



Innovation for Sustainable
Sheep and Goat
Production in Europe

Trends in the European Sheep and Goat sector Production and Consumption - challenges to the sector

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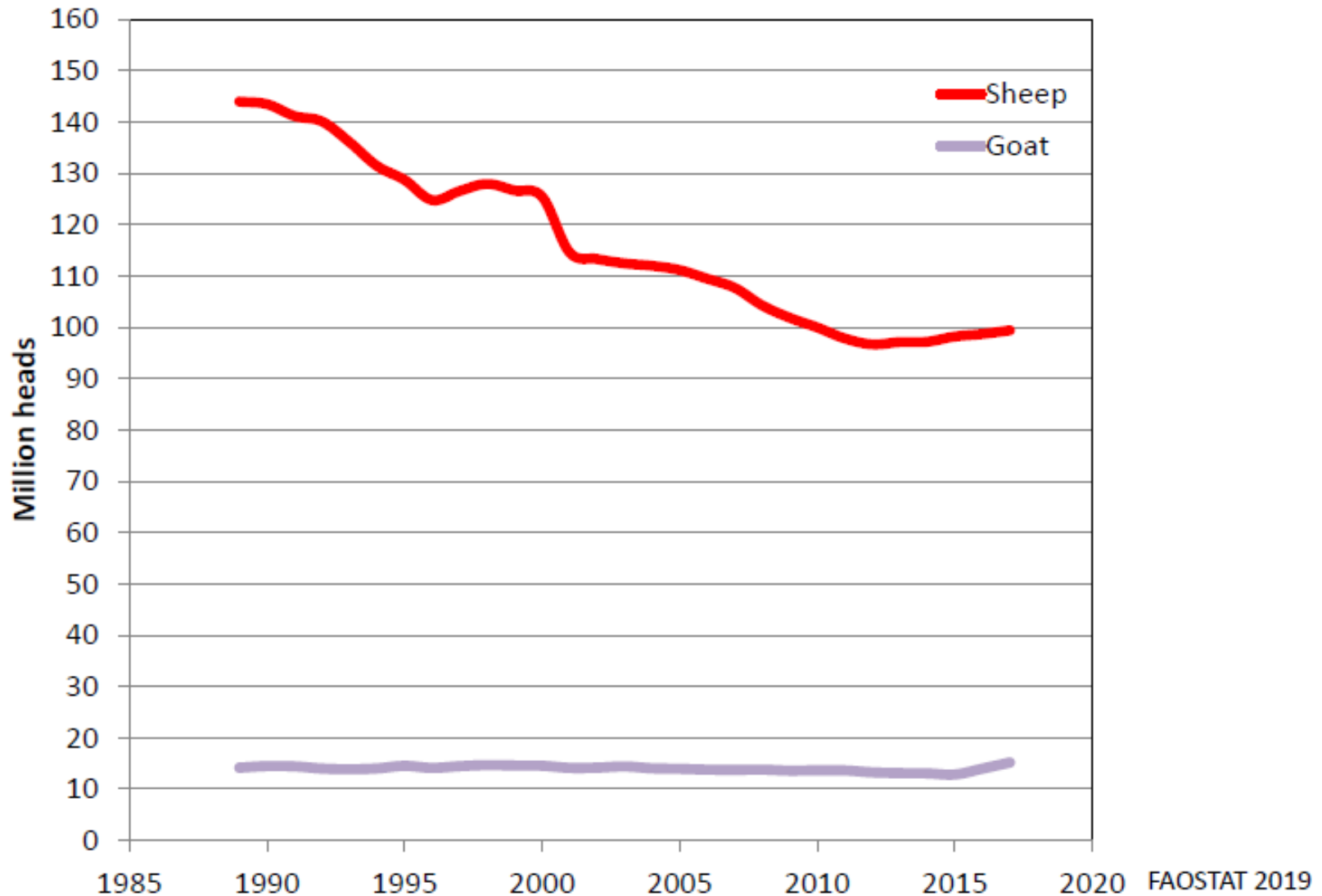
Aims of the presentation

