

Pork Industry Environmental Sustainability Initiative



C-AGG Meeting
July 21, 2011
Randy Spronk



AMERICA'S PORK PRODUCERS
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Today's Media



- 24/7
- Highly competitive
- Television news dominates
- Newspapers still viable
- Online sources rapidly growing



THE WALL STREET JOURNAL.



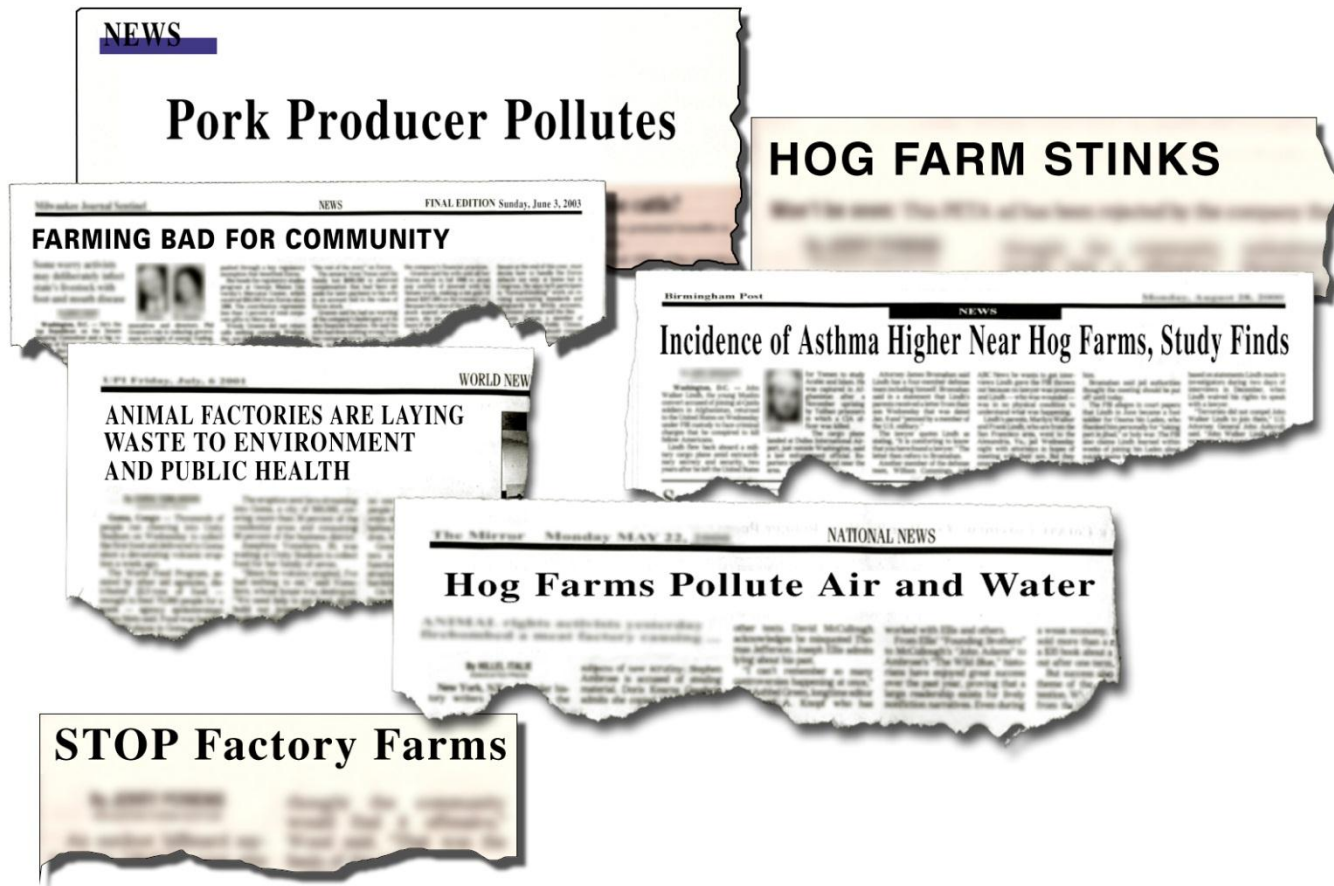
DRUDGE REPORT



The New York Times



Headlines



Opinions

“**Outlaw** concentrated animal feeding operations and encourage the development of sustainable animal husbandry. The concentrated system **degrades the environment**, directly and indirectly, **while torturing animals** and **producing tainted meat**, poultry, eggs, and, more recently, fish. Sustainable methods of producing meat for consumption exist”

February 2011

A Food Manifesto for the Future

By MARK BITTMAN



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The 9 billion-people question

The world's population will grow from almost 7 billion now to over 9 billion in 2050.

“It points out that although the concerns of the critics of modern agriculture may be understandable, the reaction against intensive farming is a luxury of the rich. Traditional and organic farming could feed Europeans and Americans well. It cannot feed the world”.

Special Edition February 2011

The Economist

Andrew Revkin

NY Times Environmental/Climate/Sustainability writer



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A Proposed Food Manifesto for Today

“Promote & encourage development of swine feeding operations & system of all types and sizes that protect the environment, safeguard animal health and welfare, improve the food safety of pork, and are environmentally, socially and economically sustainable that recognize the need for protein to feed the world’s growing 6 billion population, now and in the future.

