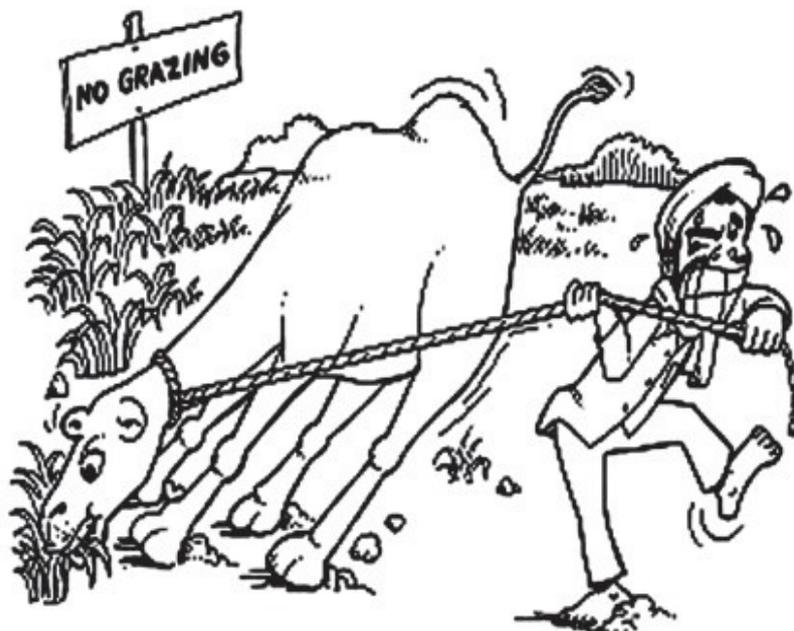


Rangeland systems and agrofood sustainability



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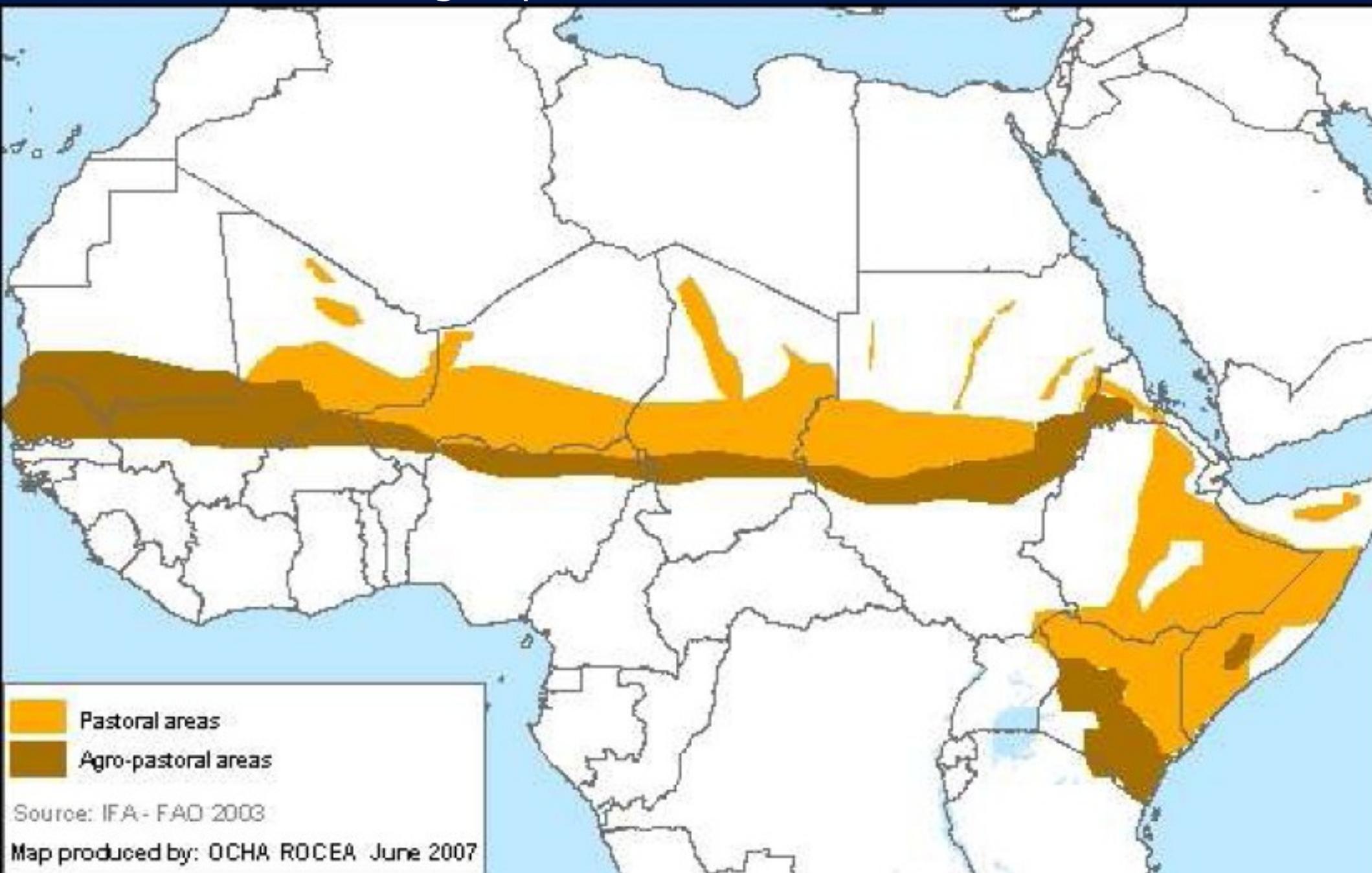
The sustainability of sub-sahelian pastoralism
(with some historical comparative considerations)

