

Animal Waste Management in Indonesia

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Introduction

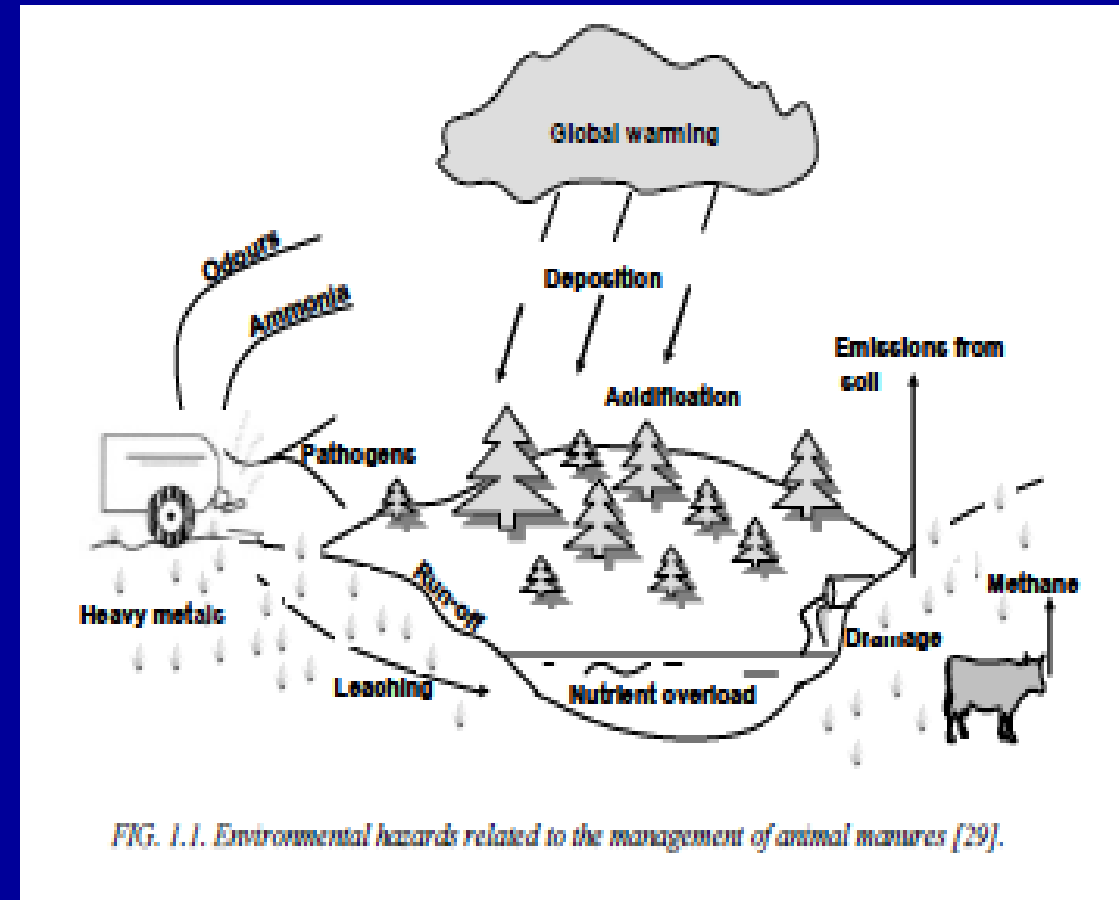
In many countries, livestock plays an important role in the economic and social life :

- supply of nutritious food,
- job creation,
- household income,
- soil fertilizer and
- energy.

Livestock and poultry beside has a positive impact also has a negative impact on the environment with the presence of waste:
feces, urine, washing water for cages and livestock, dead animals, leftover feed (forages and concentrates), feather, and so on.

Livestock waste is considered to pollute the environment with its impact on:

- greenhouse gas (GHG) emissions, carbon dioxide, nitrate and ammonia emissions and their impact on climate change.
- reduce the quality of water and air (smell and dust),
- concern about public health issues related to microorganisms.



