

20 YEARS OF GENETIC IMPROVEMENT

*ICBF and Sheep Ireland genetics conference: 'Sustainable Farming – Progress through Genetics'
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20 years of Genetic Improvement

- Dairy, beef, and sheep
- Value of past improvement
- Key sub-indexes
- Value of future improvement

History/context

- ICBF established 20 years ago
- Initial focus on dairy, motivated industry aware of overseas genetics misfit
- Gaining traction in beef has been tougher
- Sheep Ireland established in 2008

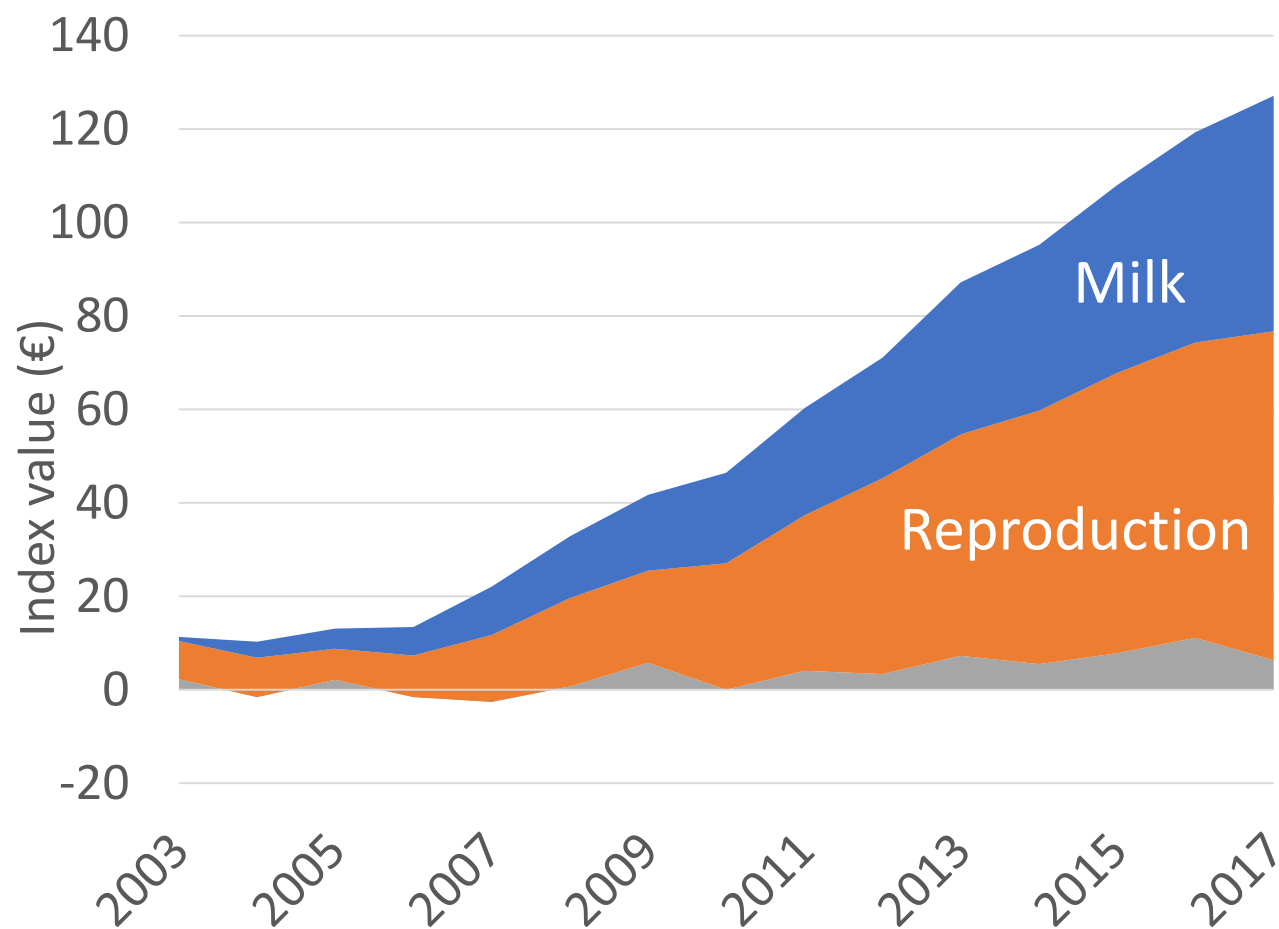
Dairy production value

- Milk and fertility

Gain by trait (4 cents per litre)

Index/ Trait	2003 ave cow	2017 ave cow	Gain
EBI (€)			221
Milk (kg)	5363	5588	225
Fat (kg)	203	220	17.1
Protein (kg)	177	191	14.2
Calving interval (days)	402	399	-2.4
Survival (percent)	81%	83%	2.0
Carcase weight (kg)	282	276	-5.6
Conformation (15 pt scale)	O-	P+	-0.8