- Give an **overview** of the status of the sector
- Present the main **challenges**, current **trends** and **opportunities**
- Provide **recommendations** based on iSAGE project
- Set a **new paradigm for the future** of the sheep and goat industry

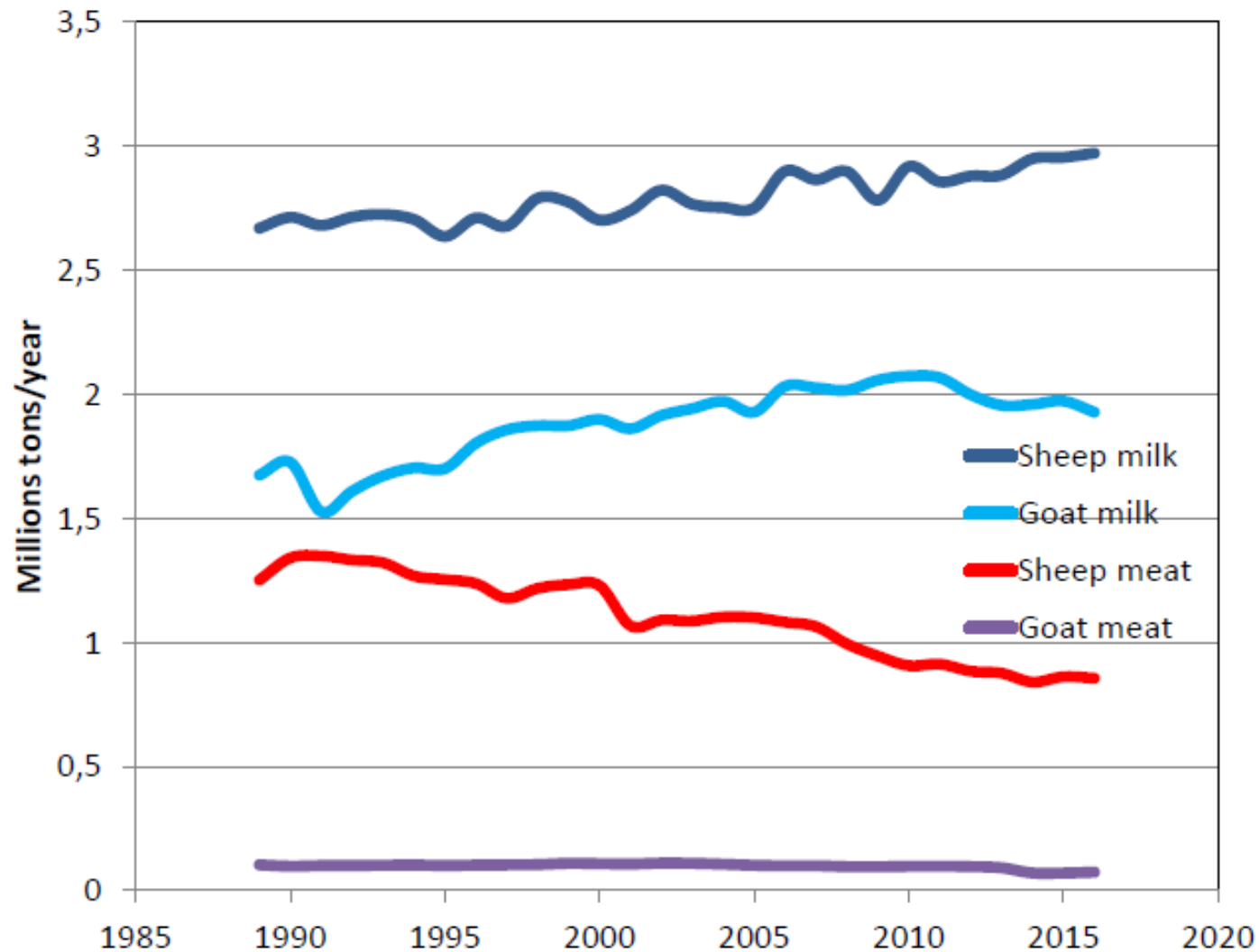
Sheep and Goats in EU

- The European Union's (EU) sheep and goat population numbers approximately **98 million** heads (**86 million** sheep and **13 million** goats).
- The largest numbers of sheep are in the UK, Spain and Greece (27%, 19% and 10% of the EU total population, respectively)
- Greece and Spain together hold more than 50% of the EU total goat population (32% and 22%, respectively).

