

Fruit by-products as feed: an agroecological approach to small ruminant nutrition

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Background



- Livestock play an important part in food systems
 - Source of high quality protein, vitamins and minerals
 - Provide people with incomes, assets and livelihoods
- Animal production systems are dependent on natural processes
 - Dependence often ignored in agroecosystems thinking

Background



Livestock farming put in 'bad light':

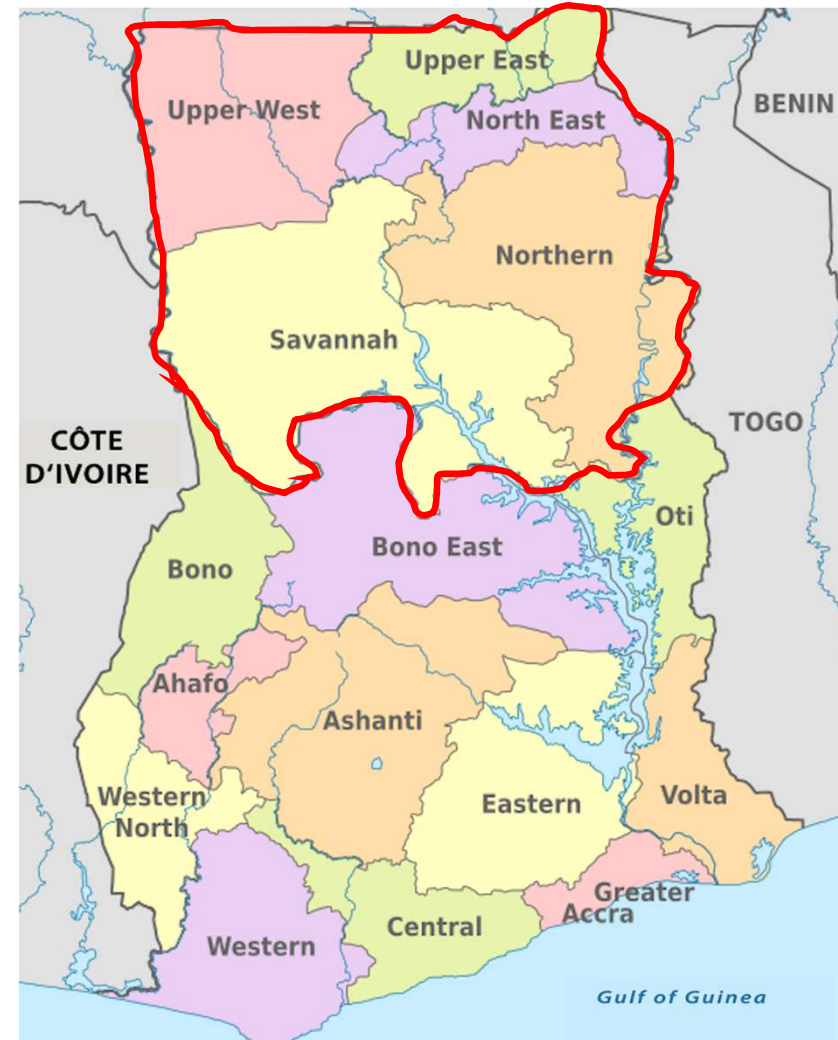
- biodiversity loss
- pollution
- increasing water demand
- changes in land use

" the problems lie not so much with the animals themselves or their use as food as they do with the ways the animals are incorporated into today's agroecosystems and food systems" (Gliessman, 2007)

- Disconnectedness from agroecosystems threatens sustainability of livestock farming systems

Ghana in the present ...

- Northern Ghana – major small ruminant producing area
- Areas are mostly hit by climate change
 - high temperatures; erratic rainfall patterns; long dry periods



Existing Gaps

- Under exploitation of alternative feed resources
- Non-existence preservation technologies
- Dry season feeding

