

Joint Research Centre (JRC)

Economic Analysis of Electronic Identification (EID) of Small Ruminants in Member States



IPSC - Institute for the Protection and Security of the Citizen

Ispra - Italy

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A case study with a general model to provide

- a quantitative cost analysis of EID for national flocks
- under some production systems common in the EU
- analysing the costs along the production chain
- for several options for the implementation

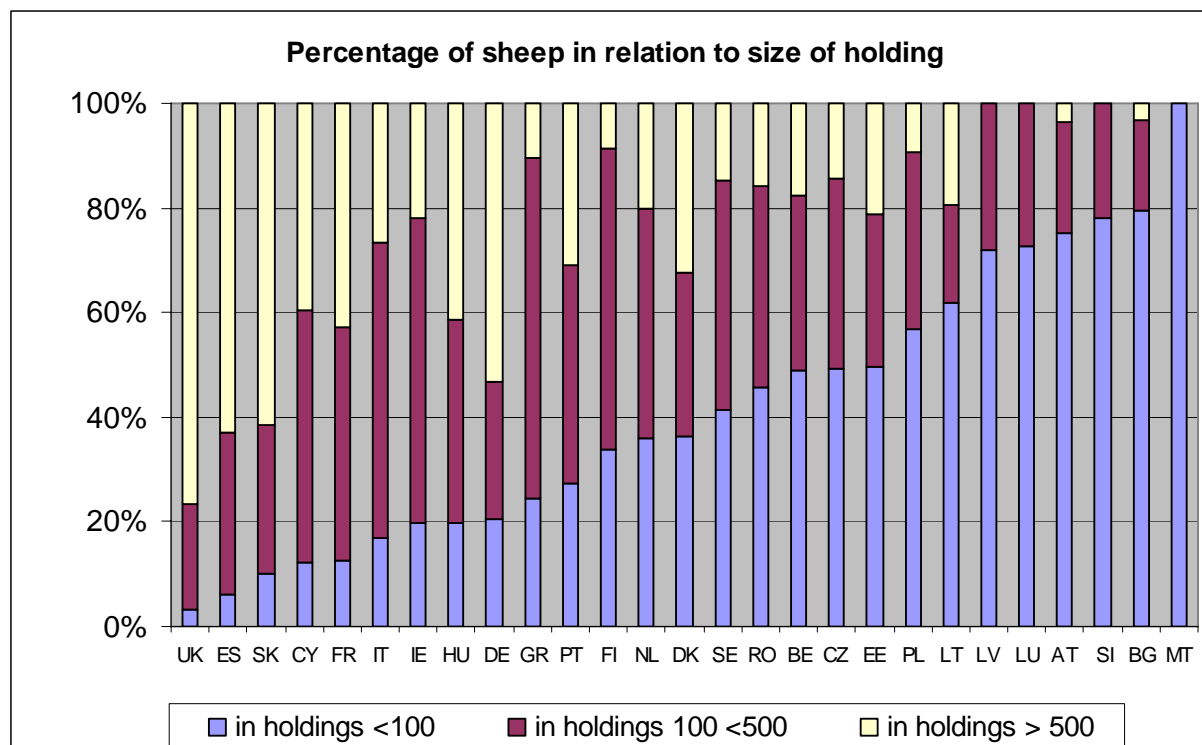
the study did not look into possible benefits, but rather on cost differences under different options for EID

	Total number of animals (1000 heads)	% sheep	% goats
United Kingdom	35,415	100%	0%
Spain	22,136	89%	11%
Greece	15,067	67%	33%
France	9,755	87%	13%
Romania	9,406	91%	9%
Italy	7,727	88%	12%
Ireland	5,355	100%	0%
Portugal	2,729	86%	14%
Germany	2,461	100%	no data
Netherlands	1,995	77%	23%
Bulgaria	1,949	74%	26%
Hungary	1,299	95%	5%
Cyprus	525	46%	54%
Sweden	513	99%	1%
Poland	480	70%	30%
Austria	386	85%	15%
Slovakia	360	97%	3%
Czech Republic	187	92%	8%
Belgium	179	84%	16%
Denmark	171	92%	8%
Slovenia	166	79%	21%
Finland	124	96%	4%
Latvia	88	80%	20%
Estonia	87	95%	5%
Lithuania	81	65%	35%
Malta	14	61%	39%
Luxembourg	7	94%	6%
EU 27	118,663	89%	11%

Source:
information from Member States and
EUROSTAT 2005/2007

Selection criteria for case study:

