TECH CARE

Integrating innovative TECHnologies along the value Chain to improve small ruminant welfARE management

Project overview

Claire Morgan-Davies (SRUC)

17 - 18 June 2025
University Foundation - Brussels

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 862050

TechCare Integrating innovative **TECH**nologies along the value **C**hain to improve **small ruminant** welf**ARE** management

- **Starting date:** 1 September 2020 – 31 August 2025
- **Duration:** 5 years
- **Topic:** H2020-SFS-2019-1, Improving animal welfare
- **Type:** Innovative Action
- **Budget:** € 5,703,693
- **Consortium:**

9 countries, 18 partners

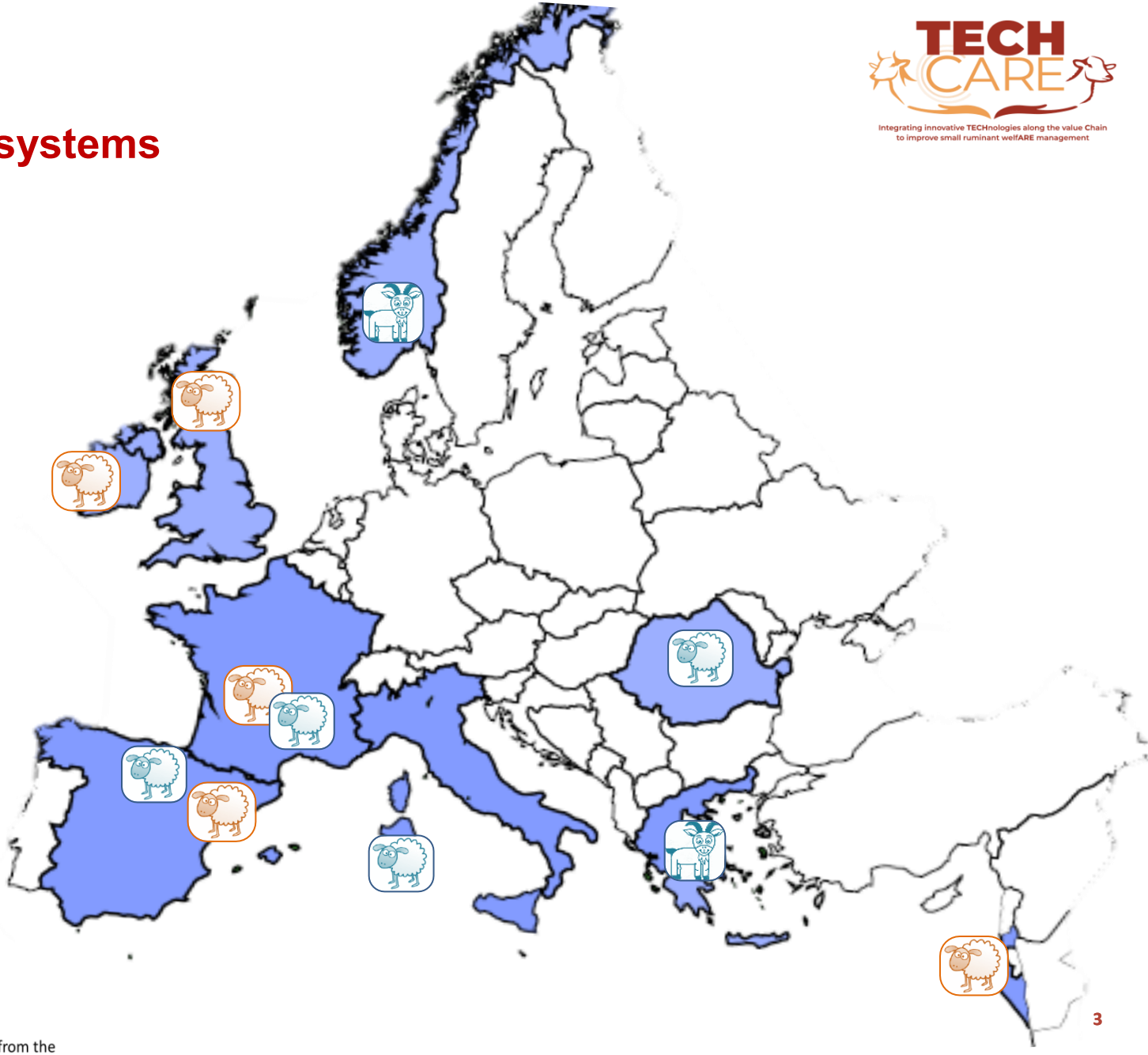
Coordinator: UK: SRUC – Dr Claire Morgan-Davies

Small Ruminant systems

Meat sheep

Dairy sheep

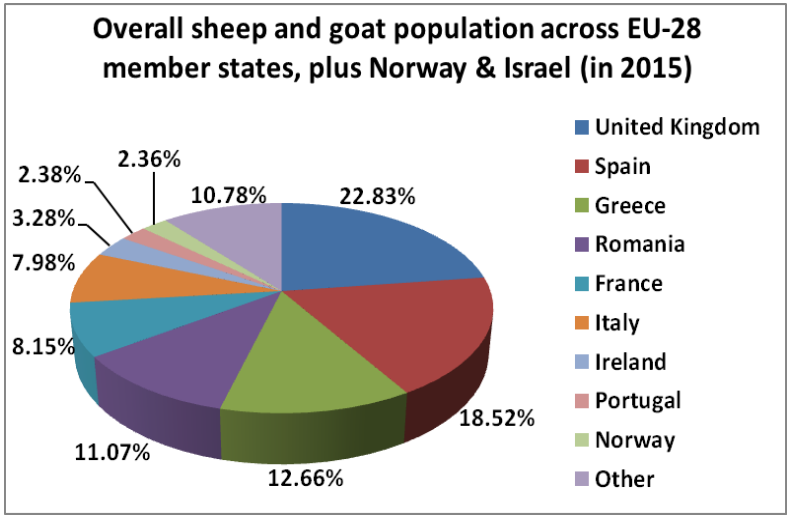
Dairy goats



This project has received funding from the European Union's Horizon 20202 research and innovation programme under grant agreement No. 862050