Trend of animal husbandry

The increasing demand for food from livestock products leads to :

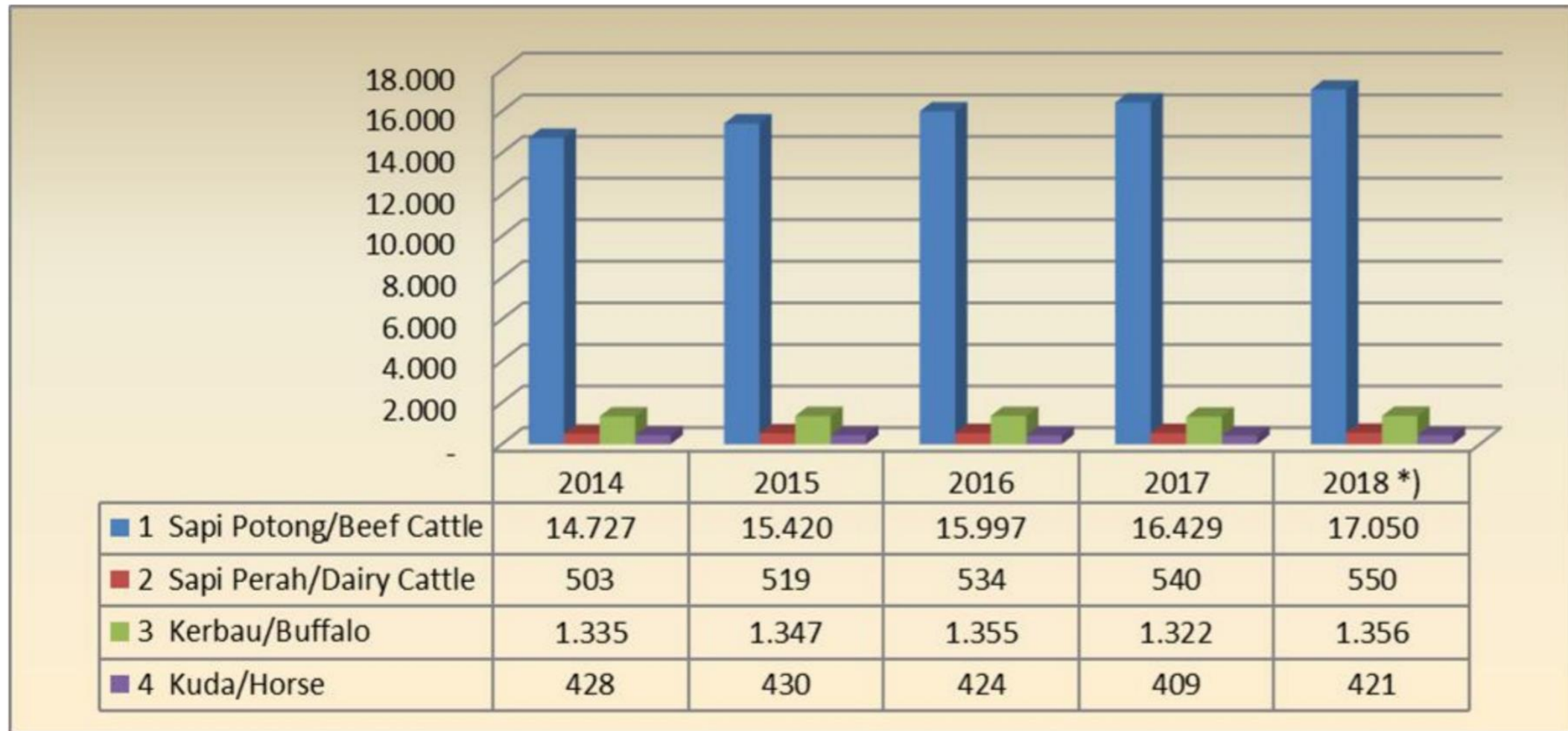
- farms are increasing in size
- changes from extensive systems to intensive systems process in livestock production



causes accumulation amount of manure, which can cause serious environmental problems if animal manure is not managed properly.