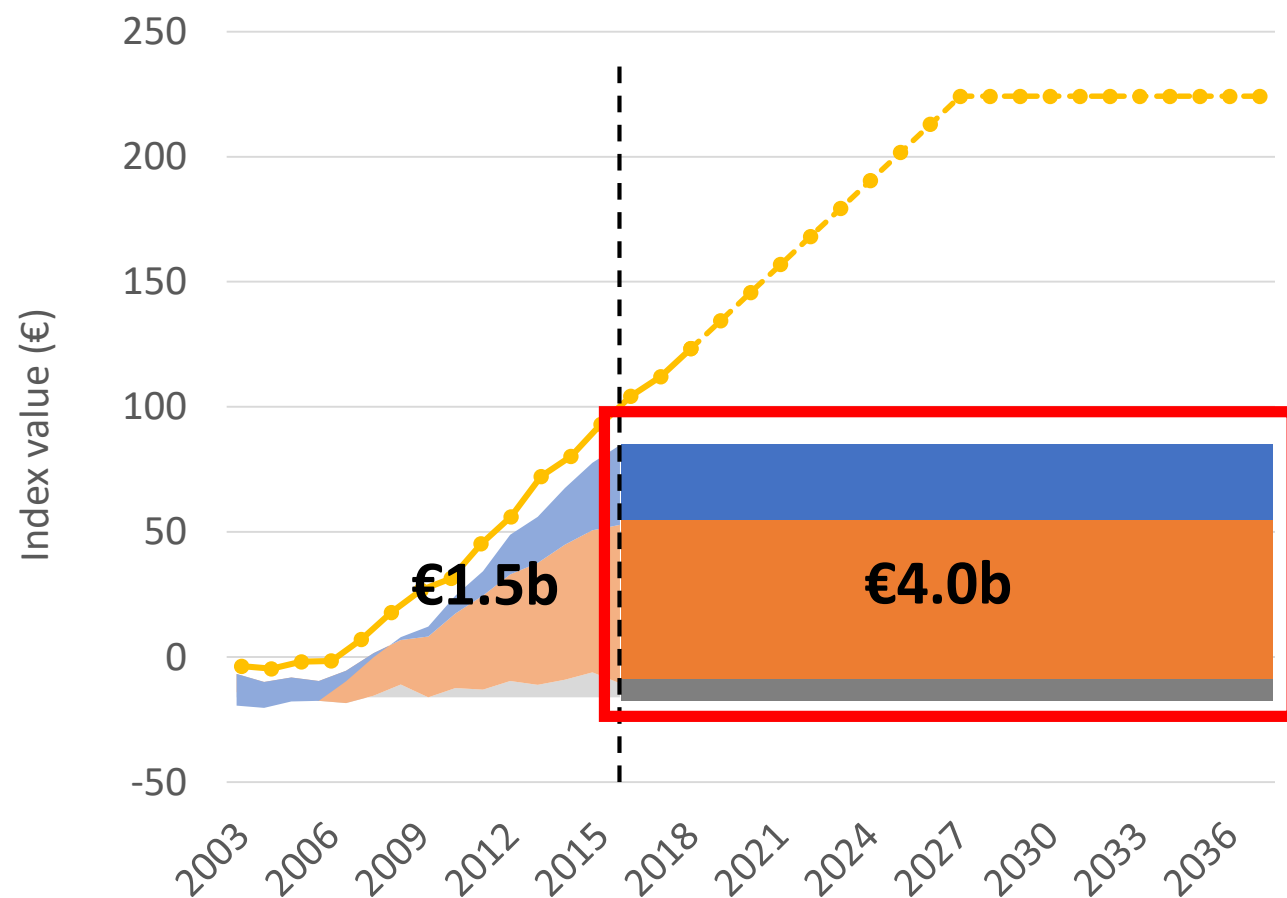
Dairy – EBI



- Dairy production benefits worth **€1.5b**
- Value driven by fertility, then milk.
- Other traits (calving, health) modest