TechCare - **CONTEXT**

- ~ 98 million sheep & goats in EU plus 2.4 m in Norway & 0.67m in Israel.
- Mostly in challenging environments
- Part of the landscape, traditions and cultural heritage
- Labour /flock size issues



Sheep & goats: crucial role for the economy, society, biodiversity and maintaining cultural heritage

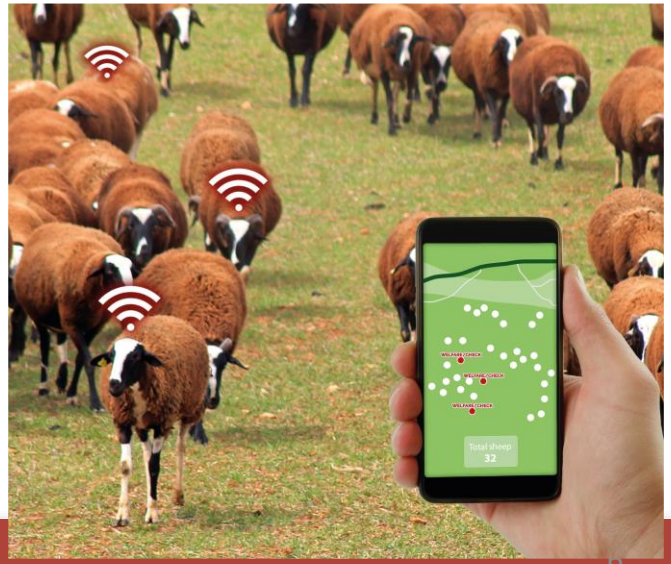
But increasing lack of labour (meat) and increase of flock size (dairy) may have a severe impact on the attention and care animals receive.

- PLF widely adopted in ‘high value’ animal sectors, but not in sheep & goats
- Very significant welfare and production efficiency advantages can be achieved by applying PLF in these contexts.
- Welfare of sheep & goats is often overlooked

can we manage welfare in small ruminant systems using PLF?

To propose innovative and cost-effective technologies to improve welfare management in small ruminants

- With **technologies adapted** to small ruminant production
- By considering the **whole production chain** (up to abattoirs)
- With adapted **early warning systems**
- Using appropriate **business models**



5 key steps:

1. Prioritise welfare challenges and issues

2. Identify potential innovative technologies solutions

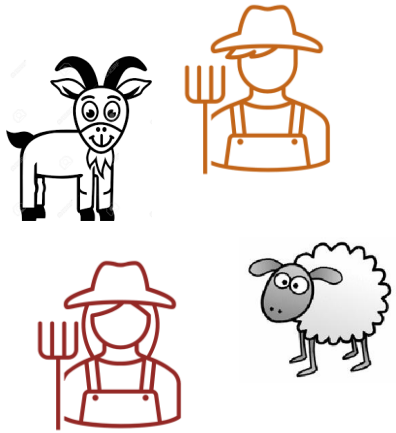
3. Validate the solutions in different and real conditions

4. Define appropriate business models

5. Communicate widely the results

7

TechCare – Outcomes & Challenges



2 main outcomes:

1. Ready to use **PLF solutions** for small ruminant welfare management (**tested & validated**)
2. List of potential technologies not yet fully ready to be deployed

-> Ambition: help ALL small ruminant farmers

Challenges:

- Cost
- Farmers' expectation
- Ease/Difficulties of implementation,
- Data analysis
- Market readiness
- Variety of environment/production systems

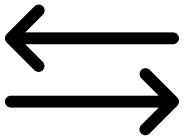
-> But we're providing a 1st STEP towards technologies in SR systems for welfare management

TechCare – Another challenge...

2020 – 2021…the Covid19 years!

- Meetings with industry, stakeholders, colleagues

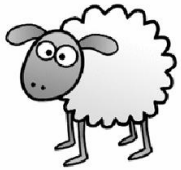
- Challenges to exchange/obtain technologies in the different countries



- Seasonal aspect of small ruminant sectors

TechCare – Project outline

Stakeholders' feedback



Improvement of animal welfare in small ruminant systems along the whole value chain

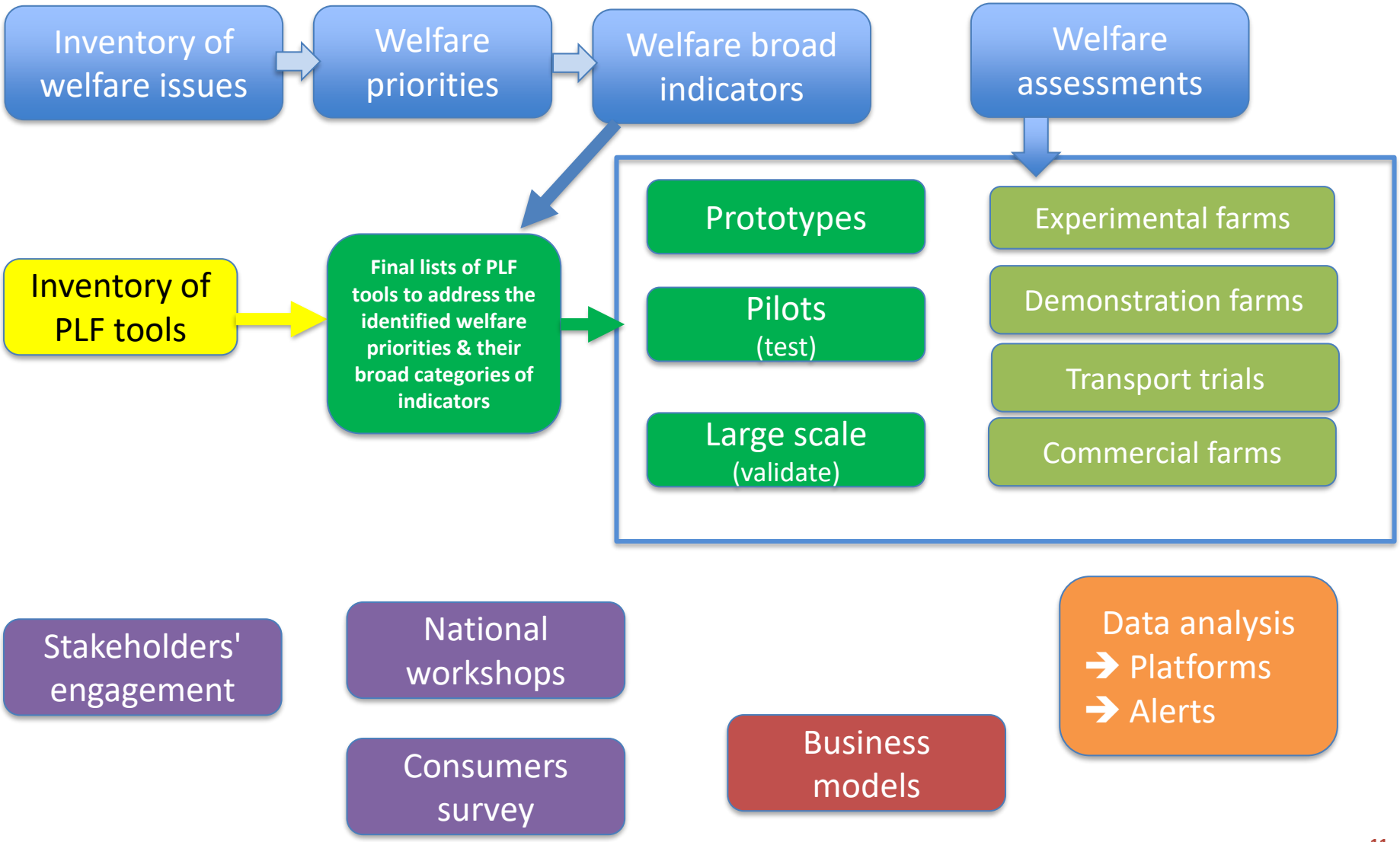
PLF innovative technology – selection, testing, validation

