

Livestock production systems: description and examples

1. Descriptions

LGA (Livestock only, rangeland-based arid/semi-arid)

- Sub-Saharan Africa (SSA): Pastoralists in the Sahel, northern Kenya, southern Sudan, southern Ethiopia, Botswana, Namibia

LGH (Livestock only, rangeland-based humid/subhumid)

- Central and South America (CSA): Extensive meat and milk production systems in the lowlands of Costa Rica

LGT (Livestock only, rangeland-based temperate/tropical highland)

- CSA: Dairy systems near Bogota, Colombia
- CSA: Andean region. Small dual-purpose systems in northern and central parts of Peru near Cajamarca and Junin (Mantaro valley), Altiplano of Peru and Bolivia, and southern and northeastern Ecuador; sheep-grazing systems in central Peru; camelid and sheep-grazing systems in the Altiplano of Peru and Bolivia

MRA (Mixed rainfed arid/semi-arid)

- SSA: Mixed crop–livestock farms in parts of the Sahel (e.g. Burkina Faso, northern Nigeria); Zimbabwe semi-subsistence mixed crop–livestock communal sector.
- South Asia (SA): Dryland systems in India (cattle, sheep, goats, buffalo)

MRH (Mixed rainfed humid/subhumid)

- SSA: Tsetse belt across central and West Africa
- South-East Asia (SEA): Rice–cattle systems; maize–cattle systems; plantation crops–small ruminants/cattle systems
- CSA: Maize–beans–pasture systems in Nicaragua

MRT (Mixed rainfed temperate/tropical highland)

- SSA: Smallholders in the Ethiopian highlands where oxen for traction are important; small-scale dairy farms in the highlands of East Africa
- SA: Wheat–maize/livestock systems in India (Gangetic Plains); wheat–maize/cattle systems in southwestern China

- CSA: Mixed crop–livestock smallholdings in the highlands of Colombia
- CSA: Andean region—mixed crop–livestock smallholdings in the highlands of the Andean Region (Ecuador, Peru, Bolivia); northern and central Peru near Cajamarca and Junin (Mantaro valley); Altiplano of Peru and Bolivia; southern and northeastern Ecuador.

MIA (Mixed irrigated arid/semi-arid)

- SA: Small-scale buffalo milk production; sheep and goats in Pakistan and India

MIH (Mixed irrigated humid/subhumid)

- SEA and SA: Irrigated rice–buffalo systems of The Philippines, Vietnam and India

MIT (Mixed irrigated temperate/tropical highland)

- East Asia: Irrigated rice and dairy farms in North and South Korea, Japan and China

LLM (Landless mono-gastric system) and LMR (Landless ruminant system)

- Asia: Pig and poultry production in Asia; goats and sheep in semi-arid/arid areas of SA

2. Examples

LGA–Livestock only, rangeland-based arid and semi-arid

Sub-Saharan Africa examples include: Pastoralists in the Sahel, northern Kenya, southern Sudan, southern Ethiopia, Botswana, Namibia

Livelihood system of a typical poor household: ranking and trend

Type of capital	Low	Moderate	High
Human	✓+		
Social		✓-	
Natural	✓-		
Physical	✓-		
Financial	✓-		

Main causes of food insecurity

Drought, crop failure, lack of animal assets, lack of income-diversification opportunities

Main causes of poverty

Loss of animals due to drought, distress sales and cattle raiding; lack of reliable/accessible markets

Degree of crop–livestock intensification

Very low; but increasing in areas where cropping is possible

Degree of diversification of income sources

Very low

Average size of landholdings for a typical poor household

Most rely on common property resources; poorest sedentarised households are landless

Average herd size by species for a typical poor household

Poorest tend to have more sheep and goats and few or no cattle or camels

Livestock species

Mainly traditional breeds of cattle sheep and goats camels

Important livestock species for poorest households

Sheep; goats; camels

Physical resources and variability

Range is the main resource, characterised by high seasonal variability

Agricultural products and services provided by livestock

Beef, milk, goat meat, goat and camel milk; transport; cultural/social services; asset building; security against income shocks

Degree of market integration

Low; systems are predominantly subsistence-based

General economic and system trends

With increasing population, the LGA system tends to evolve into mixed systems, mainly MRA

Environmental concerns

Degradation of rangelands, adverse changes in species composition of vegetation, and soil erosion. Other issues include carbon sequestration, competition with wildlife and recreation

LGH–Livestock only, rangeland-based humid/subhumid

CSA example: Extensive meat and milk production systems in the lowlands of Costa Rica.