European sheep and goat census



Small ruminant production in Europe



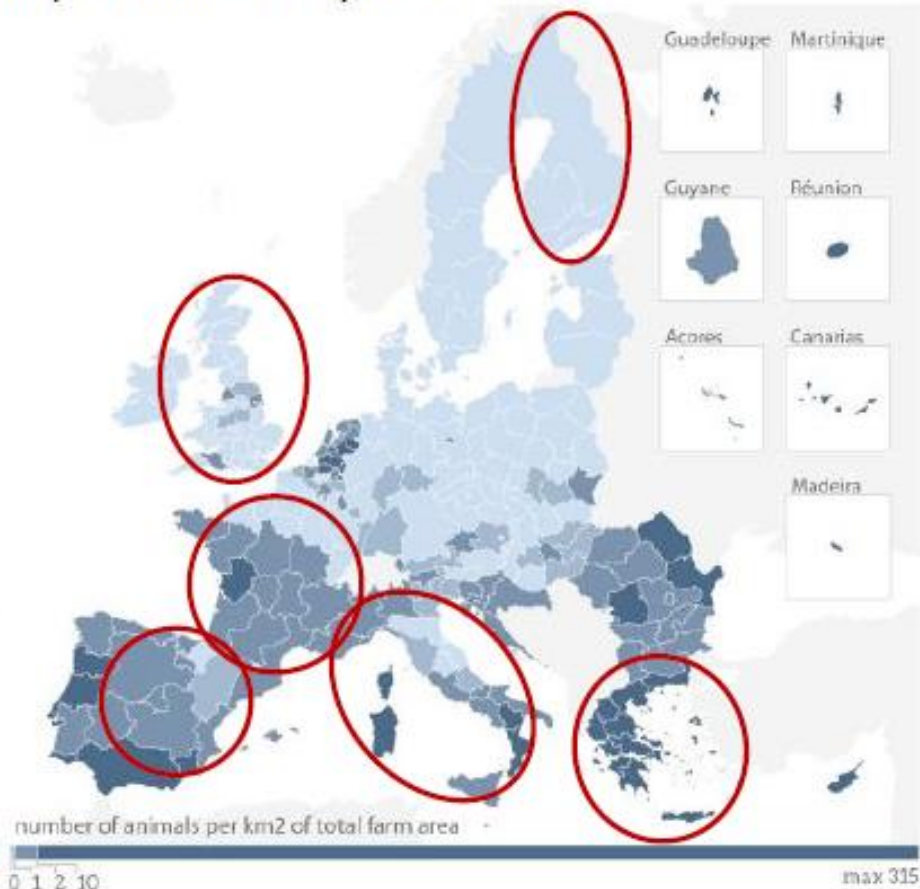
Sheep and goat distribution & iSAGE coverage

Map 1 – Sheep flock density in the EU



Data source: Eurostat, [Farm structure survey](#), 2013.

Map 2 – Goat herd density in the EU



Data source: Eurostat, [Farm structure survey](#), 2013.

Sheep and Goats in EU

- 6% of the meat and 3% of the milk production value in EU
- 850.000 sheep farms (14% of the livestock farms in EU)
- 450.000 goat farms (7% of the livestock farms in EU)
 - 113 sheep and 26 goats per farm
- Most farms are located less favoured rural areas and provide employment, environmental and social cohesion

Sheep and Goats in EU

- Small ruminants systems are a small share of the total EU livestock output in terms of production and added value.
- **Sheep and goat meat** production accounted for almost 755.000 tonnes with a value of **5.8 billion euros** (2% of total EU production and less than 6% of its value).
- **The sector is not self-sufficient in terms of sheep and goat meat**; the main importing countries are New Zealand (>80% of EU imports) and Australia (11%). **EU's exports** are limited consisting mainly of live animals from Romania and Spain