Data science, alerts

Innovative business models
For farmers, companies & consumers

10

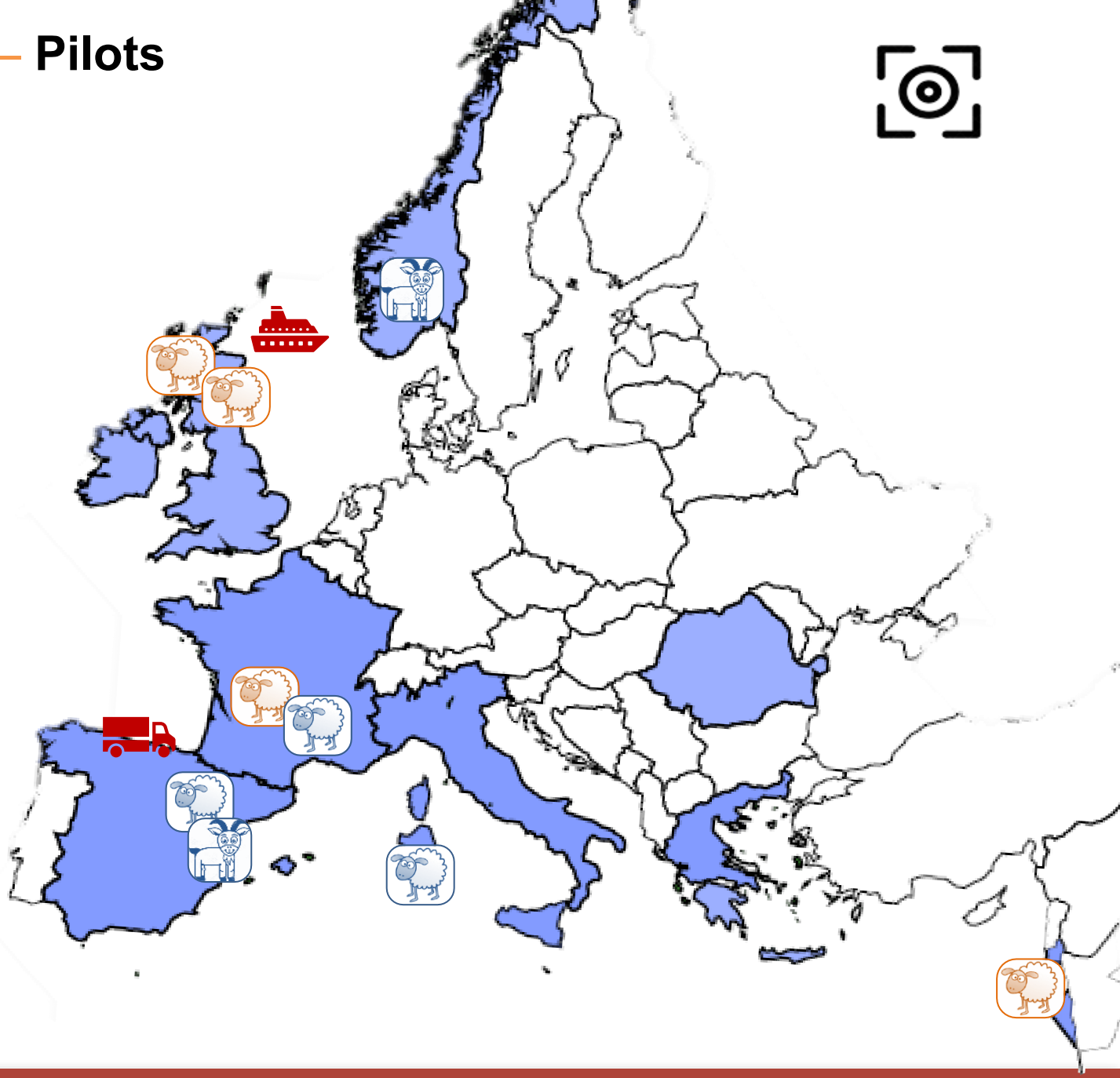
TechCare – Project implementation



TechCare – Pilots

9 Experimental farms

Transport



TechCare – Prototypes & pilots

Welfare priorities

Technological devices tested	Nutritional issues	Mastitis	Gastro-intestinal parasites	Lameness /claw health	Inappro-priate water supply	Agonistic behaviour	Poor envtal management
Water meters	BC		BC	BC	BC		
Walk-over-Weigh	BWC		BWC	BWC	BWC		
Proximity loggers	BWC		BWC	BWC	BWC		
Portable SCC readers	MY	MY					
Thermal camera	MY	MY			MY		
EID UHF ear-tags + readers	BC	BC	BC	BC	BC	BC	
EID LF ear-tags + readers	BC	BC	BC	BC	BC	BC	
Electronic milk meter	MY	MY					
Milk tank weighing scales	MY	MY			MY		
Temp. & Hum. sensors					Evt		Evt
Weather stations					Evt		Evt
Weigh crate	BWC		BWC	BWC	BWC		