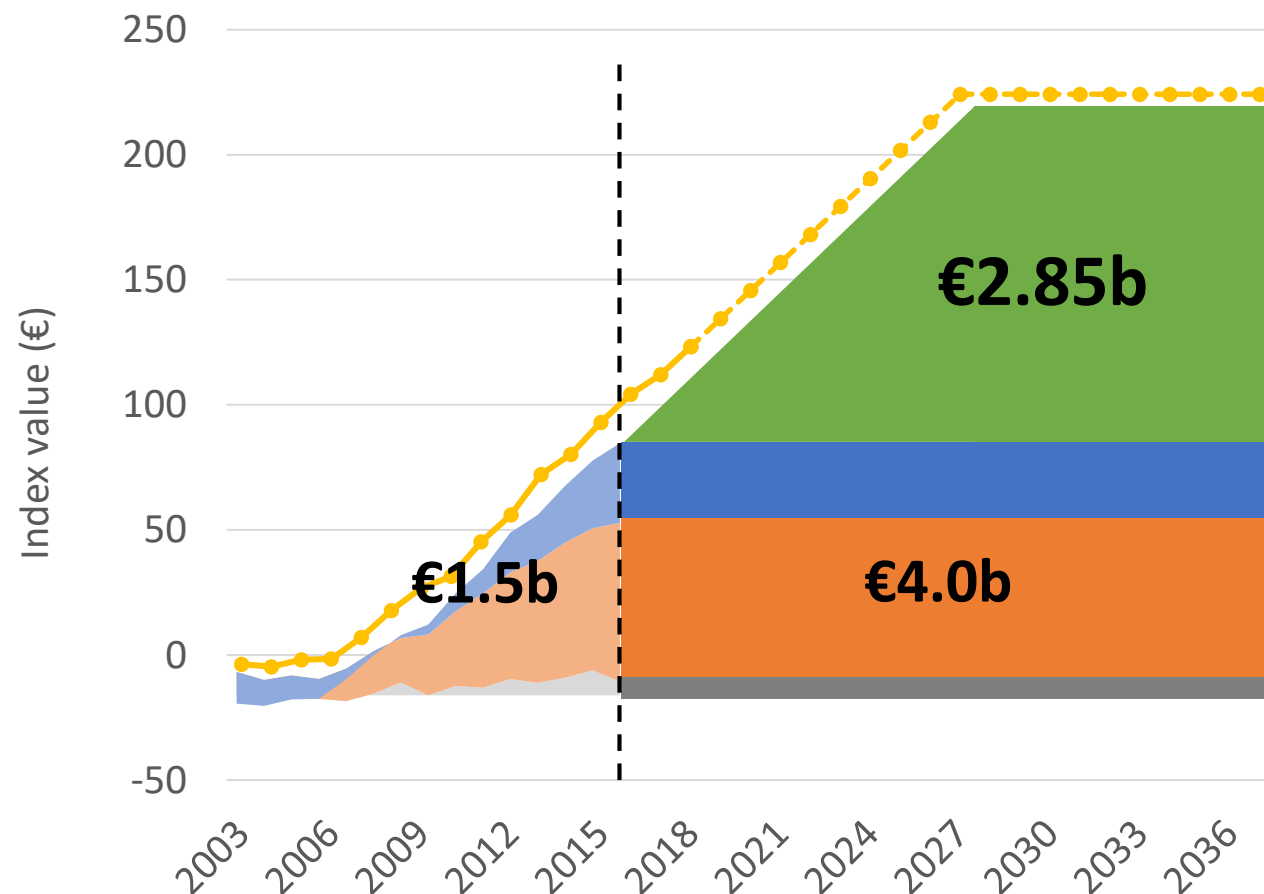
€83 per dairy cow per year

Dairy - Future



- Past = €1.5b
- “**Locked in**” for next 20 years
- Value = €4.0b

Dairy - Future

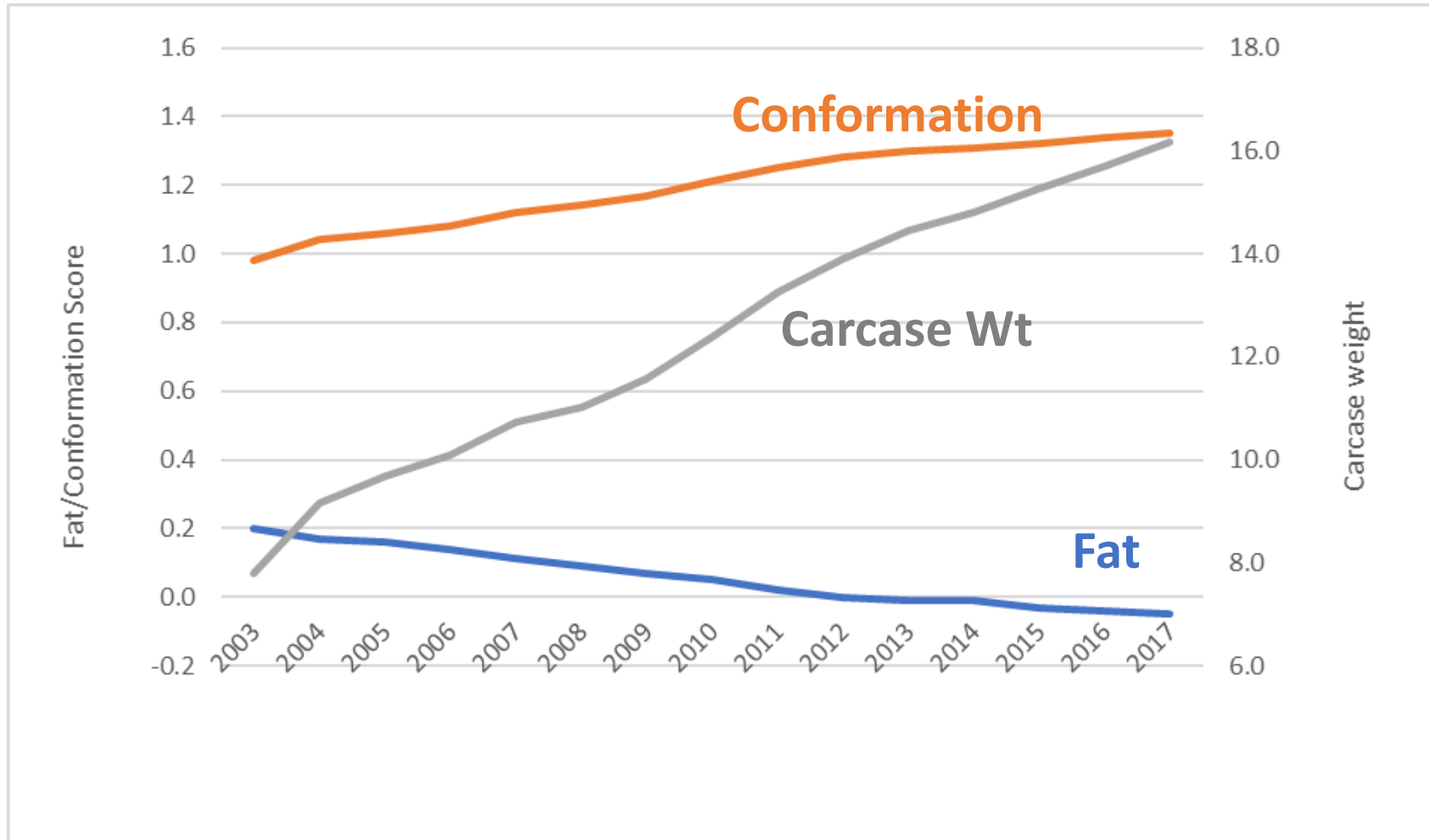


- Sustain **10 more years of genetic improvement** at current rate. Then maintain 10 years.
- Value = €2.85b
 - Herd size ~1.45m