Livelihood system of a typical poor household: ranking and trend

Type of capital	Low	Moderate	High
Human			✓+
Social			✓+
Natural		✓-	
Physical			✓+
Financial		✓+	

Main causes of food insecurity

Drought

Main causes of poverty

Low cash flow, little access to credit at competitive real interest rates, low adoption rates of improved forages

Degree of crop–livestock intensification

Low

Degree of diversification of income sources

High

Average size of landholdings for a typical poor household

15–20 ha

Average herd size by species for a typical poor household

15 cattle; 2–3 pigs; 4–5 chickens

Livestock species

Cattle; pigs; poultry

Important livestock species for poor households

Cattle; pigs; poultry

Physical resources and variability

Good and permanent access to transport and farm inputs; good public infrastructure

Agricultural products and services provided by livestock

Meat, milk, eggs

Degree of market integration

High

General economic and system trends

Livestock production is expanding and increasing; the activity is very profitable

Environmental concerns

Land degradation from overgrazing during the dry season; loss of biodiversity

LGT Livestock only, rangeland-based temperate/tropical highland**CSA example:** Dairy systems near Bogota, Colombia**Livelihood system of a typical poor household: ranking and trend**

Type of capital	Low	Moderate	High
Human		✓–	
Social	✓–		
Natural		✓–	
Physical			✓+
Financial		✓–	

Main causes of food insecurity

Poor feed supply, livestock diseases

Main causes of poverty

Low cash flow, lack of access to credit

Degree of crop–livestock intensification

Low

Degree of diversification of income sources

High

Average size of landholdings for a typical poor household

5 ha

Average herd size by species for a typical poor household

5 cows; 1–2 pigs; 4–5 chickens

Livestock species

Grade dairy cattle; pigs; poultry

Important livestock species for poor households

Cattle; pigs; poultry

Physical resources and variability

Good and permanent public infrastructure access to markets and transport system

Agricultural products and services provided by livestock

Meat, milk, eggs

Degree of market integration

High

General economic and system trends

Growing economy and increasing demand for milk; trend towards expansion of this system

Environmental concerns

Land degradation; loss of biodiversity

LGT Livestock only, rangeland-based temperate/tropical highland**CSA additional examples:** Andean region. Small dual-purpose systems in northern and central Peru near Cajamarca and Junin (Mantaro valley), Altiplano of Peru and Bolivia, southern and northeastern Ecuador; sheep-grazing systems in central Peru; camelid and sheep-grazing systems in the Altiplano of Peru and Bolivia.**Livelihood system of a typical poor household: ranking and trend**

Type of capital	Low	Moderate	High
Human	✓+		
Social	✓–		
Natural	✓+		
Physical	✓–		
Financial	✓+		

Main causes of food insecurity

Lack of income diversification opportunities; lack of animal assets; frost risk; drought

Main causes of poverty

Poor market access, distress sales

Degree of crop–livestock intensification

Varies, but generally few purchased inputs

Degree of diversification of income sources

Generally low, limited off-farm opportunities

Average size of landholdings for a typical poor household

Most rely on common property resources

Average herd size by species for a typical poor household

2–8 cattle; 6–12 sheep; 20–65 alpacas. Poorest tend to have more sheep and few or no cattle or camelids. Sheep and poultry most important for poorest households (usually under the control of women)

Livestock species

Cattle, predominantly cross-breeds, exotic and criollo breeds (*Bos taurus*); sheep, criollo and Corriedale crosses; alpacas and llamas

Important livestock species for poor households

Sheep, cattle, alpacas, llamas

Physical resources and variability

Grazing is the main feed resource and is characterised by high seasonal variability

Agricultural products and services provided by livestock

Milk, meat, fibre, wool; animal traction and transport

Degree of market integration

Low-to-moderate market orientation; these systems are mostly found in marginal locations