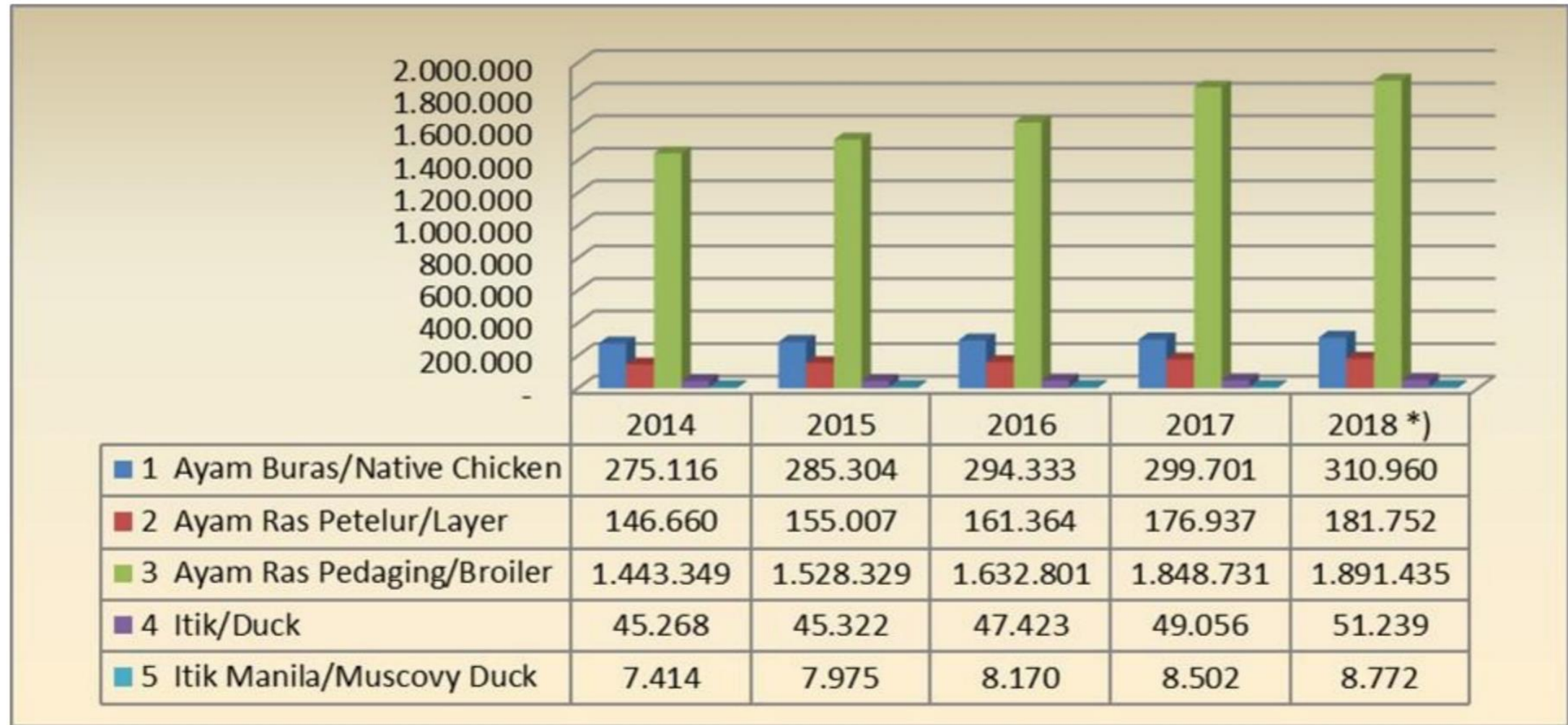
Grafik 8.1
Graph

Populasi Ternak Besar (000 Ekor)
Population of Large Livestock (000 Head)



Grafik
Graph 8.3

Populasi Ternak Unggas (000 Ekor)
Population of Poultry (000 Head)



Animal waste can be categorized into:

- liquid waste (up to 5% solids),
- slurry/semi-solid (5 - 25% solids),
- solid waste (more than 25% solids) and,
- gas.











Solid, slurry and liquid are very dependent on how to clean the pen and how much water is used to clean the pen.

