# Life Cycle Assessment methodology to evaluate environmental impact of beef manure composting in México.

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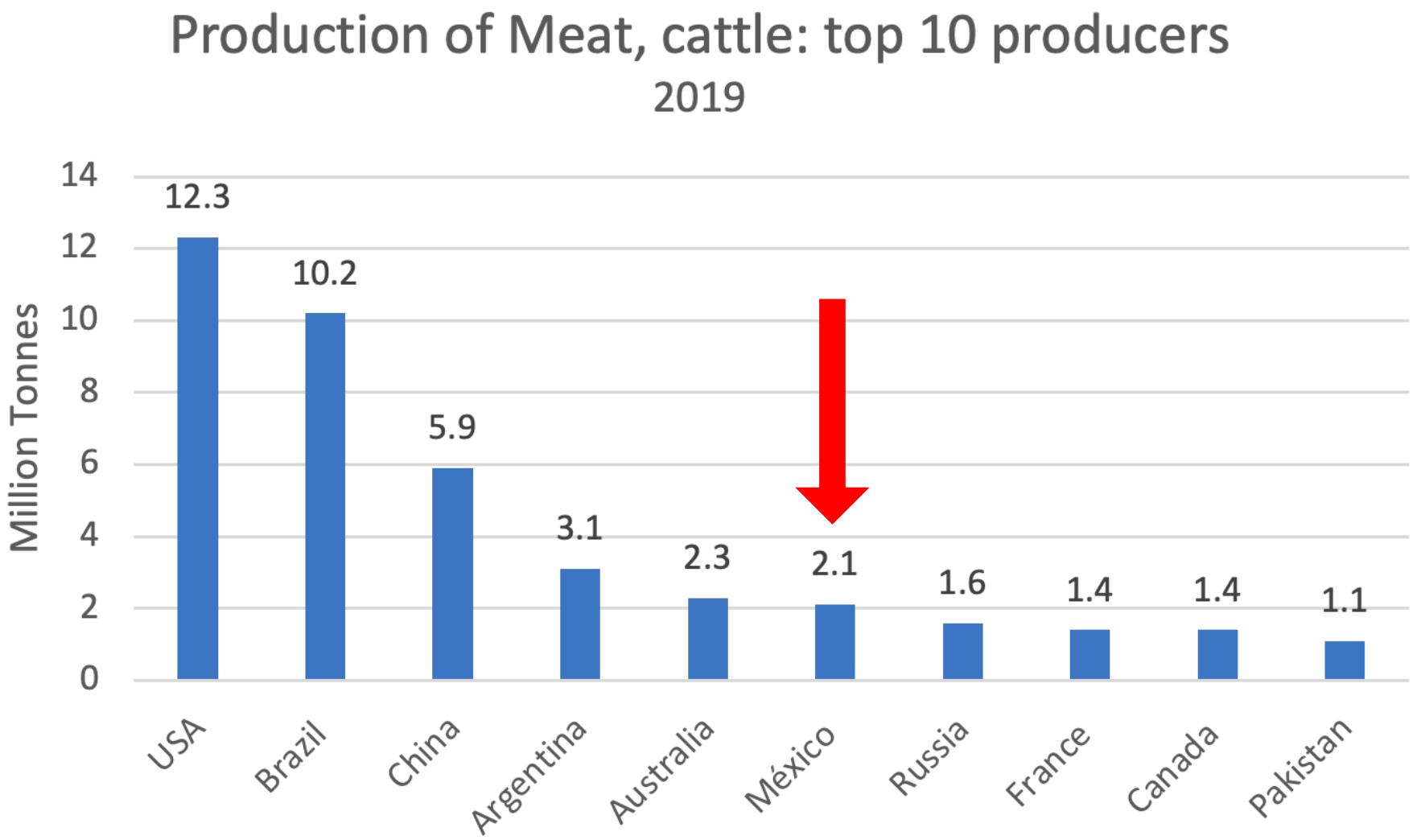
# Beef production in México




- 2.2 M ton/meat for 2020 (SIAP, 2021).