- Size of national flock*
- Production types
(milk, meat, hobby)*
- Holding size
(distribution in small, medium
and large holdings)*



Source:
information from Member States and
EUROSTAT 2005/2007

- analysis for 4 different small ruminant production systems in MS
- Cyprus (small national flock, few movements, bolus),
 - Spain (large national flock, few movements, bolus),
 - the Netherlands (small national flock, many hobby keepers, bolus / ear tag),
 - United Kingdom (only sheep, meat production, many movements, mainly through markets, ear tag)

the model could be extended to other MS

A) Full implementation

EID for all animals born after 31.12.2009, including slaughter lambs

B) Slaughter lamb derogation

as A with exception of animals for slaughter before the age of 12 months

C) Full implementation without readings on farm

as A with EID reading at delegated control points instead of farms

D) Full implementation + historic flock

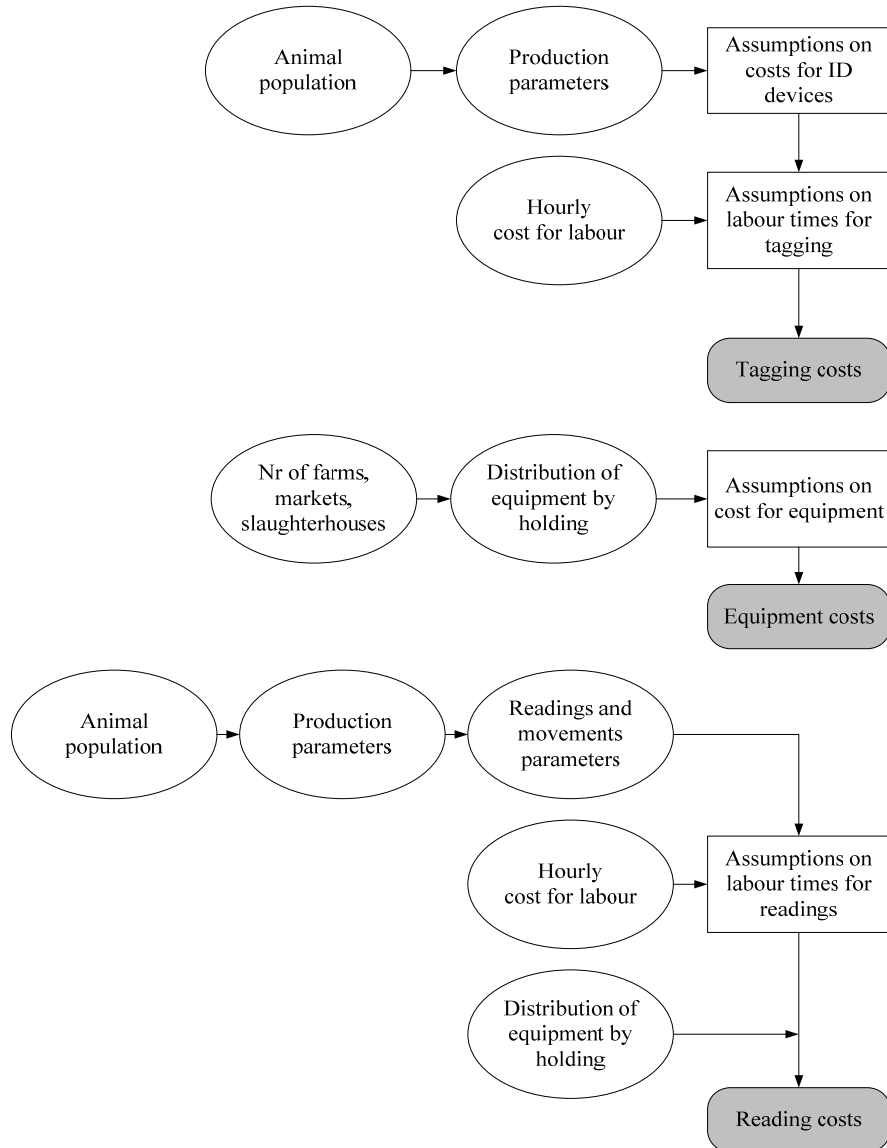
EID also for animals born before 31.12.2009

E) Full implementation + historic flock, without readings on farm

as D with EID reading at delegated control points instead of farms

F) Baseline

2 conventional ear tags with individual code and manual reading of animals related to movements as applicable only until 31.12.2010, with and without slaughter lamb derogation