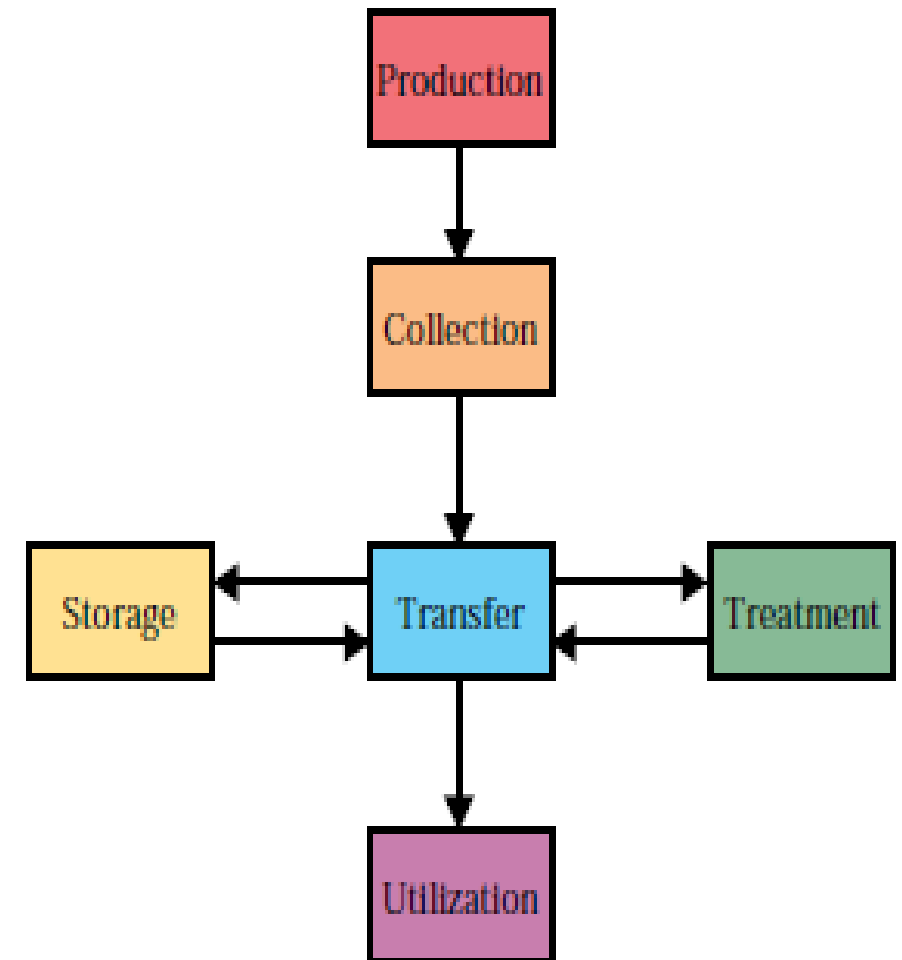
Solid content determines, how animal waste is handled.

The amount and characteristics of livestock waste depends on:

- type of livestock
- diets (digestibility, protein, fiber content)
- number of animals
- waste handling systems (added water , bedding)

Animal waste handling system:

- Production (housing facility)
- Collection and transfer
- Storage/treatment
- Transport
- Utilization



Waste handling systems

- All systems start from production
- All systems end with utilization/disposal
 - land application as fertilizer
 - treated wastewater is discharged into the river or reused to wash the cage
- No system is best

Solid waste handling system:

- mostly for poultry and horse
- Solid waste from cattle (clean the stables by shoveling dirt, after which the crumbs are watered)

Liquid waste handling system:

- mostly for dairy and swine production

Components of liquid system:

. Collection :

- flush (gutter or slotted floor)

. Scrape

• Transfer:

- Pump
- Gravity channel, pipes

• Storage

- Tanks
- Lagoon

• Transport

- Tank wagon
- Irrigation system

Animal Waste Treatment

- Stabilize waste
- Odor reduction
- Nutrient management
- Energy recovery
- Pathogen reduction
- Reduce gaseous emissions