A Proposed Food Manifesto for Today
March 2011



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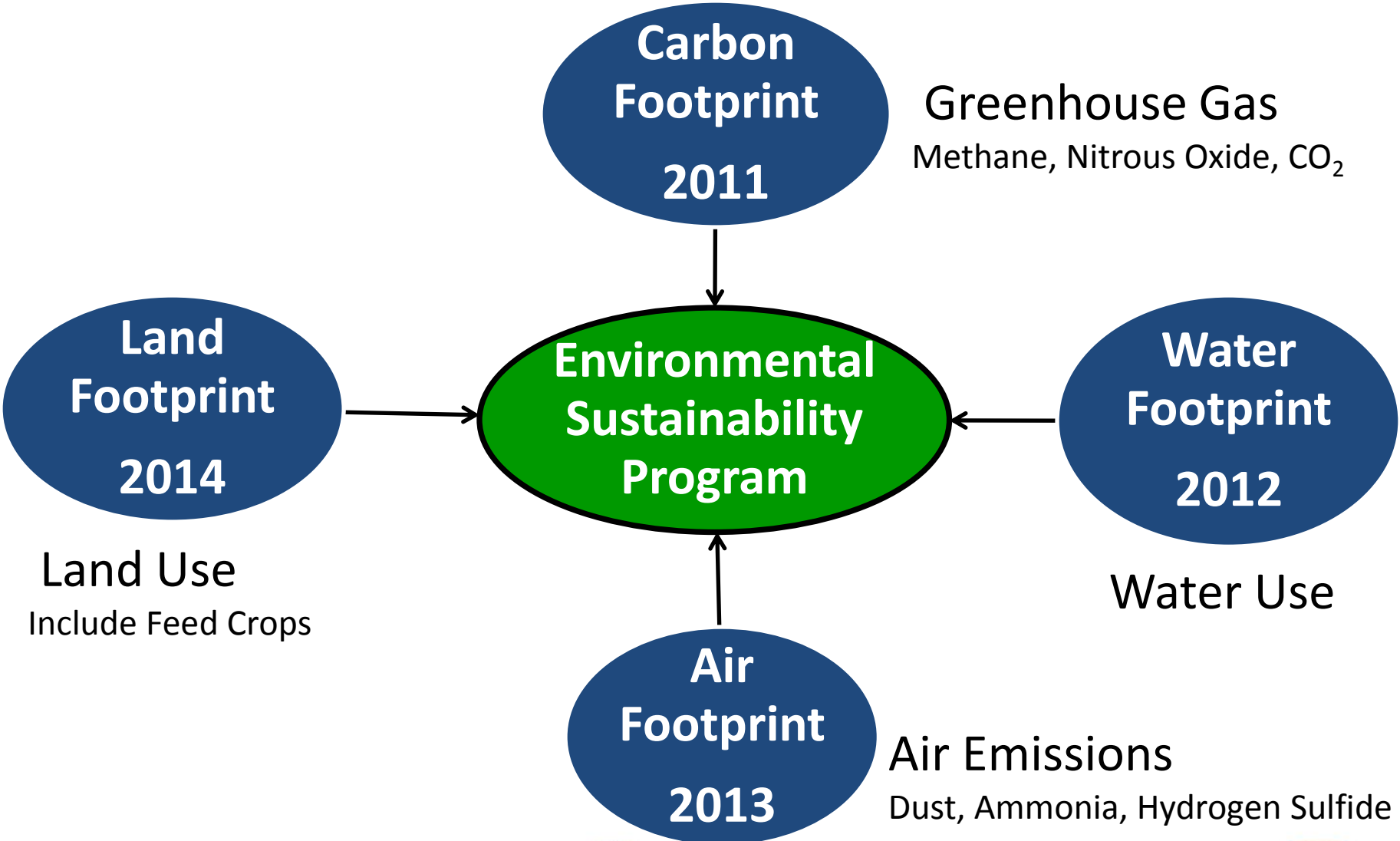
What Do We Mean By Sustainability?

Resources are not depleted or permanently damaged compromising the ability of future generations to meet their own needs.

The resources we do use are used as efficiently as possible with little or no waste.