Tagging/retagging

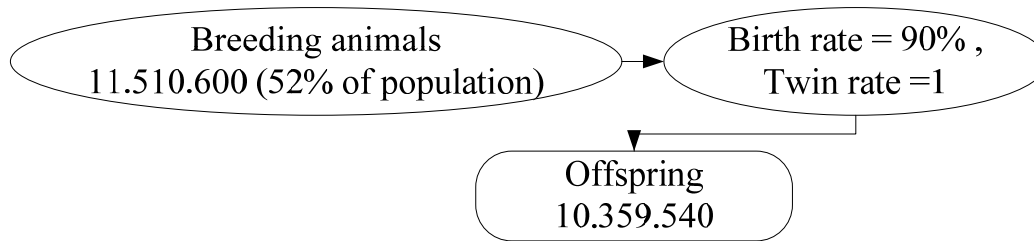
2 ear tags or ear tag + bolus,
applicators,
loss rate of tags and bolus

Reading equipment

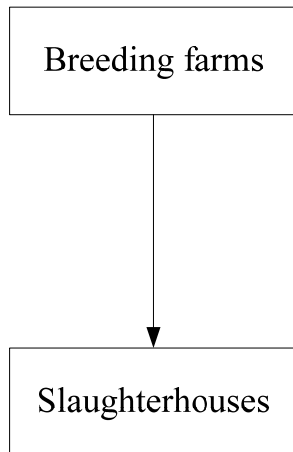
handheld, static readers,
computer, printer, software for data
processing

Reading for movements

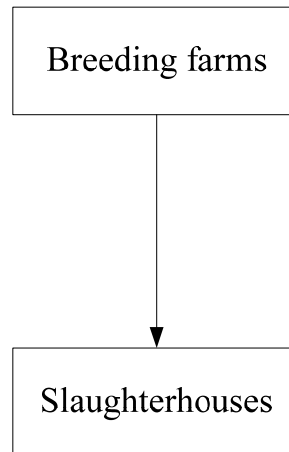
including movement document and
or updating herd register



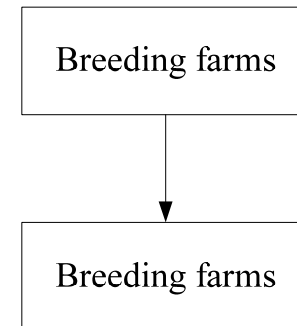
Replaced stock
(10% of offspring)

