

Research programme to share knowledge and improve uptake of new digital technologies in sheep and goat farming



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 101000471.



# ADOPTION & UPTAKE OF TECHNOLOGIES

**Sm@RT POLICY BRIEFS**



Sm@ll Ruminant Technologies

Claire Morgan-Davies  
Ann McLaren  
(SRUC)



[linktr.ee/h2020smart](https://linktr.ee/h2020smart)

[www.smartplatform.network](http://www.smartplatform.network)



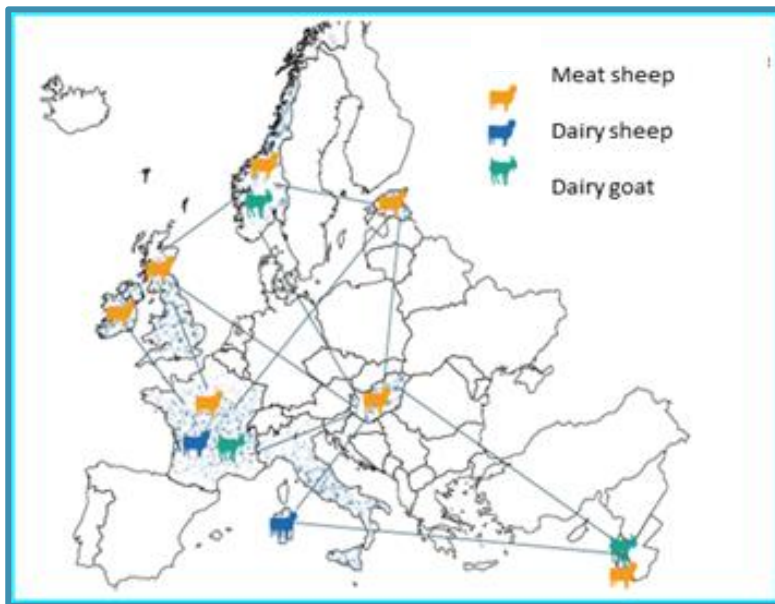
This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N° 101000471.



# Introduction

Sm@RT (Small Ruminant technologies –Precision Livestock Farming & Digital technologies for small ruminants) is a European network to share experience of new technologies for sheep and goats. It brings together a network of researchers, farmers and advisors to improve awareness of innovative tools, demonstrating their potential and possible return on investment.

*Sm@RT involved 11 partners in 8 countries, and focus on dairy goats, dairy sheep and meat sheep farmers.*



Sm@RT fostered exchanges on technologies between farmers during farm demonstration days on innovative farms and digifarms.

Sm@RT created resources for farmers regarding available technologies, to progress in their digitization process to meet their needs and objectives. Guidelines, cost-benefit analysis, farmers’ testimonies and videos have been created to encourage uptake of solutions to needs.



## Findings

In general, the findings of this project confirm that:

- 🐄 Although only 15 % of farmers have technologies on their farms, 79 % of them would like to use technologies to help with feeding/grazing, health and welfare, reproduction, flock/herd management, fattening and/or milking
- 🐄 A total of 166 needs were identified and prioritised, and 60 innovative technology solutions were proposed to the farmers.
- 🐄 Training sessions on Digifarms and Farm Demonstration on Innovative farms proved an ideal medium for peer-to-peer knowledge transfer regarding the use of technologies. They gave farmers confidence in using the tools.
- 🐄 The main barriers to uptake are linked to costs of technologies, but also to the lack of training options, after-sales advice, confidence in one's skills and compatibility between the devices.
- 🐄 Sharing of knowledge and experiences between farmers, researchers and other stakeholders in different countries proved invaluable.
- 🐄 There is a lot of information regarding cost of technologies, but the information is often dispersed and not always in a format (or language) easy to understand or to adapt to one's farming situation. Cost-benefit analyses are necessary for farmers to fully decide on investing in technologies or not.

The project identified 4 key messages, that are developed in policy briefs:

1. Focus on research needs
2. Peer-to-peer demonstration & training needs for farmers
3. Innovations on small ruminant farms
4. Adoption & uptake of innovative technologies

### This policy brief focus on key message #4 – Adoption & uptake of innovative technologies

*The recommendations identified in the four policy briefs have been developed during the life of the project by the partners and in collaboration with **over 1350** stakeholders during the project's participatory workshops.*

*The project carried out an initial online survey to capture farmers' opinions, which gathered **over 660** answers. A total of **52** national workshops have been conducted, together with **five** transnational workshops, **one** final seminar and **one** international visit. **Over 635** individual farmers' evaluations were collected during **30** training sessions and farm demonstrations days on Digifarms and Innovative Farms.*



## Recommendation at a glance

- ✓ **The ADOPT software is a useful tool to understand adoption and uptake**
- ✓ **Detailed cost-benefit analyses of the innovative technologies, including scale of the business, are needed**
- ✓ **Bespoke trainings for farmers when buying innovations are essential**
- ✓ **A hotline for when the technology does not work would be useful**
- ✓ **A trial period /option to test the technology before a decision is made would be beneficial.**

## What is the challenge?

- There is a lack of uptake of innovative technologies by sheep and goats' farmers in Europe and beyond.
- Although innovative technologies and digital solutions are widely accepted in other livestock industries (e.g. dairy cattle), the sheep and goats' sectors are less inclined to invest and use technologies on their farms.
- This is despite the many potential benefits that could be had from using these innovative solutions, as seen in Sm@RT policy brief no. 3.
- It is not always easy to understand where the barriers to uptake lie, as they may be manyfold and dependant on the innovative technology and on the farming system considered.



## What did we learn from Sm@RT?

- Sm@RT conducted a series of farmers' workshops and demonstration events to gauge their interest in adopting certain innovative technologies
- To assess factors influencing the **rate** and **peak level** of uptake of the tools and technologies proposed as solutions, stakeholder groups in the 8 Sm@RT countries used the Adoption and Diffusions Outcome Prediction Tool (ADOPT) (<https://adopt.csiro.au/home.aspx>).
- A total of **45** different ADOPT sessions have been completed to date, covering **24** different tools and technologies.
- Overall, the most sensitive questions associated with the **peak adoption level** outputs were:
  - the scale of the sheep/goat enterprise
  - the potential profit benefit during the years that the technology were used
  - The peak adoption level ranged from 2 years (Norway – Virtual Fence) to 24 years (Ireland – EID stick reader), with an overall average of 11 years across all sessions.
- The most sensitive questions associated with the **length of time** to peak adoption were:
  - the need to develop substantial new skills and knowledge to use the technology
  - the learnability characteristics of the technology
  - the peak adoption level percentage ranged from 1% to 98%, with an overall average of 60%.

## What do we recommend?

- ✓ **Provide detailed cost-benefit analysis of the innovative technologies, including scale of the business**
- ✓ **Provide bespoke trainings for farmers when buying innovations**
- ✓ **Provide pen-side advice ('hotline') to farmers when the technology does not work**
- ✓ **Provide a trial period /option to test the technology before buying**