Sheep and Goats in EU

- The **main product** of the sheep and goat sector is **meat**. Amongst EU Member States (**before Brexit**), sheep meat production is especially important in **UK and Ireland**
- **Milk, cheese, wool and skin products** are also of economic importance in many countries.
- **Sheep and goat milk** is mainly produced in Greece, Spain, France, Romania and Italy and is mostly used for cheese-making

Sheep and Goats in EU

- Most **sheep milk** is processed by dairy industries into traditional cheese types some of which are PDO (e.g. Feta, Pecorino, Manchego, and Roquefort).
- **Goat milk** is often processed on farm into different local dairy products, including yogurt, and is mainly addressed to local or national markets.
- There are also **PDO goat cheeses** produced by dairy industries (e.g. Murcia al Vino) and pasteurized **goat milk for direct human consumption**



Sheep and Goats in EU

Sheep and goat milk accounts for a minor part of the total agricultural output.

- **In France**, it ranges from **1%** for dairy sheep milk and **2 %** for goat milk so around **3 %** for small ruminants.
- **In Italy and Spain** it ranges from a minimum of **0.9%** to a maximum of **1.8%**,
- **in Greece**, sheep and goat milk contributes approximately **9%**
- In the recent years, **consumption of meat has decreased**, whereas consumption of **goat's milk and cheese** has **increased significantly** in several Member States.

Typology of Sheep and goat systems

1. **Intensive dairy** sheep and goat farms (e.g. high input of purchased feedstuffs)
2. **Semi-intensive or semi-extensive** dairy sheep and goat farms (e.g. normally pasture fed animals)
3. **Intensive meat** sheep farms (e.g. high input of purchased feedstuffs)
4. **Semi-intensive or semi-extensive meat** sheep and goat farms (e.g. normally pasture fed animals)
5. **Dual-purpose** sheep and goat farms (farms where the farmer sees value in two or more different products such as meat and wool or meat and dairy).

Production systems: Diversity...

GREECE

From the **transhumance system** dominated by the use of mountainous small breeds to the **intensive systems** with high yielding indigenous breeds as well as foreign breeds.

ITALY

From **very intensive** irrigated farms in **lowlands** (12 ewes/ha), to **extensive pastoral** farms in **mountains** (2 ewes/ha)

SPAIN

From the small family cheese makers in **Basque** area (100 ewes) to the large milk producers in **Castilian** plateau (1000 ewes)

FRANCE

From the small family cheese makers in **Corsica** (100 ewes with 100 litres/ewe) to the intensive milk producers in **Roquefort** (500 ewes with 300 litres/ewe)

Production systems: Diversity...

GREECE:

- Entire national flock of dairy sheep. Importation of Assaf E and Lacaune in large numbers

ITALY:

- Dairy sheep is concentrated in Sardinia,

SPAIN:

- The sector is developing rapidly especially with the ASAF_E breed.

FRANCE:

- Localised production
 - Milk sheep raised in 3 regions (Roquefort, Atlantic Pyrenées & Corsica)
- **Well organised and technically supported production**
 - Milking machines and milk recording
 - **Controlled reproduction** by AI (~400,000 ewes) and genetic selection
 - Can be used as example for other countries

Internal Challenges of the Sector

FARM

Slow adoption of innovations
Poor business management training
Lack of professionalization

FARMING SYSTEM

Low promotion of local breeds
Low adaptability of high productive breeds
Low integration of livestock and agriculture

SECTOR

Sector fragmentation / Lack of integration
Low cooperation between farmers
No attractive to young farmers
Low female involvement

OVERARCHING

Animal health issues
High subsidy dependency
Low competitiveness

External Challenges of the Sector

SOCIETY

Low consumer education in local products
Farmer role unrecognised by society
Low social knowledge about farming
Poor recognition of farming public services
Low consumer demand

POLICY

Uncertainty in future subsidies
EU policy without scientific evidence
Environmental policy against intensification

SCIENCES

Researchers not address real problems

MARKET

Market monopolised
Unfair trade / Lack of traceability
Uncertainty of meat and milk prices
Volatility of commodity prices

