13-24 months)	no.		0	0	0	0	0	0	0	0	0	0	0	0
Rams	no.	1	0	0	0	0	0	0	0	0	1	0	0	0
Fertiliser														
Nitrogen	kg N/ha	79.9												
CAN	% N	80												
Urea	% N	20												
Protected urea	% N	0												
Phosphorus	kg P/ha	12.1												
Potassium	kg K/ha	24.1												
Lime	tonnes/ha	0												
Concentrate feed														
Ewe concentrate	kg	7200												
Lamb concentrate	kg													
Feeding rate			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
ewe	kg/day													
lamb	kg/day													
Hogget	kg/day													
Ram	kg/day													

The Irish Agriculture and Food Development Authority

The first valorisation of the training kit and its annexes: training the “Carbon” advisers



up to now, 167 advisers were trained

- 17% more than the target (143) foreseen at the beginning of the project;
- proportional with the no of farms to be assessed / monitored in each of the 5 countries
- training sessions = still open (reserves / dissemination)
- interactions between the trainers & advisers = continuous

  (for advices, feed-back, clarifications, error-proofing, ...)
- the advisers started to contribute to the assessments – demo / INNO
- the advisers started to contribute to the awareness raising (on GHG issues,...)
- the advisers started to contribute to the promotion of low carbon initiative(s)
- they will continue to have an important role in the project / after the project

Thank you for your attention. Do you have any questions ?

Sébastien Bouvatier – French ministry of Agriculture
Sindy Throude – Institut de l'Elevage (France)
Alberto Stanislao Atzori – University of Sassari (Italy)
Catalin Dragomir - IBNA (Romania)

Programme of this webinar

- Implementing carbon farming in Europe
- Overall presentation of the project LIFE Green Sheep
- Simplified LCA in sheep farming : comparison of carbon footprint estimates from different tools
- Training of 143 "carbon" advisors
- Involvement of 1,637 sheep farms at the European scale
- How to disseminate the results of the project and inform farmers and advisers widely ?
- Carbon farming and result based solutions, an innovative scheme for boosting carbon initiatives and developing sustainable agriculture
- Conclusion

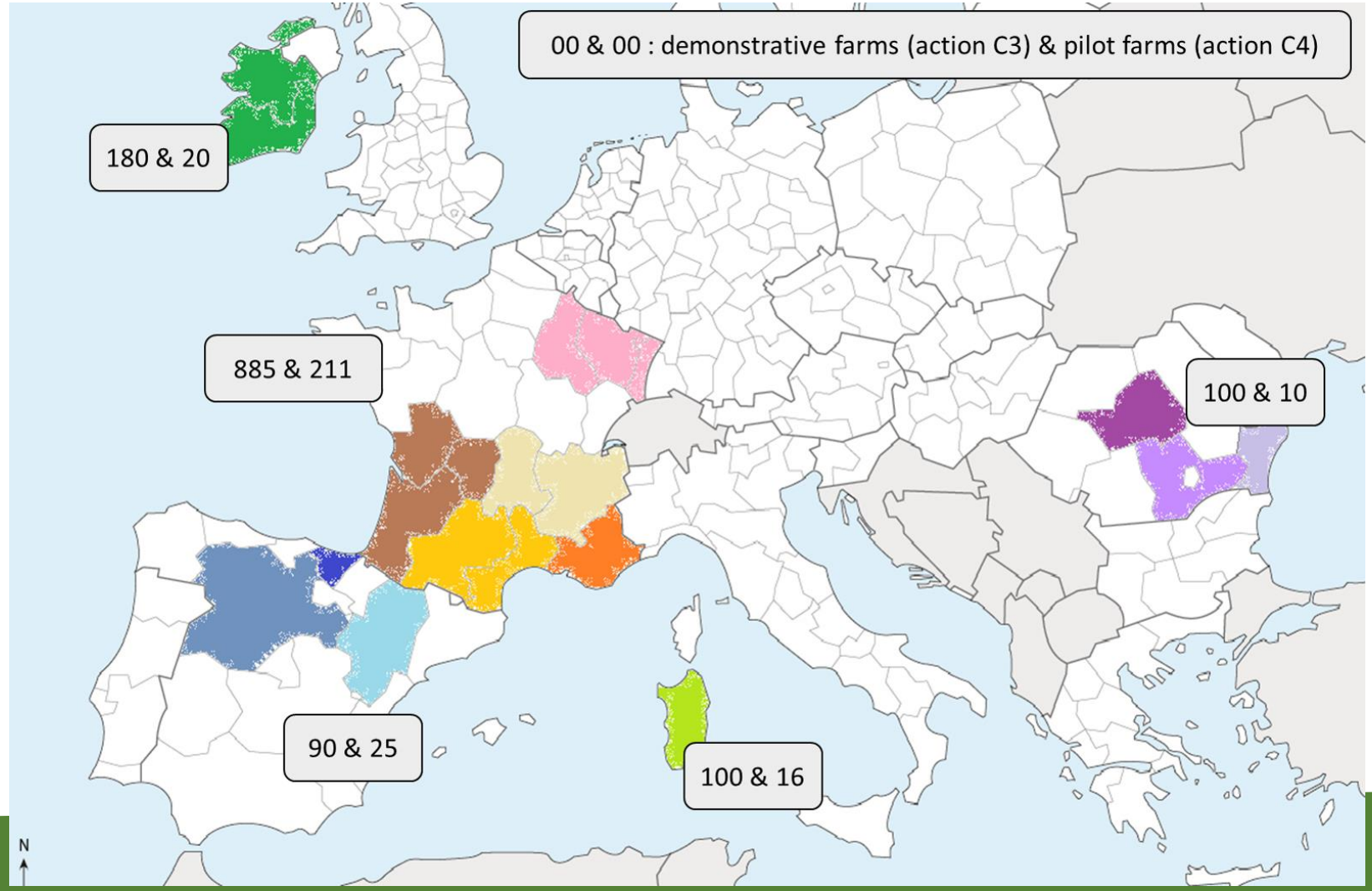
Involvement of 1,637 sheep farms at the European scale

Sindy Throude – Institut de l'Elevage (France)

A large network of sheep farms involved in the LIFE Green Sheep project

1,355 demonstrative farms

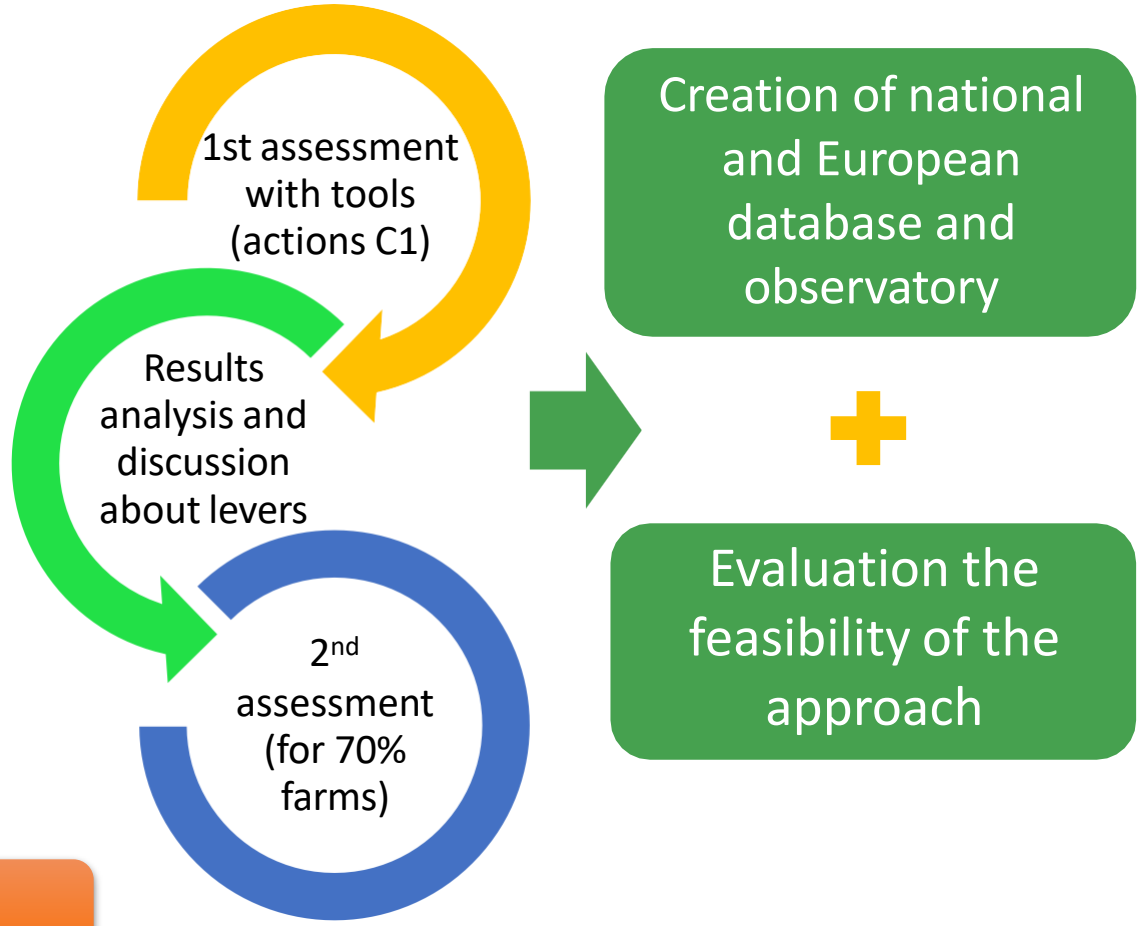
282 innovative farms



Action C3: 1,355 demonstrative farms in Europe involved in a low carbon and sustainable approach

