On-farm slaughter – ethical implications and prospects

Jan Hultgren[1], Charlotte Berg[1], Anders H. Karlsson, Katrin J. Schiffer[2], Bo Algers[1]

[1]Department of Animal Environment and Health, Swedish University of Agricultural Sciences
[2]Eldrimner – Swedish resource centre for artisan food production

Slaughter of animals

- Production of meat for human consumption
- Mainly farm animals like livestock, poultry, fish
- Household or commercial
- Globally, many animals are slaughtered without a slaughterhouse

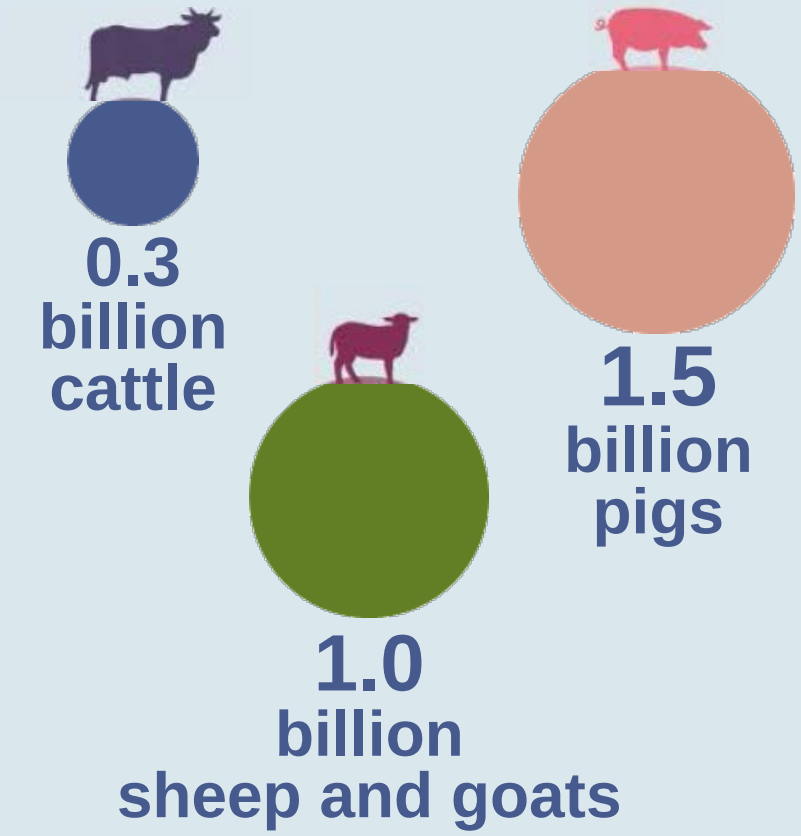
Pieter Bruegel, 1616

Commercial slaughter

- Largely industrialised, efficient plants
- Up to thousands of cattle or pigs and tens of thousands of broilers per day
- Official control of animal welfare, disease spread and food safety
- Small-scale alternatives

Ralph Orlowski, 2005

Commercial slaughter globally 2016



65.8 billion chickens

FAO, 2018

Scope of this presentation

- On-farm slaughter of cattle, sheep, pigs and broilers, comparing with large-scale industrial slaughter, in the European Union
- Examples of practices

- On-farm slaughter = stunning and killing in the place where the animals were raised the last part of their lives

Legal restrictions

- Legislation:
  - EU Regulation 1/2005 on animal transport
  - EU Regulation 1099/2009 on slaughter and killing
  - EU Regulations 853/2004 and 854/2004 on hygiene rules and official controls of products of animal origin
  - National regulations
- Adequate facilities, trained personnel, standard routines
- Stunning before bleeding; exceptions in some countries
- Domestic ungulates must be brought alive into commercial plants, except emergency purposes

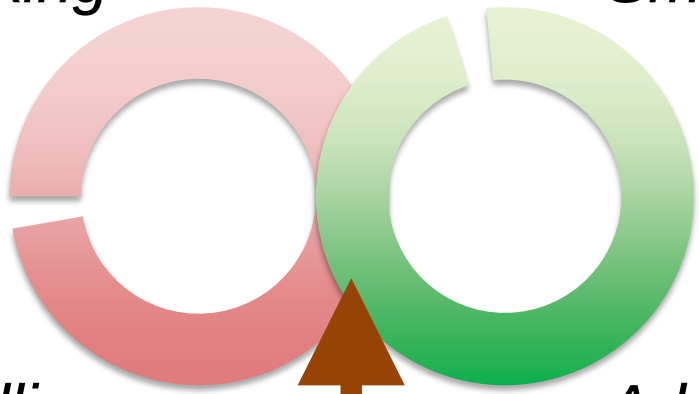
Animal welfare at slaughter

- Sometimes inappropriate facilities and demanding working conditions – difficult to drive animals and handle hassle and balking properly
- Inadequate stunning is likely to cause considerable suffering
- Many welfare risks, large variations between slaughter plants, stockpersons and animals – sometimes poor conditions