ACCESS TO PRODUCTION FACTORS

Limited access to land
Limited access to capital

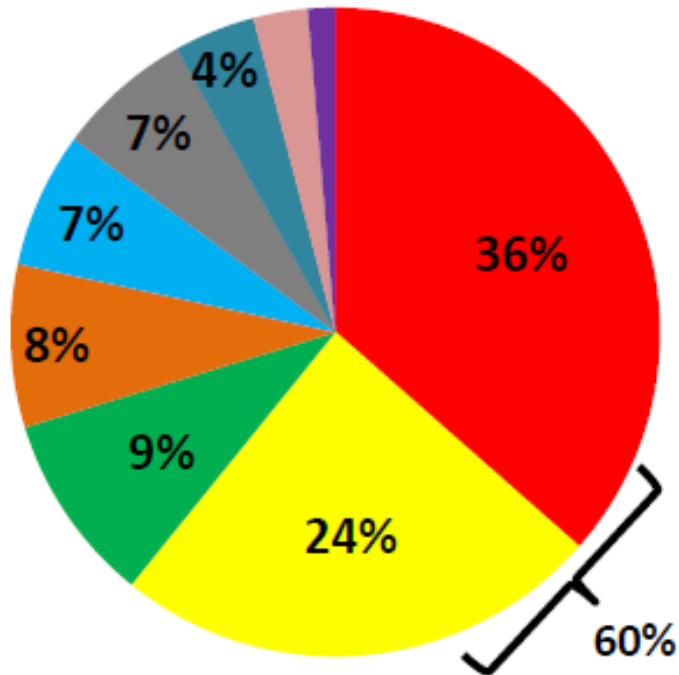
ENVIRONMENT

Wildlife conflicts
Climate change threats

EU funding (FP7 and H2020)

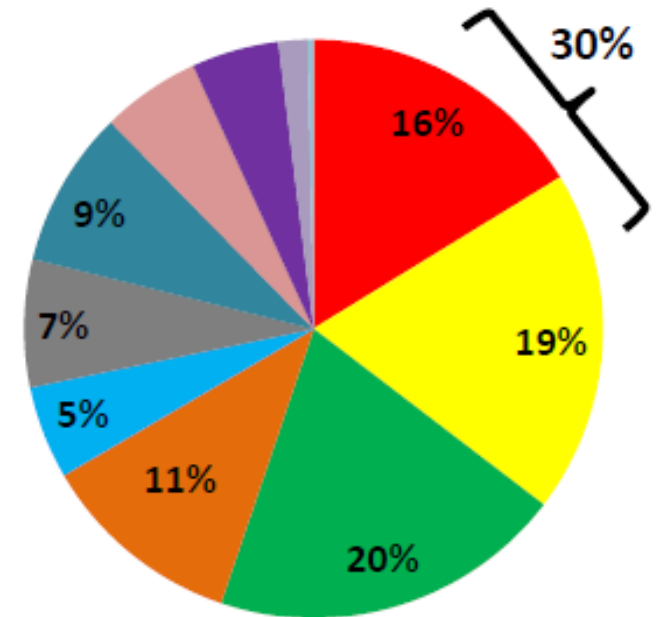
Small ruminants

74 projects



Cattle

308 projects



Strategic priorities per country.

Development axes	Finland	France	Greece	Italy	Spain	Turkey	UK	All
Innovation in farming practices- Productivity		X	X	X	X	X	X	6
Improvement of human and social capital		X	X	X	X	X	X	6
Environmental sustainability					X		X	2
Market access and economic performance	X	X	X	X	X	X	X	7
Product quality, hygiene and food safety		X	X	X	X	X		5
Genetic improvement	X	X	X	X	X	X	X	7
System structure and exogenous factors			X	X				2
TOTAL	2	5	6	6	6	5	5	35

Trends and opportunities

- Only farms which take up innovative solutions to modernise and rationalise their **modus operandi** are likely to remain in business with an emphasis on
 - **flock size**
 - **management of feeding and grazing**
 - **marketing strategies**
 - Current **technological trends** such as
 - digital technologies
 - Internet of Things
 - decision support tools
 - machine learning
- should be used **to re-design** the sheep and goat sector

Trends and opportunities

- The **gradual decrease** in consumption of sheep and goat meat within the EU the last 15 years is an **alarming bell**
- **Co-financed of EU promotion initiatives** with third countries is an opportunity but **at the moment is a failure**
 - EU funding is directed to campaigns focused on increasing sheep and goat meat consumption with emphasis on traditional products, but also towards introducing newer cuts with respect to consumer choices.
- **Opportunities arise** with current trends in the supply of dairy products and kid meat exports to third countries.