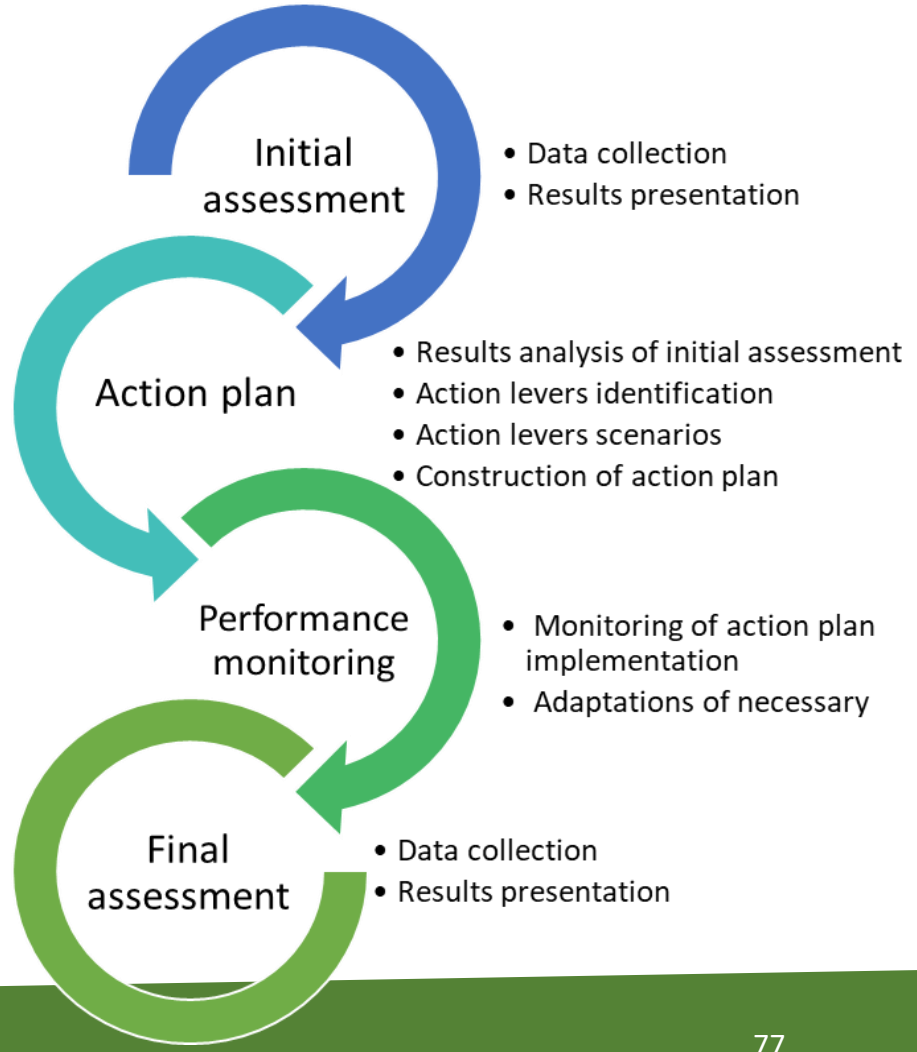
- Assessing GHG emissions but also other environmental, economic and social performances, on 1,355 demonstrative farms,
- Creating a national and European observatory with 1,355 sheep farms in contrasting production contexts,
- Determining the environnemental efficiency and the sustainability performances of farms according to production systems and practices,
- Achieve 5% GHG mitigation on demonstrative farms scale.

All 1st assessments will be done by March 2023



Action C4: Monitoring of 282 farms in Europe and construction of carbon plans to ensure their sustainability

- Assessing GHG emissions but also other environmental, economic and social performances, on 282 innovative farms,
- Developing innovative farms with a low carbon footprint,
- Demonstrating the feasability of mitigation practices in real conditions,
- Evaluating the technical, environmental and economic benefits of adopting mitigation GHG practices at farm level,
- Achieve 12% GHG mitigation on innovative farms scale.



All 1st assessments will be done by December 2022

A large diversity of sheep farms

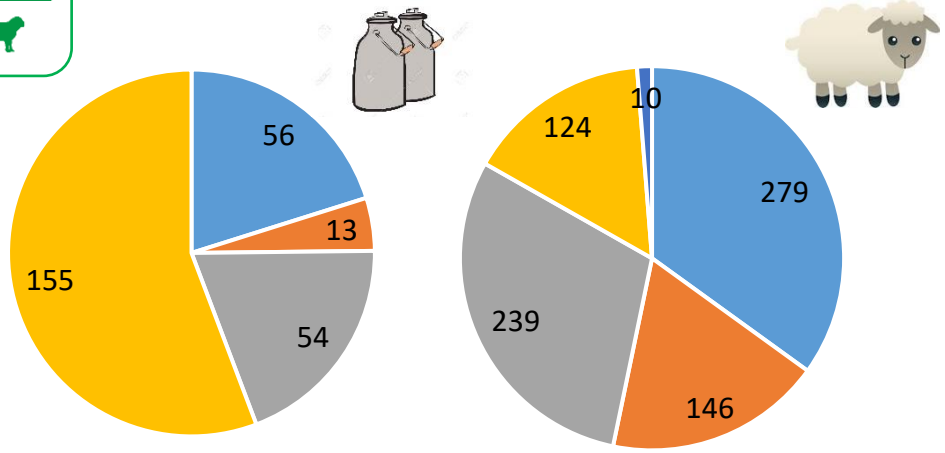
- The project partnership allows us to cover different production systems (from extensive grazing / low input to intensive / indoor), various feed resources, various feeding systems, various types of farms, various breeds, etc.

- Classification of sheep systems *(based on EuroSheep project classification)*
  - Representative of the sheep farms diversity met in each country
  - A sample which includes voluntary commercial farms
  - but also, agricultural high school and experimental farms (as innovative farms)

Shepherded: Continuous presence of the shepherd with the sheep.
Extensive: < 1 ewe/ha
Semi-extensive: Dairy: grazing natural grassland plus some supplementation Meat: ~ 2-4 ewes/ha
Semi-intensive: Dairy: Grazing plus supplementation and winter housing Meat: ~5-11 ewes/ha
Intensive: Dairy: continuously housed (no pasture) Meat: > 12 ewes/ha

On-going farms' assessments
At the project scale

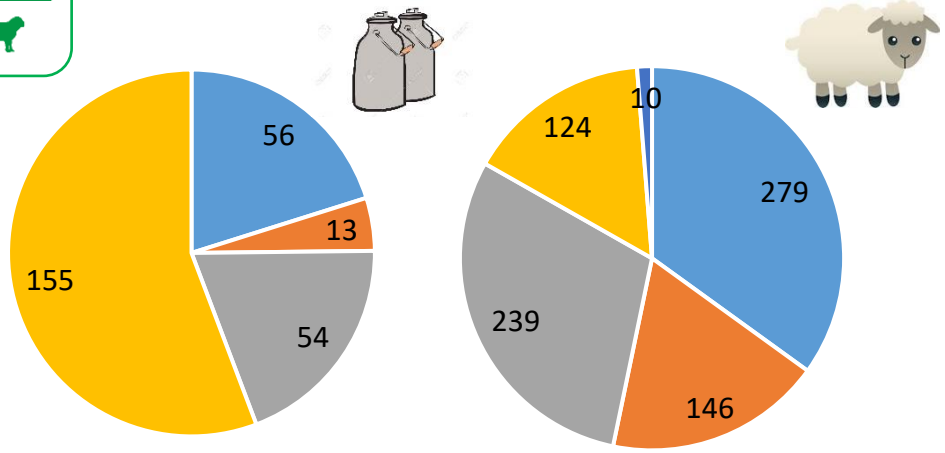
1,355 Demonstrative farms



SUMMARY	Assessment of demonstrative farms - Progress report
Meat sheep farms	14%
Dairy sheep farms	40%
Total	22%

On-going farms' assessments
At the project scale

1,355 Demonstrative farms



SUMMARY	Assessment of demonstrative farms - Progress report
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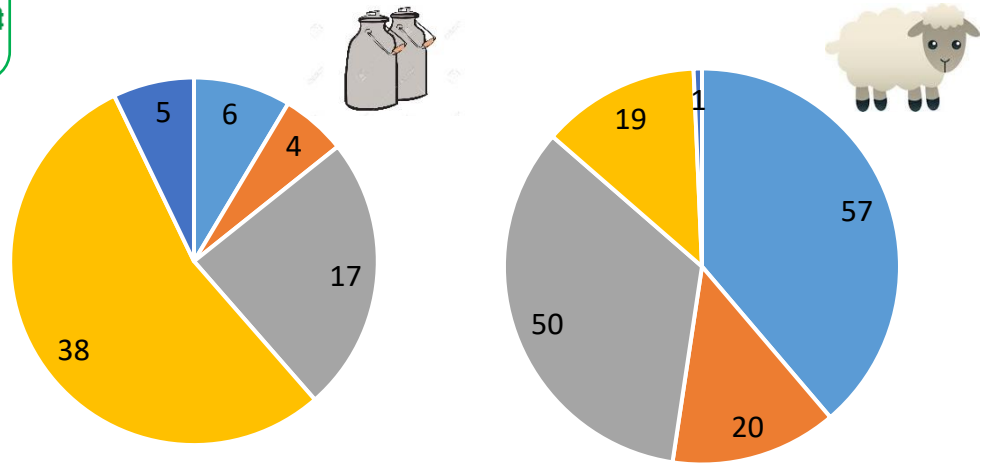
Total	22%

282 Innovative farms



SUMMARY	Assessment of innovative farms - Progress report
Meat sheep farms	2%
Dairy sheep farms	20%
Total	8%

On-going farms' assessments
At the Italian scale

WORK IN PROGRESS

On-going farms' assessments
At the Italian scale

For the selection of the **100** demonstrative farms (Action C3) and the **16** innovative farms (Action C4), the criterion adopted by the LAORE Agency for carrying out technical assistance and territorial consulting could be followed.