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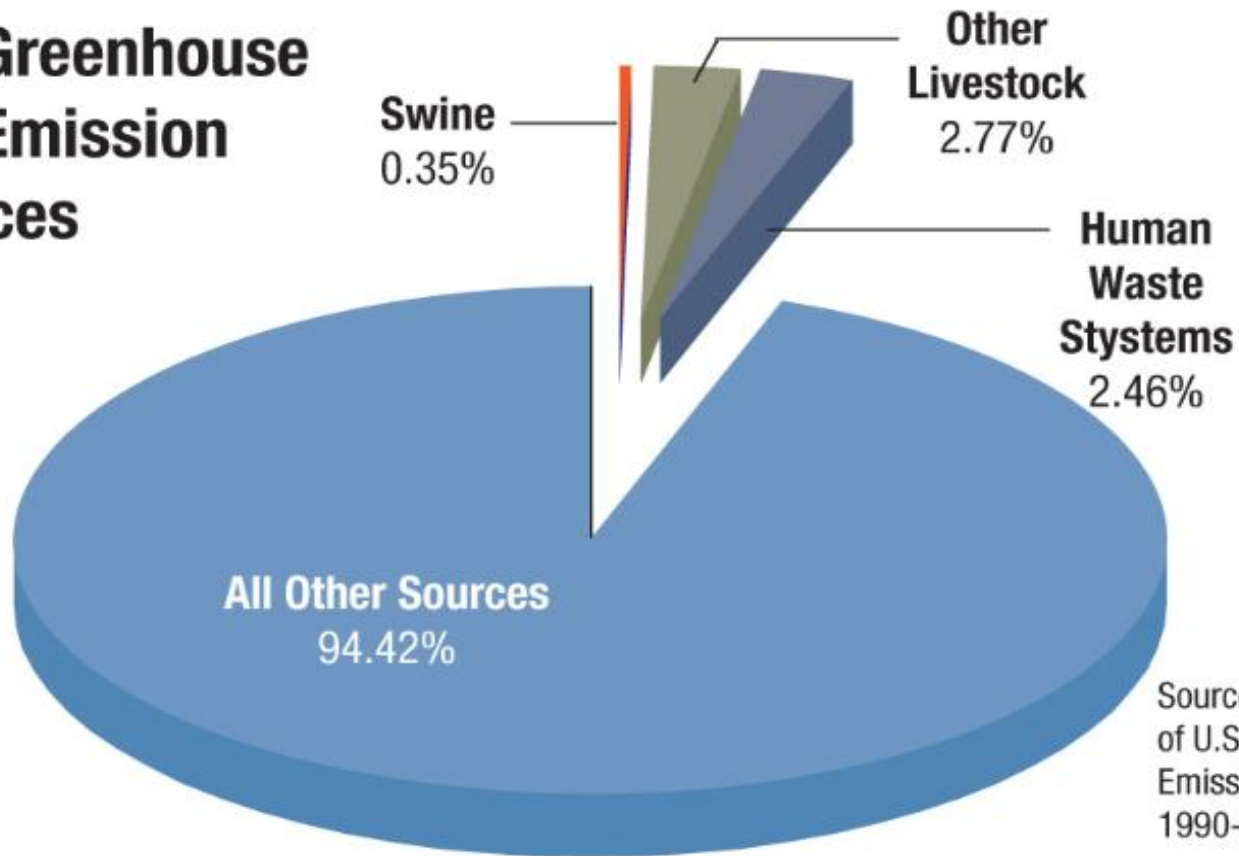


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Swine A Small Part of Total U.S. GHG

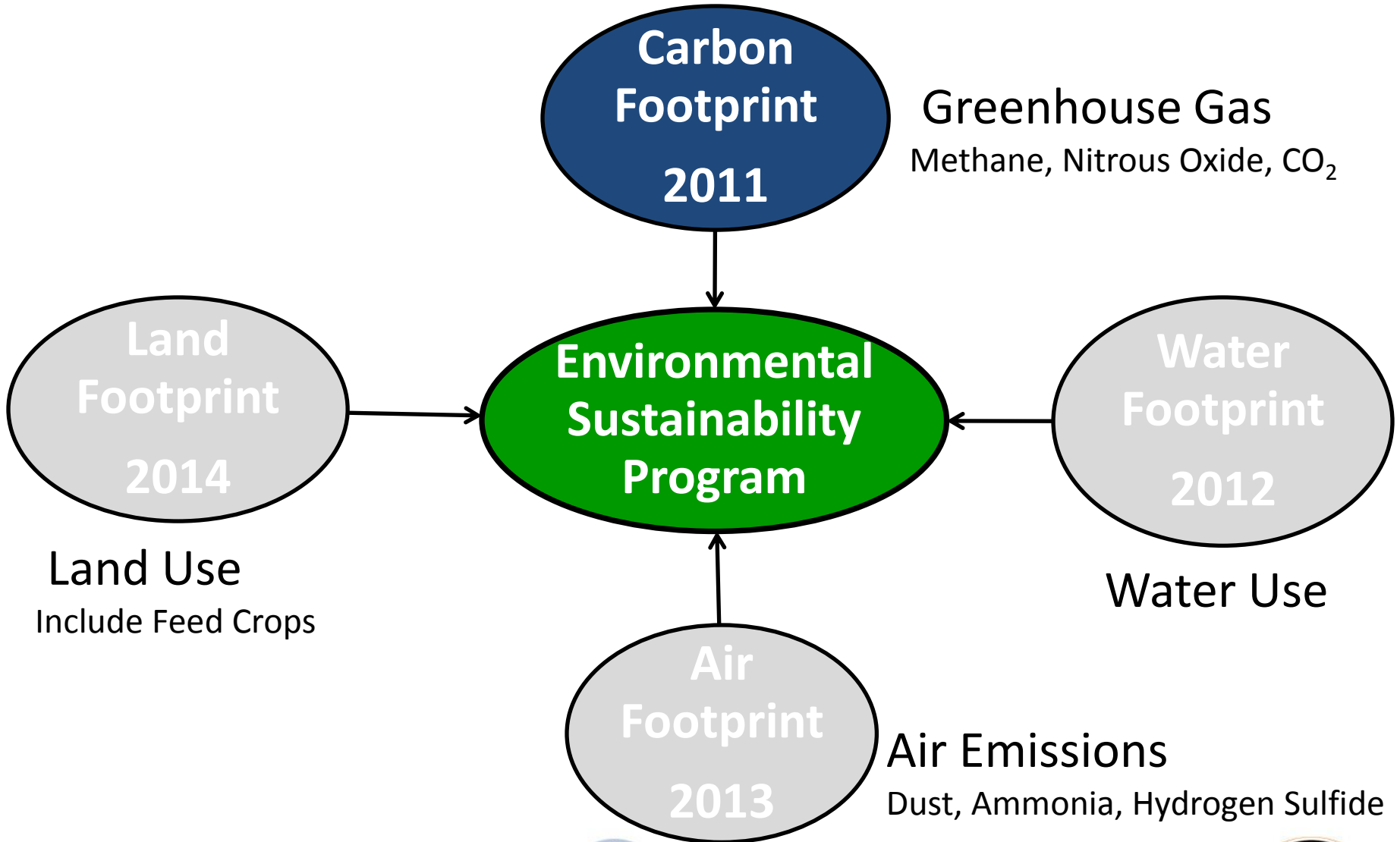
U.S. Greenhouse Gas Emission Sources



Source: Draft Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2009, Feb. 15, 2011.