PLF tools

BROAD WELFARE INDICATORS

BC = behaviour change

BWC = change in body state

MY= milk yield & quality

Evt - Environmental indicators

TechCare – Prototypes & pilot

Welfare priorities

TechCare promising innovations

Technological devices tested	Nutri… issues				…nappro-priate water …upply	Agonistic behaviour	Poor envtal management
Water meters	BC				BC		
Walk-over-Weigh	BW…				BWC		
Proximity loggers	BWC				BWC		
Portable SCC readers	MY	M…					
Thermal camera	MY	MY					
EID UHF ear-tags + reade…		BC	BC	BC			
EID LF ear-tags + …aders		BC	BC	BC			
Electronic milk me…							
Milk tank weig…							
Temp. & …							Evt
Weather static…					E…		Evt
Weigh crate			BWC	BWC	BWC		

PLF tools

Welfare assessments & priorities

TechCare pilots & transport

BROAD WELFARE INDICATORS

BC = behaviour change

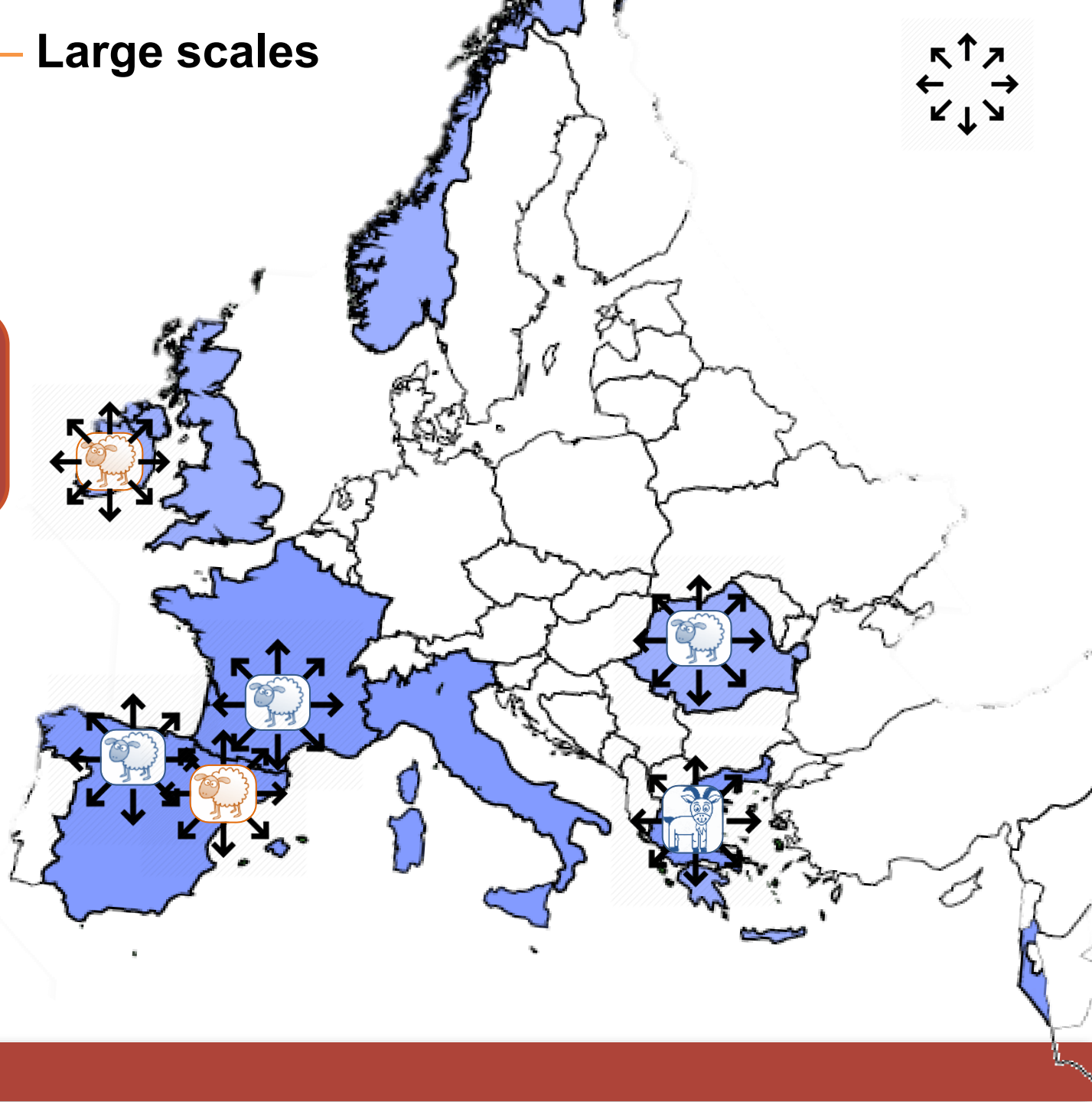
BWC = change in body state

MY= milk yield & quality

Evt - Environmental indicators

TechCare – Large scales

6 demonstration sites
60 to 120 farms



TechCare – Large scales

Technological devices	France	Greece	Ireland	Spain	Romania
EID LF ear-tags + readers	✓		✓	✓	✓
Individual milk meter	✓	✓		✓	
Milk tank weighing scales	✓	✓			
Temp. & Hum. sensors	✓	✓	✓	✓	
Weather stations	✓	✓	✓	✓	✓
Weigh crate			✓	✓	

- 6-10 commercial farms in each large scale
- Welfare assessments

- Potential to measure broad welfare indicators
- Available commercially
- Meet other criteria for likely uptake by farmers (e.g., cost, robustness, ease of use).