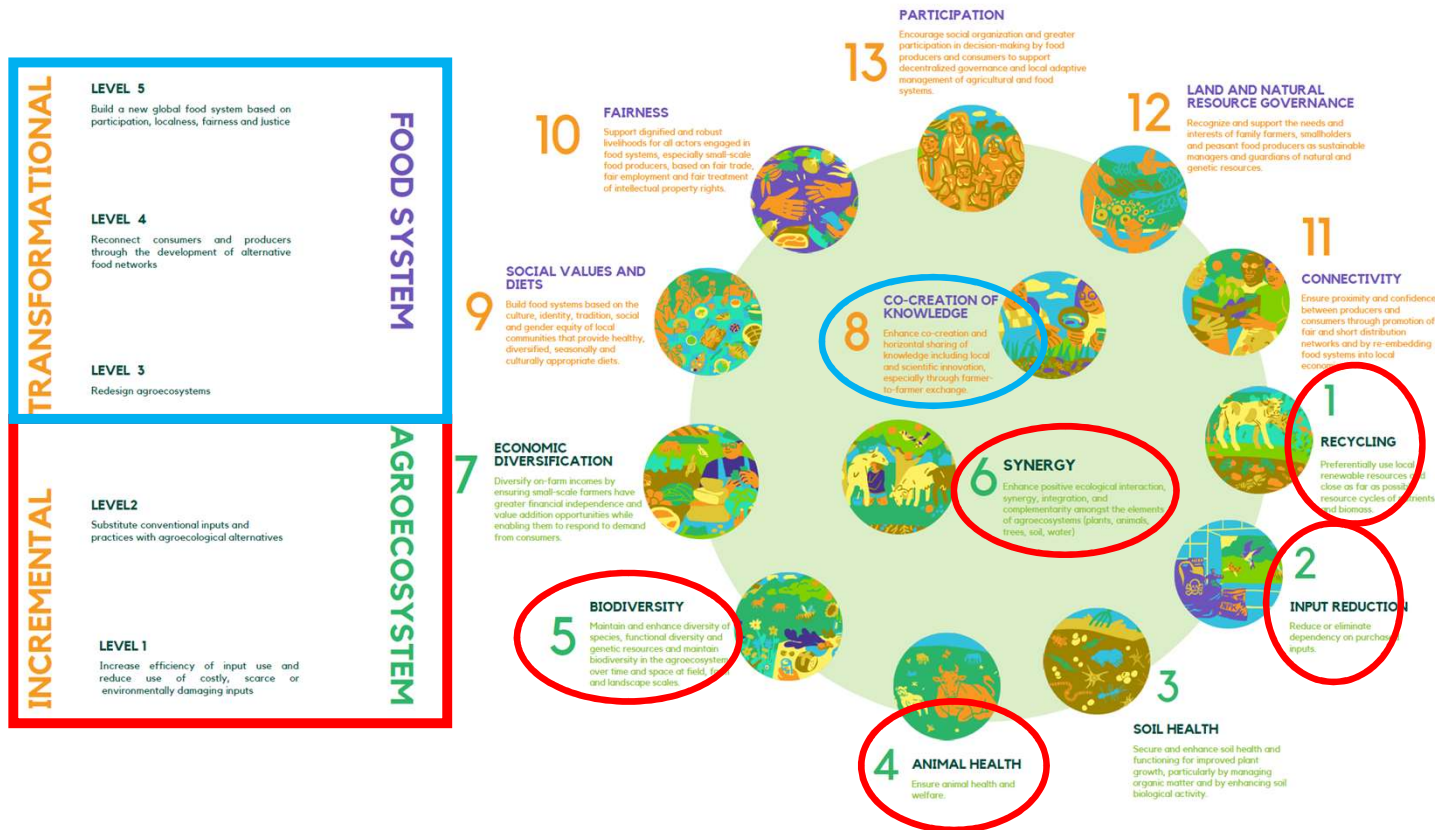
It is essential to use livestock to increase the **African food system efficiency** and **create a circular agro-food system** (Jayathilake et al., 2021)

Our Project

Explores agroecological practises to improve livestock production among smallholder farmers in rural Ghana