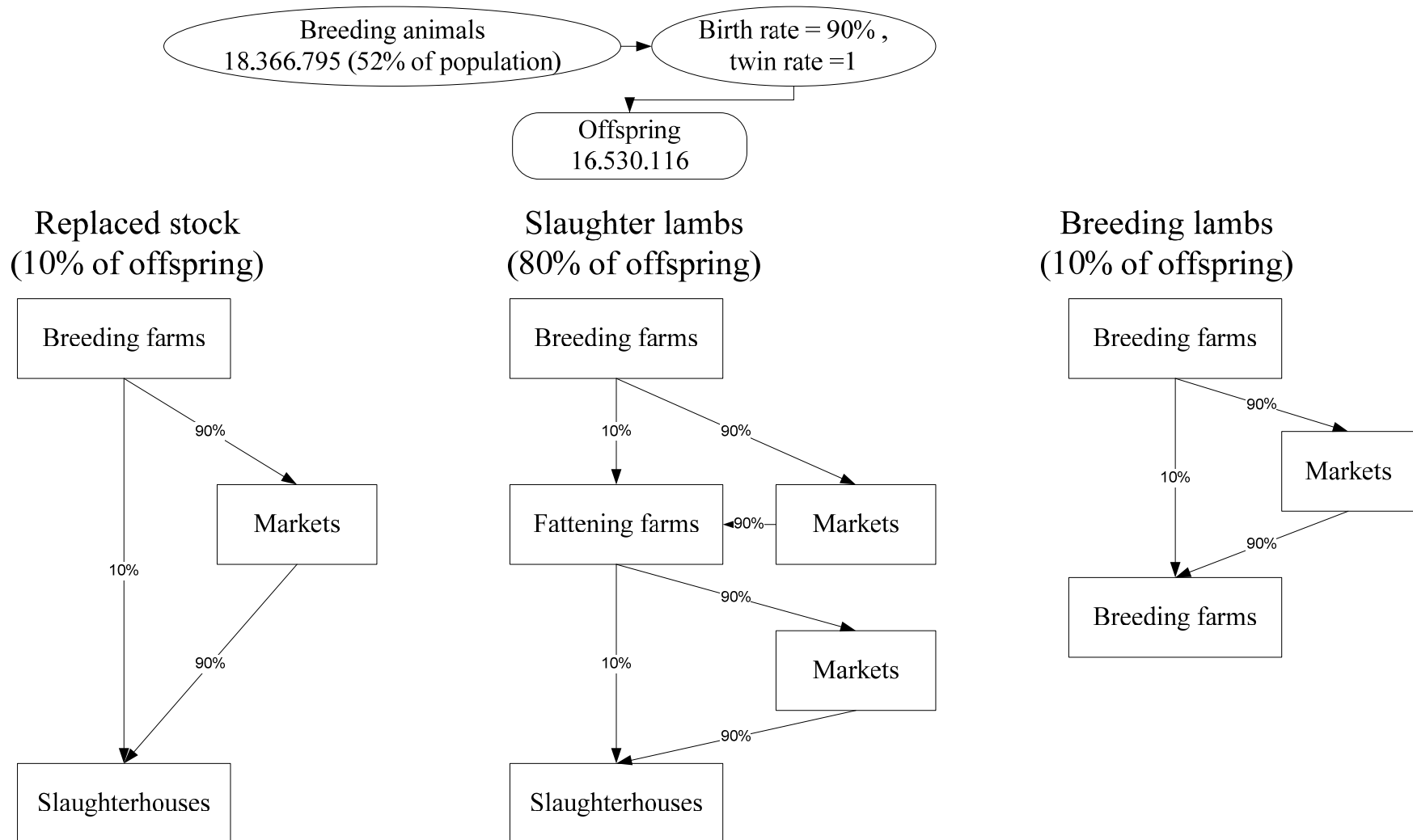


Slaughter lambs
(85% of offspring)



Breeding lambs (5%
of offspring)





	Farms	Markets / assembly centers	Slaughterhouses
Cyprus	4000	130 ⁽¹⁾	5
Netherlands	17,980 43,200 ⁽²⁾	20	200
Spain	121,230	- ⁽³⁾	1,132
United Kingdom	82,970	150	250

- (1) Assembly centers
- (2) Hobby keepers
- (3) No data provided

Results

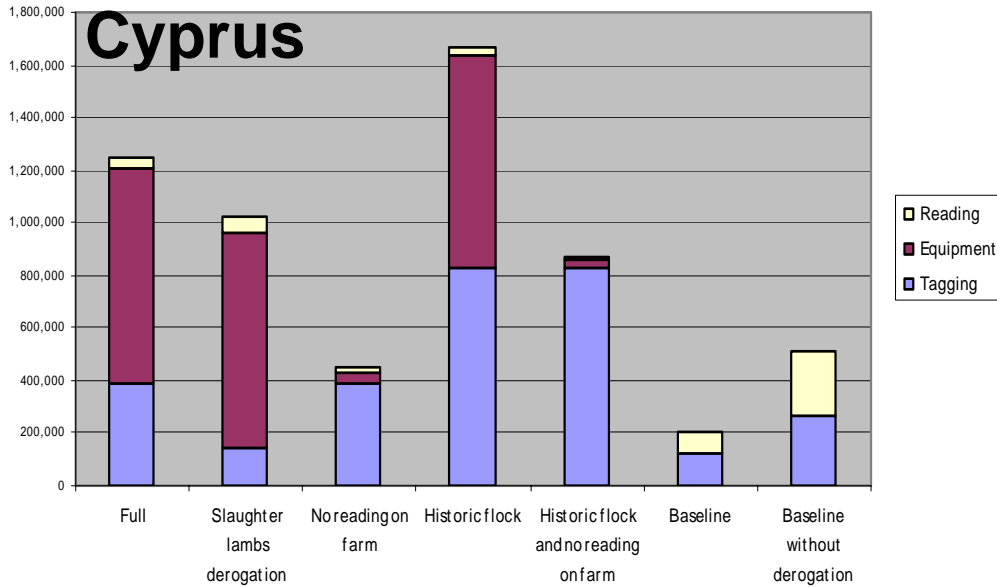
	Cyprus	Netherlands	Spain	United Kingdom
Option A: full implementation of EID in 2010 including slaughter lambs, full reading from 2011 on	1.246 Mio € ruminal boluses	5,259 Mio € electronic ear tags	43,107 Mio € ruminal boluses	72,610 Mio € electronic ear tags
Distribution per activity				
Reading equipment	65%	62%	55%	49%
Tagging	31%	29%	40%	38%
Reading	4%	9%	5%	13%
Distribution per actors				
Farm holdings	95%	94%	97%	92%
Markets/assembly centres	3%	3%	--	5%
Slaughterhouses	2%	3%	3%	3%