General economic and system trends

Moderate production potential in global terms; potential intensification is limited by market forces and environmental issues

Environmental concerns

Degradation of rangelands; water quality and conservation: adverse changes in botanical composition of vegetation; soil erosion; methane emissions; loss of biodiversity; carbon sequestration

MRA Mixed rainfed arid/semi-arid

SSA examples include: Mixed crop–livestock farms across the semi-arid (also known as dry savanna) region of West Africa; Zimbabwe semi-subsistence mixed crop–livestock communal sector

Livelihood system of a typical poor household: ranking and trend

Type of capital	Low	Moderate	High
Human	✓+		
Social	✓+		
Natural	✓–		
Physical	✓+		
Financial	✓–		

Main causes of food insecurity

Drought, crop failure, lack of animal assets, poor and declining soil fertility with lack of fertilizer

Main causes of poverty

Loss of animals due to drought, distress sales, crop failure; lack of income-diversification opportunities; poor market access

Degree of crop–livestock intensification

Varies, but generally few purchased inputs, so manure is important for soil fertility. Scarcity of fodder in dry season results in crop residues being an essential feed resource

Degree of diversification of income sources

Varies, but generally low (few cash crops for these dry areas; limited off-farm opportunities, but remittances can be important where a family member has migrated)

Average size of landholdings for a typical poor household

2–10 ha, often fragmented

Average herd size by species for a typical poor household

5–10 sheep and goats; a few poultry for poorest households (usually under the control of women); some cattle where Fulani have settled; many indigenous cattle throughout region, but often tended by transhumants/nomads

Livestock species

Cattle, predominantly indigenous breeds; sheep and goats; poultry

Important livestock species for poor households

Small ruminants; poultry

Physical resources and variability

Feed resources: crop residues (mainly poor quality) and rangeland; high rainfall variability

Agricultural products and services provided by livestock

Meat, milk, animal traction and transport; social/cultural (e.g. bride wealth)

Degree of market integration

Extremely variable, but very low for wide areas

General economic and system trends

Population growth is leading to over-exploitation of the natural resource base

Environmental concerns

Methane emissions; overgrazing and range degradation; deforestation

MRA Mixed rainfed arid/semi-arid

SA example: Dryland systems in India (cattle, sheep, goats, buffalo)

Livelihood system of a typical poor household: ranking and trend

Type of capital	Low	Moderate	High
Human	✓		
Social	✓		
Natural	✓+		
Physical	✓+		
Financial	✓+		

Main causes of food insecurity

Drought, crop failure, lack of animal assets, temperature extremes, lack of water

Main causes of poverty

Loss of animals due to drought, distress sales, crop failure; lack of income-diversification opportunities, poor market access

Degree of crop–livestock intensification

Generally weak, transhumance in search of animal feed

Degree of diversification of income sources

Generally poor

Average size of landholdings for a typical poor household

0.5–1.5 ha

Average herd size by species for a typical poor household

30–55 sheep and goats; 3–8 buffalo; 3–5 cattle

Livestock species

Cattle, predominantly indigenous breeds; buffalo; sheep and goats; poultry

Important livestock species for poor households

Small ruminants—often only means of survival in the most arid areas

Physical resources and variability

Feed resource; grazing land; high rainfall variability

Agricultural products and services provided by livestock

Meat, milk, animal traction and transport; social/cultural; insurance; stock of wealth

Degree of market integration

Generally low

General economic and system trends

Population growth is leading to over-exploitation of the natural resource base

Environmental concerns

Overgrazing and range degradation; decreasing soil fertility; expanding desert margins; water scarcity

MRH Mixed rainfed humid/subhumid

SSA example: Tsetse belt across central and West Africa

Livelihood system of a typical poor household: ranking and trend

Type of capital	Low	Moderate	High
Human	✓+		
Social	✓+		
Natural	✓–		
Physical	✓+		
Financial	✓–		

Main causes of food insecurity

Most households food-secure; crop and livestock diseases; human diseases (especially malaria and sleeping sickness); lack of inputs for cropping, particularly fertiliser; livestock dry–season feed shortage