Agroecology principles related to animal production



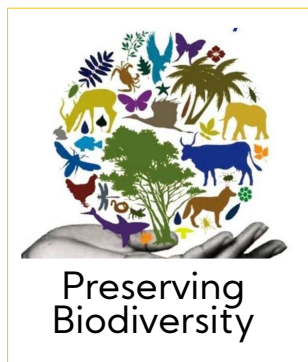
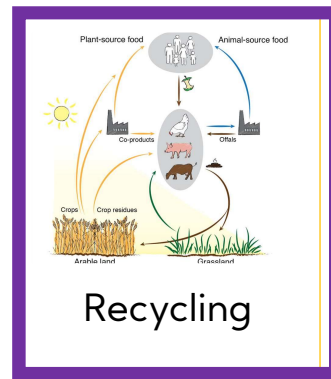
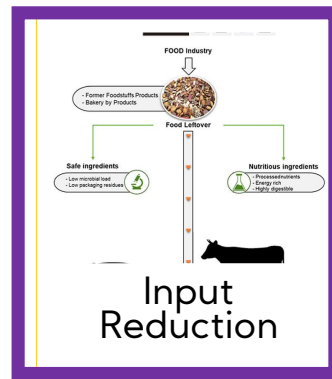
THE FIVE LEVELS OF TRANSITION TOWARDS SUSTAINABLE FOOD SYSTEMS AND THE RELATED 13 PRINCIPLES OF AGROECOLOGY
SOURCE: GLIESSMAN (2007) AND HILPE (2019)

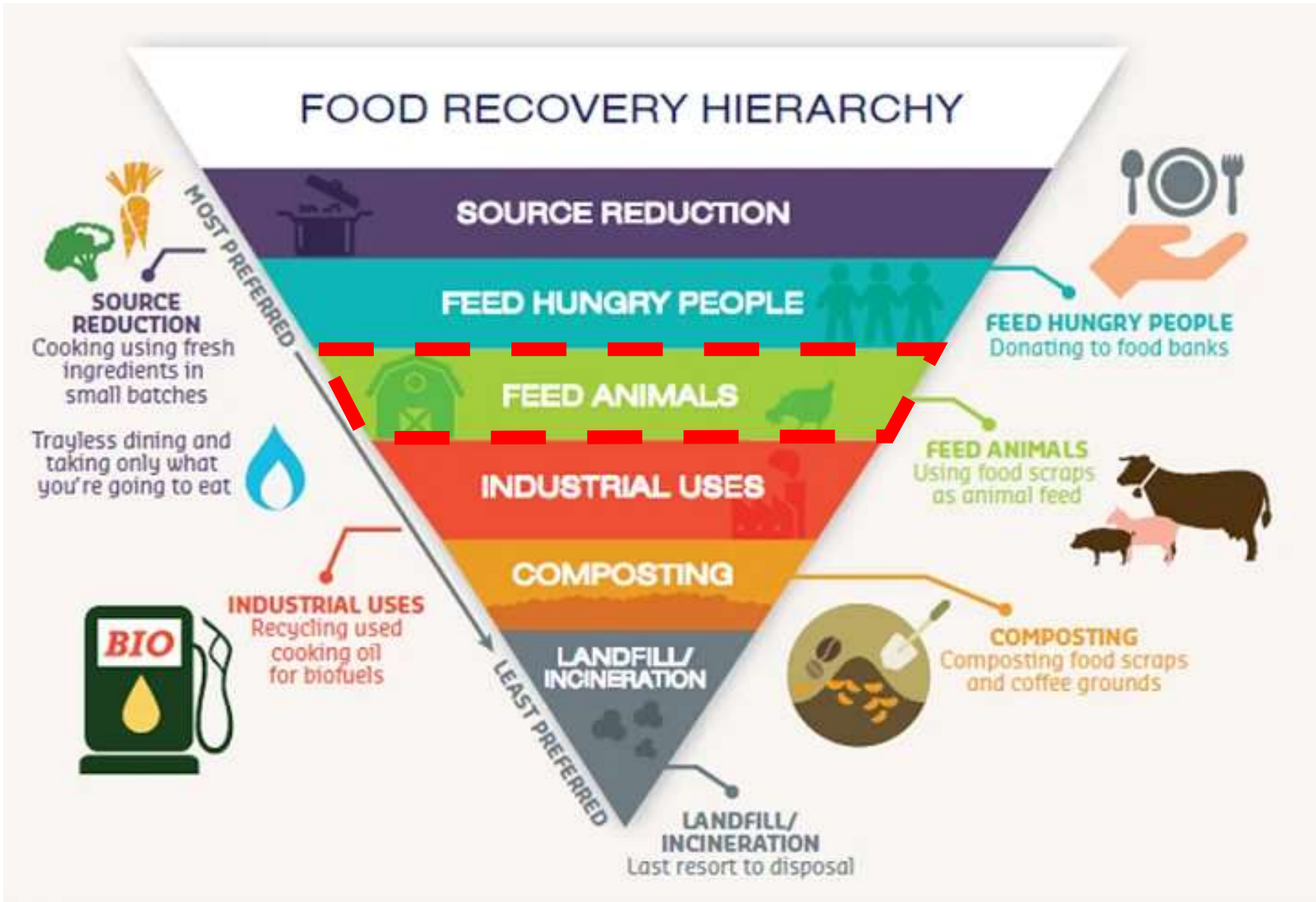
Agroecology principles related to animal production