Human-animal interaction

Hassle and balking

Smooth animal flow



High stress

Low stress

Rough handling

Adequate mild handling

Design of facilities
Workload
Education and training
Attitudes and normative values

The animal's perspective

- Restricted movement, restraint
- Distress, anxiety, stress
- Strong hunger and thirst
- Bruises, injuries
- Pain

Issues with industrial slaughter (given that slaughter is accepted)

- Transport and handling of live animals
- High processing speed
- Varying levels of animal welfare
- Occupational safety risks
- Meat quality sometimes compromised
- Poor transparency
- Low level of farmer control over processing, animal welfare and product quality

Slaughter transport of animals

- Usually on road
- Most transports <8 hours, much longer transports occur
- Varying conditions during transport
- Sick or injured animals not fit for transport
- Some animals kept one night in lairage

Extensive rearing

- Often high ambitions regarding environmental protection, animal ethics and animal welfare
- Animals less used to human handling and difficult to handle at slaughter, resulting in stress, inadequate stunning and low welfare

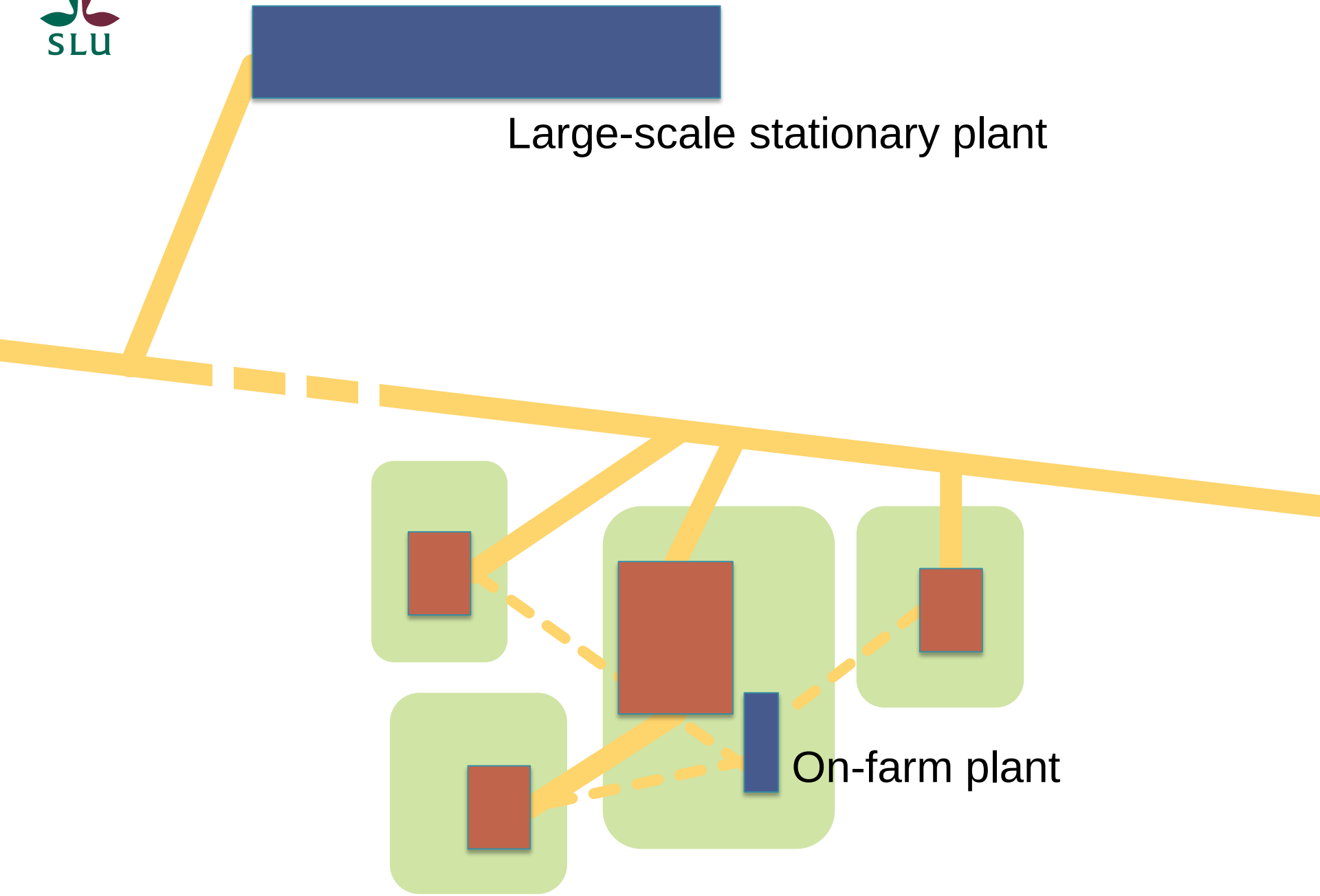
Mostphotos, 2017

Stress and meat quality

- Transport-related injuries and bruises
- Depleted glycogen reserves of the muscles before death, resulting in a high final pH – DFD (dark, firm and dry), typically seen in cattle
- Increased glycogen metabolism after death, resulting in a too fast pH drop – PSE (pale, soft and exudative), typically seen in pigs, rarely in cattle
- Large financial losses to the industry

Approaches to on-farm slaughter

1. Plant built on farm
2. Plant transported on road and parked on farm when required (mobile slaughter)
3. Animals stunned and bled on farm, bodies taken to nearby plant