Beef production

- Beef production
 - Slaughtered in Ireland
 - Live cattle exports
- Cull cows
- Maternal traits for suckler cows

Beef – Terminal traits

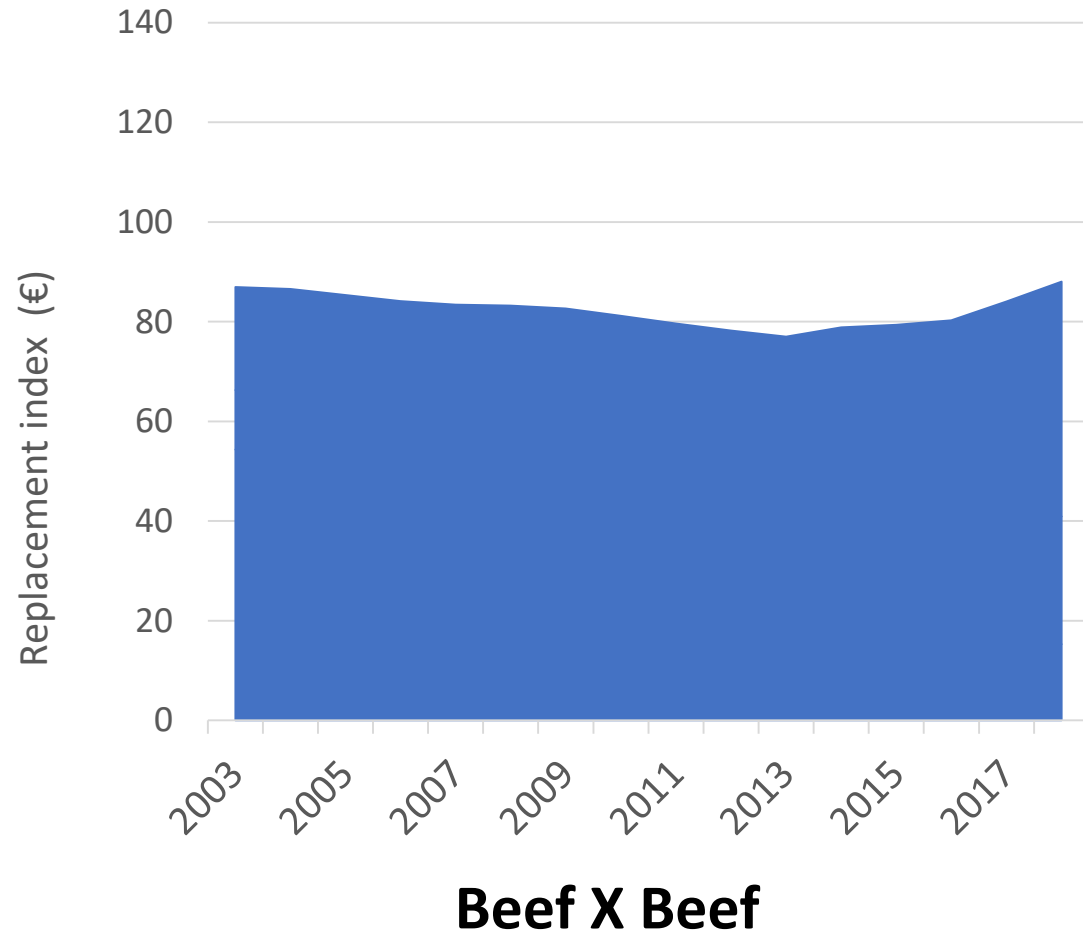


Beef – Terminal

	NPV (€m)
Beef (Terminal)	
Slaughtered in Ireland	464
Live cattle exports	105
Total	569