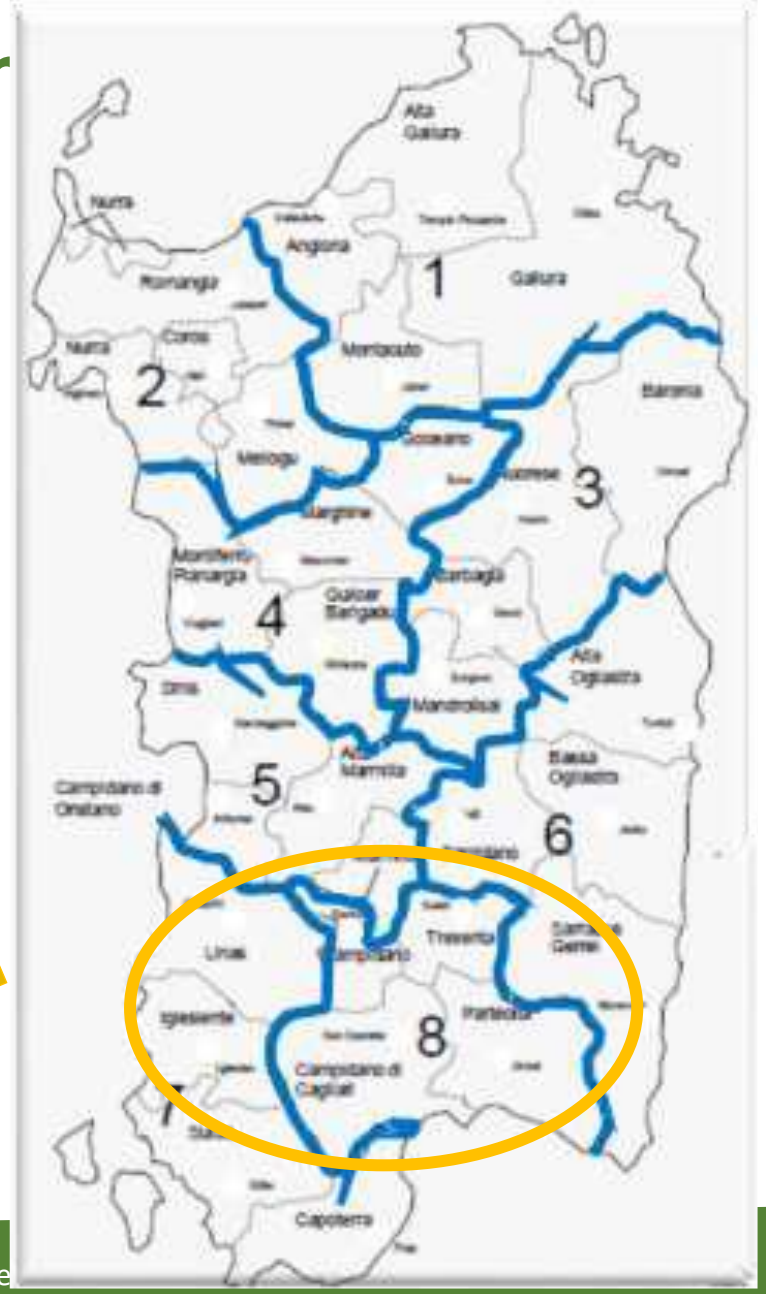
The regional territory was divided into eight territorial areas, each in turn divided into **4 sub-areas**.
The choice of demonstrative and innovative farms could be made by identifying in each area about 12/13 demonstration companies and then 2 innovative companies that perhaps have different levels of extensification/intensification.

On-going farms' assessm
At the Italian scale

WORK IN PROGRESS

Action C4 : 4 innovative farms

Action C3 : 30 demonstrative farms



On-going farms' assessments

At the Irish scale

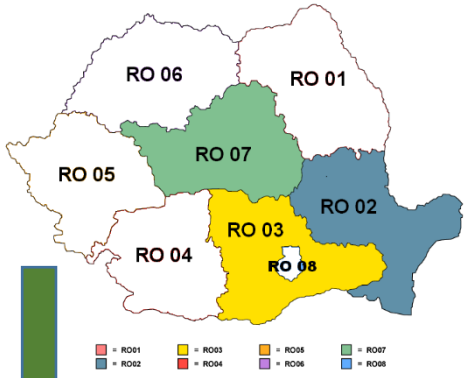
WORK IN PROGRESS

- Demonstration farms -180 farms identified
  - assessment completed on 51 farms
  - 90 will be completed by October

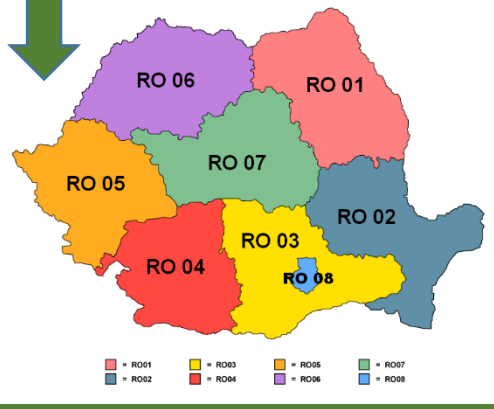
- Innovative farms - 15 of the 20 farms identified
  - data collected and assessments to commence

On-going farms' assessments
At the Romanian scale

WORK IN PROGRESS



extension from three to all euro-regions (within the same budget)



overall target: 100 DEMO farms + 10 INNO farms

 # 40+ farms identified

 # 22 data sets collected (by the GHG advisors)

 # 22 data sets priorly checked for errors & misunderstandings (+ check-up with farmers)

 # ongoing assessment using adapted CAP'2ER tool

 # 9 farms identified

 # 5 farms – objectives explained; agreements "in principle"
2 others – contacted, ongoing...

 # 2 datasets collected

 # CAP'2ER assessments yet to start

On-going farms' assessments
At the Spanish scale

WORK IN PROGRESS

- For meat sheep farms 

	Demostrative		Innovative	
	Sample	1st Assess.	Sample	1st Assess.
Shepherded	10		1	
Semi-intensive			1	
Semi-extensive	22		7	
Extensive			1	
Total	32	0	10	0

Demonstrative farms' sample :
100% Commercial Flocks
100 % Sheep farms + crops

Innovative farms' sample :
100% Commercial Flocks
80 %Sheep farms + crops
20% Specialized sheep farms

100% PGI "Ternasco de Aragón"

On-going farms' assessments
At the Spanish scale

WORK IN PROGRESS

- For dairy sheep farms 

	Demostrative		Innovative	
	Sample	1st Assess.	Sample	1st Assess.
Intensive	13	11	3	3
Semi-intensive	14 + 26	13 + 1	1 + 1	1
Semi-extensive	2		5	
Extensive				
Total	27 + 28	24 + 1	4 + 6	4 + 0
	55	25 (45%)	10	4 (40%)

Castille-León + Basque Country

37% PDO "Idiazabal Cheese"

37% Farm made cheese

3,6% organic

On-going farms' assessments
At the French scale

WORK IN PROGRESS

885 Demonstrative farms

- 800 meat sheep farms 
- 185 dairy sheep farms 

211 Innovative farms

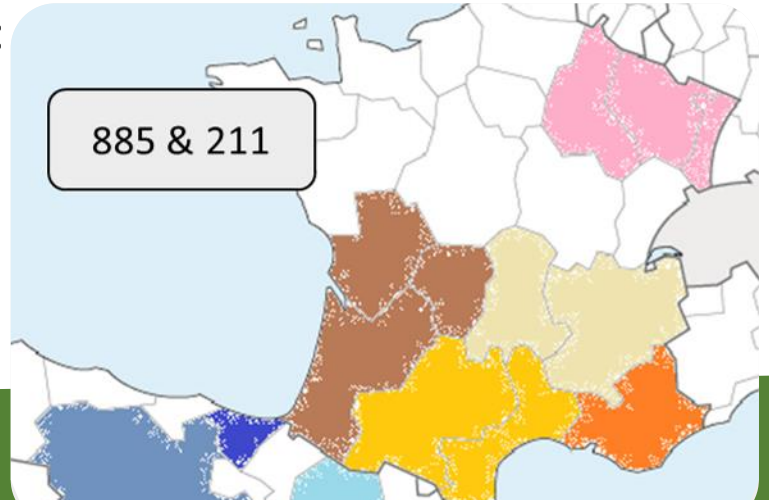
- 155 meat sheep farms 
- 56 dairy sheep farms 

On-going farms' assessments
At the French scale

WORK IN PROGRESS

885 Demonstrative farms

- 800 meat sheep farms
- 185 dairy sheep farms
- All French rearing sheep systems represented
  - Specialized & mixed farms
  - Including high school farms
  - From 5 regions :



211 Innovative farms

- 155 meat sheep farms
- 56 dairy sheep farms
- All French rearing sheep systems represented
  - Specialized & mixed farms
  - Including high school & experimental farms
  - From 5 regions

On-going farms' assessments
At the French scale

WORK IN PROGRESS

885 Demonstrative farms

- 800 meat sheep farms
- 185 dairy sheep farms
- Work in progress :
  - 22% of the assessments done
  - Most of the assessments will be done during Autumn period

Région	Avancement (%)
AURA	6%
PACA	24%
Occitanie	32%
Nouvelle-Aquitaine	21%
Grand-Est	6%

211 Innovative farms

- 155 meat sheep farms
- 56 dairy sheep farms
- Work in progress :
  - 45% of the assessments done
  - Most of the assessments will be done during Autumn period

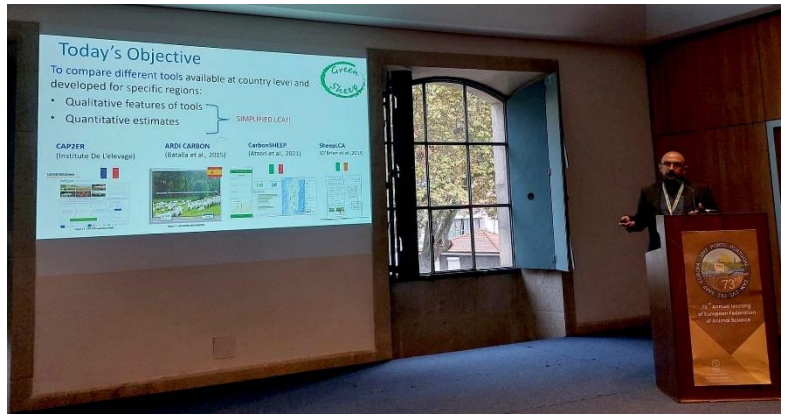
Région	Avancement (%)
AURA	42%
PACA	45%
Occitanie	55%
Nouvelle-Aquitaine	40%
Grand-Est	29%

How to disseminate the results of the project and inform farmers and avisers widely ?