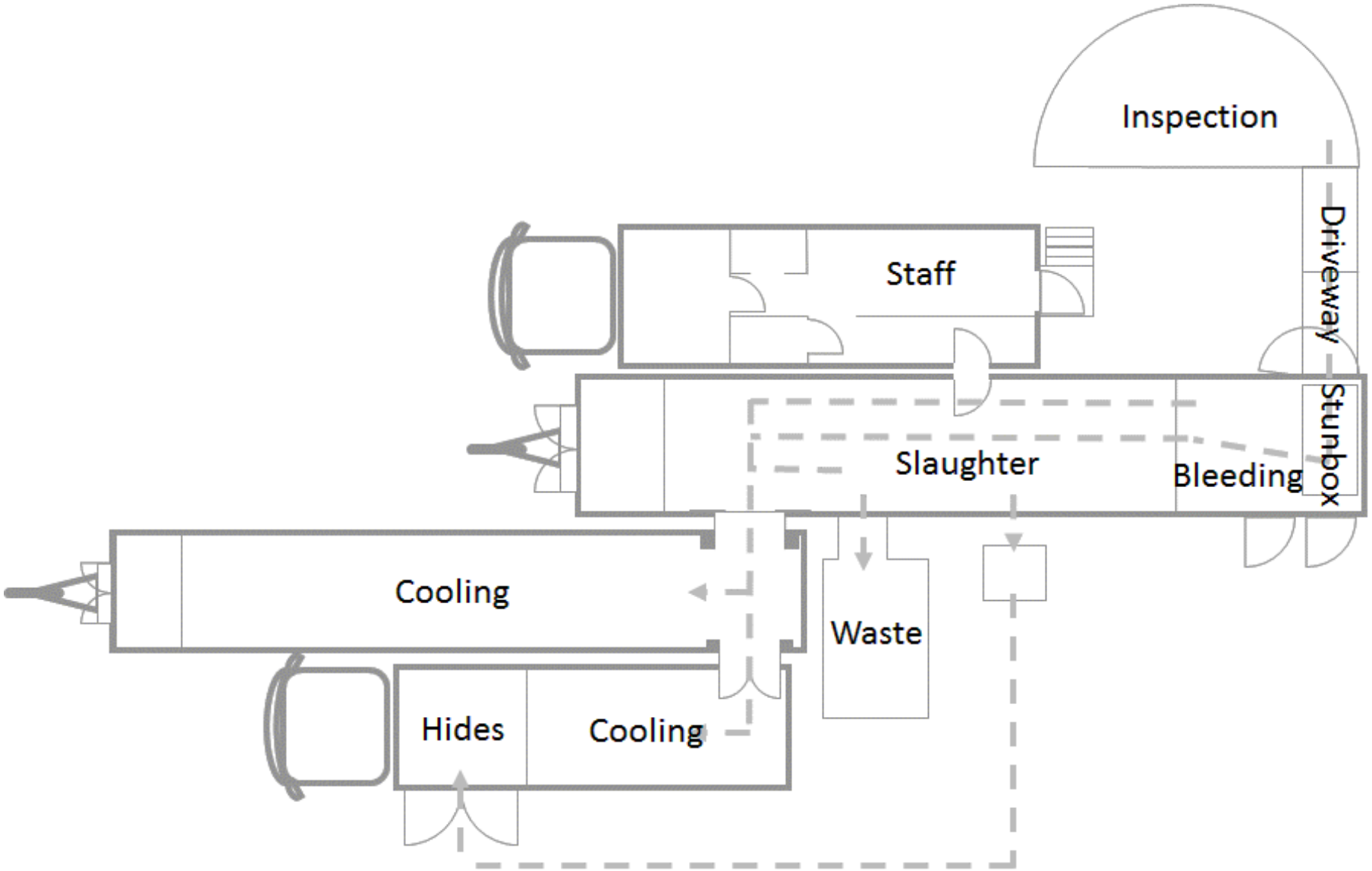

Large-scale stationary plant
On-farm plant

Plant built on farm

- Usually a low throughput
- Otherwise basically same as industrial slaughter; animals taken from other farms are also exposed to transport

Mobile cattle slaughter in Sweden

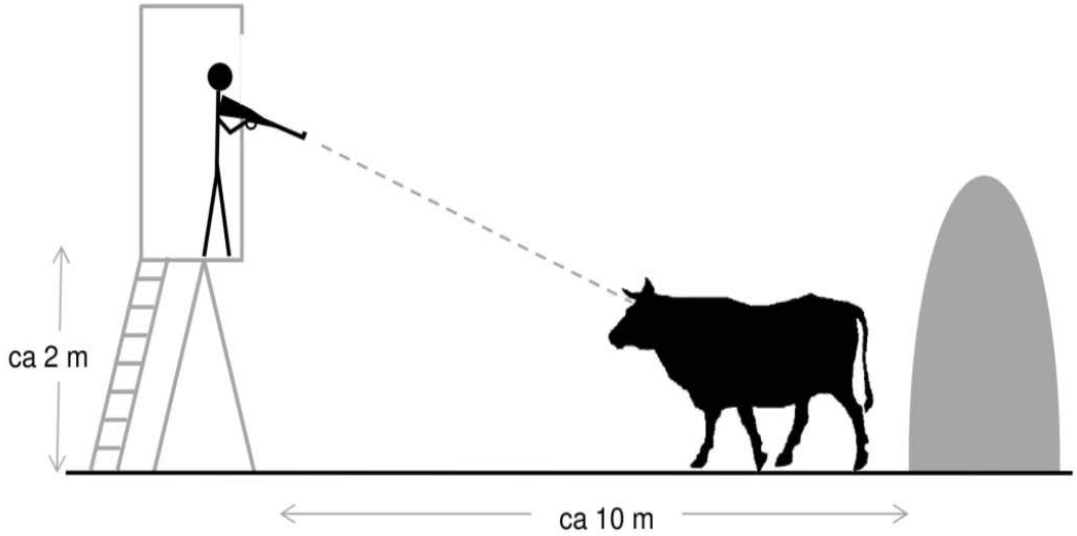
- A full-scale commercial mobile plant for large cattle
- Operated by a Swedish company since 2015
- Capacity for 30-35 animals per day, 3 days per week
- Two slaughter teams
- Farms all over Sweden, 1.2% of all large cattle slaughtered in 2017
- Pelvic suspension of carcasses


Inspection
Driveway
Staff
Stunbox
Slaughter
Bleeding
Cooling
Waste
Hides
Cooling

’The gunshot method’

- Cattle kept in small group in familiar home enclosure
- Stunning of one animal with rifle at short distance
- Remaining animals immediately taken out
- Hoisting and sticking
- Body taken to nearby slaughter plant
- Almost stress-free if done correctly – qualified trained shooter and calm shooting conditions crucial
- Practised in Germany

’The gunshot method’ of cattle in Germany



Challenges for on-farm slaughter

- Adequate facilities and equipment, adapted to different animal species, breeds and types
- Appropriate weapon and ammunition for rifle stunning
- Skilled, trained and flexible staff
- Reliable electricity and water supply
- Waste disposal
- Hygiene and carcass refrigeration
- Official control, including zoonotic diseases
- Low speed, relatively high production costs

Conclusions

- Potential for improved animal welfare and meat quality, through avoided animal transports and less handling
- Increased transparency and farmer control
- Risks for occupational safety, food safety and public health
- Consumers willing to pay
- Changes in legislation needed
- Does not replace industrial slaughter

Acknowledgements

- Katarina Arvidsson Segerkvist, Anne Larsen and Karin Wallin in project team
- The Marie-Claire Cronstedt Foundation and the Swedish Animal Welfare Association for financial support