	Cyprus	Netherlands	Spain	United Kingdom
Option A: full implementation of EID in 2010 including slaughter lambs, full reading from 2011 on	1.246 Mio € with ruminal boluses	5,259 Mio € with electronic ear tags	43,107 Mio € with ruminal boluses	72,610 Mio € with electronic ear tags

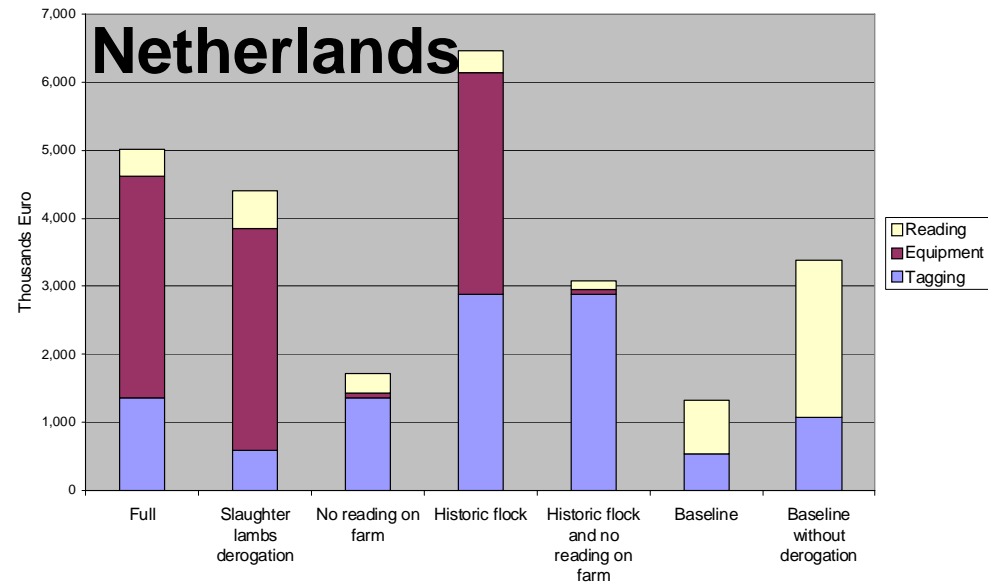
Cost savings with other options compared to option A

Option C: no EID reading on farm	-64%	-66%	-57%	-52%
Option E: including historic flock, no EID reading on farm	-30%	-39%	-14%	-13%
Option B: slaughter derogation	-18%	-12%	-28%	-18%
Option D: including historic flock	+34%	+29%	+43%	+39%