Main causes of poverty

Lack of cash; insecurity

Degree of crop–livestock intensification

Variable

Degree of diversification of income sources

Little off-farm income

Average size of landholdings for a typical poor household

Highly variable

Average herd size by species for a typical poor household

Few cattle because of tsetse and cultural practices

Livestock species

Local cattle (trypanotolerant) and sheep breeds; poultry; pigs

Important livestock species for poor households

Poultry; small ruminants

Physical resources and variability

Relatively dependable rainfall

Agricultural products and services provided by livestock

Meat, milk, animal traction and transport; social/cultural; insurance; stock of wealth

Degree of market integration

Poor

General economic and system trends

Expansion of livestock systems constrained by tsetse infestation

Environmental concerns

Deforestation; carbon sequestration; loss of biodiversity, with potentially large global impact; high risk of soil degradation due to continuous cropping

MRH Mixed rainfed humid/subhumid

SEA example: Rice–cattle systems; maize–cattle systems; plantation crops–small ruminant/cattle systems

Livelihood system of a typical poor household: ranking and trend

Type of capital	Low	Moderate	High
Human	✓		
Social	✓+		
Natural	✓		
Physical	✓+		
Financial	✓+		

Main causes of food insecurity

Crop failures and consequent drought and lack of feed; livestock diseases

Main causes of poverty

Lack of cash, poor access to credit and markets; limited land areas and fragmentation; low productivity due to low technology applications

Degree of crop–livestock intensification

Low to medium

Degree of diversification of income sources

High

Average size of landholdings for a typical poor household

0.3–0.8 ha

Average herd size by species for a typical poor household

1–2 cattle; 1 buffalo; 1–3 goats and sheep; 1–3 pigs; 5–20 chickens (meat)

Livestock species

Local cattle and buffalo; pigs; poultry; sheep and some goats

Important livestock species for poor households

Cattle; goats; pigs; poultry

Physical resources and variability

Poor infrastructure, post-harvest, marketing and processing facilities; considerable ecosystem variability; crop residues main feed resource; forages and weeds in roadsides and alleys also important; strong seasonality of feed availability

Agricultural products and services provided by livestock

Meat, milk, eggs, manure, draught power, transport, recreation

Degree of market integration

Generally poor

General economic and system trends

Expansion is constrained by low productivity (for both animals and crops), poor access to markets and extension services, and low adoption of improved technologies. Need for intensification because amount of land devoted to these systems cannot increase due to impact on natural-resource base (deforestation).

Environmental concerns

Deforestation; soil mining due to intensification of cropping systems and reduced use of fertilizer; soil erosion mainly in uplands; loss of biodiversity

MRH Mixed rainfed humid/subhumid**CSA example:** Maize–beans–pasture systems in Nicaragua**Livelihood system of a typical poor household: ranking and trend**

Type of capital	Low	Moderate	High
Human	✓+		
Social		✓+	
Natural		✓-	
Physical	✓+		
Financial	✓+		

Main causes of food insecurity

Crop failure, drought, extreme weather variability

Main causes of poverty

Low productivity, low agricultural and livestock prices

Degree of crop–livestock intensification

High

Degree of diversification of income sources

Medium

Average size of landholdings for a typical poor household

10–15 ha

Average herd size by species for a typical poor household

4 cows; 3–4 pigs; 5–7 chickens

Livestock species

Cattle; pigs; poultry

Important livestock species for poor households

Cattle; pigs; poultry

Physical resources and variability

Moderate transport system access; poor public infrastructure; low quality of housing and livestock–crop facilities

Agricultural products and services provided by livestock

Meat, milk, eggs, maize, beans

Degree of market integration

Moderate

General economic and system trends

Livestock activity is increasing; crop expansion limited

Environmental concerns

Land degradation; soil erosion; soil nutrient depletion; loss of biodiversity

MRT Mixed rainfed temperate/tropical highland**SSA examples include:** Smallholders in the Ethiopian highlands where oxen for traction are important; small-scale dairy farmers in the highlands of East Africa**Livelihood system of a typical poor household: ranking and trend**

Type of capital	Low	Moderate	High
Human		✓+	
Social		✓+	
Natural			✓-
Physical		✓+	
Financial		✓+	