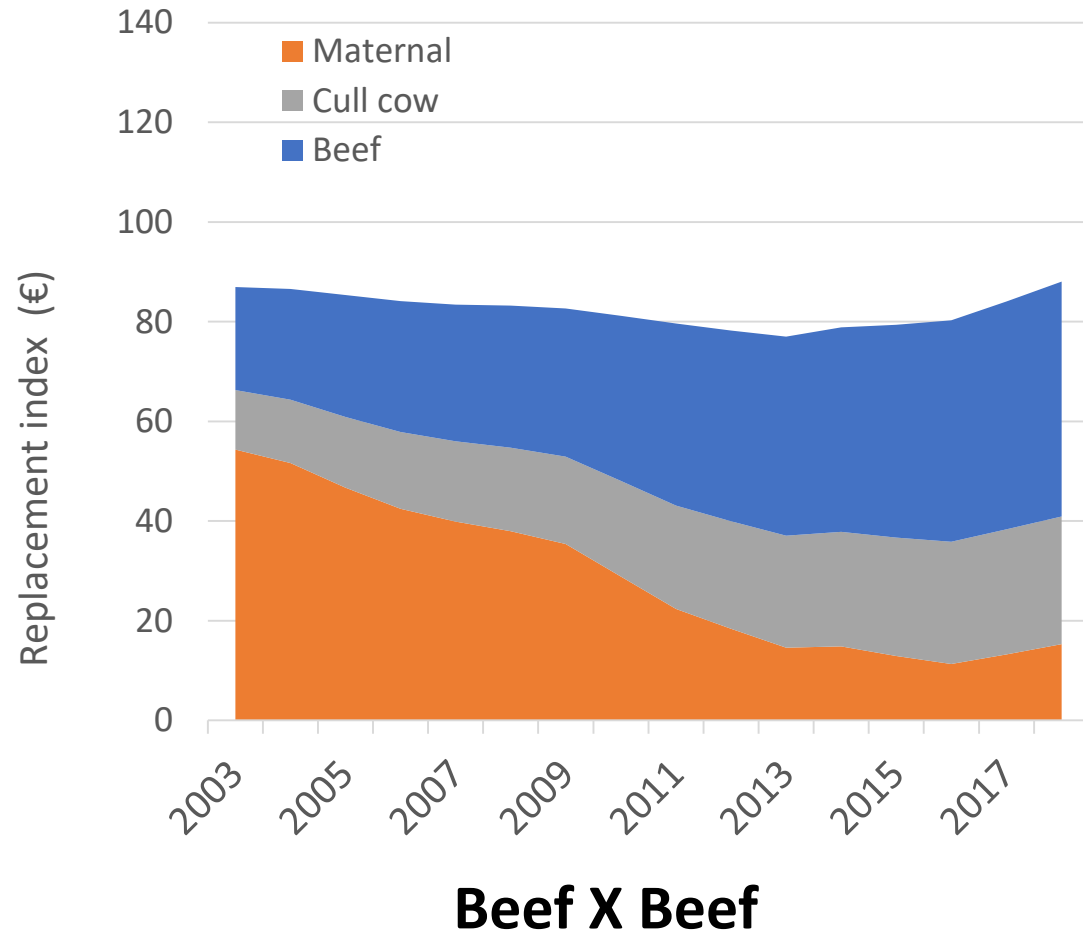
**€33 per suckler cow
per year**

Beef – Replacement index



- Replacement index steady

Beef – Replacement index



- Replacement index steady
- **But** maternal traits have deteriorated
- Compensated by terminal traits

-€25 per suckler cow per year

Beef – Past value

	Value (€m)
Beef (Terminal)	
<i>Slaughtered</i>	464
<i>Live cattle exports</i>	105
Cull cows	31
Suckler cows (Maternal)	-420
Total	180