TechCare – Large scales

Technological devices	France	Greece	Ireland	Spain	Romania
EID LF ear-tags + readers					
Individual milk meter					
Milk tank weighing scales					
Temp. & Hum. sensors					
Weather stations					
Weigh crate					

TechCare large-scale farms

- 6-10 commercial farms in each la
- Welfare assessments

re broad welfare indicators

mercially

Me other criteria for likely uptake by farmers (e.g., cost, robustness, ease of use).

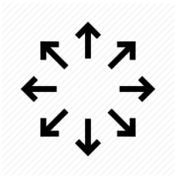






TechCare – Data analysis

PLF tools data

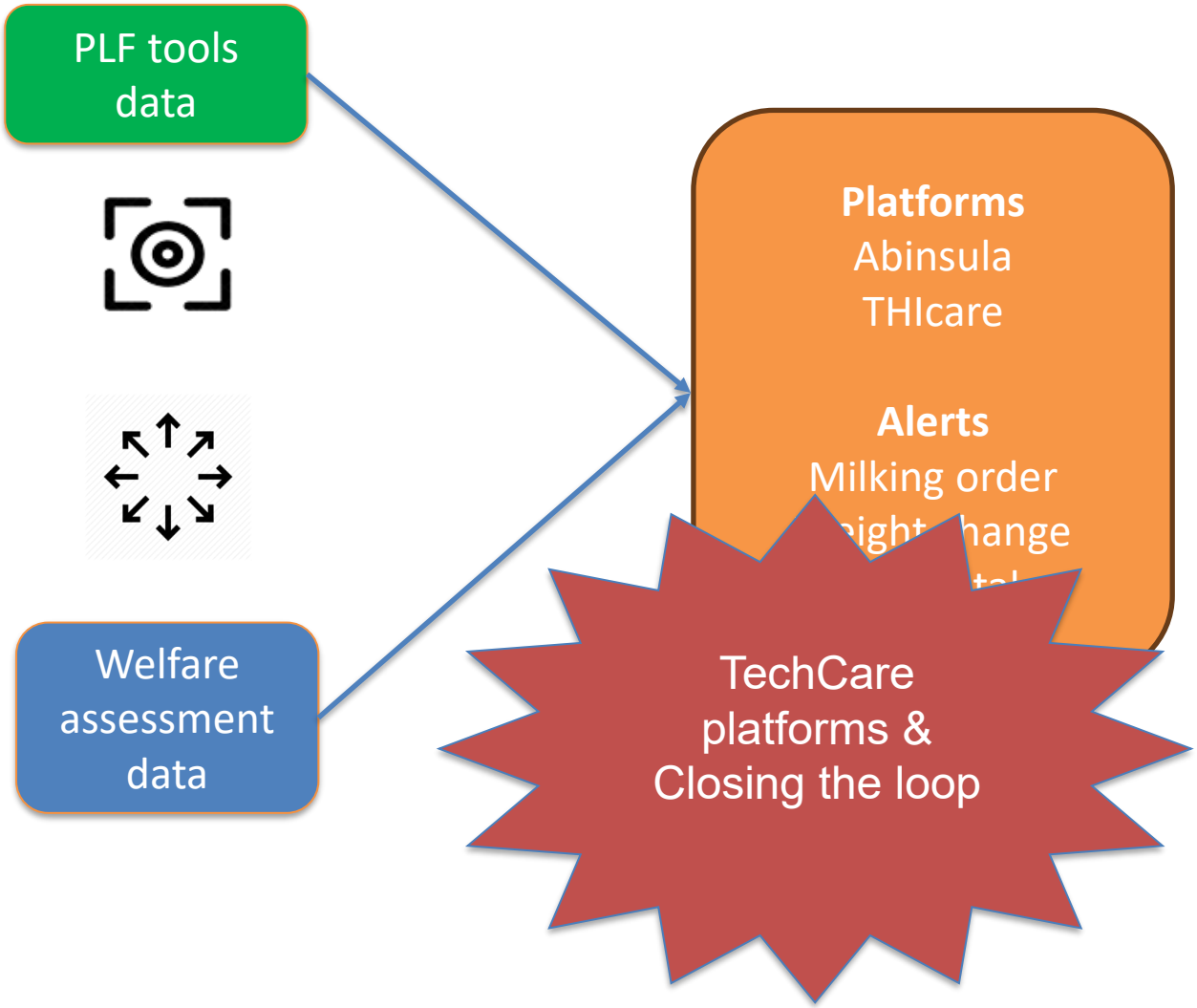


Welfare assessment data

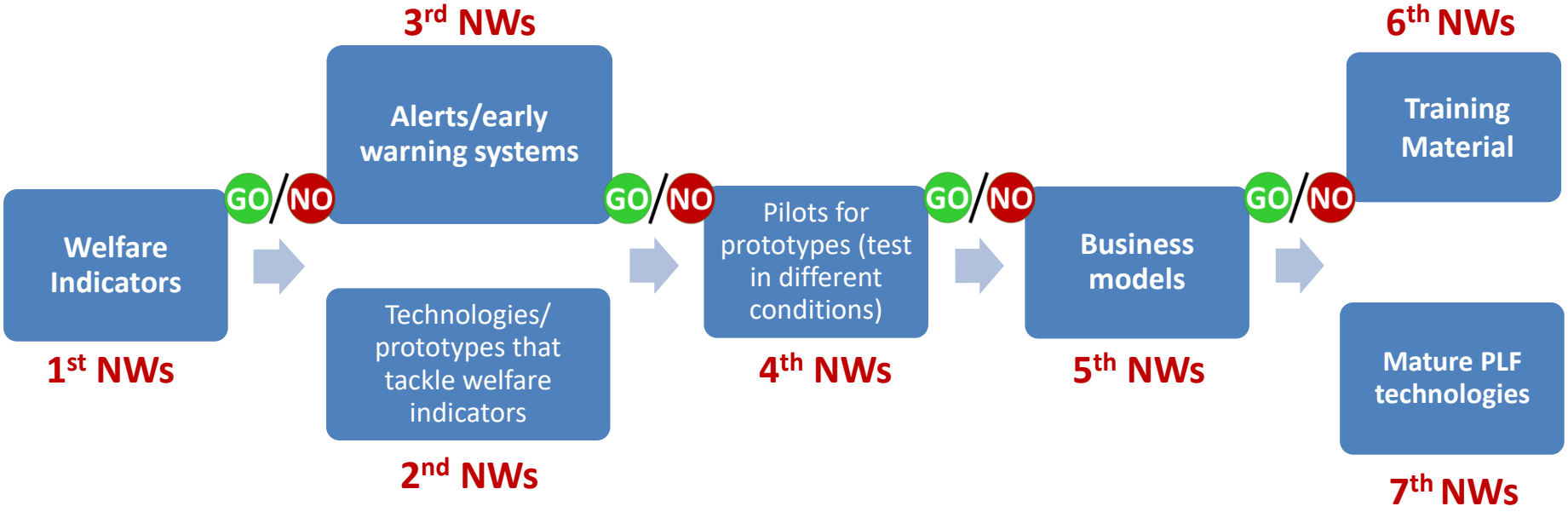
Platforms