Caroline Guinot – Ressources Agro (France)

Presence at scientific, technical and agricultural events

Presentation of the project and the tools



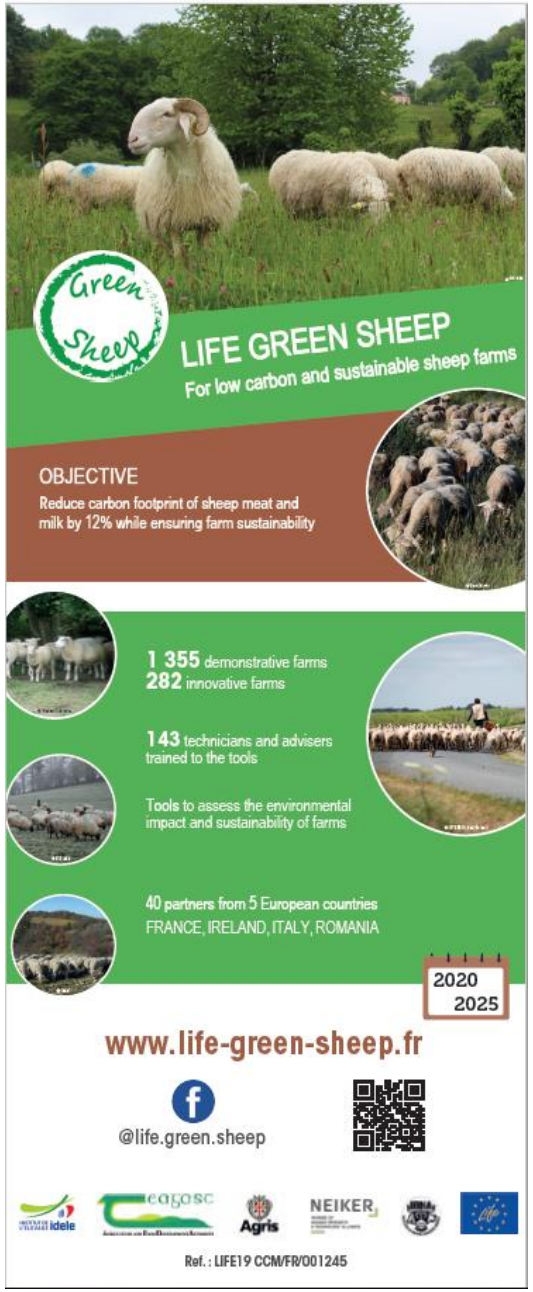
E4 : Results dissemination

	Tasks
E4 : LIFE [illegible] results dissemination	1-Farm open days
	2-Professionnal conferences
	3-Participation to scientific conferences
	4-Results' dissemination to goat systems

- Professional conferences to present the project
  - 2021
    - France → several national livestock shows : SPACE (Rennes, West of France, 09/21), Sommet de l'Elevage (Clermont-Ferrand, Center of France, 10/21)
  - 2022:
    - France → several national livestock shows : Provinlait (Requista, 06/22), SPACE (Rennes, West of France, 09/22), Sommet de l'Elevage (Clermont-Ferrand, Center of France, 10/22), « Journées techniques ovines » (lot, 10/22)
    - Spain → Ovinnova (Valladolid, 10/22)
    - Romania → « AGROMALIM - international fair for agriculture, food industry and packaging" (Arad, 09/22)

Common material to present physically the project

- Leaflets
- Rolls-up
- Power-points



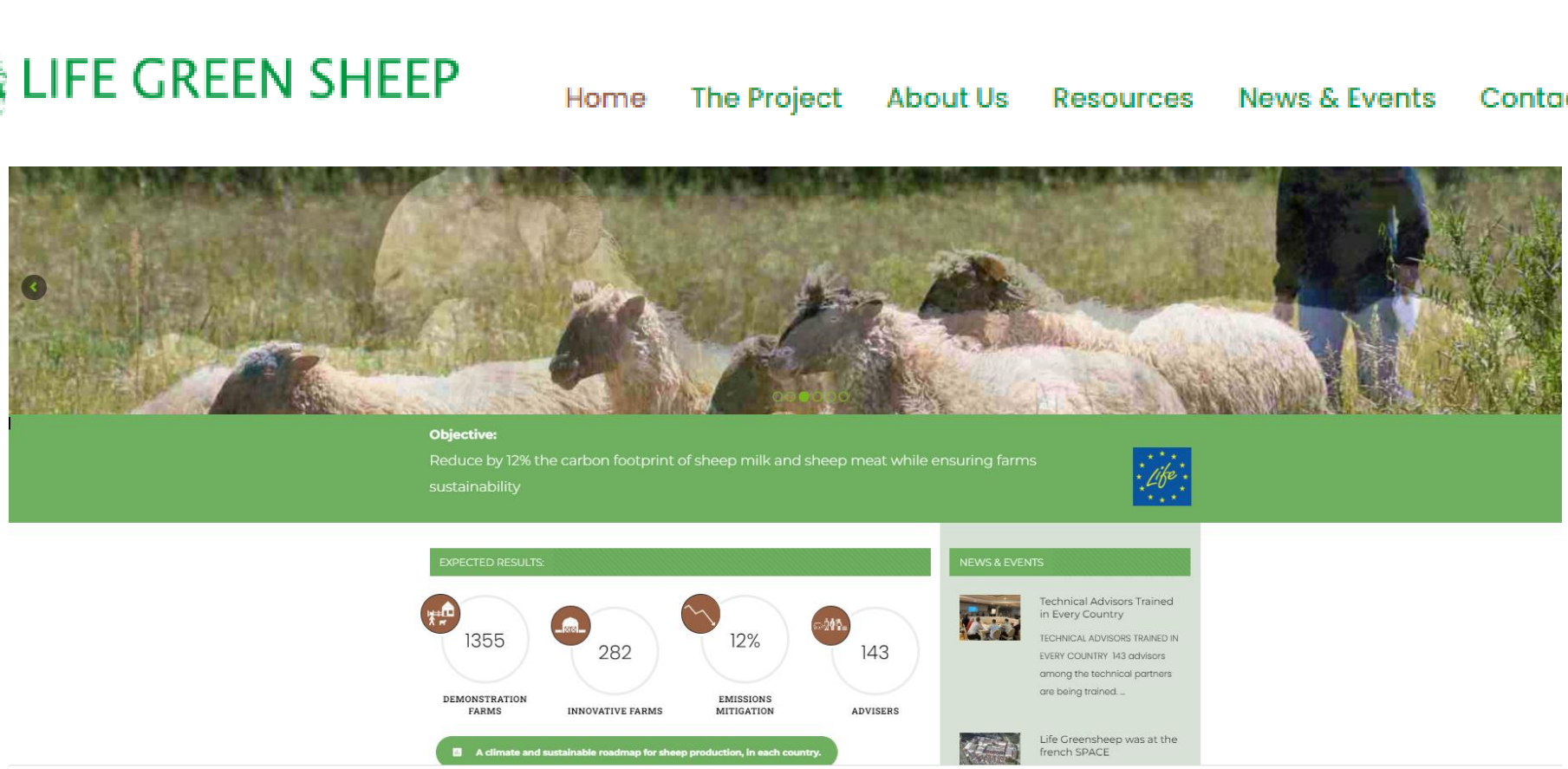
	Tasks
E4 : LIFE Green Sheep results di →	1-Farm open days
	2-Professionnal conferences
	3-Participation to scientific conferences
	4-Results' dissemination to goat systems

Scientific conferences

- Scientific conferences and papers
  - 2021 : presentation of the LIFE Green Sheep project
    - September, 30th : EAAP in Switzerland → presentation of the tools qualitative comparison (poster)
    - October, 1st : Symposium organised by IBNA in Romania → presentation of the LIFE Green Sheep project
    - April, 21st : Seminar of Innovation, technical and environmental efficiency in dairy farms - University of Turin
  - 2022 : presentation of the LIFE Green Sheep project & tools comparison
    - April, 22nd : Seminar of System dynamics modeling for sustainable Animal Science. University of Sacred Heart of Piacenza
    - April, 27th : Seminar of Environmental impact of dairy chains and use of Algae to reduce enteric emissions. Seminar at MeetJob, Climathon, University of Oristano
    - May, 31st : Anniversary session of scientific communications "95 years since the establishment of I.C.A.R. (Romanian Institute for Agricultural Research), Bucharest in Romania
    - September 5-8: EAAP in Portugal
    - September, 21th : National workshop "Results of applied research in the biology and nutrition of farm animals", Balotesti in Romania
    - September 27-29: FAO - CIHEAM in Sicily
    - October 12-14: LCA Food in Peru

A brand new web site published today !