Main causes of food insecurity

Crop failure; crop and livestock diseases

Main causes of poverty

Loss of main household breadwinner; loss of assets due to distress sales; small landholdings, high population density; lack of off-farm income

Degree of crop–livestock intensification

High

Degree of diversification of income sources

Moderate

Average size of landholdings for a typical poor household

1–5 ha

Average herd size by species for a typical poor household

1 dairy cow; 2 oxen for traction; a few sheep and goats

Livestock species

Multi-purpose cattle (meat, milk, traction); upgraded dairy cattle

Important livestock species for poor households

Dairy cows; sheep and goats; poultry

Physical resources and variability

Main feed resources: crop residues, roadside grazing, increasingly planted forages, relatively low rainfall variability

Agricultural products and services provided by livestock

Milk, beef, veal and mutton; traction; manure; capital assets and insurance

Degree of market integration

Very low in some places such as Ethiopia, higher in others

General economic and system trends

The system is under pressure to specialise in specific products. In places this may give rise to landless systems

Environmental concerns

Loss of domestic animal biodiversity; use of agrochemicals; waste disposal; methane emissions; carbon sequestration; competition for recreation; loss of biodiversity; water conservation

MRT Mixed rainfed temperate/tropical highland

SA examples include: Wheat–maize/livestock systems in India (Gangetic Plains); wheat–maize/cattle systems in southwestern China.

Livelihood system of a typical poor household: ranking and trend

Type of capital	Low	Moderate	High
Human		✓+	
Social		✓+	
Natural			✓–
Physical		✓+	
Financial		✓+	

Main causes of food insecurity

Crop failure due to unfavourable climatic conditions, with impact on feed availability; crop and livestock diseases

Main causes of poverty

Loss of main household breadwinner; loss of assets due to distress sales; small landholdings; lack of off-farm income

Degree of crop–livestock intensification

High

Degree of diversification of income sources

Moderate

Average size of landholdings for a typical poor household

0.25–1.0 ha

Average herd size by species for a typical poor household

0.5–1.5 cattle; 0.1–0.3 buffalo; 0.5–2 goats; 1–5 pigs; 5–20 chickens

Livestock species

Beef/traction cattle; meat goats; pigs

Important livestock species for poor households

Cattle (beef, traction); meat goats; pigs

Physical resources and variability

Crop residues main feed resources, with some grazing practised in communal areas; strong seasonal variations

Agricultural products and services provided by livestock

Milk, beef, veal and mutton; manure; draught power

Degree of market integration

High

General economic and system trends

This intensive system is under pressure to further specialise in specific products; market access is still weak

Environmental concerns

Loss of domestic animal biodiversity; high use of agrochemicals; soil erosion; waste disposal; methane emissions; carbon sequestration, competition with recreation, loss of biodiversity, competition for water

MRT Mixed rainfed temperate/tropical highland

CSA example 1: Mixed crop–livestock smallholders in the highlands of Colombia.

Livelihood system of a typical poor household: ranking and trend

Type of capital	Low	Moderate	High
Human		✓+	
Social	✓–		
Natural			✓–
Physical			✓+
Financial	✓+		

Main causes of food insecurity

Livestock disease; cattle raiding; crop failure

Main causes of poverty

Low productivity; low prices

Degree of crop–livestock intensification

High

Degree of diversification of income sources

Moderate

Average size of landholdings for a typical poor household

3–4 ha

Average herd size by species for a typical poor household

2–3 cows; 1–2 pigs; 6–7 chickens

Livestock species

Cattle; pigs; poultry

Important livestock species for poor households

Cattle; pigs; poultry

Physical resources and variability

Good access to transport system; good public infrastructure, access to markets; good housing and agricultural facilities

Agricultural products and services provided by livestock

Meat, milk, eggs (non-livestock products include plantains, coffee, fruit, beans, maize)

Degree of market integration

High

General economic and system trends

Livestock activity and fruit industry increasing

Environmental concerns

Land degradation; loss of biodiversity

MRT Mixed rainfed temperate/tropical highland

CSA example 2: Andean region; mixed crop–livestock smallholders in the highlands of the Andean Region (Ecuador, Peru, Bolivia); northern and central Peru near Cajamarca and Junin (Mantaro valley); Altiplano of Peru and Bolivia; southern and northeastern Ecuador.