Abinsula
THIcare

Alerts
Milking order
Weight change
Water intake

TechCare – Data analysis



TechCare – Stakeholders – a crucial role



Stakeholders decision/validation

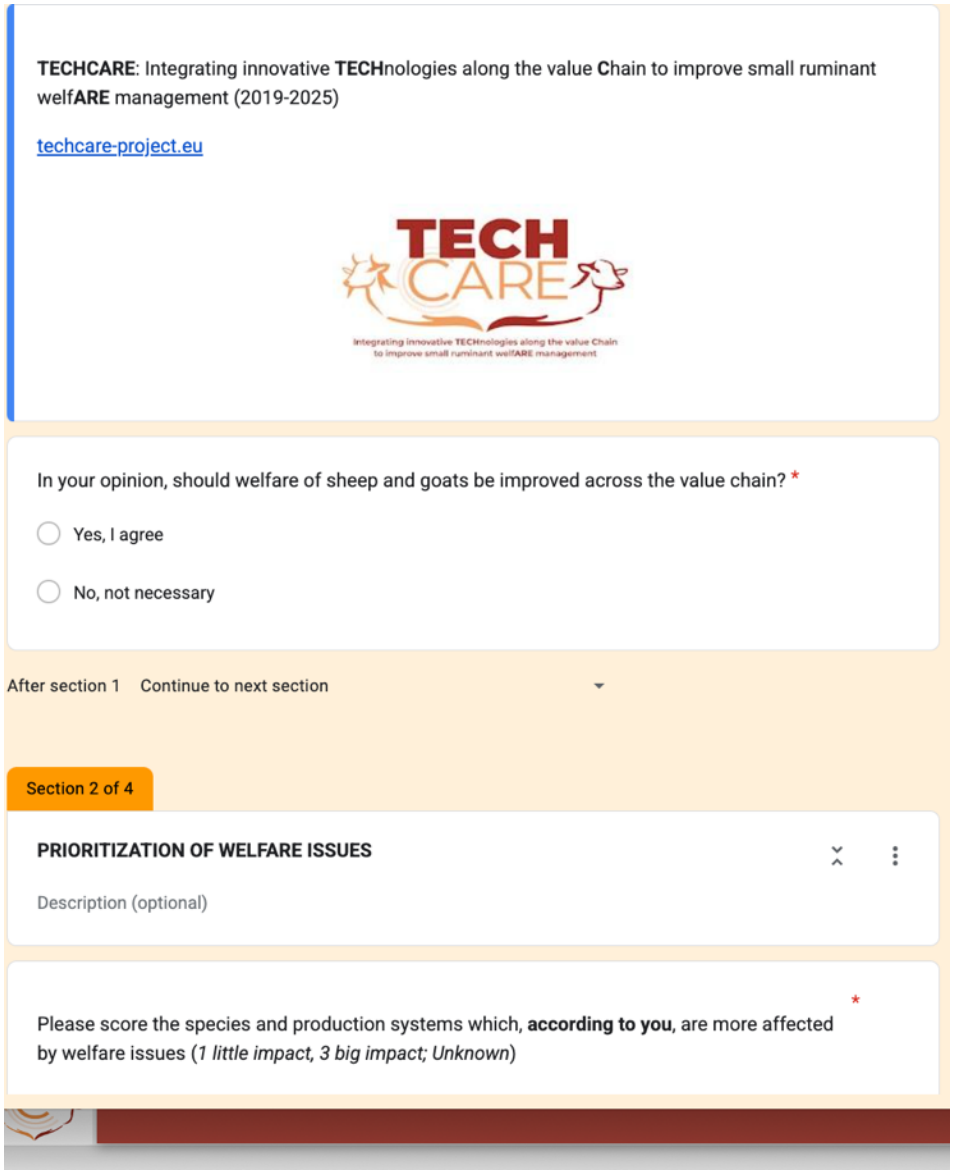
TechCare – Consumers survey

- 10 countries
- April – June 2025
- 2,863 participants in total

Country	No Participants	No Answers	Answering Ratio
FRANCE	317	314	99.1%
GREECE	326	322	98.8%
IRELAND	399	366	91.7%
ISRAEL	241	213	88.4%
ITALY	317	307	96.8%
NORWAY	119	117	98.3%
ROMANIA	n.a.	223	n.a.
SPAIN	320	310	96.9%
UK	371	345	93.0%
BELGIUM	96	91	94.8%
GERMANY	92	89	96.7%
NETHERLANDS	86	80	93.0%
PORTUGAL	92	86	93.5%
TOTAL	**n.a**	**2,863**	**95.1%***