An english base, declinaison to come in each language



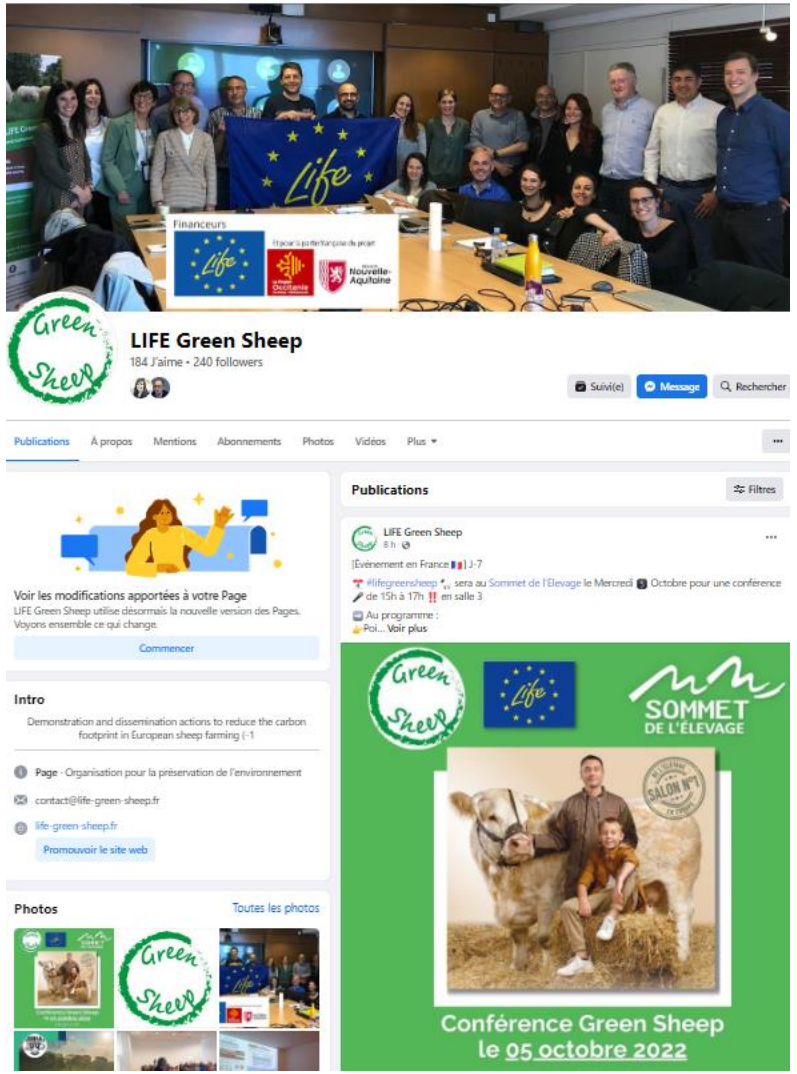
On line presency

With messages about

- European network and partners
- Key figures about the project, Livestock and Climate
- Ongoing actions (trainings, meetings)
- Events related to the subjects
- Testimonials of farmers and advisers about the interest of the project and the multiple performance

To come :

First results



LIFE Green Sheep
Publié par Sindy Moreau · 17 mars ·

[🌍#lifegreensheep project 🐑 web spaces 💻]

Come and discover the Italian web space with AGRIS Sardegna - Agenzia per la ricerca in agricoltura ❗ Have a good visit ! 🙂

http://www.sardegnaagricoltura.it/index.php?xsl=443...

#L... Voir plus

Voir la traduction

SARDEGNAAGRICOLTURA.IT

SardegnaAgricoltura: Progetto LIFE GREEN SHEEP

Il progetto LIFE Green Sheep si svolgerà in 5 anni da Ottobre 2020 a Settembre 2025 in 5 paesi Europei: la Francia, l'Irlanda, l'Italia, la Spagna e ...

94 Personnes touchées | 13 Interactions | – Score de diffusion | Booster la publication

LIFE Green Sheep
Publié par Caroline Guinot · 9 août ·

« Le niveau 1 de l'outil CAP'2ER nous a permis de visualiser de manière précise les effets sur l'environnement de notre mode de conduite de notre troupeau de brebis Lacaune. Le rendu nous a permis d'identifier les pratiques impactantes pour l'environnement, mais également les leviers d'amélioration et nous allons essayer de les mettre en œuvre » GAEC DE LA MAYNOBE (Remi, Régis et Christine Nespoulous)

« CAP'2ER est un outil supplémentaire d'accompagnement des exploitations ... Voir plus

Voir les statistiques et les publicités | Booster la publication

LIFE Green Sheep
Publié par Caroline Guinot · le 8 septembre à 12:33 ·

Catalin Rotar, membre de l'équipe roumaine du projet LIFE Greensheep (@TAG) et directeur technique d'IBNA, a participé à AGROMALIM - salon international de l'agriculture, de l'industrie alimentaire et de l'emballage, qui s'est déroulé du 1er au 4 septembre. , à Arad, en Roumanie.

Ce fut une bonne occasion de promouvoir le projet LIFE Greensheep et d'avoir des discussions très intéressantes et stimulantes avec les visiteurs du stand de l'IBNA, sur les questions liées aux ... Voir plus

Voir l'original · Noter cette traduction

National and european newsletter

- Objective : another way to communicate about the project, to promote Green Sheep actions, to encourage regional/national initiatives

- Content :
  - News / Key figures
  - Actions in progress
  - Coming soon events
  - Focus to a local/regional events/project/…
  - Testimonies
  - Green Sheep in Europe

Life Green Sheep Newsletter #1 - June 2022

We are pleased to send you the first edition of the LIFE GREEN SHEEP program newsletter: the European program which aims to make sheep farming low-carbon and more sustainable.

Objective: reduce the carbon footprint of sheep farming by 12% while ensuring the sustainability of farms.

How?

- By deploying an environmental and sustainability diagnosis in 1355 "demonstrative farms" which will constitute an observatory and examples throughout Europe.
- By testing an action plan and levers for improvement through a more detailed diagnosis in 282 "innovative farms".

After a first year of operation, all the foundations are in place for the deployment of the program: exchanges between the 5 partner countries (France, Spain, Italy, Ireland and Romania) in order to gather knowledge regarding best practices, updating and development of tools, etc. are well advanced and all are converging towards a common evaluation method of environmental and sustainability performance. The program advisors are being trained in diagnosis tools. They have the keys in hand to start farms evaluation.

Have a pleasant reading!

Regional, national and european meetings

Objective **: to present the project to a larger public than project partners**

- Regional meetings : 1 per region during the project
  - During 2023 after the farms' assessment to be able to present results
- National meetings : 2 per country during the project
  - 1 during Spring 2023
  - 1 during Autumn 2024
- European meetings : 1 per year
  - Like today ! ☺

Carbon farming and result based solutions, a mechanism for boosting low carbon initiatives

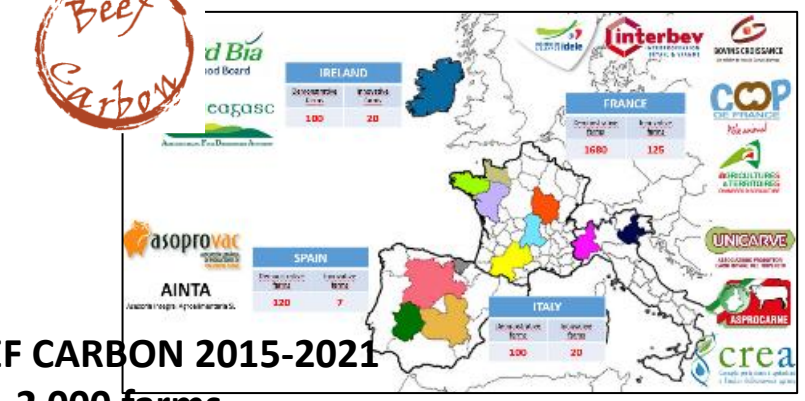
Jean-Baptiste Dollé – Institut de l'Elevage (France)

Challenges for reaching EU Climate objective

- GHG emissions and carbon sequestration
- Current and emerging low carbon solutions
- Skills on climate change and agriculture
- Methodologies and tools for assessing carbon performance
- Carbon footprint and farm efficiency
- Carbon transition costs
- Farmers involvement
- …

How carbon farming can help this transition ?

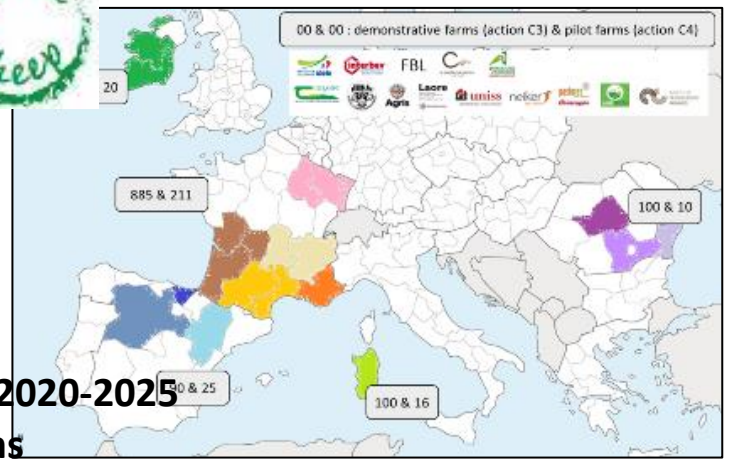
Example of Initiatives to reduce carbon intensity in mixed crops livestock systems