A new paradigm for the sheep and goat industry

- **Invest in Local Breeds**
- **Support young farmers** through an increase in direct payment schemes and education
- **Supporting products and supply chains.**
- **Objective support of sheep and goat meat in the future:**
 - increased **provenance labelling and assurance schemes**
 - providing **easy to cook and novel lamb meat cuts**
 - **“tell the whole story”** from the breed
 - Introduce **novel products and recipes**
 - **branded products** such as Protected Designation of Origin (PDO) Protected Geographical Indication (PGI)
 - **convenient formats** such as single-portion and fixed-weight product packaging
 - **organic plus fair trade**
 - **clear label cues or claims.**



The meat supply chain

- **Selling through different routes** is recommended in order to handle carcass imbalance and improve supply chain resilience in a volatile meat market
- **Product innovation**, flexibility and real-time adjustments
- **Working relationships** between supply chain members (from farm to fork)



The dairy supply chain

- **Setting trading conditions** relating to milk price, volumes and quality requirements before the milking season. Collective negotiations and written contracts
- **Logistics efficiency** is strategic in collection and delivery of milk (exploiting economies of scale)
- **Dual-purpose breeds** producing milk and meat can secure sustainable returns.
- **Product and market innovation** strategically implemented with the involvement of all supply chain members, including producers for the milk quality requirements and retailers to gain premium shelf space.

Climate change and reduction of GHG emissions

- **GHG emission estimates** from small ruminant production systems **have so far been overestimated** (by 18% and 28% for sheep and goats in Europe, respectively).
- **iSAGE calculations** revealed that **the small ruminant production systems in Europe have not caused additional warming** to the atmosphere in the last decades.
- **Adaptation and mitigation measures** need to be tailored to specific conditions (e.g. climatic area, production system, etc.)
- **Alternative feeds**; growing legumes can cut emissions by up to 20% at farm level due to less need for synthetic fertilisers
- **Breeding** for higher resistance to heat stress
- **General management strategies**

Future trends in Sheep and goat sector

- **Milk production is increasing** and the situation is expected to continue
- **Economic pressures will dictate production systems:**
 - Semi-Intensive and intensive systems will prevail
 - **Flock size** will increase but number of holdings will decrease
 - There will be major changes in **housing and nutrition**
 - **Machine milking** in dairy systems will be the norm
 - Smallholder flocks will fight for survival



Future trends in Sheep and goat sector

- Focus on animal health and welfare can give excellent returns on investment
- **Transparency** in disease reporting and sharing of accurate information: **reduce the impact of production limiting disease**
- Wide implementation of ground-breaking technologies
- DNA markers for economic traits
 - disease susceptibility
 - Milk production
 - Reproduction
 - Growth



<http://www.illumina.com>

Future trends in Sheep and goat sector

- Future funding should consider the complexity of sheep and goat production systems
 - socioeconomics
 - Sustainability
 - globalisation
 - Climate change and its impact on the epidemiology of diseases
- To predict the forthcoming changes **after 20 years** look at the dairy cows industry today!

Conclusions

- The **main problem of the sector is low income** despite heavy reliance on subsidies from the Common Agricultural Policy (CAP)
- **Re-direction of subsidies** under CAP towards public goods (GHG, Biodiversity, animal welfare and rural livelihoods) is **premature**
- There is **poor uptake of innovations** mainly as result of disconnection with profit and relative education
- **Age structure and lack of new entrants** is a major threat for the future
- **Sheep and goat systems have shown remarkable resilience and adaptability over Millenia**



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Thank you