Know about the Importance of Animal Health

Animal health





Our approach



To use fruit by-products as alternative feed resources
sustainably enhance small ruminant nutrition and meat quality



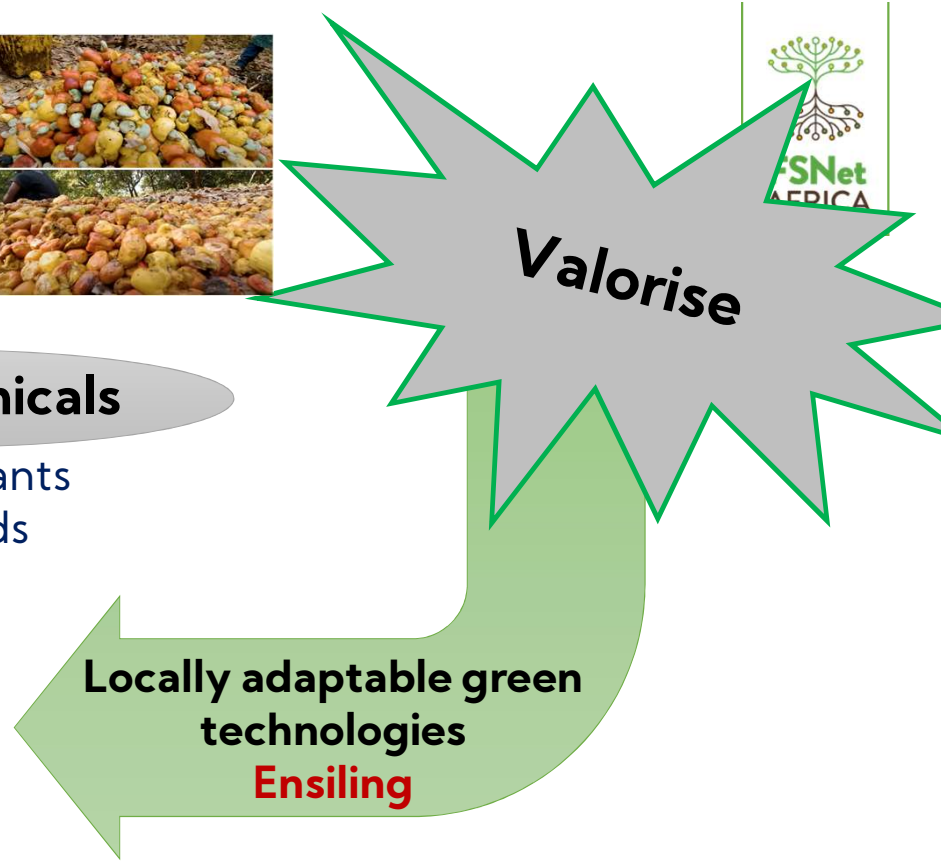
Nutrients **Phytochemicals**

- Soluble carbohydrates
- Degradable fibres

- Antioxidants
- Flavonoids
- Tannins

Small ruminant feeds

Animal performance **Meat Quality**



Looking into the future



Nutritional & Phytochemical composition of fruit by-products



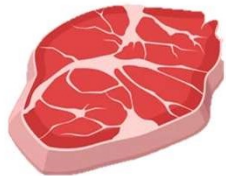
Reduce biomass & burdens on environment



Small ruminant performance



Improved food & nutrition security



Meat quality



Improved livelihoods



