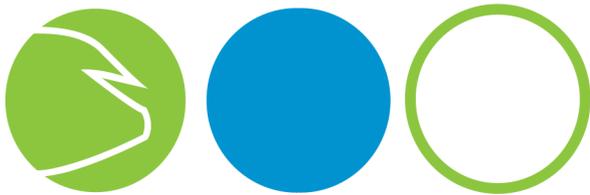


Environmental Product Declaration (EPD) for Improvac®



Joseph Robinson, PhD
Pfizer Animal Health





Outline

- Description of the product: Improvac[®]
- What will not be presented today
- What will be presented today (project overview)
- Summary of overall “footprint” findings of the LCA
- Value of the project to Pfizer Animal Health
- Use of the EPD system
- Integration of the LCA and EPD approaches into the sustainability initiatives of Pfizer Inc.



Use of the EPD System

- Why did we choose to develop an environmental impact assessment for Improvac?
- Why did we choose the EPD reporting format?
- Have we integrated our EPD (for Improvac) into other environmental management practices?
- What do expect from the international EPD system?
- How would we (I) like to see it evolve?



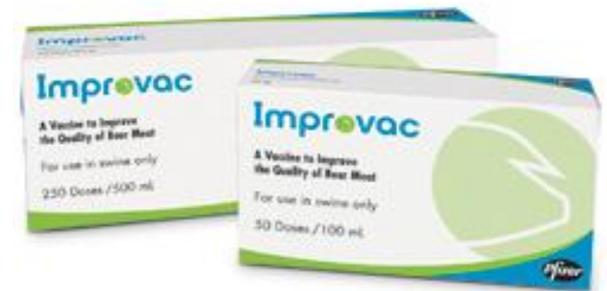
Acknowledgements

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- Life Cycle Engineering
 - Gian Luca Baldo
 - Fabrizio Boeri
 - Paola Borla

What is Improvac?

“Improvac is an immunological product that can be used in pig management as an alternative to physical castration for the control of boar taint, an offensive off odor and taste caused by compounds such as androstenone and skatole that can accumulate in the fat of entire male pigs following the onset of puberty.”

1. Production benefits: healthier growth with improvements in feed conversion efficiency
2. Packer benefits: leaner animals
3. Social/Environmental benefits: animal welfare and Sustainability Declarations



LCA: Goal and scope

The meaning of a Life Cycle Assessment (LCA) study of Improvac for Pfizer Animal Health:

- A need to produce reliable data about the environmental burden of an average farm that uses vs. one that doesn't use this immunological product
- Quantify any possible environmental benefits accrued from using Improvac
- For benchmarking against existing practices
- For eventual dissemination activities, including green marketing tools such as Environmental Product Declarations (EPD: ISO Type III Environmental claims)



