Life Cycle Assessment

WHAT IS A LIFE CYCLE ASSESSMENT (LCA)?

A Life Cycle Assessment (LCA) is a standardised way to model and compare the environmental impact of your farm and products, incorporating different production systems and industries. It is both difficult and expensive to measure the quantity of greenhouse gas (GHG) emissions or the carbon storage on a piggery. For this reason, carbon accounting is done through calculations, to produce an estimate of emissions and carbon storage. LCAs cover a wider range of impacts, most commonly GHG emissions (reported as carbon equivalents), land use and land use change, energy use and water use. Other factors that can be measured include nutrients to land, feed ingredients and by-products. You can also have different boundaries for an LCA, focused just on farm or processing, or all the way from feed creation through to final product consumption. Generally, the broader the range of activities covered, the less reliable and accurate the data. There is an international standard for LCAs (ISO 14040/44) and a specific methodology for pig supply chains published by the Food and Agriculture Organisation (FAO, 2018, Environmental performance of pig supply chains: Guidelines for assessment (version 1), Livestock Environmental Assessment and Performance Partnership. Rome, FAO. 172 pp.)

LCA AND CARBON FOOTPRINT – WHAT'S THE DIFFERENCE?

A carbon footprint is a more specific type of LCA, where the only impact being assessed is the GHG emissions. Carbon footprints also have an ISO standard (14067) which is consistent with the broader LCA.

Carbon footprints look at all GHG emissions, with the main gases of interest for pork production being carbon dioxide, methane and nitrous oxide, all converted into carbon equivalents. Methane has 25 times more global warming potential than carbon dioxide, and nitrous oxide has 298 times more potential. A carbon footprint examines the combined impact of all emissions produced from a product, and is most commonly reported as emissions per unit of product (e.g. kilograms of CO2-e per kilogram of live weight, carcass weight or retail meat) and is referred to as the emission intensity. A carbon footprint allows 'like for like' comparison between different production systems and products, provided they offer the same function.

An LCA may report emissions intensity but will often report total emissions (e.g. tonnes of CO2-e for the entire industry or business) which is of greater interest in corporate and global reporting. A measure of total emissions is also of more use when considering targets around carbon neutrality to identify how much carbon needs to be removed from the system.



THE DIFFERENT SCOPES OF EMISSIONS

When discussing LCAs, there is often references to the different 'scopes' used to assess GHG emissions.

A LCA can focus on any of these scopes, where as a carbon footprint must include all three. There are three scopes which are outlined below which are used to classify GHG emissions based on where they are generated and their relationship to the business being assessed:

Scope 1

Direct GHG emissions occur from sources that are owned or controlled by the company.

Scope 2

Accounts for GHG emissions from the generation of purchased electricity consumed by the company.

Scope 3

Are a consequence of the activities of the company but occur from sources not owned or controlled by the company. These can be further broken down into two sources:

Upstream emissions: from sources such as the production of purchased feed, and manufacture of chemicals.

Downstream emissions: from sources such as those associated with the transportation and processing of pigs.

Downstream

Scope 3 emissions

Meat processing

exported offsite

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•

Retail

Post-farm emissions

• Emissions from transport of pigs to meat processing

Emissions from manure/sludge

The key sources of emissions for a piggery (pre-farm, on-farm and post-farm), separated by scope, are shown in the figure below:



Pre-farm emissions



Scope 3 emissions

- Emissions from purchased pigs
- Emissions from the production of feed, including grain and supplements
- Emissions from the production of straw bedding



Piggery emissions

Scope 1 emissions

On-farm

- Piggery emissions
 - Enteric methane
 - Manure management
 emissions including nitrous
 oxide and methane
- Piggery services including diesel, petrol, gas

Scope 2 emissions

Grid-supplied electricity
 emissions



WHY MEASURE YOUR FOOTPRINT AND BENCHMARK?

Australian's worried about the future of the planet are looking to make more sustainable decisions, with much of the focus on the food system. Due to media focus, there is growing concern around the impact of meat consumption on the planet. This is an opportunity for the pork industry. Some retailers have made commitments to lower there environmental impact, including examining supply chains. This means LCA data will become more valuable to allow continued trade of products as these commitments start to be enacted. LCA benchmarking over time is important if you are considering how to lower your footprint. As the accepted way to track impact such as GHG emissions, there is a need to understand the starting point through an LCA before making changes and then undertake another LCA to determine any improvements. The process of understanding and reducing GHG emissions is outlined below:



1. Understand emissions 2. Baseline, benchmark and set targets 3. Reduce emissions

4. Store carbon (generate offsets) 5. Report, monitor and market

LCA AND PIGGAS -WHAT'S THE DIFFERENCE?

APL is commencing a new LCA benchmarking program for the industry.

It is important to note that the methodology for estimating GHG emissions in Australia has changed (PigGas is based on 2011 and 2012 Australian methodologies) and the calculator is now out of date. The current PigGas model does not perform a LCA and should not be considered a proxy for one. The 55 case studies completed using PigGas in 2016 are not applicable as LCAs. They do not include the essential components of a LCA, including all GHG emissions on a piggery.

We need current baselines and ongoing benchmarking to help the industry demonstrate our environmental credentials. This is why we are investing in a new LCA to help kickstart this process for the pork industry.

An LCA is the first step you can take to understand and evaluate your sustainability.

MORE INFORMATION

For a copy of the Sustainability Framework have a look on <u>APL's website</u> or contact Rowena Davis at rowena.davis@australianpork.com.au

For technical information, contact Gemma Wyburn at gemma.wyburn@australianpork.com.au