Livestock waste treatment in Indonesia: Cattle, Dairy, and Swine

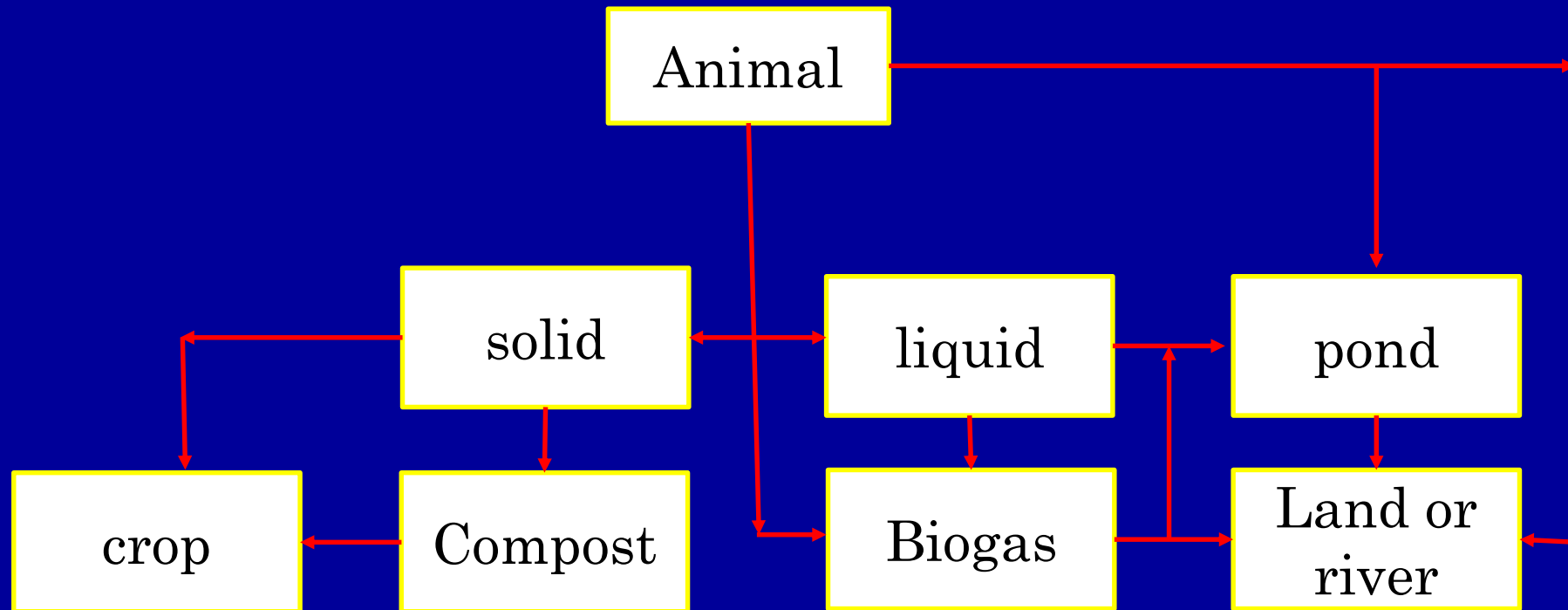
Generally in Indonesia, 80% are smallholder farms with less than 20 head of livestock

↳ varying from 1 to 20 head of cattle therefore the waste management system is very simple

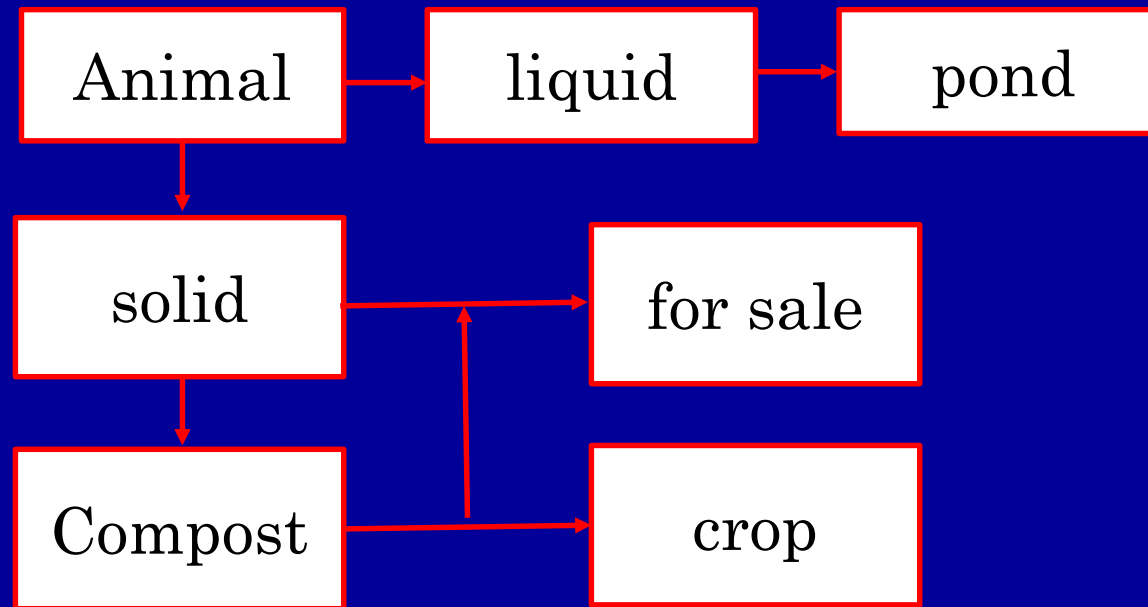
The government has provided a lot of biogas installations for farmers that have livestock under 20 animals.