Livelihood system of a typical poor household: ranking and trend

Type of capital	Low	Moderate	High
Human	✓+		
Social		✓+	
Natural		✓–	
Physical	✓–		
Financial		✓–	

Main causes of food insecurity

Crop failure; lack of income-diversification opportunities, crop and livestock diseases, frost risk

Main causes of poverty

Lack of cash and off-farm income; loss of assets due to distress sales; small landholdings

Degree of crop–livestock intensification

High

Degree of diversification of income sources

Moderate to high

Average size of landholdings for a typical poor household

3–5 ha

Average herd size by species for a typical poor household

Cattle herd typically 5–15 cows; sheep 8–20. In communities herd sizes vary from 20–80 cows, usually kept together

Livestock species

Cattle, predominantly cross-breeds, exotics and criollo breeds (*Bos taurus*); sheep, criollo and Corriedale crosses

Important livestock species for poor households

Cattle; sheep; poultry; often a pair of oxen

Physical resources and variability

Grazing is the main feed resource characterised by high seasonal variability; in some cases hay from barley and oats is used

Agricultural products and services provided by livestock

Milk, meat, traction, transport

Degree of market integration

Moderately market orientated; crop–livestock systems are mostly found closer to urban populations.

General economic and system trends

High production potential in global terms. However, potential intensification of the system is limited by market forces and environmental concerns

Environmental concerns

Water quantity and quality; soil erosion; methane emissions; loss of biodiversity

MIA Mixed irrigated arid/semi-arid

SA example: Small-scale buffalo milk production; sheep and goats in Pakistan and India.

Livelihood system of a typical poor household: ranking and trend

Type of capital	Low	Moderate	High
Human	✓		
Social	✓		
Natural	✓+		
Physical	✓+		
Financial	✓+		

Main causes of food insecurity

Crop failure; loss of animals to drought; fragile environment

Main causes of poverty

Poor access to credit and markets; reliance on transhumance

Degree of crop–livestock intensification

Weak

Degree of diversification of income sources

Poor

Average size of landholdings for a typical poor household

1–3 ha

Average herd size by species for a typical poor household

30–50 goats and sheep; a few buffalo

Livestock species

Cattle; buffalo; sheep and goats

Important livestock species for poor households

Buffalo; sheep and goats

Physical resources and variability

High variability; feed and water are significant constraints

Agricultural products and services provided by livestock

Milk and animal traction, meat from sheep and goats, savings

Degree of market integration

In some areas, high (e.g. milk production is mainly located in the proximity of urban centres; with sheep and goats, generally poor

General economic and system trends

Increasing numbers of goats and sheep

Environmental concerns

Deforestation; chopping down trees for feed; loss of soil fertility; competition for water

MIH Mixed irrigated humid/subhumid

SEA and SA examples: Irrigated rice–buffalo systems of The Philippines, Vietnam, India.

Livelihood system of a typical poor household: ranking and trend

Type of capital	Low	Moderate	High
Human		✓+	
Social		✓+	
Natural		✓–	
Physical		✓+	
Financial		✓+	

Main causes of food insecurity

Most households food secure; crop and livestock diseases; poor markets and marketing systems

Main causes of poverty

Lack of cash; poor access to credit; low productivity; small landholdings; fragmentation

Degree of crop–livestock intensification

Medium to high (e.g. non-ruminants and market-oriented smallholder dairy)

Degree of diversification of income sources

Low–medium; some non-farm and off-farm income; additional income from high-value crops

Average size of landholdings for a typical poor household

0.3–0.8 ha

Average herd size by species for a typical poor household

1–3 cattle; 5–15 goats; 3–6 pigs; 15–30 chickens

Livestock species

Buffalo; cattle; pigs; poultry; goats

Important livestock species for poor households

Buffalo; cattle; pigs; poultry; goats

Physical resources and variability

Moderately good infrastructure, post-harvest, marketing and processing facilities; relatively low variability