LCA Functional Unit Definitions

**IMPROVAC
PRODUCTION:**

UPSTREAM & CORE

**2 doses immunological product
use per male pig**

**USE PHASE (FARM)
LEVEL**

DOWNSTREAM

**2 doses immunological product
use per male pig**

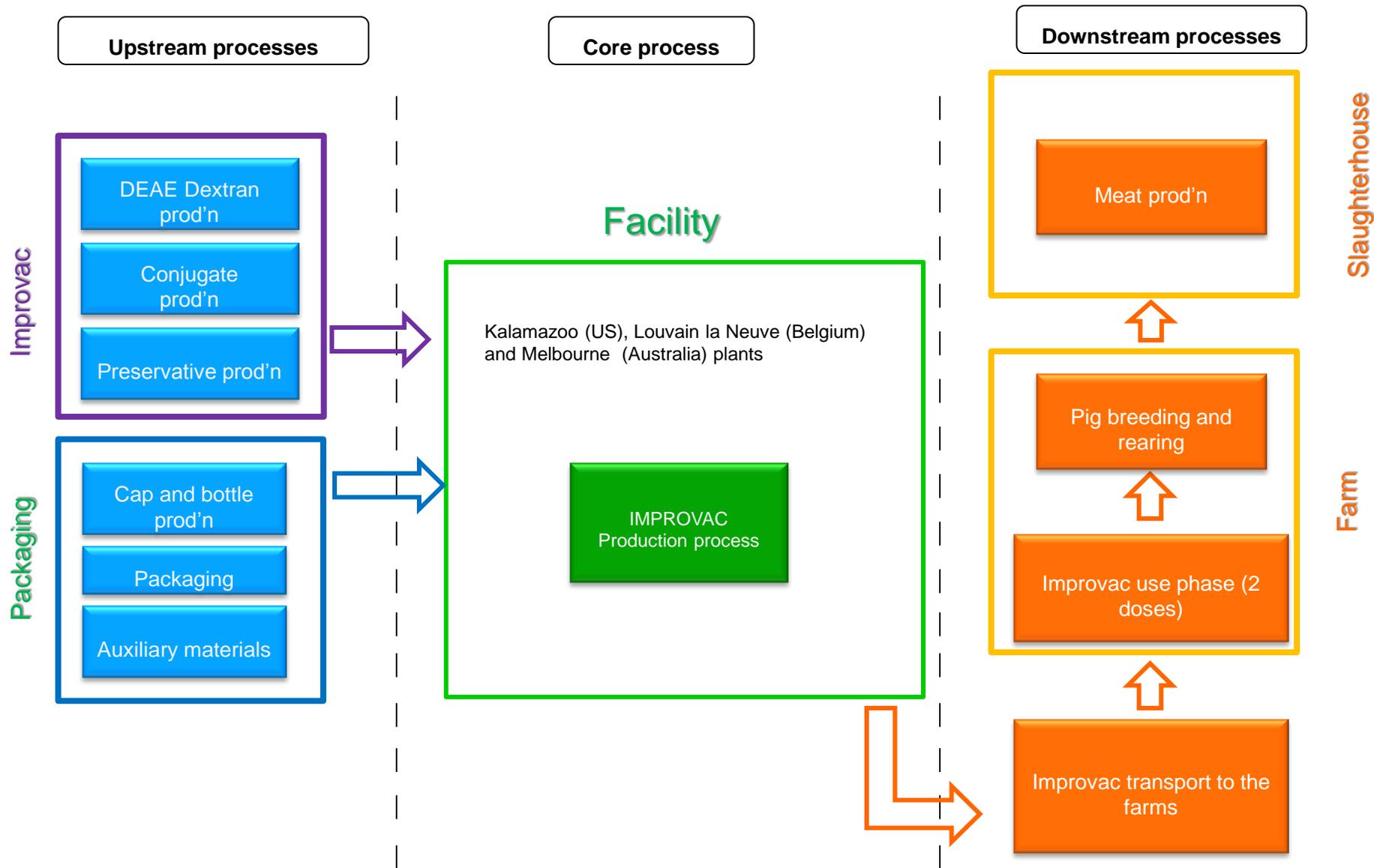
**END OF LIFE
(SLAUGHTERHOUSE)**

DOWNSTREAM

**Pig ready for slaughter
(live-weight) and the unit
mass of final product (meat)**



LCA System Boundaries





A Global Project

Canada

- 2 farms questionnaires
- 1 Slaughterhouse questionnaire

Europe

- 1 Slaughterhouse Questionnaire (FR)
- 2 Farms Questionnaires (FR)
- 1 Farms Questionnaires (NL)
- 2 Farms Questionnaires (UK)
- 1 Farms Questionnaires (SP)

Japan

- 1 Slaughterhouse questionnaire
- 1 Farm questionnaire

China

- 1 Slaughterhouse questionnaire
- 3 Farms questionnaires

Australia Government
LCA Study of Pork
supply chain

Brazil:

- 2 Slaughterhouse
- 2 Farms Questionnaires

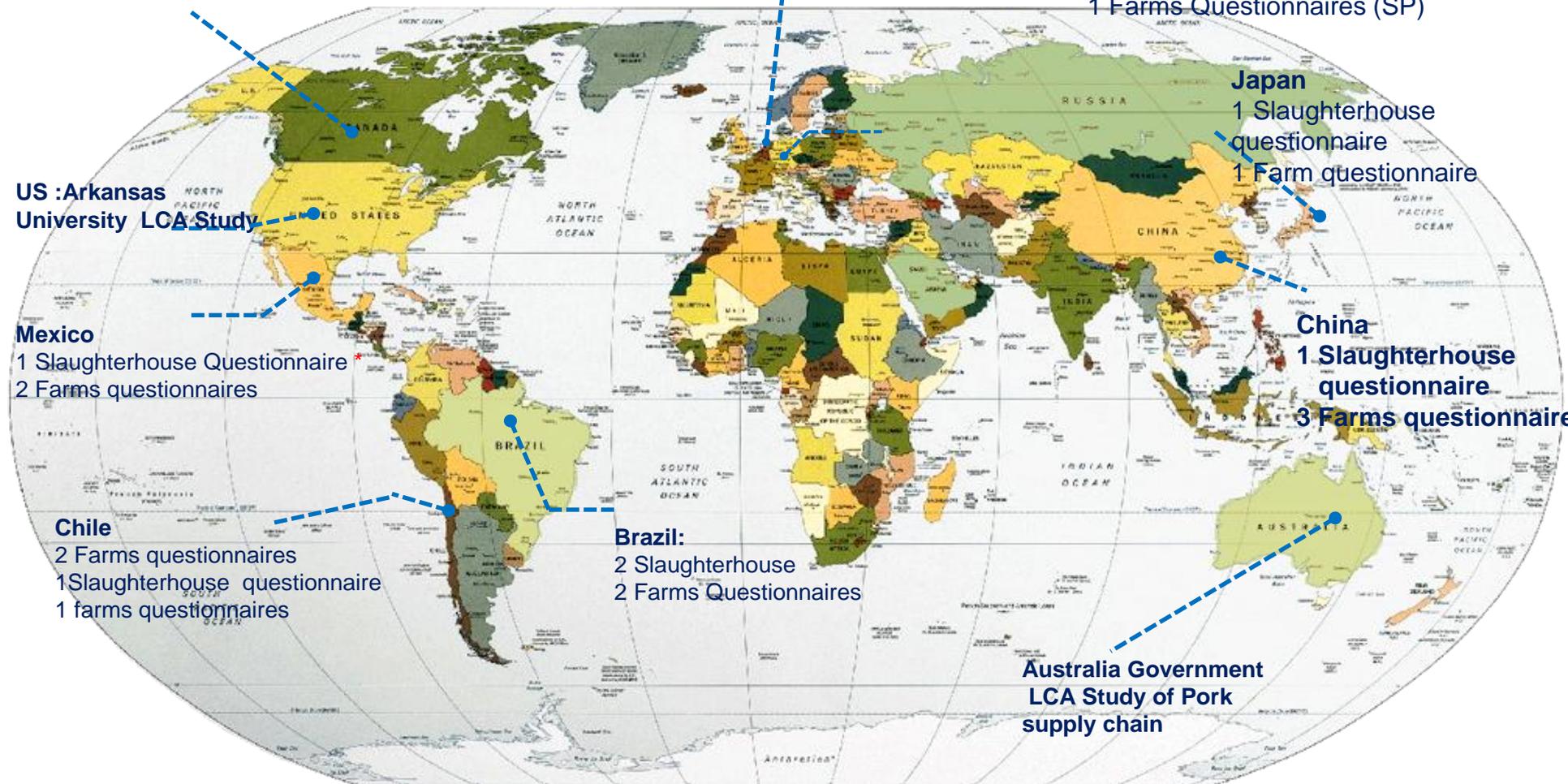
Chile

- 2 Farms questionnaires
- 1 Slaughterhouse questionnaire
- 1 farms questionnaires