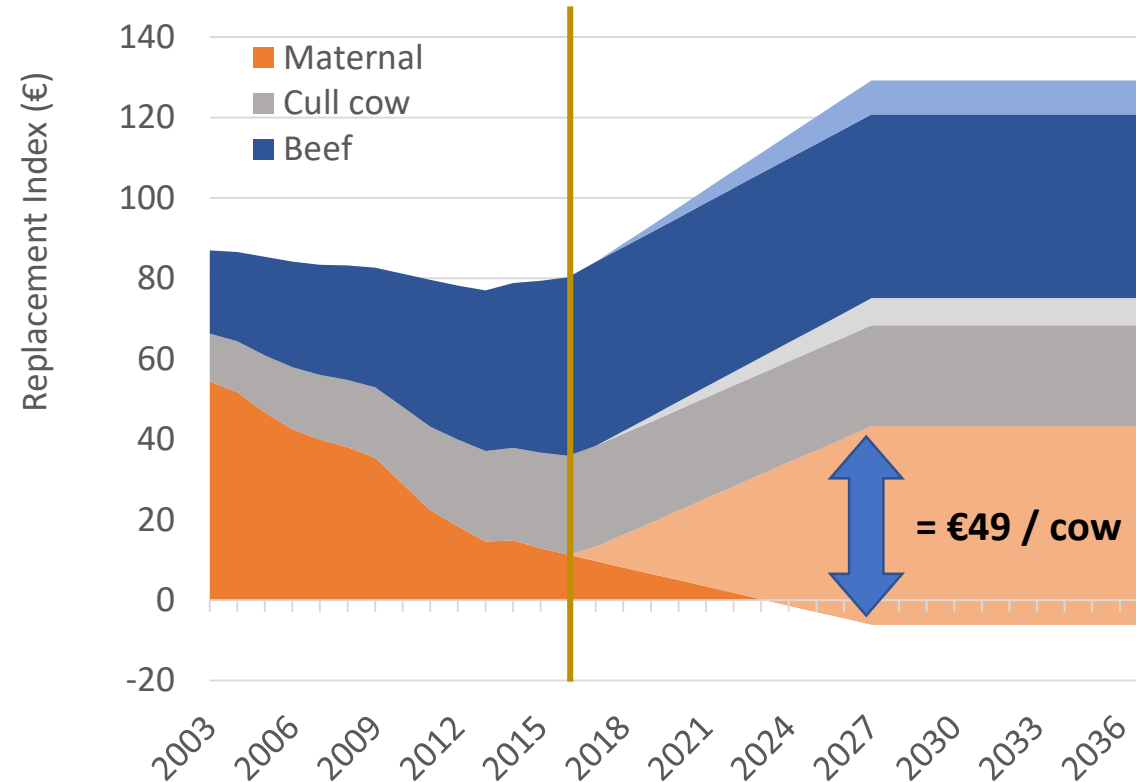
Beef – A new future



Beef Data & Genomics Programme

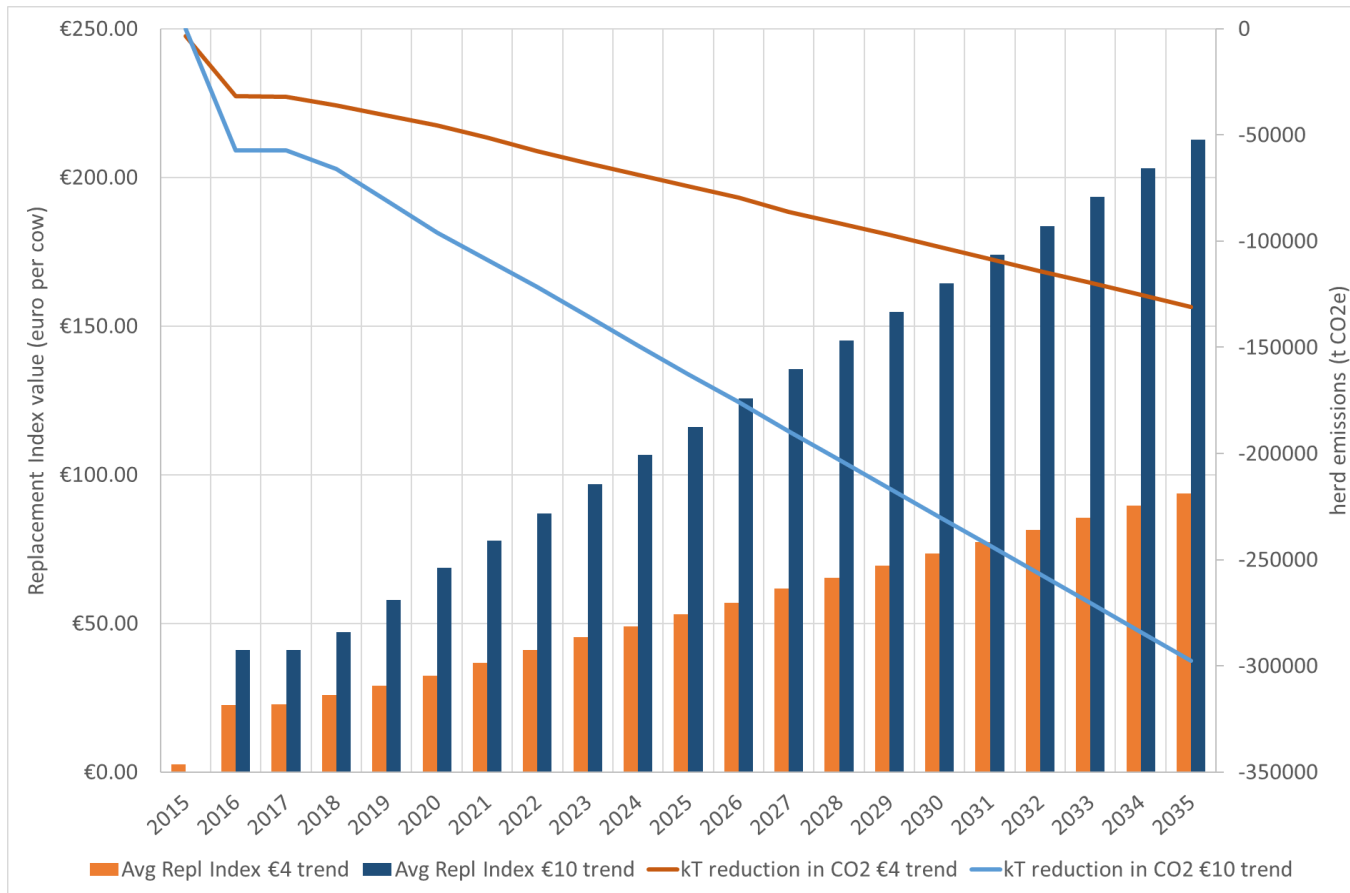


Beef – BDGP



Value of new maternal gain from BDGP = €540m

GHG benefits from BDGP



20 years of €10/yr gain in Replacement index = 10% reductions in suckler emissions.

Sheep production

- Terminal index
- Replacement index:
 - Sub-indexes for growth, lambing and maternal