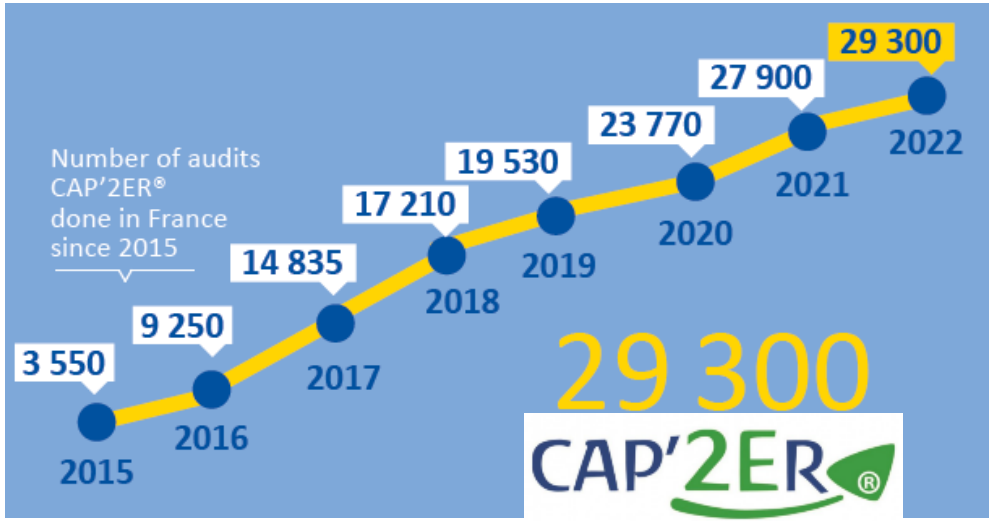
LIFE BEEF CARBON 2015-2021
2 000 farms

LIFE CARBON DAIRY 2013-2018
4 000 farms

A commitment to involve farmers in reducing by 20 % product carbon footprint

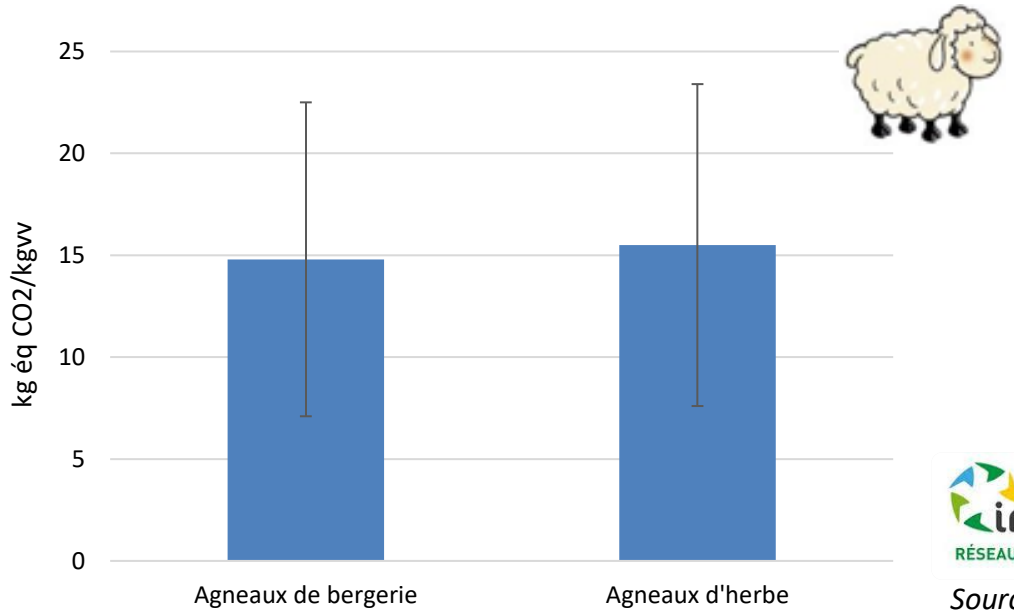


LIFE GREEN SHEEP 2020-2025
1 500 farms



What is the potential in reducing carbon footprint in agriculture now ?

- No difference between production systems…
- but high difference between efficient and less efficient farms



Source : Atténuation des émissions de GES en élevage allaitant, 2014

40 mitigations practices ready to use

GHG emissions

Inputs
Pasture management,
Concentrates and fertilizers,
Legumes, Crops rotation

Fuel and electricity
No-till cultivation,
Power and equipment,
Working organization

Crops management & fertilization
Legume fodder crops,
Optimization of fertilizers uses

Herd management
Improving productivity
Reducing number of unproductive animals, lipids

Feed
Feed efficiency,
Forage quality and yield

Manure management
Time spent in shed vs pasture,
Biogas production

Carbon sequestration

Cover crops

Avoid bare soil

Agroforestry

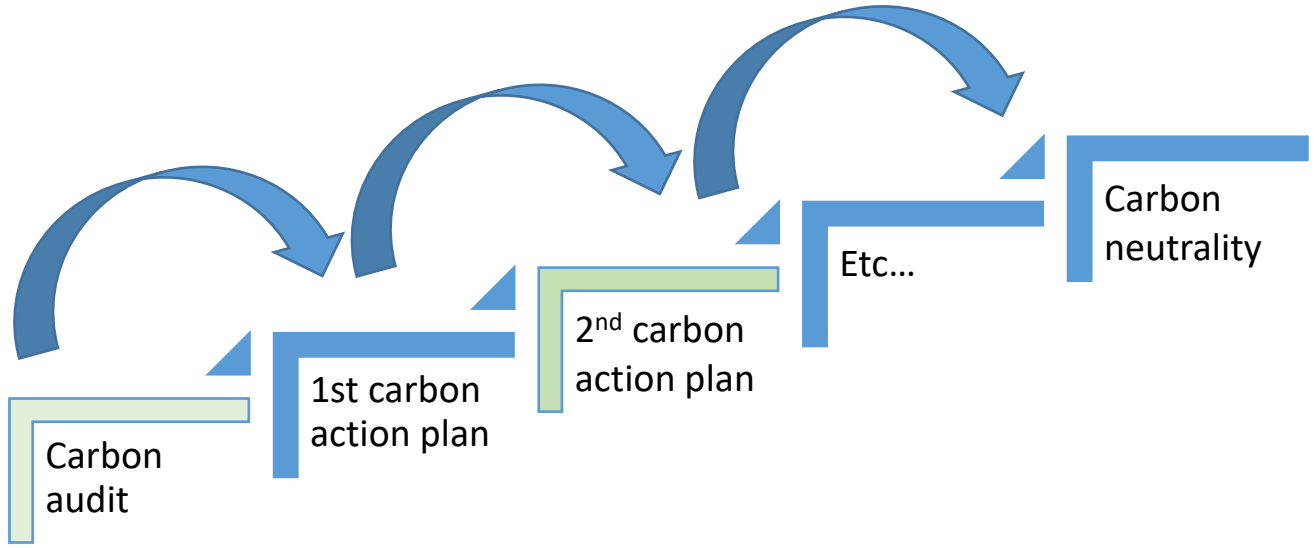
Grassland management

CAP'2ER®

The first step → A reduction of carbon footprint up to 10 to 20%

Mitigation practices for tomorrow

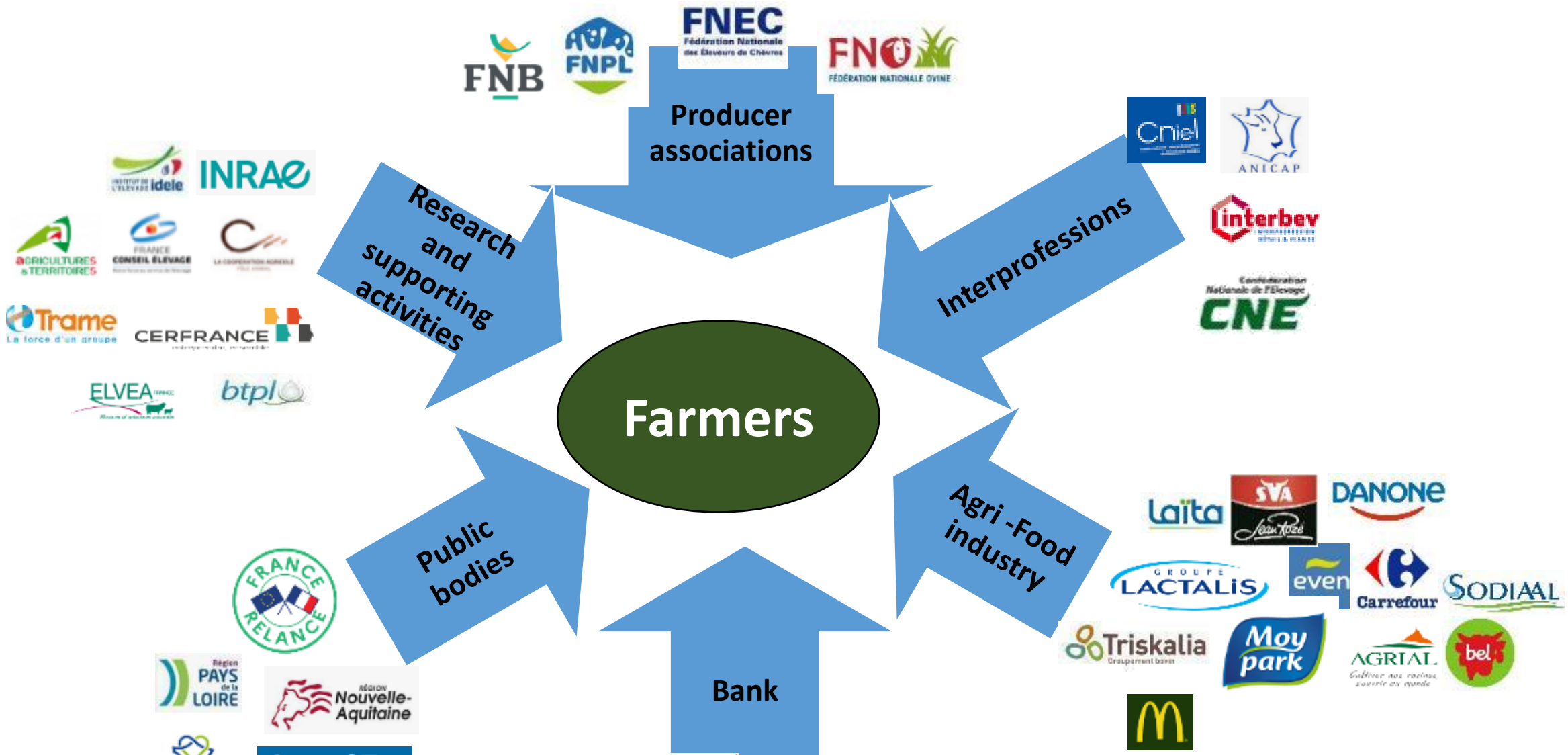
- Genetic
  - Adaptation to CC
  - Feed efficiency
  - Methane emissions
- Feed additives
  - 3 NOP, tanins, algae, citrus
- Manure management
  - Additives, nitrification inhibitors
- Carbon sequestration
- …



From research to practice,
Solutions for upscaling carbon farming

- Recruiting, and advising farmers in applying low carbon transition
- Building up a partnership for involving the 10 million farmers in EU
- Measuring farm carbon performance and progress done
- Assuring additionality and environmental integrity
- Developing a cost efficient MRV system in a transparent way
- Funding farmers for applying mitigation practices