Pastoralism is still live in Europe . It played a fundamental role in Wester countries economic development but it has been marginalised as a relict



The prejudices of Western (and Chinese) culture influenced the policies of governments in Asia and in Africa. Most of the constraints on pastoralism in the world depend on political and cultural bias agains pastoralism and nomadism.

Pastoralism and agro-pastoralism in sub-sahelian Africa

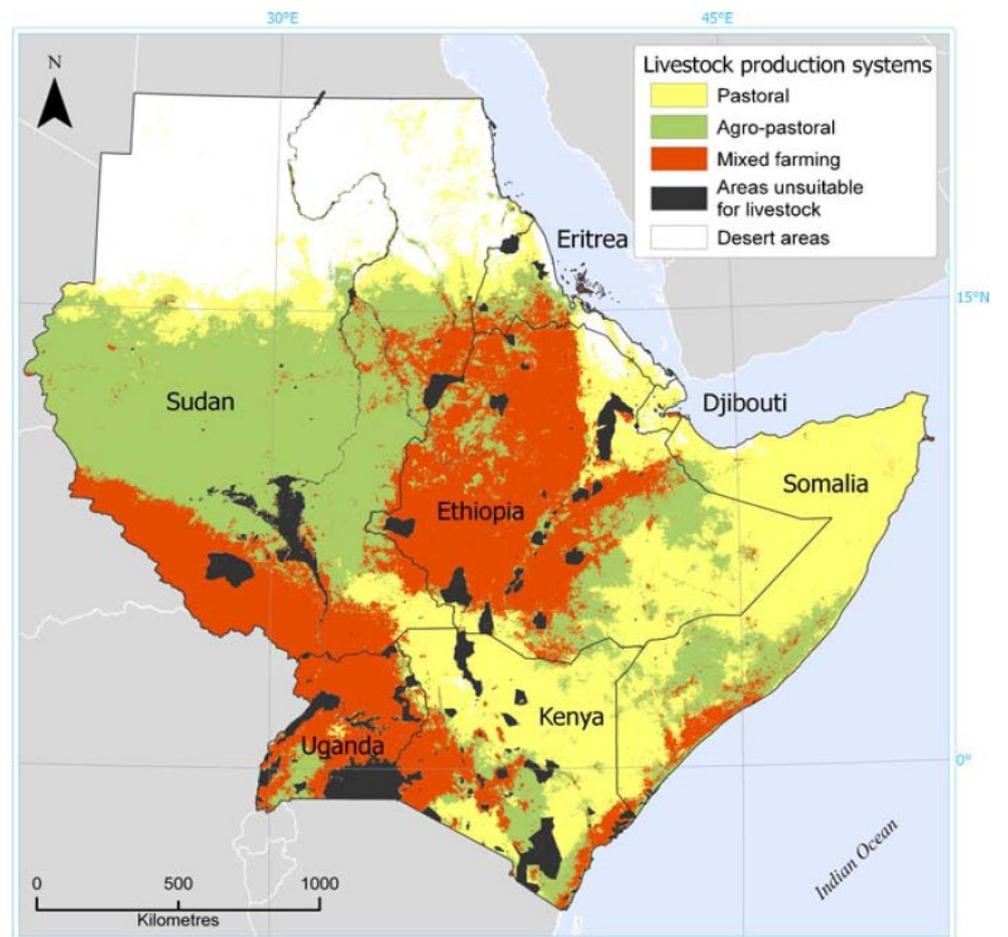
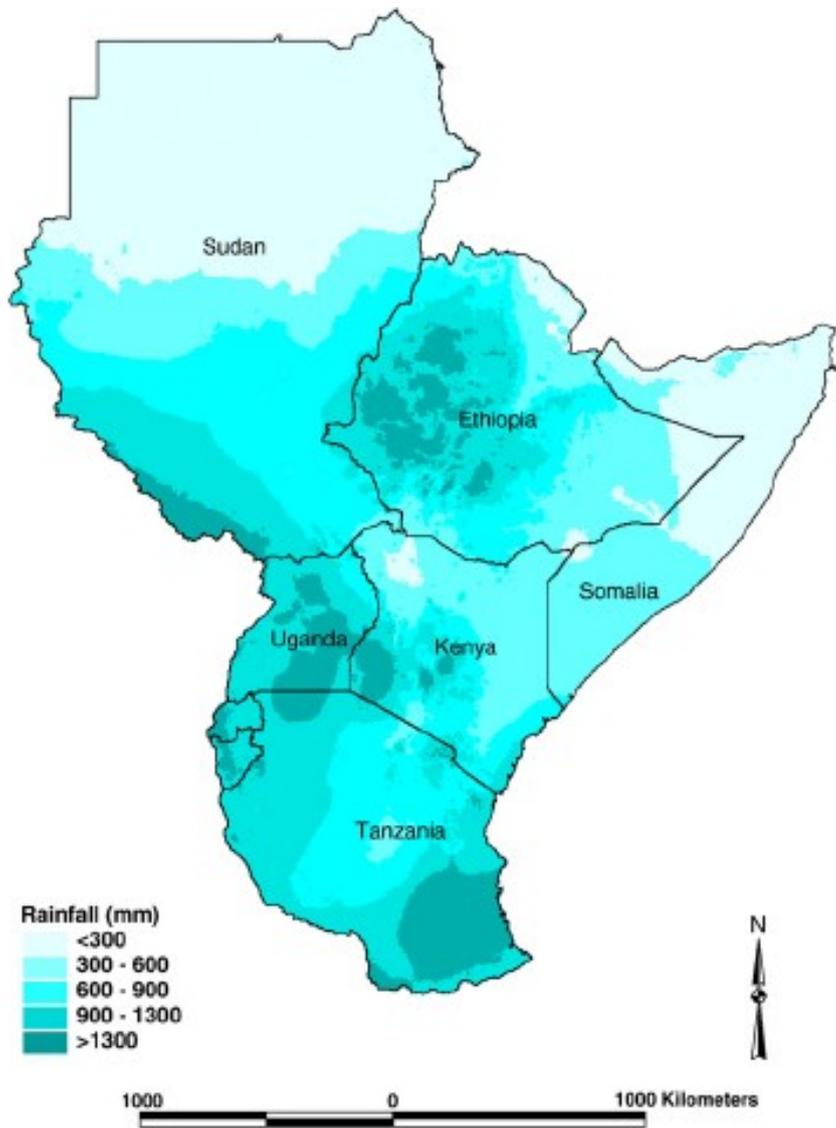


Form of land utilization in the sub-sahelian area

Mixed-farming

agro-pastoralism

pastoralism



Pastoralism is a multidimensional system

An agricultural production system, using mainly rangeland resources

A livestock-based livelihood strategy

A way of life with socio-cultural norms and values, and indigenous knowledge revolving around livestock

Pastoralism provides

An efficient way to take profit from scattered and highly variable resources (pasture and water) in an harsh environment

Preservation of genetic resources

Most of the consumed meat in East Africa

A set on social norms, shared values, mutual trust, interpersonal interactions

A strategy for pooling livestock-based resources, spreading risks and resolving shortfalls in current consumption (i.e. support human welfare)

Wise sustainable strategies

Rotational use of pasturelands, which allows pasture to recover after intense grazing

Keeping apart grazing reserves for drought periods

Dividing the livestock: only the strongest animals are taken on longer migrations.

Maintenance of different types of livestock (such as cattle and goats), which have different grazing habits and reduce herders' risk of losing all their animals to one disease.