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Pork's Carbon Footprint

- **A two year effort**
 - Literature Review
 - Scan Life-Cycle Assessment (LCA) - Pork Chain
 - Understand live swine production role/contribution relative to the entire pork chain - “field to fork”
 - Detailed Life-cycle Assessment - Live Swine
 - Focus on swine production segment of pork chain- “field to farm gate”
 - Live Swine Carbon Footprint Calculator
 - A producer tool to help understand the carbon footprint for their specific operation.



Carbon Footprint Scan Level LCA

Region & Production Weighted Average Footprint

- Live weight = 2.8 kg CO₂e/kg at farm gate
- Dressed carcass weight = 3.8 kg CO₂e/kg at farm gate



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Carbon Footprint Scan Level LCA

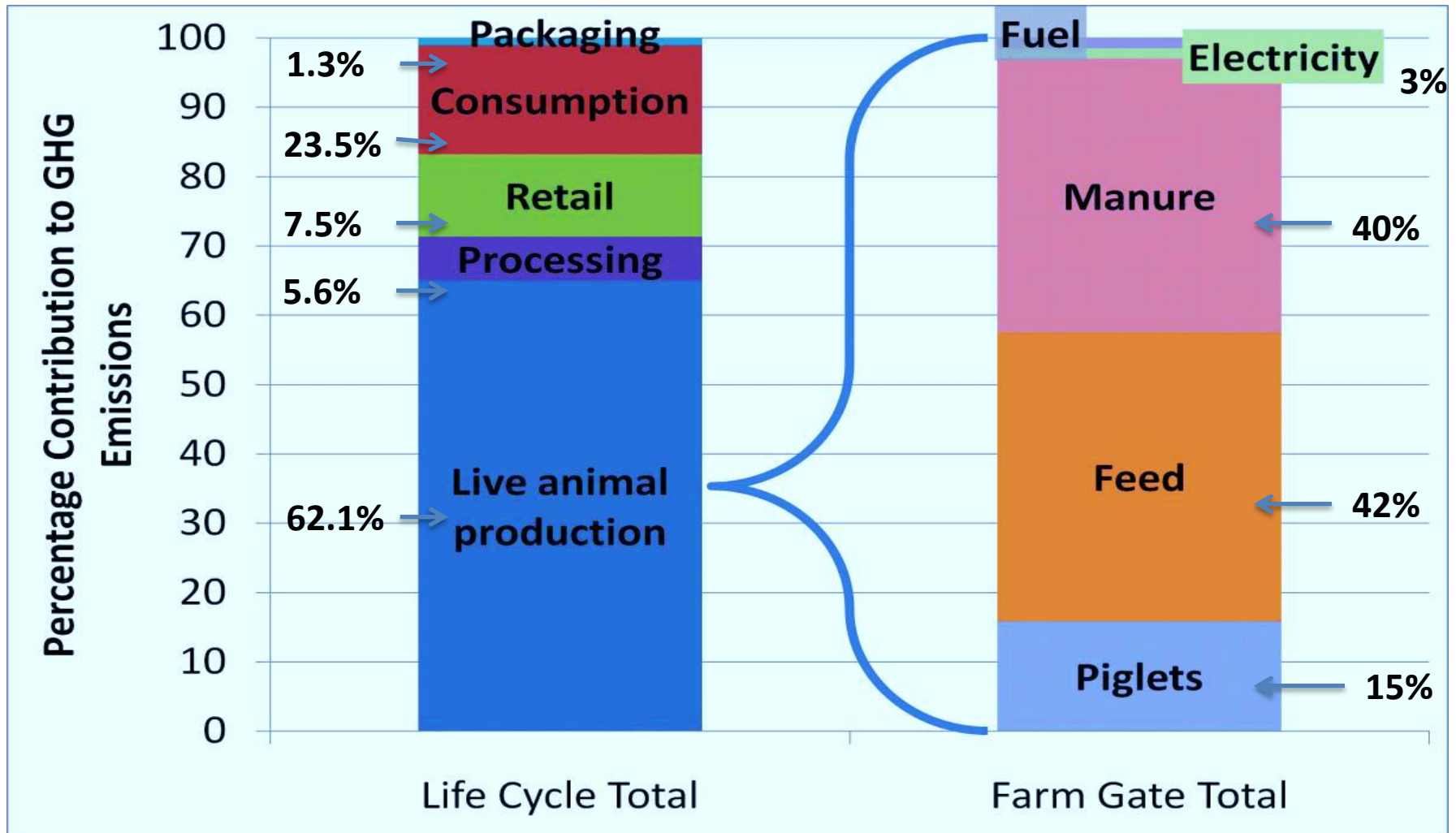
Summary - U.S. & EU (EU data from Literature Review)

CO ₂ e /KG - Carcass Weight Basis	
US Pork	3.8 (2.85 – 5.1)
Denmark	3.6 – 4.3
Sweden	2.6
France	3.0*
UK	3.3 – 5.6
Canada	3.1

*value corrected from live weight to carcass



Carbon Footprint Scan Level LCA



Live Swine

Carbon Footprint Calculator

CARBON



SM



Version 1.0

- Easy-to-use software, PC-based tool
- Usable for sow farms and wean-to-finish production
- Data saved and recalled by users only
- Helps identify on-farm areas for alternative inputs/improved efficiency
- Helps quantify pork industry's already small carbon footprint at individual farm level

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**Environmental
Sustainability Effort**

#08206-06/2011

Live Swine Carbon Footprint Calculator

Before you Begin...