*** Based on 12 out of 13 countries**

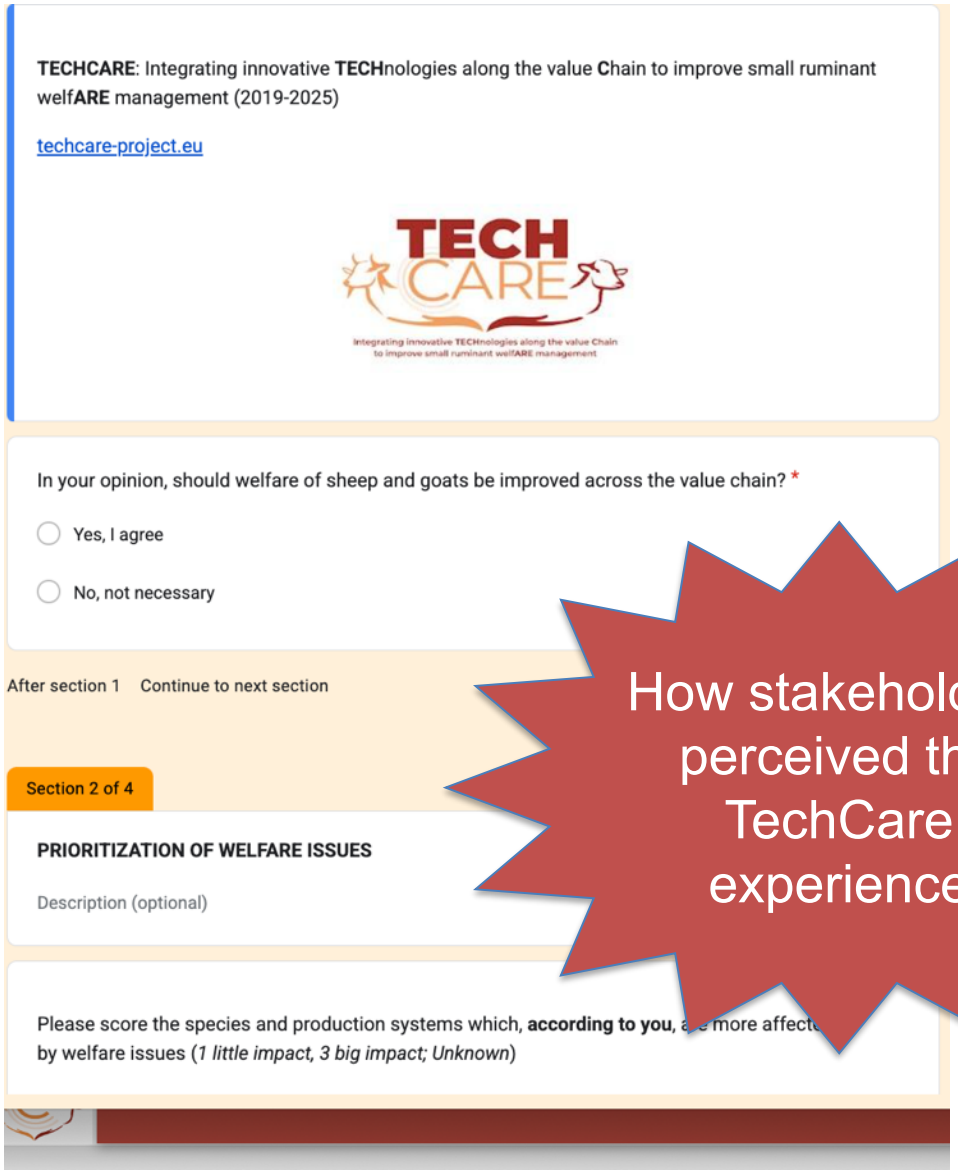
TechCare – Consumers survey



12 questions in total on:

- Overall welfare status
- Prioritization of welfare issues (at the farm, during transportation and in the abattoir)
- Consumers' perspective