French partnership developed for involving farmers

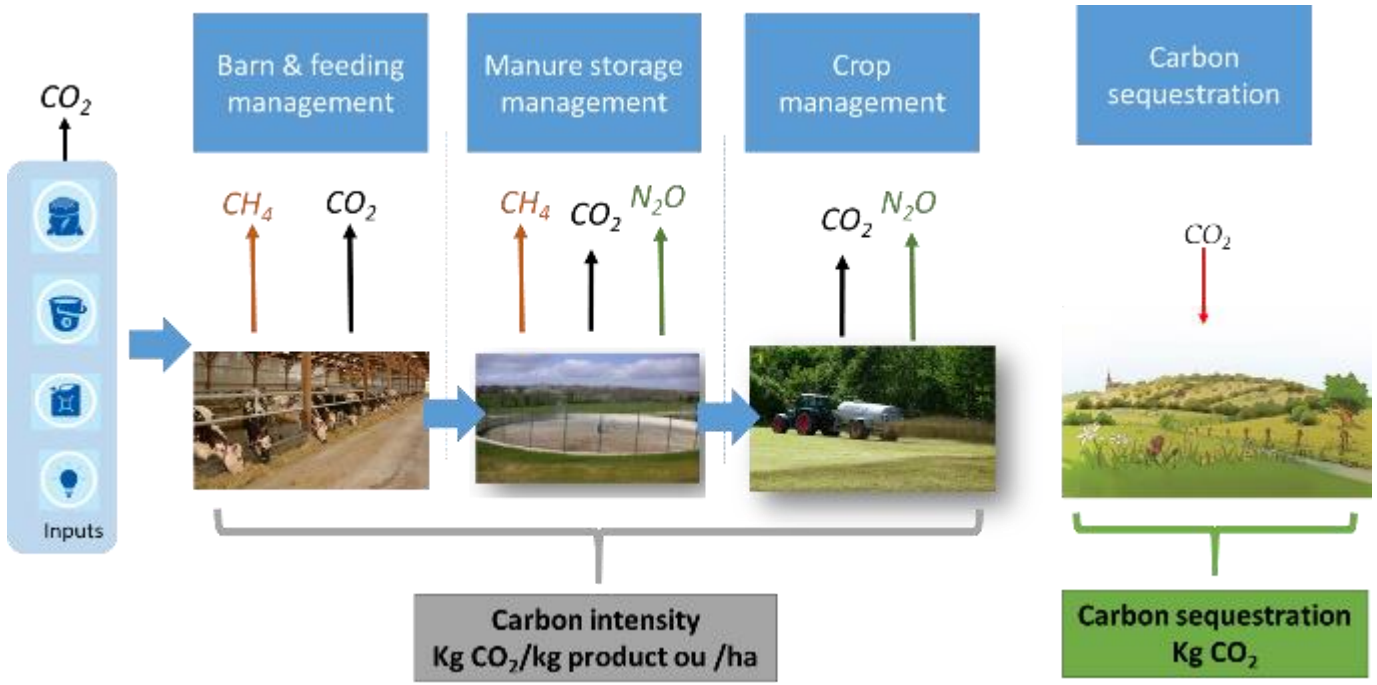


A whole farm method/tool for assessing GHG emissions and carbon removal

Tool box

CAP'2ER®

CAP'2ER®- A TOOL TO EVALUATE AND REDUCE ENVIRONNMENTAL IMPACT FROM FARMS: METHODOLOGY

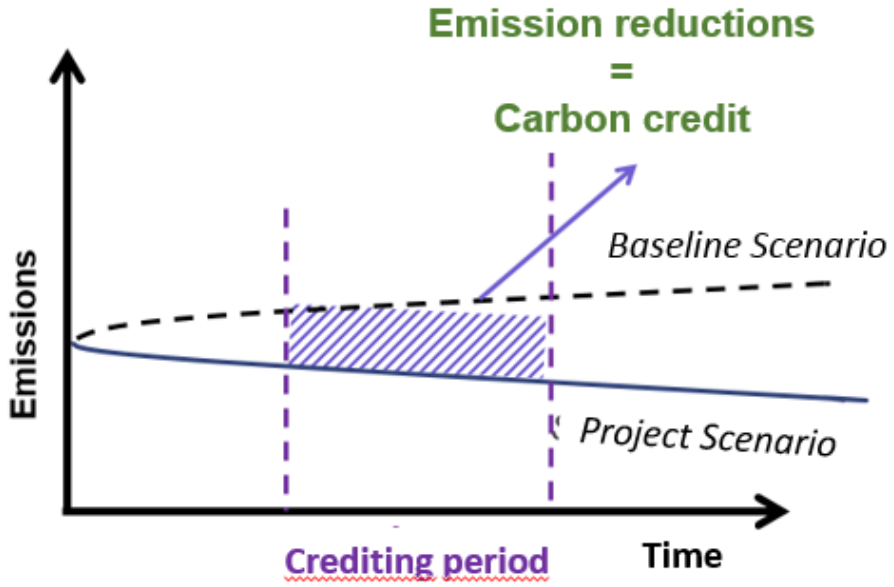


Methodology: In accordance with IPCC tiers 2&3 and main guidelines

FIL IDF · FAO FIAT PANIS · leap

Certified by BUREAU VERITAS

A certified methodology for Quantifying, Verifying and Certifying Carbon reductions



CARBON AGRI

External auditor

BUREAU VERITAS

VERIFIED

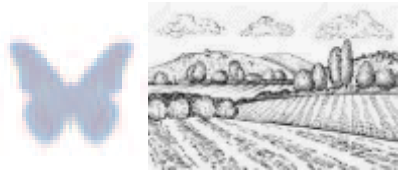
CERTIFIED

Ministère de l'Écologie, du Développement durable et de l'Énergie

LABEL BAS CARBONE

Monitoring social & environmental co-benefits

Biodiversity&Landscape



Linear meter of hedges
Hectare Grassland

Soil fertility
& Food performances

% Organic matter
Kg protein produced

Air quality

Water quality
Water consumption

Reducing deforestation

Renewable energy

6 steps for supporting farmers in low carbon transition

5 years duration

From reductions quantification to rewarding mechanism

Defining baseline 1st Audit

Building up mitigation action plan

Applying mitigation measures

Quantifying CO_2 reductions - 2nd Audit

Verifying and certifying the carbon reduction

Paying farmers for carbon reductions

From the audit to the CO_2 reductions quantification

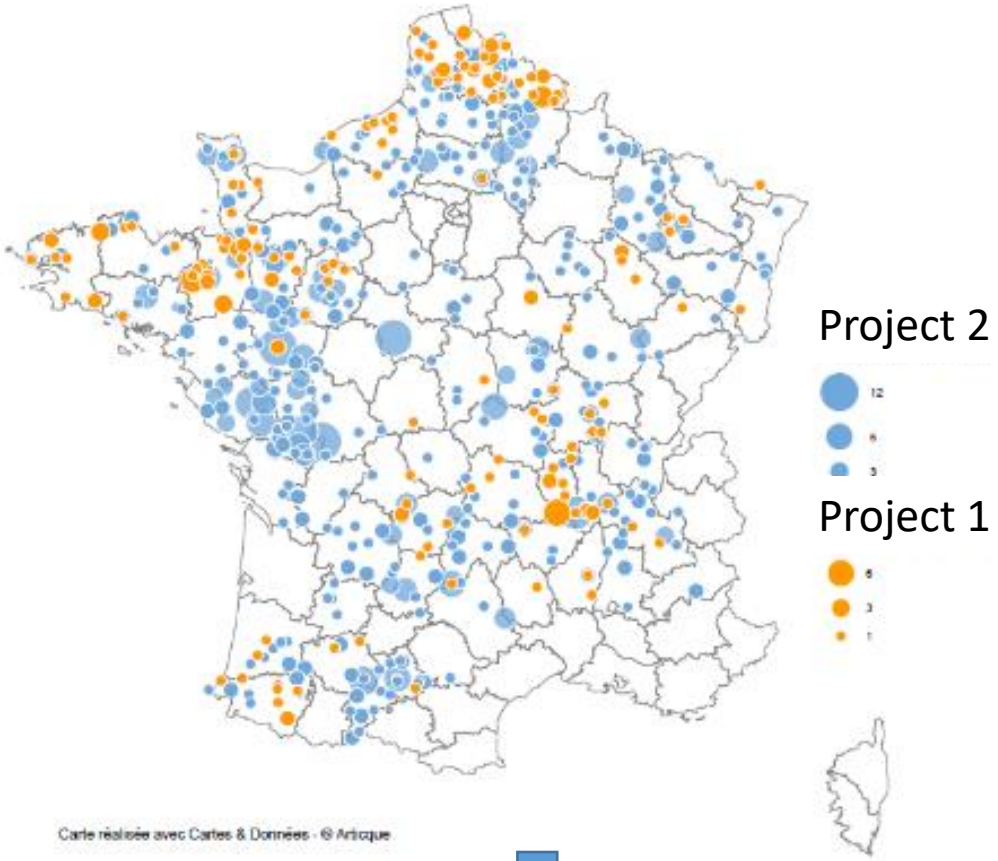
French carbon offset projects in progress

- **Project 1**
  - **301 farmers**
  - **22 project developers**
  - **138 766 tons CO_2**

- **Project 2**
  - **960 farmers**
  - **56 project developers**
  - **550 000 tons CO_2**