Although you will likely have most of the required information to input to the calculator, there are a few items to make sure you have before starting. These include:

- Size of barn/building and insulation value of walls and ceilings
- Feeding program (feedstuffs and phases)
- Total wattage of lights in the barn
- Size and number of barn fans (For wattage and CFM information, check fan housing, in materials that came with them or manufacturer's website.)
- Average annual fuel (Gas & Diesel) used in relation to raising animals in this barn
- Average annual water used in relation to raising animals in this barn

If more than one barn is present at this site you may estimate the allocation of total annual use to each barn based on the percentage of total animals housed in each barn or if like barn sizes simply divide the total annual usage by the number of barns.



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Live Swine Carbon Footprint Calculator

Grow Barn Model - Barn Information (Step 7 of 17)

Location

Herd

Barn

Manure

Feed

Heating & Cooling

Other Energy Used

What is the length of your barn?

feet

What is the width of your barn?

feet

What is the height of the ceiling of your barn?

feet

What is the insulation (R-Value) of barn walls?

What is the insulation (R-Value) of barn roof?

Typical insulation (R-Value) for barn walls is between 15 and 25.

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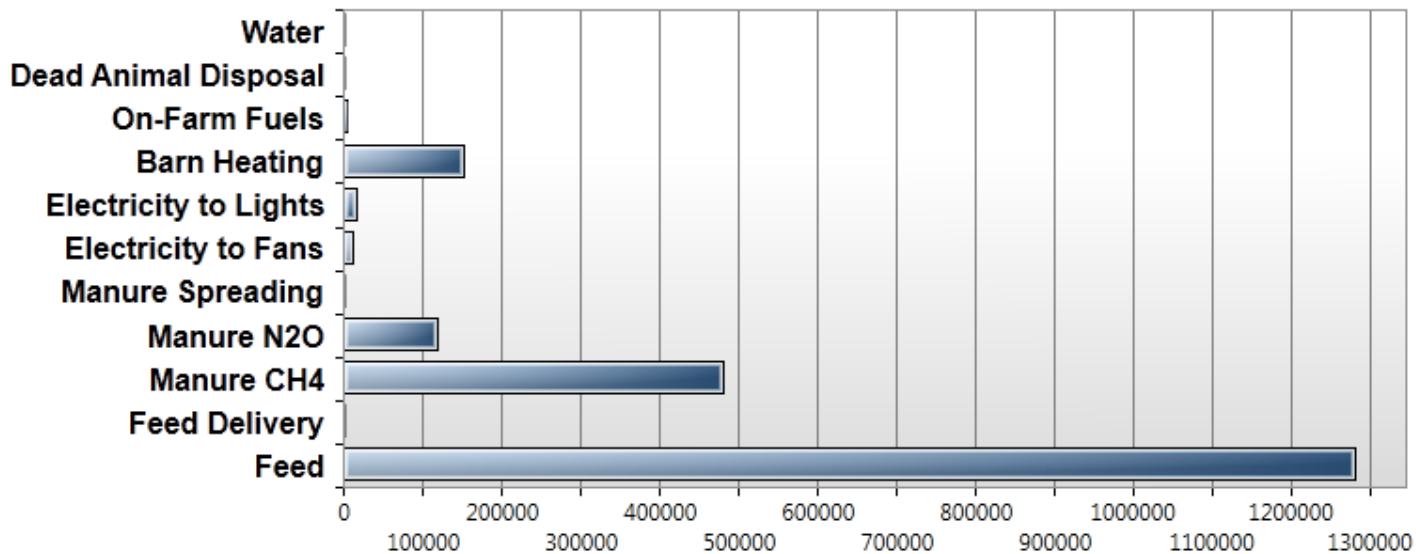
Live Swine Carbon Footprint Calculator

Grow Barn Model Outputs - Overall Summary

Overall Summary

- Herd
- Manure
- Feed Use Output

GHG Emissions Per Year By Source



All measurements in kg CO₂e/year.



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Live Swine Carbon Footprint Calculator

Grow Barn Model Outputs - Summary Details

Overall Summary

Herd
Manure
Feed Use Output

Source	Kg CO ₂ e/yr	Percent
Feed production	1,282,267	61.74%
Feed delivery	2,093	0.10%
Manure CH ₄	481,699	23.19%
Manure N ₂ O	120,396	5.80%
Electricity to fans	12,248	0.59%
Electricity to lights	17,116	0.82%
Barn heating	153,116	7.37%
On-Farm fuels	6,800	0.33%
Dead animal disposal	1,942	0.09%
Water	409	0.02%
Manure spreading	820	0.04%
Totals:	2,076,813	100.00%