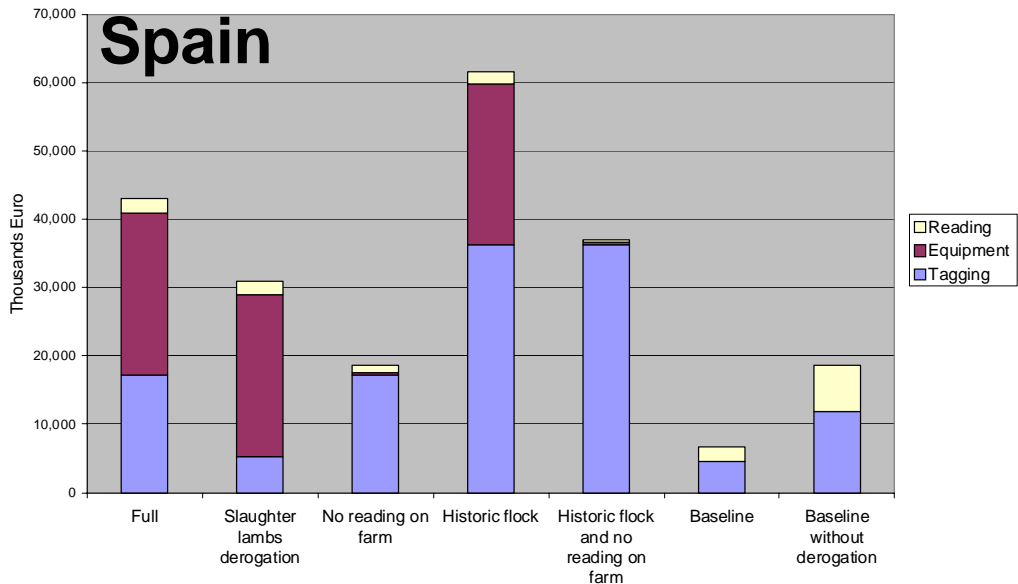
Cyprus



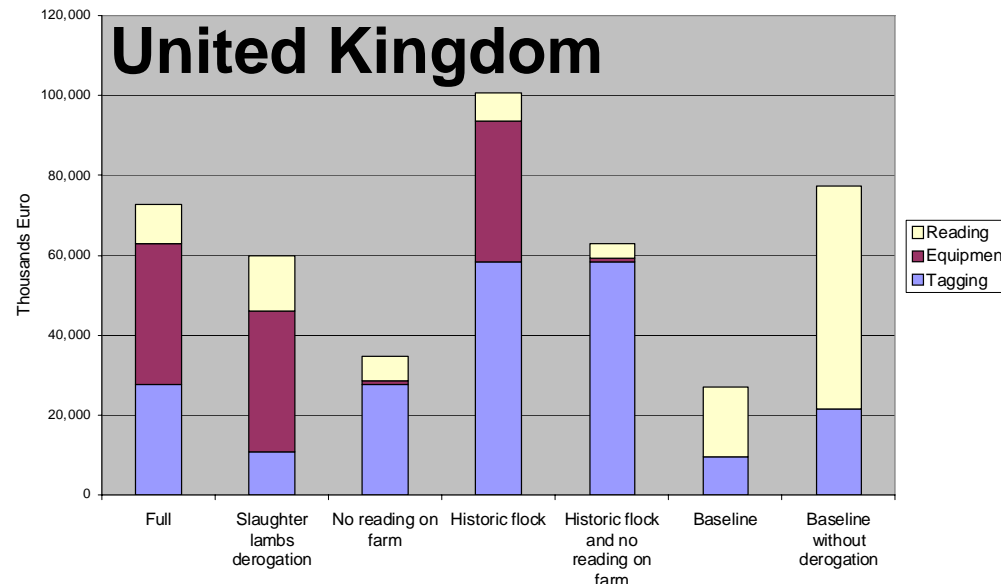
Netherlands



Spain



United Kingdom



Conclusions

Individual identification best with EID

- Full conventional individual identification more expensive than full EID for MS with more large holdings and where animals are moved frequently (e.g. UK);

Reading equipment is the most expensive part

- 49-65% for reading equipment
- 29-40% for tagging
- 4-13% for reading

Costs are not equally distributed along the chain

- 92-97% at farm holdings
- 3-8% at markets, assembly centers, slaughterhouses

Costs could be substantially reduced, esp. for farmers

- 52-66% cost savings with full implementation without weakening traceability when EID is read only at control points (markets, assembly centers, slaughterhouses, etc.)
- 13-39% cost savings for full implementation + historic flock, when EID is read at control points
- 12-28% cost savings when applying slaughter derogation but with weakening traceability

Actors involved	Options	Equipment costs	Tagging/re-tagging costs	Reading costs	Advantages from EID
Farm holdings	Full	+++	++	+	
	Slaughter derogation	+++	+	++	
	Full, no farm read		++		√√
	Full + historic	+++	+++	++	
	Full + historic, no farm read		+++		√
Markets	Full	+++	--	+	√√
	Slaughter derogation	+++	--	+++	
	Full, no farm read	+++	--	+	√√
	Full + historic	+++	--	++	√√√√
	Full + historic, no farm read	+++	--	++	√√√√
Slaughter houses	Full	+++	--	+	√
	Slaughter derogation	+++	--	+++	
	Full, no farm read	+++	--	+	√
	Full + historic	+++	--	++	√√√
	Full + historic, no farm read	+++	--	++	√√√
Government/ official control bodies	Full	+	--		√√
	Slaughter derogation	+	--		√
	Full, no farm read	+	--		√√
	Full + historic	+	--		√√√
	Full + historic, no farm read	+	--		√√√

- As any other animal ID system(s), also EID comes with its costs;
- Costs are not equally distributed throughout the production chain (farmer>abattoirs)
- With all animals electronically identified, downstream the full advantage is available
- Substantial savings could be achieved by transferring/delegating readings to control points
- Additional advantages which were not looked in by the study (farm management, less errors, better and faster traceability,.....)



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