- **Project 3 – Under construction**

Certified LABEL BAS CARBONE



 # 700 000 tons CO_2 avoided

Farmers

Project developers and advice companies

France CARBON AGRI Association

Carbon buyers

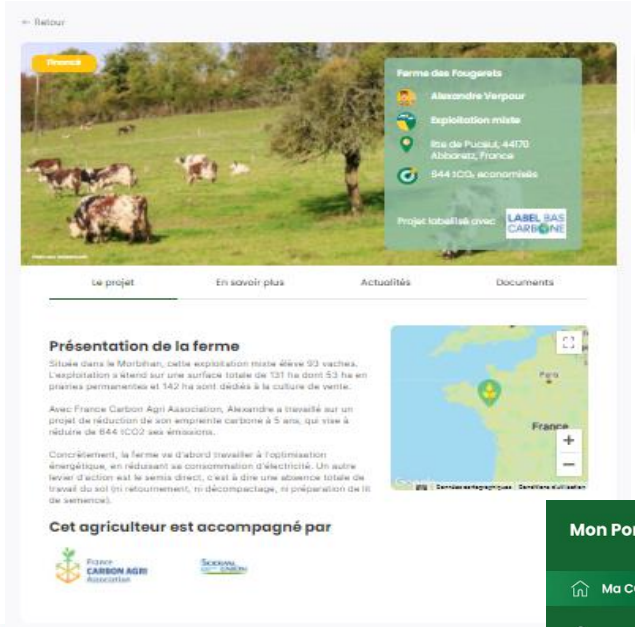
Ministry of Ecological Transition

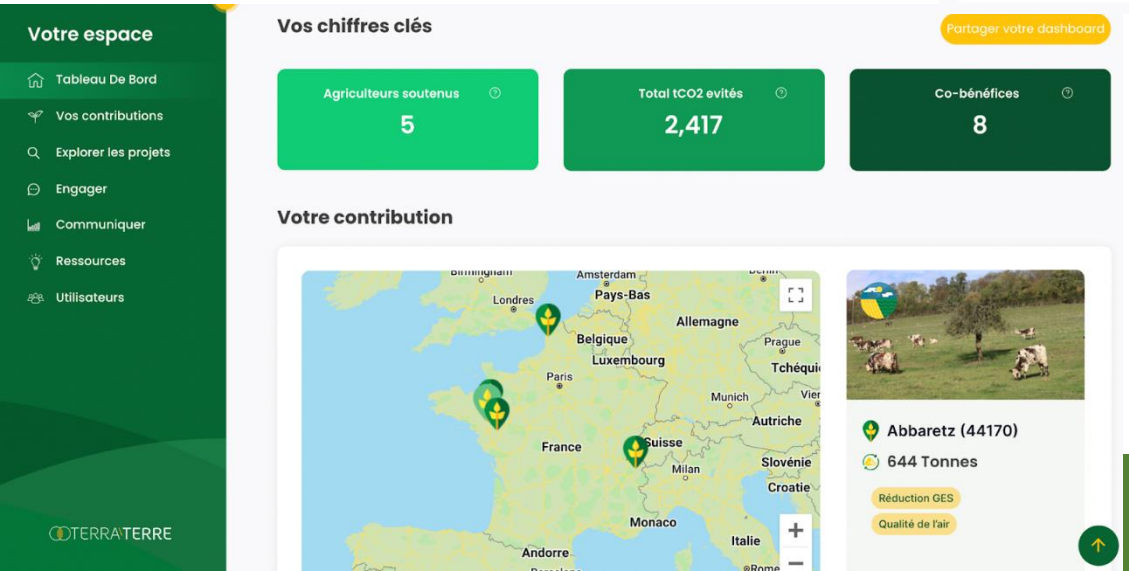
A collaborative platform for facilitating project sharing among partners

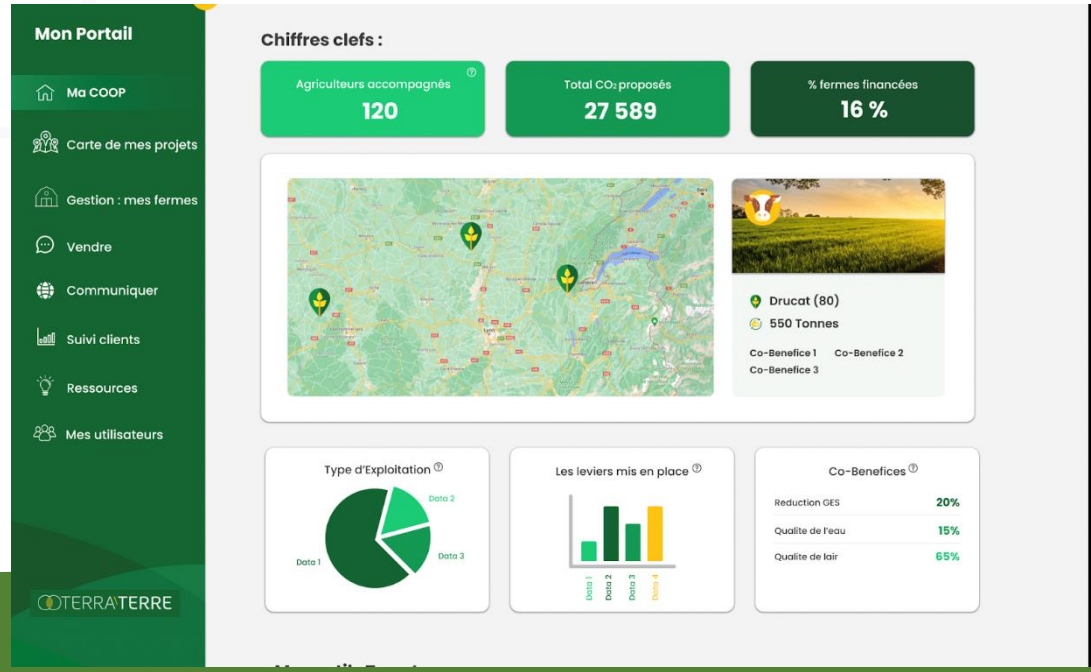
Farmers

Carbon buyers

Project developpers

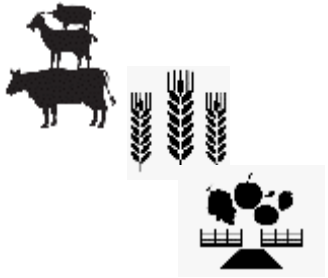




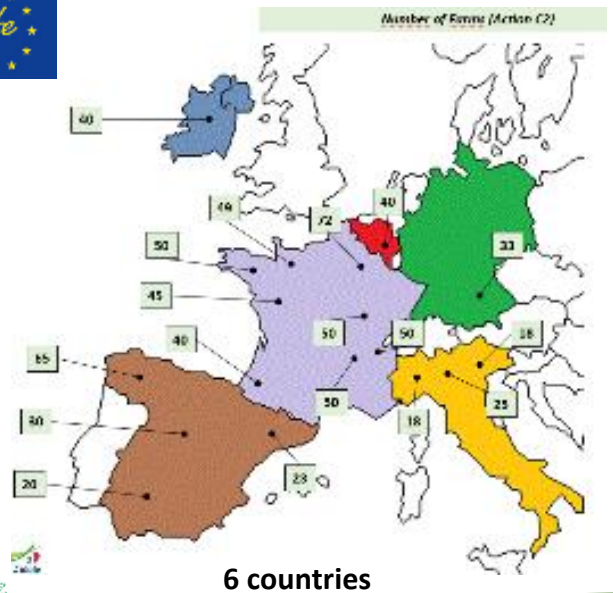


Upscaling low carbon initiatives in EU agricultural systems
Developing carbon rewarding mechanisms in agriculture

- ❑ Harmonized tools and standards at EU scale (GHG Emissions & Carbon removals)
- ❑ Co-innovation and demonstration actions in farms
- ❑ Upscaling carbon rewarding mechanism for farmers
- ❑ Feeding the European CARBON FARMING strategy

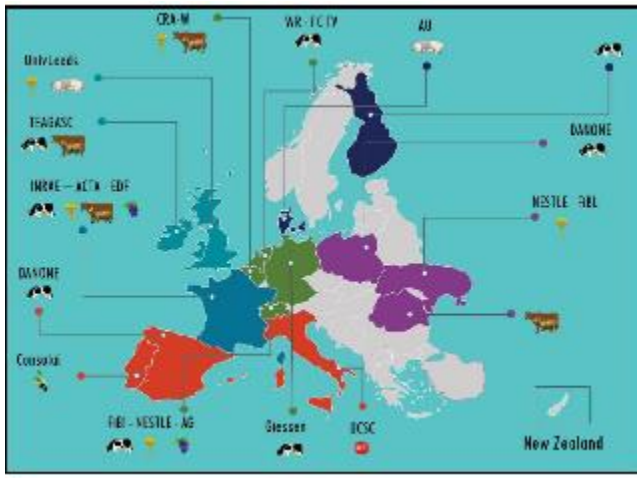


LIFE CARBON FARMING – 2021/2027



6 countries
50 partners
700 farms

H2020 CLIENFARMS– 2022/2025



12 countries
33 partners
1 200 farms

H2020 Climate Farm Demo – 2022/2029

28 countries
80 partners
1 500 farms

Take Home Message

Carbon farming, an interesting tool for low carbon transition

- **Benefits**
  - Decreasing GHG emissions, increasing carbon removals
  - Facilitating farmers and stakeholders involvement behind a common objective
  - Supporting farmers on technical aspects / innovative practices
  - Additional income for farmers
  - Contribution to agroecology and farm sustainability

- **Needs**
  - A common EU certification framework
  - Method&Tools interoperability / Open data
  - A pragmatic approach (MRV, non-permanence risk,…)
  - Diversifying funding sources (CAP, carbon finance, Ecosystem services, premium product,…)

Do you have any questions ?

Sindy Throude – Institut de l'Elevage (France)

Caroline Guinot – Ressources Agro (France)

Jean-Baptiste Dollé – Institut de l'Elevage (France)

Conclusion

Sindy Throude – Institut de l'Elevage (France)

The LIFE Green Sheep project in progress !

- LIFE Green Sheep project being disseminating within the project
  - Results available in 2023
  - Will be presented for the next EU information meeting like today !
- A project in line with the EU context and the development of carbon farming
  - A committed sheep sector
  - Importance of taking into account of positive externalities of sheep
- Stay informed about the project through :
  - The EU Newsletter: Subscribe to it !
  - The EU website: https://life-green-sheep.eu/
  - The project's Facebook page: https://www.facebook.com/life.green.sheep

Thank you for listening and please stay connected a few minutes for a survey ☺

LIFE GREEN SHEEP : for a low carbon and sustainable sheep farming

LIFE19 CCM/FR/001245 - LIFE GREEN SHEEP

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MEMBER OF
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& TECHNOLOGY ALLIANCE

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