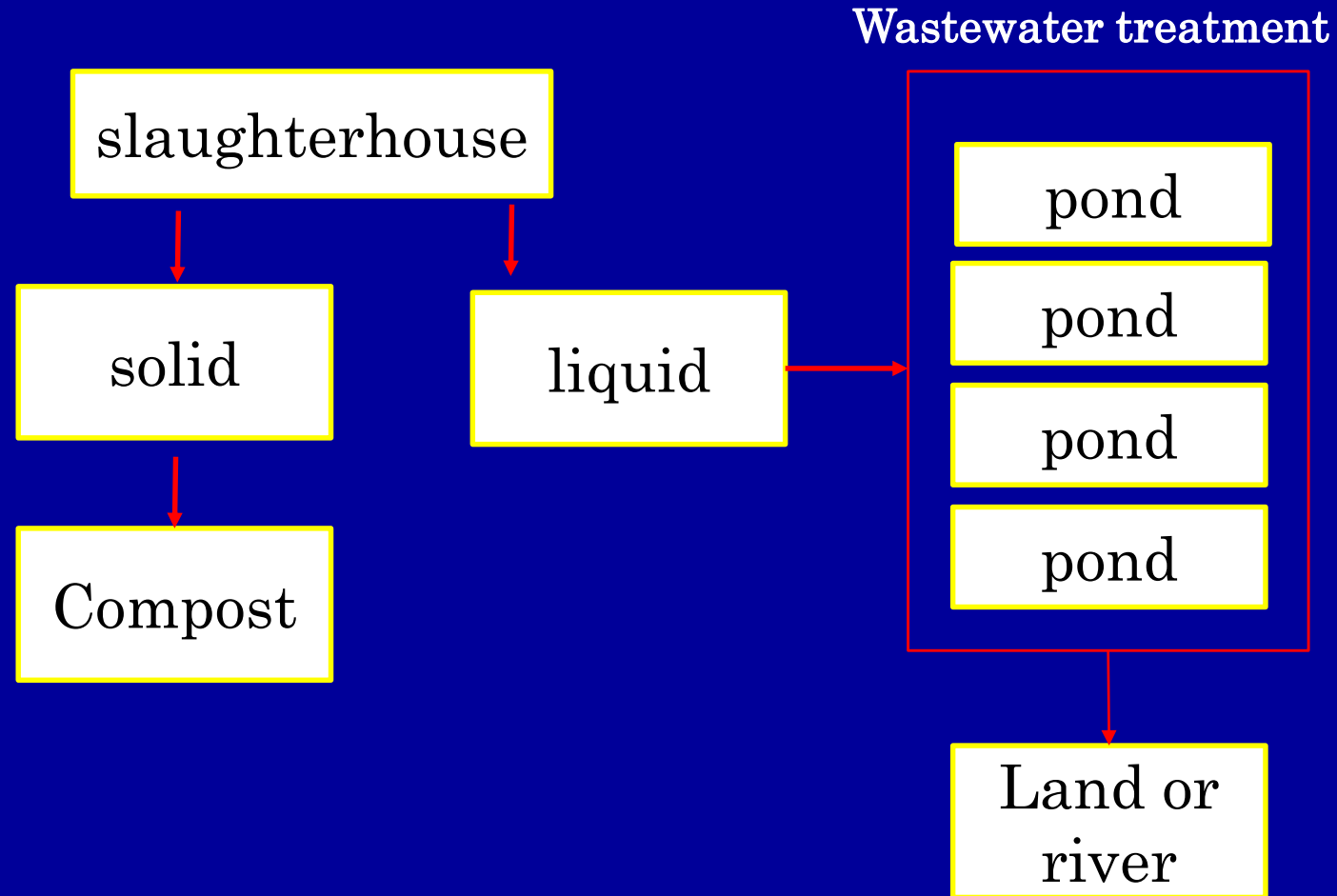
Livestock waste treatment in Indonesia: Cattle, Dairy, and Swine



Livestock waste treatment in Indonesia: Poultry and Sheep



Livestock waste treatment in Indonesia: Slaughterhouse and processing of livestock products



Livestock waste treatment in Indonesia: Poultry Slaughterhouse