Source: FAOSTAT (Nov 11, 2021)

# Manure production & disposal in México

65% of meat is produced in feedlot systems (Peel *et al,* 2011)

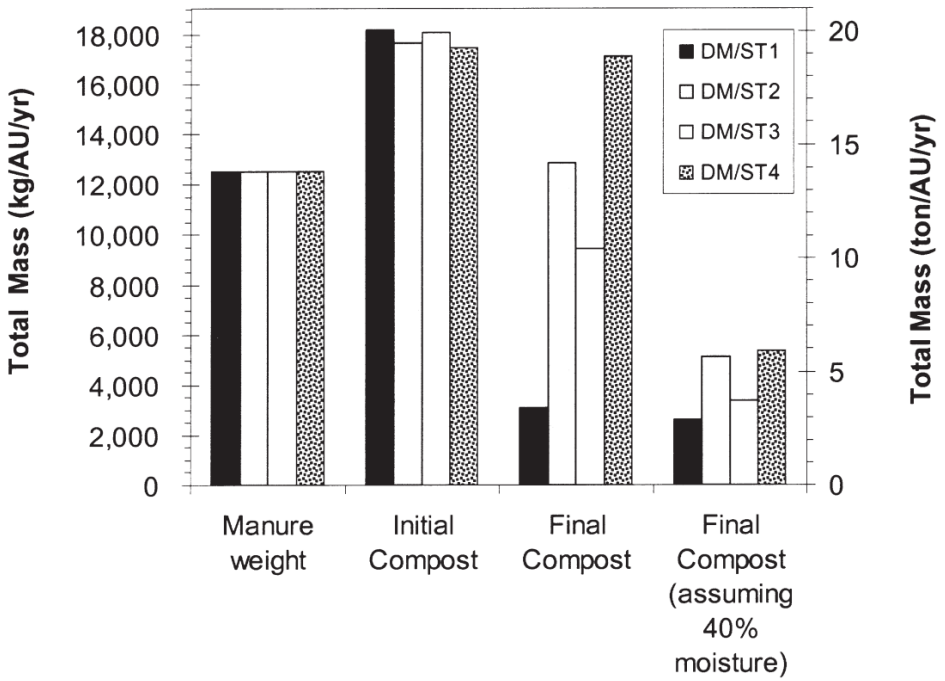
Not enough land available for disposal

Increase in beef lot capacity = increase in manure production (excess accumulation)

Disposal of material to water resources and public sites

Manure in feedlot´s nearby stream

# ¿How to reduce this issue?




- US: EPA classifies manure compost to have lowest environmental risk form of manure disposal (EPA, 2004).

- Through composting, manure can reduce 50-80% of initial volume (Michel *et al,* 2013).

# Composting as an alternative

- Compost is the best alternative for long storage periods and agricultural puropses

- Biological benefits of composting

Table 1. Potential Survival of Fecal Pathogens in the Environment

| Material | Duration of Survival | | | |
|---|---|---|---|---|
| | Cryptosporidium | Salmonella | Campylobacter | E. coli 0157:H7 |
| Cattle manure - Frozen | > 1 year | >6 months | 2-8 weeks | >100 days |
| Cattle manure | 8 weeks | 12-28 weeks | 1-3 weeks | >100 days |
| Liquid manure | >1 year | 13-75 days | >112 days | 10-100 days |
| Composted manure | 4 weeks | 7-14 days | 7 days | 7 days |

Source: Human and Animal Pathogens in Manure, Olsen, M. E.

# Aim of study

Determine impacts of current manure management

Quantify emission reductions if composting implemented

# LCA aplication in composting facility

- Feedlot is located in nothern México, arid region
- Houses aprox. 20,000 animals
- Evaluation of Jan-Dec 2021

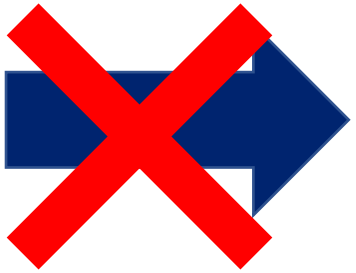
Feedlot, México

- Quantify environmental impact through attributional LCA
- Model composting scenario to determine emission reductions
- Result oriented decission making