TechCare – Consumers survey

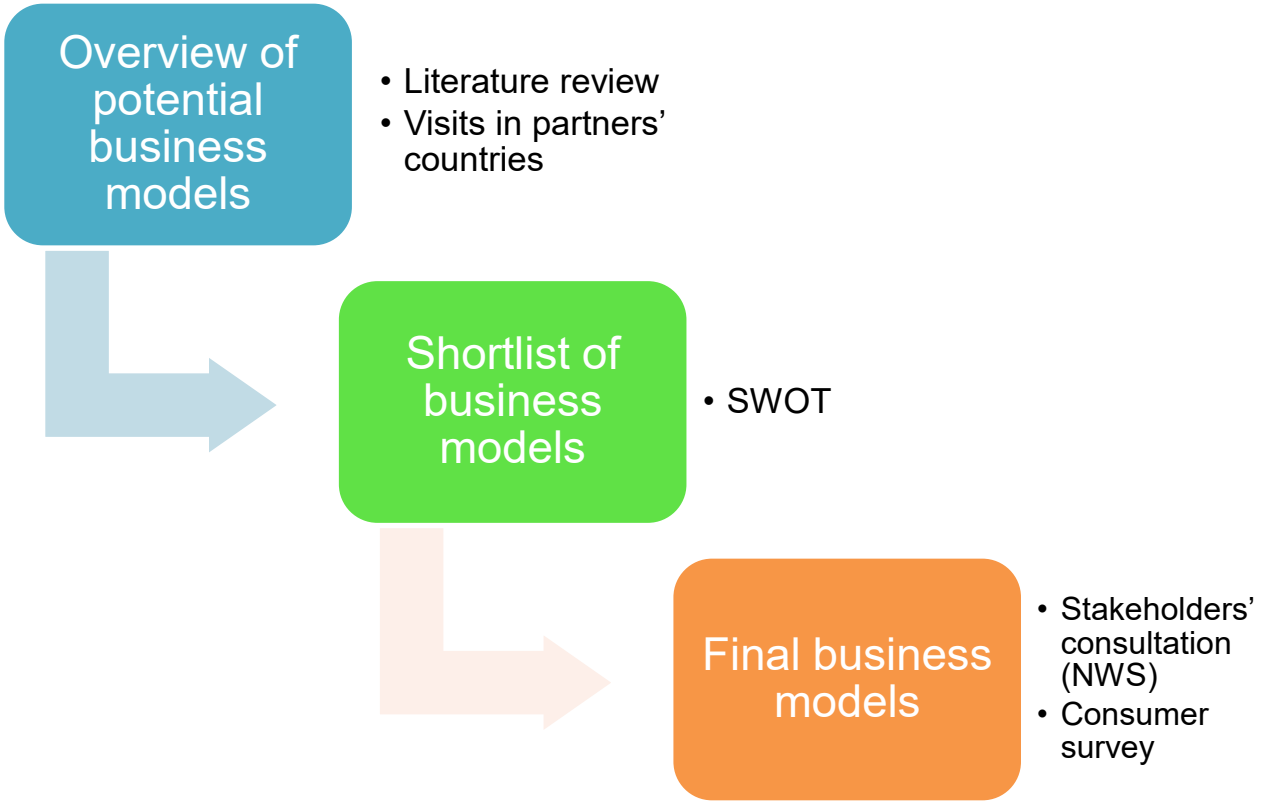


How stakeholders perceived the TechCare experience

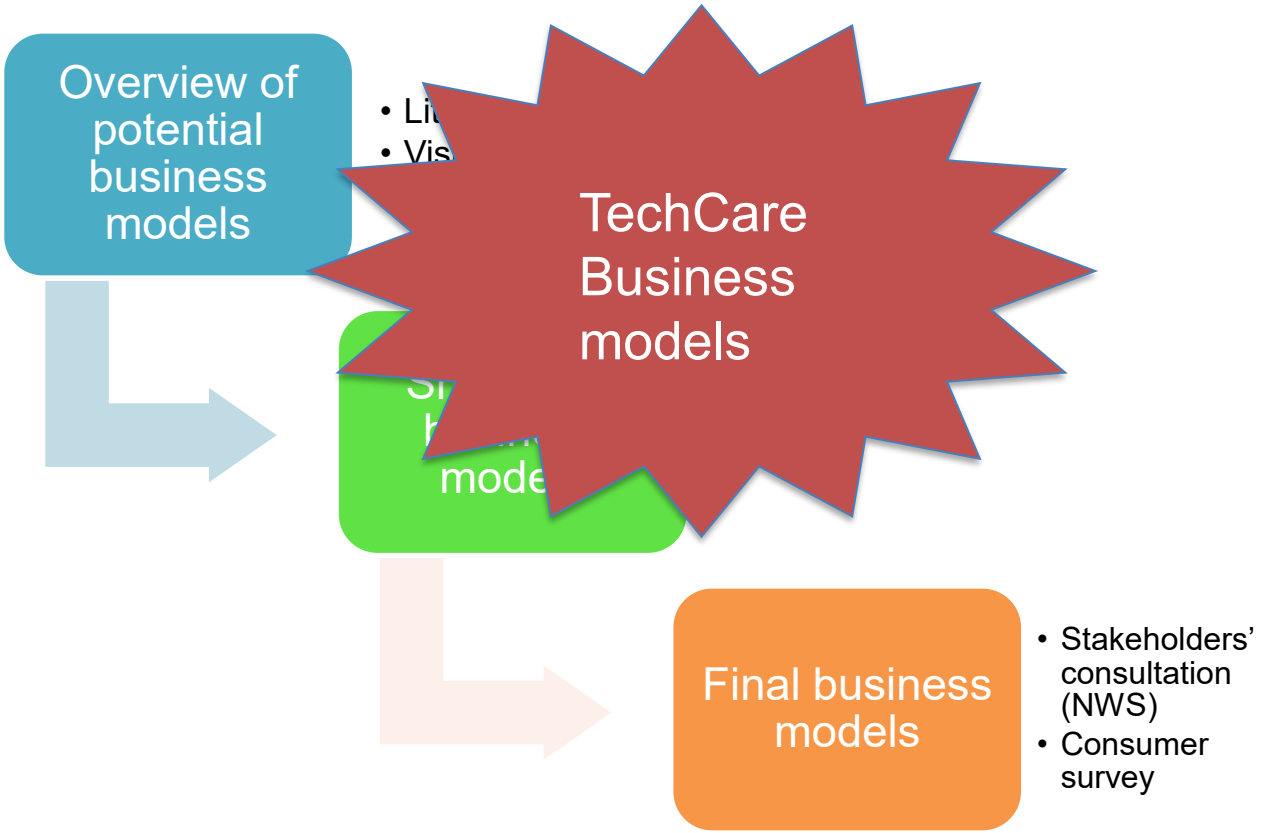
12 questions in total on:

- Overall welfare status
- Prioritization of welfare issues (at the farm, during transportation and in the abattoir)
- Consumers' perspective

TechCare – Business models



TechCare – Business models



TechCare – Steps

Innovations – what do farmers think?

- Welfare issues & indicators

Stakeholders

Stakeholders

- Technologies to measure welfare indicators

- Early warning systems

Stakeholders

Stakeholders

- Technologies tested on pilot farms

- Technologies tested on large scale commercial farms

Stakeholders

Stakeholders

- Business models

Welfare assessments & priorities in SR systems

TechCare promising innovations

TechCare platforms

Technology testing

TechCare business models

Closing the loop

TechCare experience

TechCare – The outputs after 5 years

2 main outputs :

Technologies ready to implement on farms/value chain, to improve welfare management

Technologies not yet acceptable entirely to whole industry:

I. Only available to innovative farmers
II. Still to be developed

'Low-cost' & relevant to most small ruminant farmers

- ✓ ***Guidelines/blueprints on technologies use***
- ✓ ***Alerts***

- ❑ Welfare priorities lists
- ❑ 4 sets of welfare assessment guidelines
- ❑ 4 broad categories of welfare indicators

Welfare assessments & priorities in SR systems

- ❑ 13 potential technologies -> 4 tested on commercial farms
  - *EID weigh crate + reader(s)*
  - *Individual milk meter*
  - *Milk tank weight*
  - *Weather station/indoor sensors*

Technology testing on TechCare pilot and large scale farms

- ❑ 3 alerts being developed
  - *Milking order*
  - *THI*
  - *Weight change*

Closing the loop

- ❑ 3 platforms:
  - *app for welfare assessment*
  - *web platform –data monitoring, algorithms & alerts (dairy sheep)*
  - *THIcare app*

TechCare platforms

- ➢ **Less advanced along value chain**
- ➢ **Lower 'starting' point**
- ➢ **Valuable information**

TECH CARE
Integrating innovative TECHnologies along the value Chain to improve small ruminant welfARE management

- Let's have more details ….today & tomorrow!