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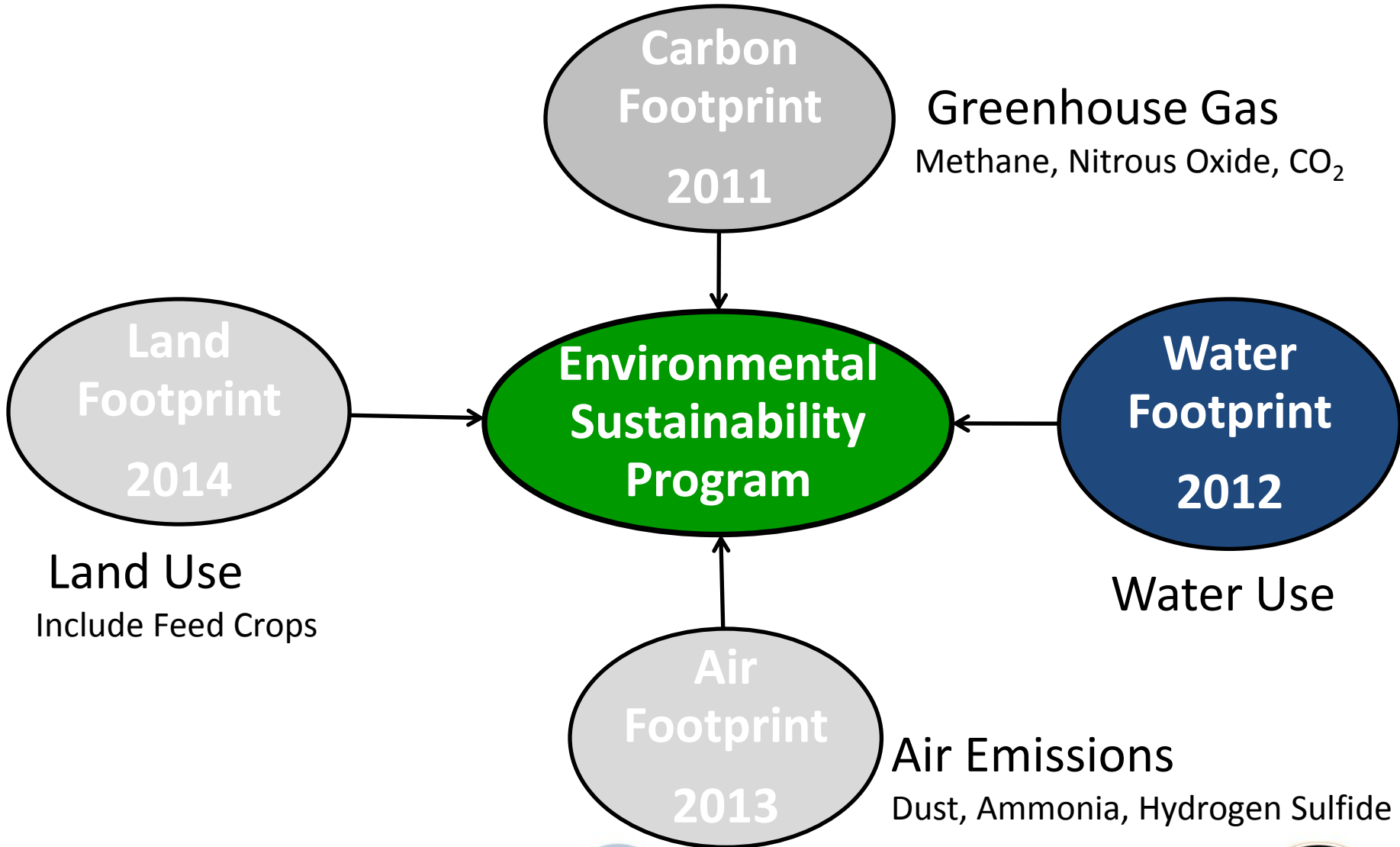
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Remaining Work – Carbon Footprint

- **Comparison of Swine Footprint 1959 to 2009**
 - *In progress – Scheduled completion - December 2011*
- **Economic Impact Module for Live Swine Carbon Footprint Calculator**
 - *Proposal under review*
 - *If funded – Completion expected - December 2012*