Google maps: Baja California, México. 2021

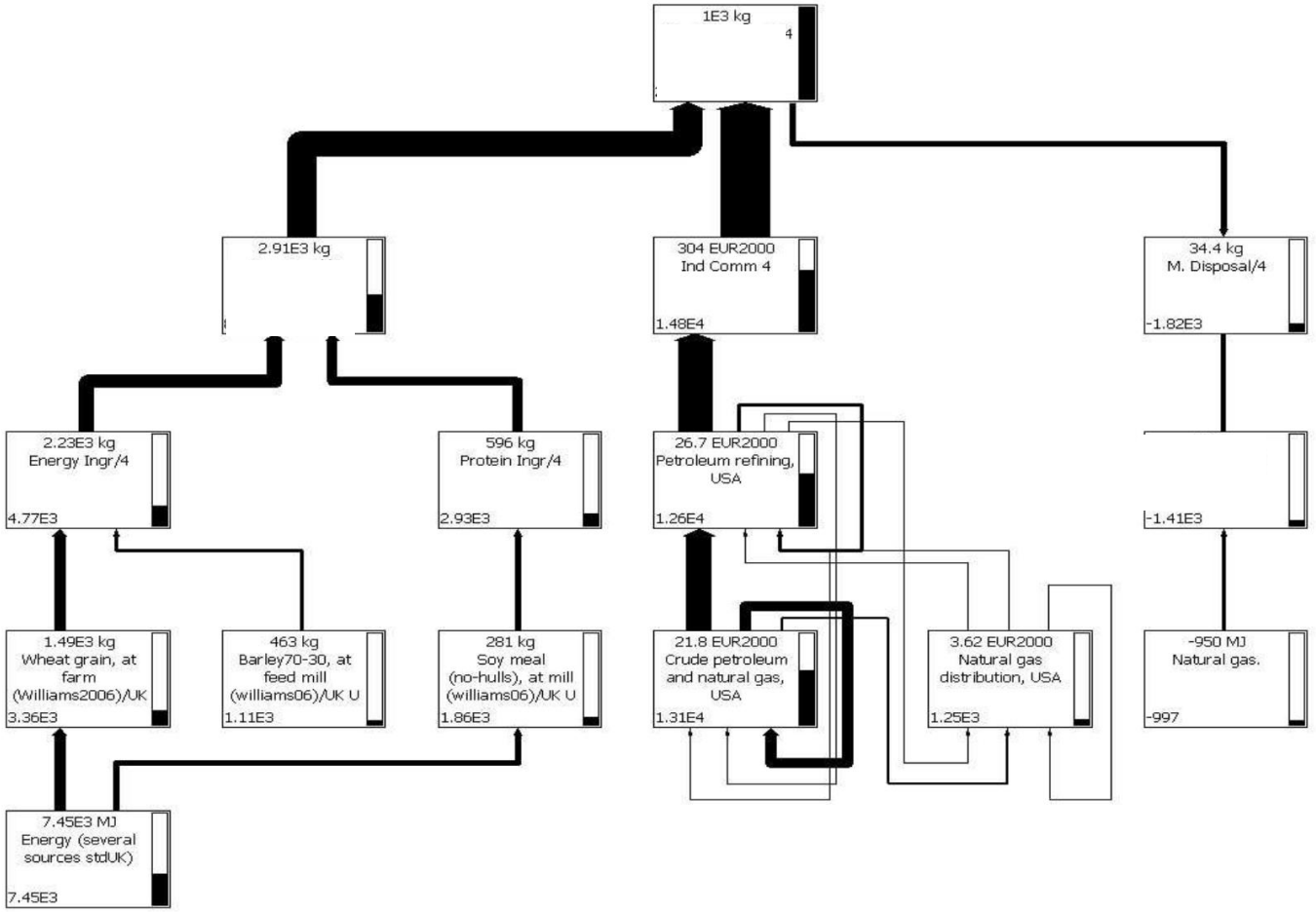
# LCA application objectives

# System boundaries




# IMPACT ASSESSMENT

- SimaPro ® 7 PhD
- GWP
- EP
- AP
- Water consumption



# Thank you

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