Mexico

- 1 Slaughterhouse Questionnaire*
- 2 Farms questionnaires

US :Arkansas
University LCA Study

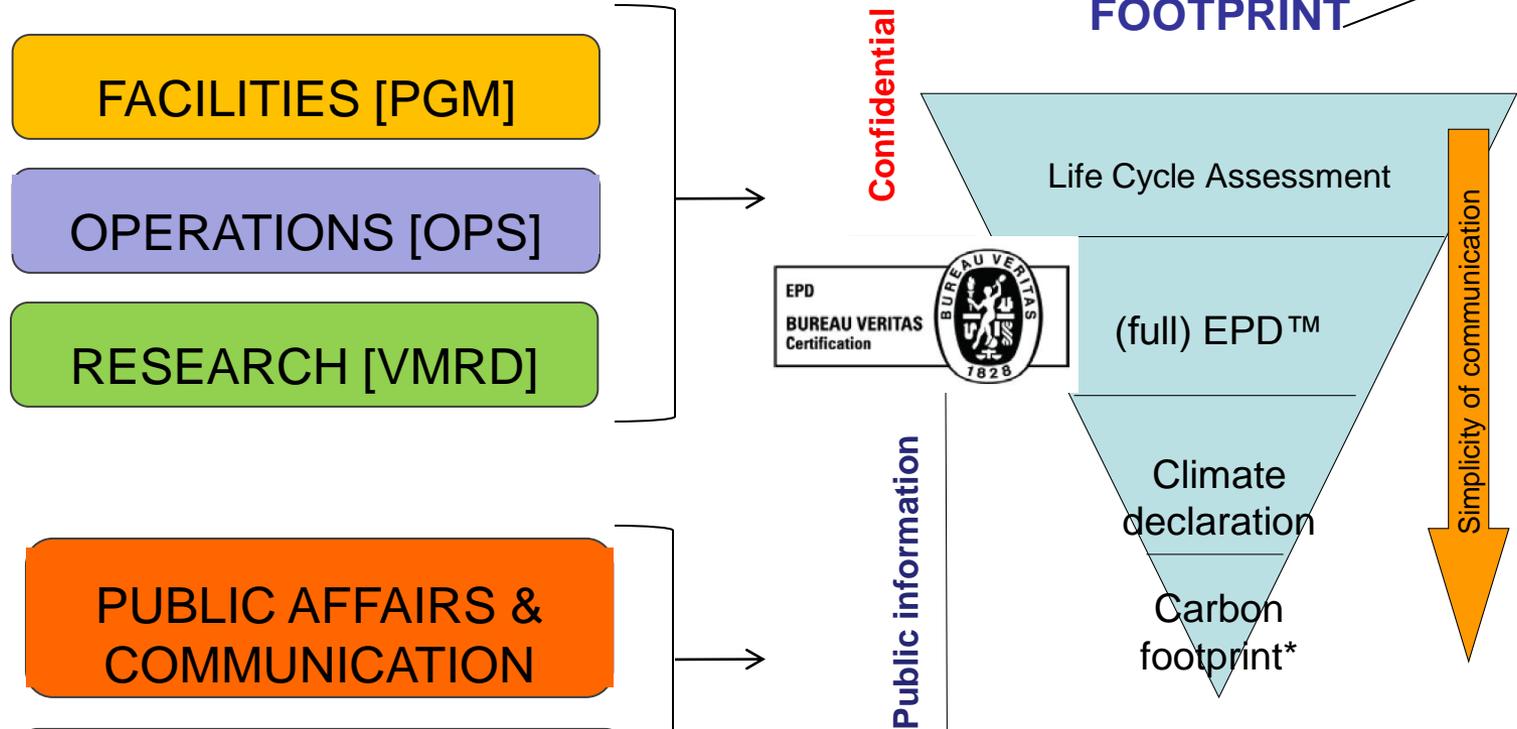




An Integrated Approach



FROM LCA TO CARBON FOOTPRINT



CARBON FOOTPRINT
(Emission expressed as CO₂-equivalents)