Lake of Como (Lariana goats)

Pastoralism relies over autochthonous animal genetic resources and preserves them



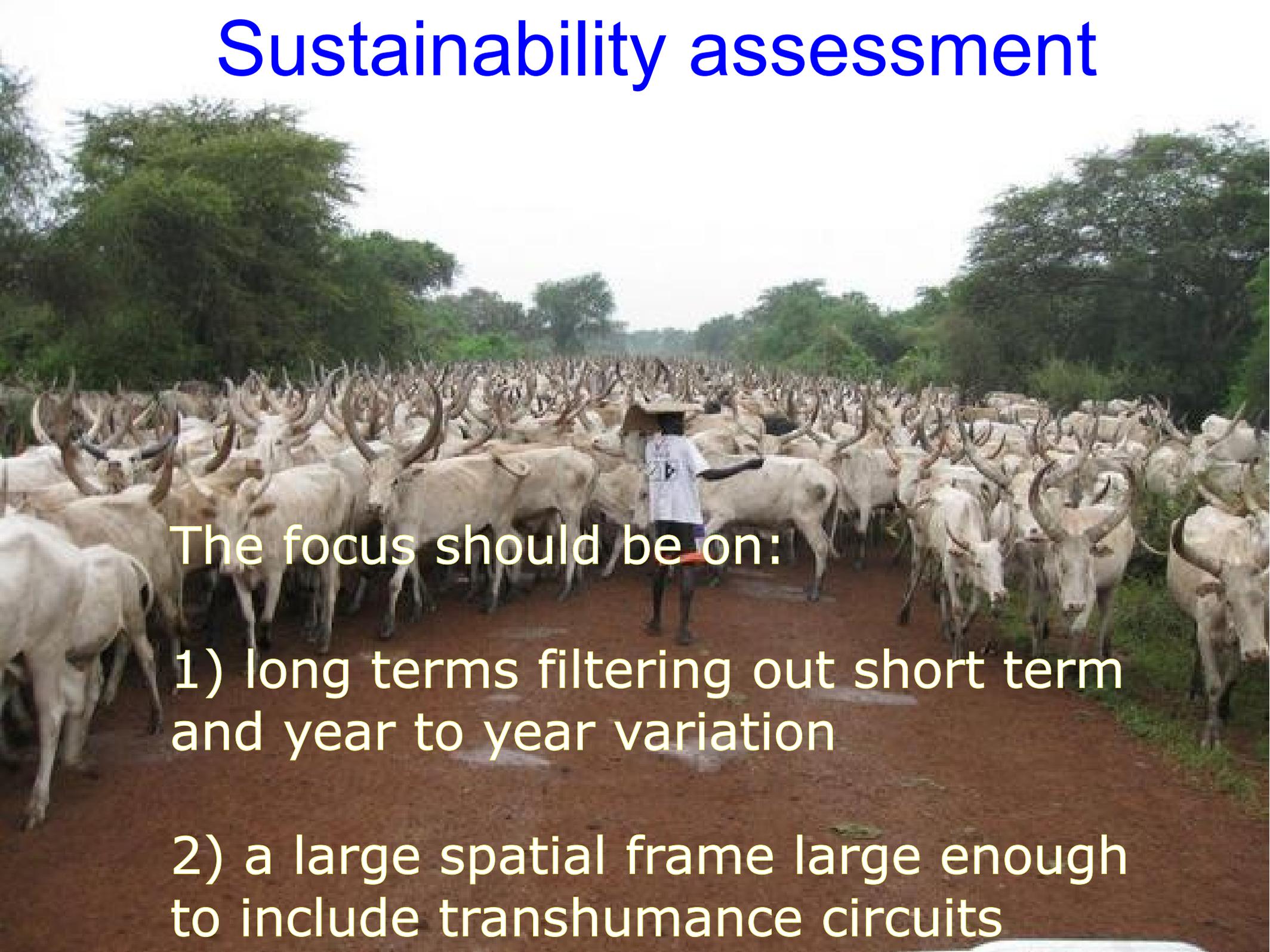
Pastoralists have

Higher levels of health and nutrition in comparison with sedentary people

Widely acknowledged rich skill and knowledge in animal husbandry and breeding

More independence and sense of belonging

Sustainability assessment



The focus should be on:

1) long terms filtering out short term and year to year variation

2) a large spatial frame large enough to include transhumance circuits

Pastoralism sustainability

Aspects	Components	Factors
Ecological sustainability	Production efficiency resilience	household food security pasture productivity (diversity) livestock productivity livestock mobility livestock diversity
Socio-economic sustainability	resilience	livestock diversification options, household economy, community development, pastoral traditions