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Sustainability Program

Remaining Work - Water Footprint

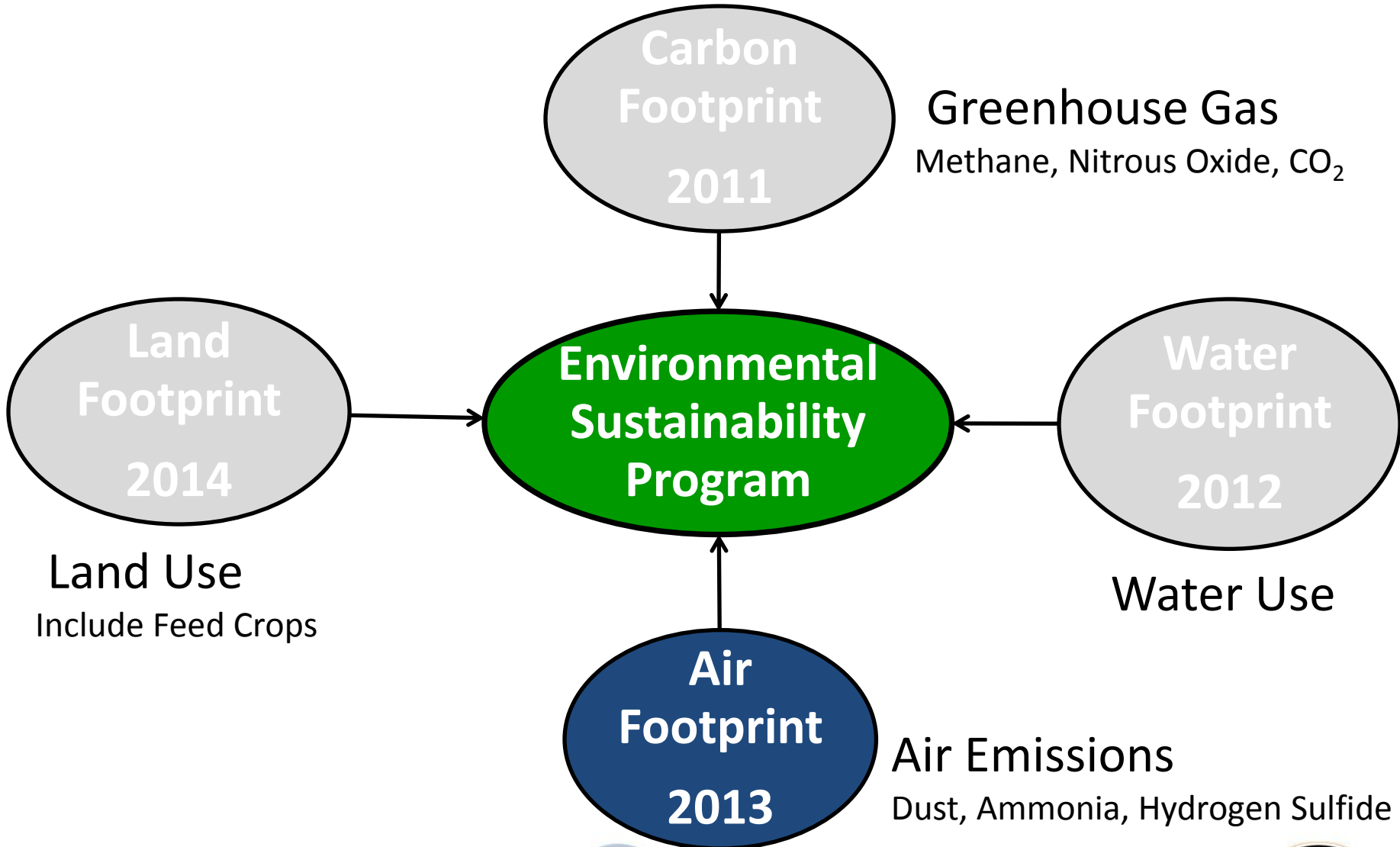
- **Develop baseline water use footprint – *Completion 2012***
 - Literature review - *Done*
 - Life-cycle assessment & water use calculator – *Proposal under review*



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Sustainability Program

Remaining Work - Air Footprint

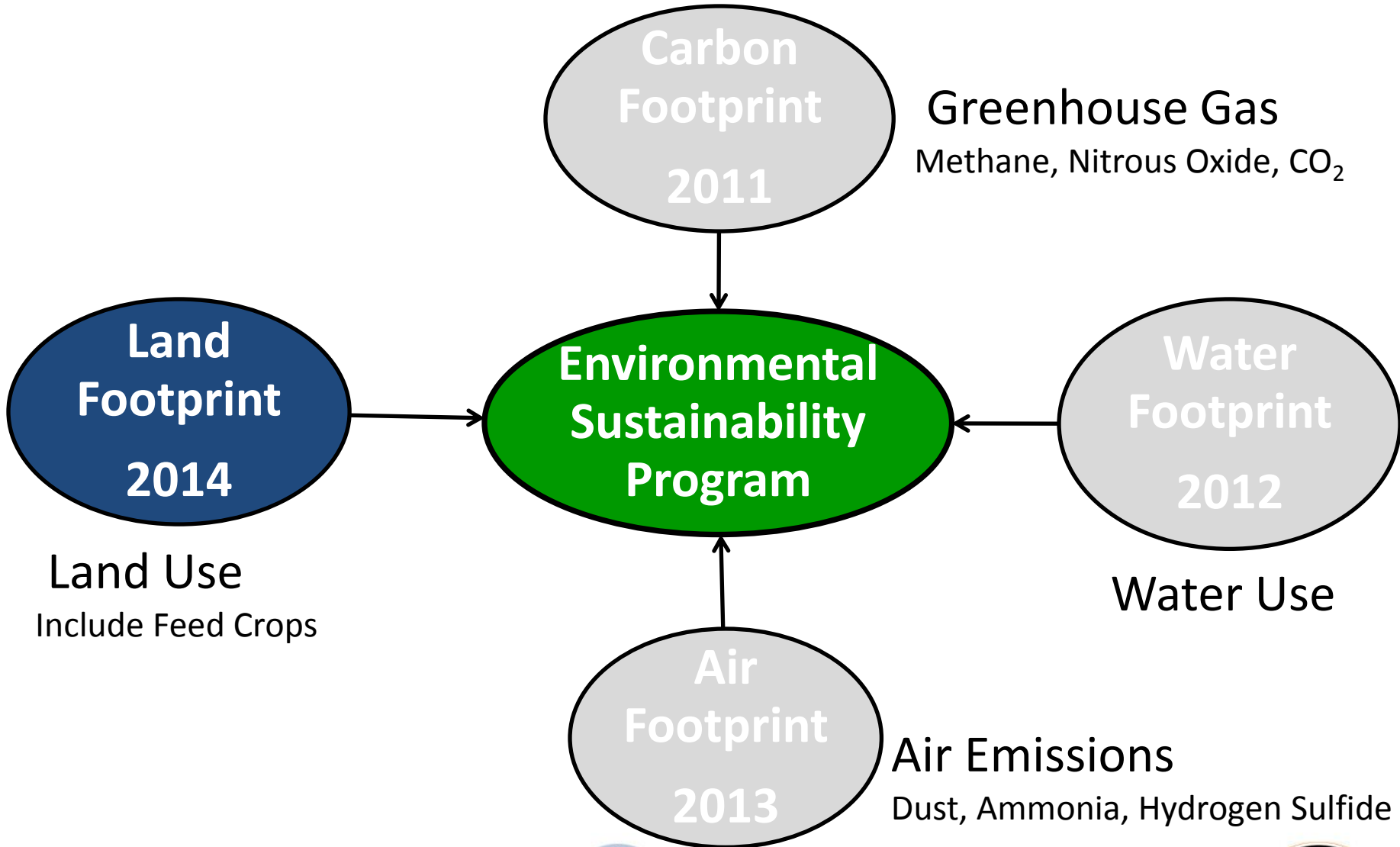
- **Develop baseline air emission footprint for non-greenhouse gas emissions - *Completion - 2013***
 - National Air Emissions Monitoring Study – *Done*
 - Evaluation & analysis of NAEMS pork data – *In Progress*
 - Process-based model for operation specific air emissions - *In Progress*