Fossil	3.1	16.7	1.2	0.9	21.9
Biogenic	0.1	5.3	0.4	-	5.8
					27.7

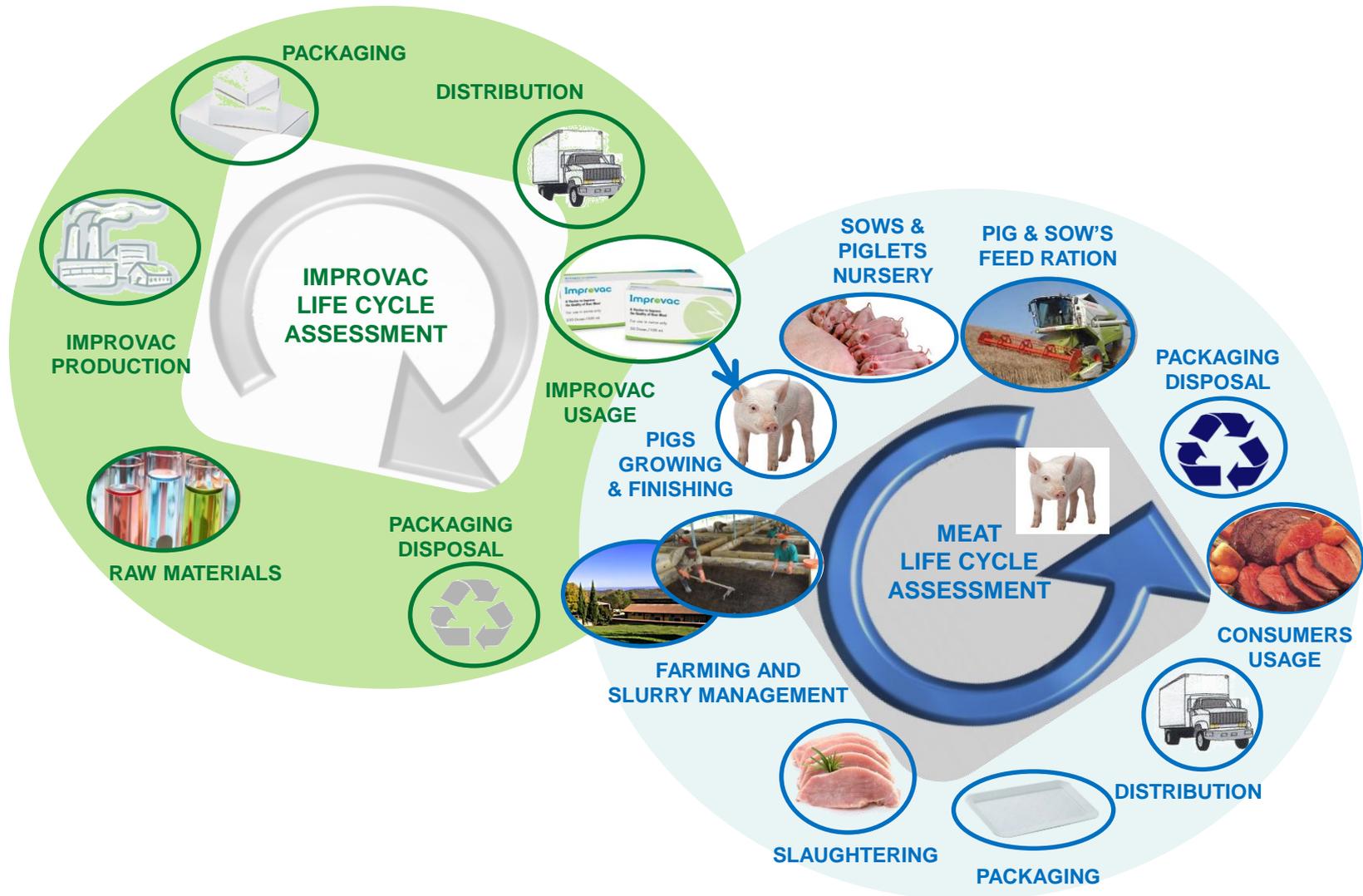
EPD
THE GREEN YARDSTICK

CPC code 34920

For more information - www.environfac.com



Improvac Production, Use and Pork Food Chain





LCA Results

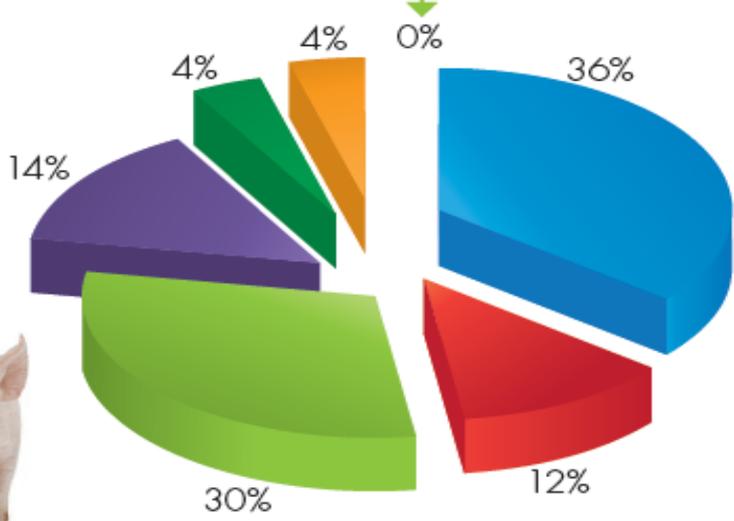
The most relevant contributors to the Carbon Footprint Indicator of the Improvac system .

GWP Main Contributors

Improvac production = 0,04 kg CO₂ eq. for 2 doses
The contribution to total GWP is 0,4 g CO₂ eq./kg live weight (0,01%).



Improvac Pig
GWP per kg of live weight pig = 5,4 kg CO₂ eq.



- Pig Ration
- Housing System
- Slurry Management
- Sow Management
- Transport]
- Slaughterhouse
- Vaccine pack end of life
- Vaccine production
- Vaccine distribution

DOWNSTREAM PROCESS

Transport phase includes:

- Improvac transport from facilities to farm (2 doses per pig)
- Transport of Improvac crew
- Pig feed transport from suppliers to farm
- Pig transport to slaughterhouse

UPSTREAM AND CORE PROCESSES



LCA Results

Reduction in Carbon Footprint of pigs raised using Improvac vs. physical castration			
Carbon Footprint (kg CO ₂ e) for 1 kg <u>live weight</u>			
Life Cycle Phase	Physical castration	Improvac	Reduction
Pig Ration	2,06	1,94	6%
Housing System	0,63	0,63	
Slurry Management	1,70	1,59	6%
Sow	0,76	0,76	
Transport	0,23	0,23	
Slaughterhouse	0,20	0,21	
Improvac end of life		<0,01	
Improvac production		<0,01	
Improvac transport		<0,01	
Total	5,57	5,36	3,7%
Carbon Footprint (kg CO ₂ e) for 1 kg <u>carcass</u>			
Total	7,12	7,00	1,7%
Carbon Footprint (kg CO ₂ e) for 1 kg <u>lean meat</u>			
Total	13,43	12,75	5,0%
For a pig of about 111 kg live weight, the use of Improvac reduces Carbon Footprint by about 23 kg CO ₂ e compared to physical castration			