Agricultural products and services provided by livestock

Meat (pork and poultry), milk, eggs; traction; manure; transportation

Degree of market integration

Moderate to high

General economic and system trends

Increasing mechanisation has resulted in declining animal numbers, e.g. buffalo; declining availability of farm labour because of competition from off-farm/non-farm employment; increasing specialisation and intensification

Environmental concerns

Public health issues; low efficiency of water utilisation; soil erosion; nutrient cycling; manure disposal problems and human health hazards, particularly in poor peri-urban areas, e.g. dairy production, pigs and poultry production; loss of agricultural land due to conversion to industrial systems; loss of biodiversity

MIT–Mixed irrigated temperate/tropical highland

East Asia examples: Irrigated rice and dairy farms in North and South Korea, Japan, China.

Livelihood system of a typical poor household: ranking and trend

Type of capital	Low	Moderate	High
Human		✓–	
Social		✓	
Natural			✓
Physical			✓
Financial		✓	

Main causes of food insecurity

Most of the calories obtained from cereals, diet quality needs to be improved

Main causes of poverty

Small farm sizes and insufficient income diversification; deeply entrenched traditions

Degree of crop–livestock intensification

Low to moderate

Degree of diversification of income sources

Low

Average size of landholdings for a typical poor household

0.5–1.5 ha

Average herd size by species for a typical poor household

5–8 pigs; 8–10 dairy cows

Livestock species

Cattle; sheep; pigs; poultry

Important livestock species for poor households

Cattle; pigs; poultry; sheep

Physical resources and variability

Highly variable; feed resources limiting in many places; crop residues and purchased feed important

Agricultural products and services provided by livestock

Milk, meat, wool

Degree of market integration

Moderate to high

General economic and system trends

The viability of this system is expected to diminish as a result of outcome of General Agreement on Tariffs and Trade (GATT) negotiations; the system is expected to shift to more extensive production, using less water and chemical inputs; possibility of more displaced farms and farmers and increased poverty

Environmental concerns

Over-exploitation of shallow aquifers; net amount of cultivated land in China may decrease in the future because of urbanisation and expansion of agriculture onto more fragile lands; in the more peri-urban areas and intensive systems, serious human health hazards, e.g. zoonoses; competition for water; disposal of manure

LLM and LLR Landless monogastric and ruminant systems

Asia examples include: Pig and poultry production; goats and sheep in arid/semi-arid areas of SA.

Livelihood system of a typical poor household: ranking and trend

Type of capital	Low	Moderate	High
Human	✓		
Social		✓+	
Natural	✓+		
Physical	✓+		
Financial	✓+		

Main causes of food insecurity

Most households food-secure; livestock and poultry diseases; nomadism/transhumance, search for feeds, constraints to animal production, e.g. feeds, water, animal health

Main causes of poverty

Lack of cash; isolation and illiteracy (in arid/semi-arid environments)

Degree of crop-livestock intensification

Low (high for livestock and poultry only)

Degree of diversification of income sources

Poor; some non-farm/off-farm income

Average size of landholdings for a typical poor household

No land

Average herd size by species for a typical poor household

One sow and/or 1–2 fatteners (pigs); 3–5 chickens; 30–50 sheep and goats

Physical resources and variability

Considerable variability and minimal resources; good access to markets and other infrastructure in some areas; main feed resource: high-energy concentrates (mainly cereals, oilseeds and their by-products); system is knowledge- and capital-intensive with high production efficiency in terms of output per unit of feed; feed and water availability are major constraints

Livestock species

Almost exclusively exotic breeds of pigs and poultry; indigenous goats and sheep

Important livestock species for poor households

Pigs; poultry; goats; sheep; sometimes camels in arid areas

Agricultural products and services provided by livestock

Meat (pork and poultry), eggs, mutton, goat meat, manure/urine

Degree of market integration

High: products of this system are geared exclusively towards urban markets

Low: for goats and sheep

General economic and system trends

There is increasing demand for products of this system from urban/peri-urban consumers, hence there is pressure/potential for further expansion; goat and sheep numbers are increasing, but marketing channels are still not well developed; increasing awareness on animal welfare; public health issues, and animal disease epidemics threatening trade

Environmental concerns

Generation of waste (manure concentration); air and water pollution; degradation of forest margins and chopping down of trees.