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Sustainability Program

Remaining Work – Land Footprint

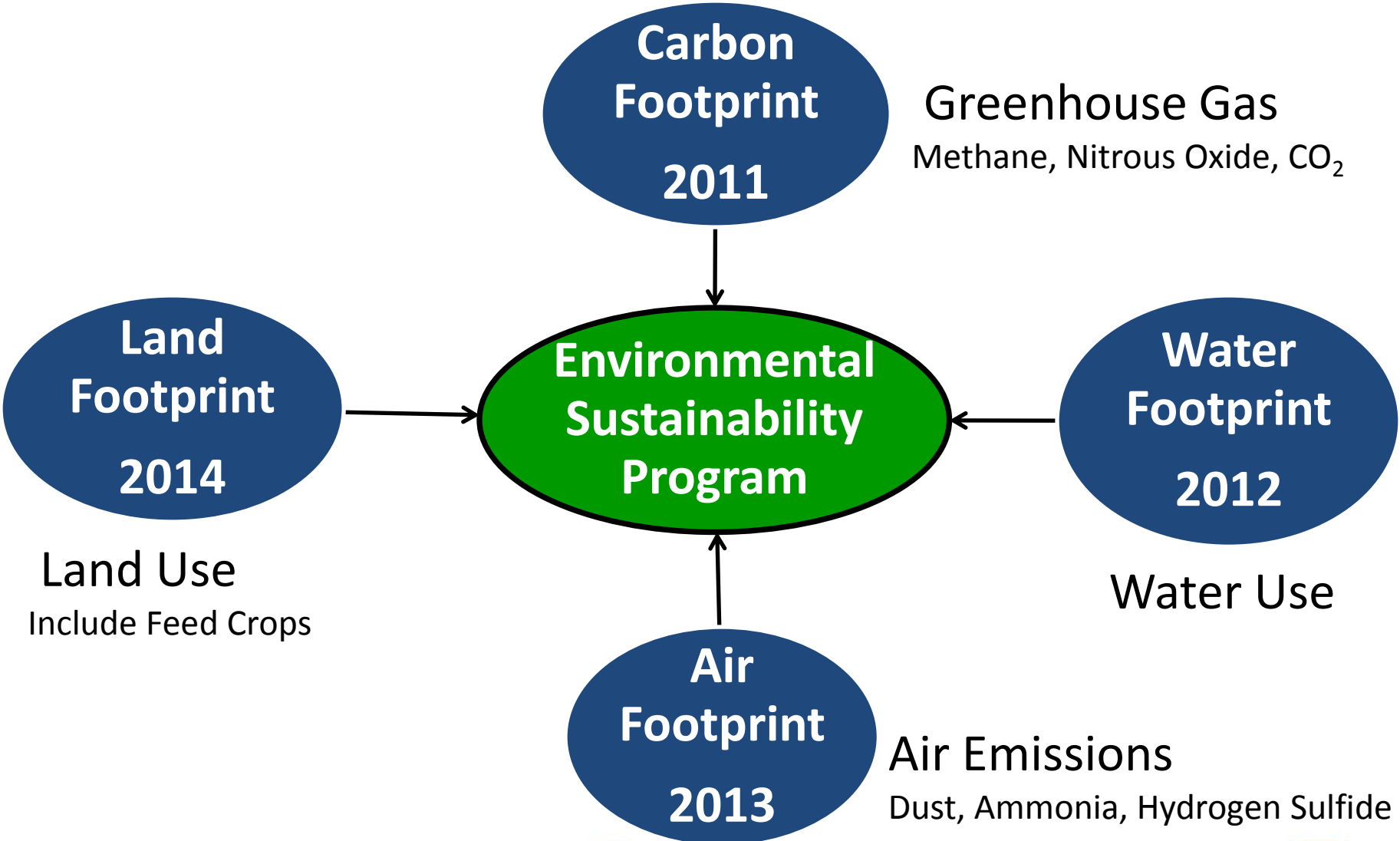
- **Develop baseline land use footprint – *Completion 2014***
 - Include swine production units & land for feed production
 - Literature review, life-cycle assessment & land use calculator



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