Final Remarks on the LCA Results

The benefits of the Improvac technology is attributable to a reduced consumption of feed and a reduced production of slurry.

The LCA study showed a clear environmental benefit in terms of all the main impact indicators of the Improvac system vs. the baseline scenario (physical castration).

The conservatively estimated reduction in carbon footprint is near to 4% on a live weight basis, which corresponds to a reduction of about 5% on a one kg of lean meat basis. For a typical fattening pig reared to a weight of 115 kg, the reduction in global warming potential is equivalent to approximately 28 kg of CO₂.



Environmental Management Practices

Integrating EPDs and SPDs into Pfizer management practices

- Long-standing commitment to environmental health and safety protection
- Pfizer building on its environmental programs to enhance sustainable practices
 - Seek continuous improvement in environmental performance
 - Integrate environmental considerations into R&D activities
 - Contribute to the common effort to protect the environment in the natural world and in the workplace



Environmental Management Practices

- Pfizer's Environmental Sustainability Program Actions:
 - Setting priorities for environmental activities with guidance from business partners and stakeholders
 - Communicating with stakeholders on issues and progress
 - Corporate responsibility pledge to reduce environmental impacts globally
 - Strategic priorities: climate change mitigation, product stewardship, access to clean water
- Use of LCA and the EPD process as a means of quantitatively verifying mitigation of environmental impact (e.g., climate change mitigation using products such as Improvac)



Thank You for Your Attention