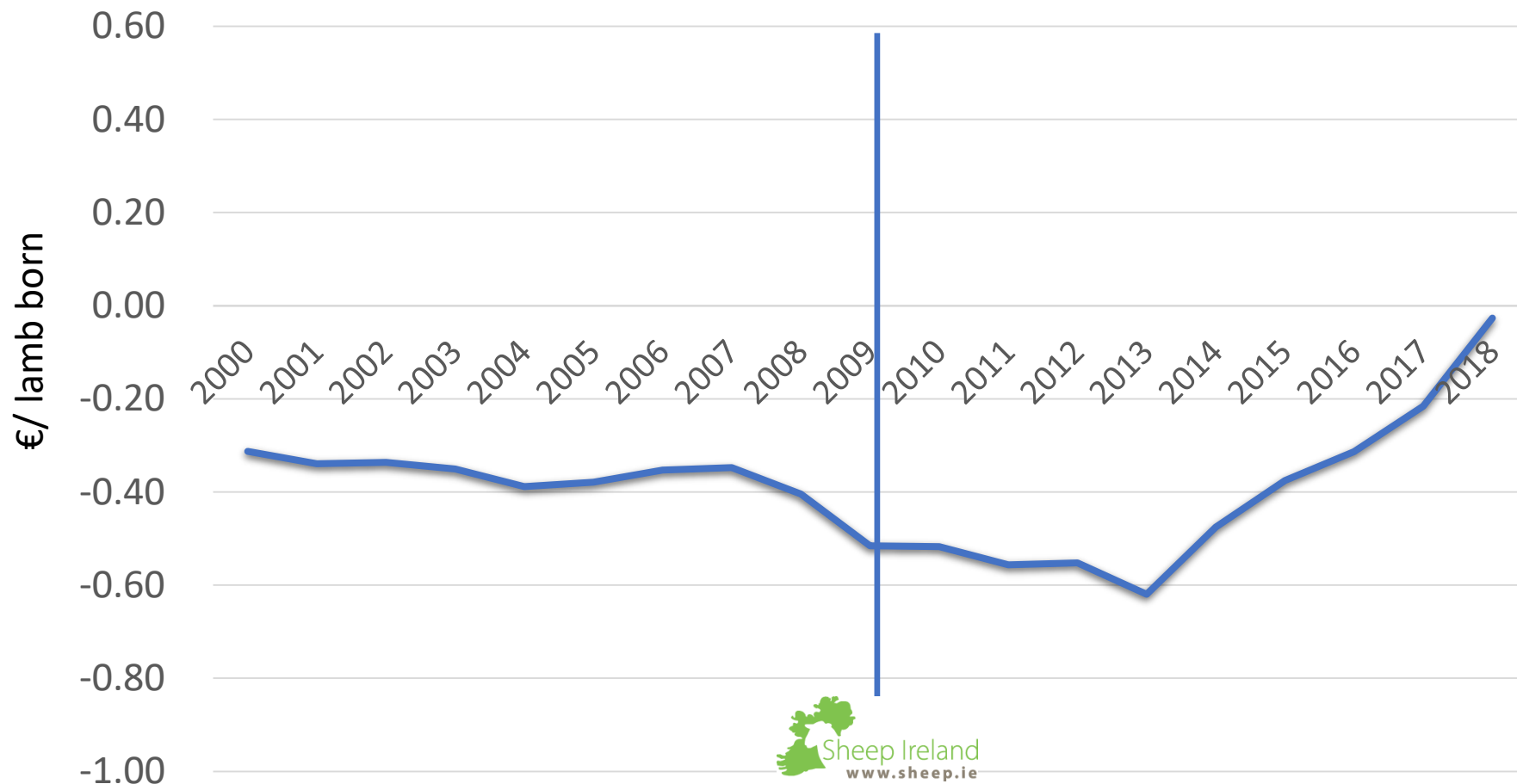
Genetic trend terminal index



- Terminal index value €0.34m

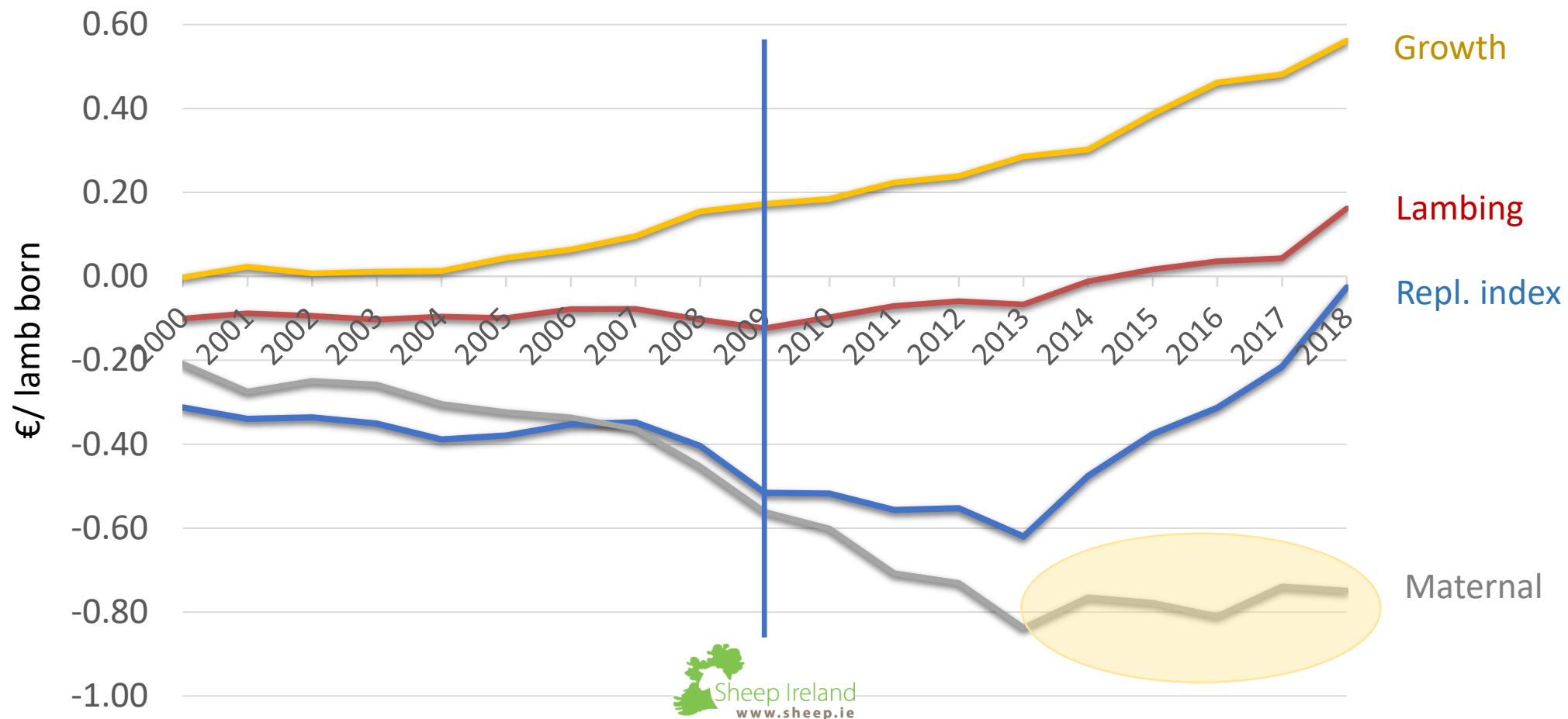


Genetic trend replacement index

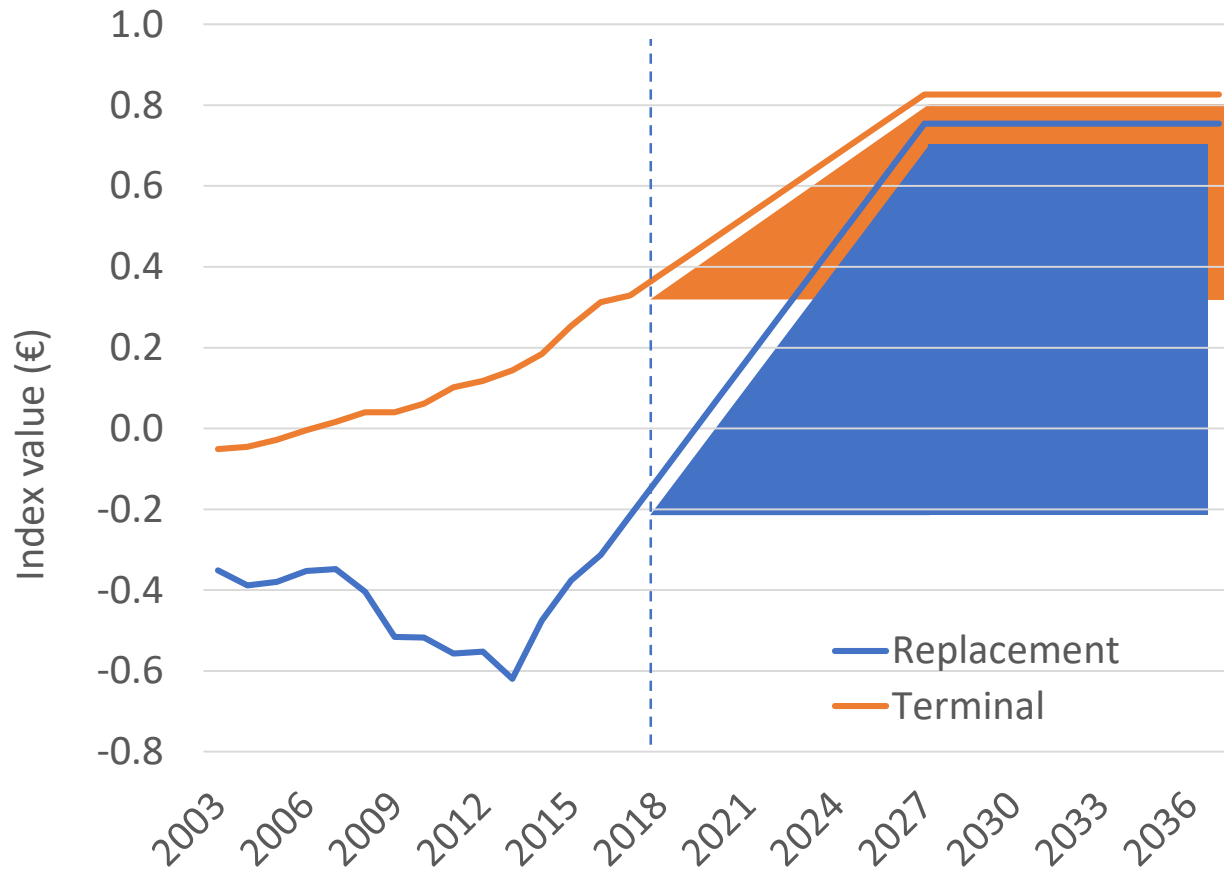


- Maternal index value €0.74m

Maternal genetic trends



Sheep – future benefits



- Value of benefits much greater than past
- Replacement index is driver
 - **Rep = €15.5m**
 - **Term = €2.0m**

20 years of Genetic Improvement

- Dairy
 - Past: huge value driven by fertility
 - Future: Focus on health traits
- Beef and sheep
 - Negative maternal trends have been reversed. Other beef industries have failed to do this (NZ, USA, UK, Aus)
 - Maintain momentum (BDGP, and future scheme?)
 - Future: Grow engagement,