Ecological sustainability

Aspects	Indicators
Livestock productivity	Calf mortality Herd size
Pasture productivity	Carrying capacity Biomass quantity and quality (e.g. Crude protein content) Species richness and diversity Soil nutrients
Mobility	Distance covered



Pieter Bruegel the elder: Il ritorno della mandria (1565)



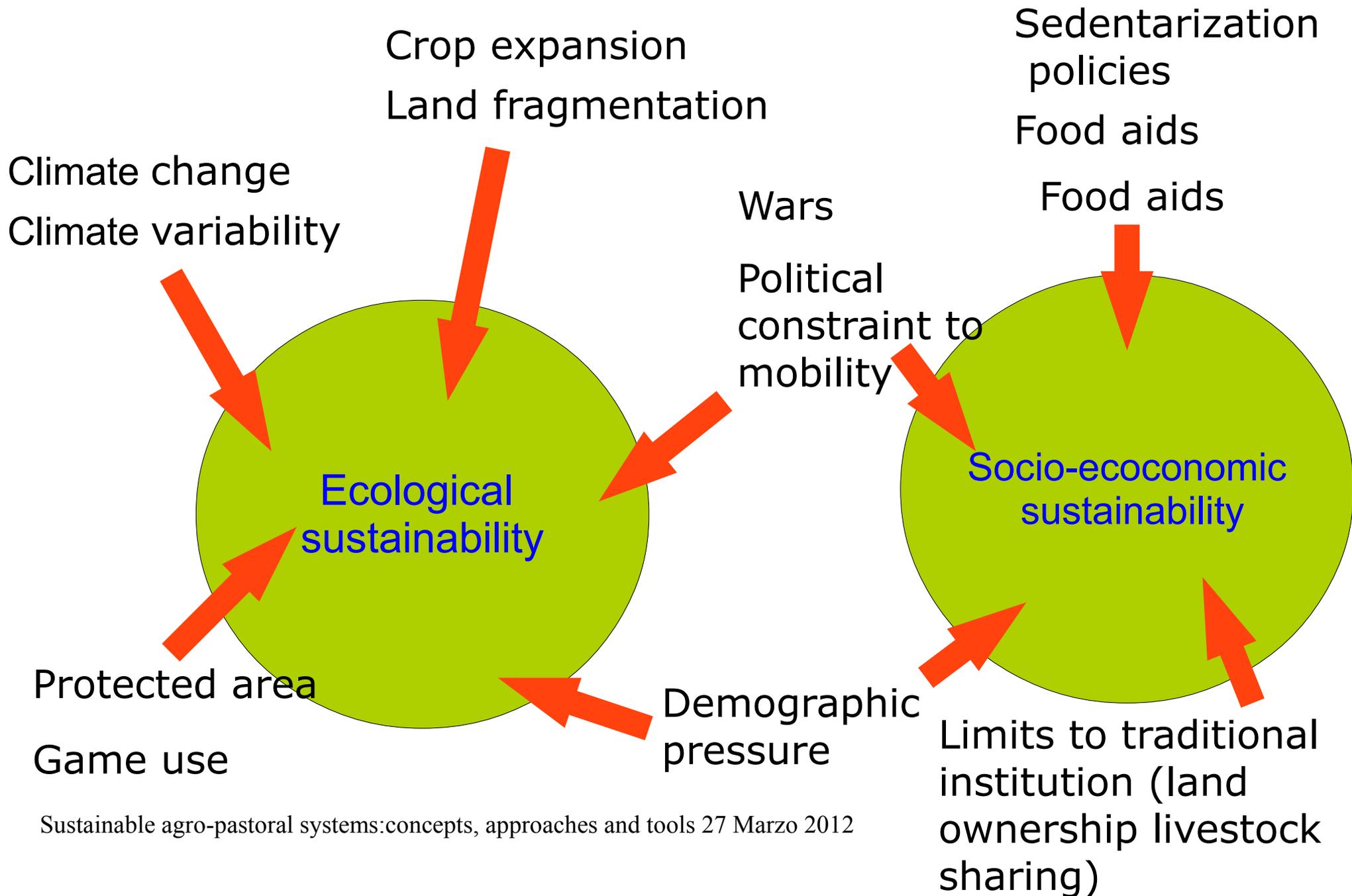
Mobility is a key element of pastoralism



Socio-economic sustainability

Aspect	Indicators
Household food security	household food need (calorie intake) is a key indicator of socio-economic sustainability
Livelihood diversification options	Revenue from non livestock based activities
Community development	Household income
Pastoral tradition	Rate of urban emigration

Challenges to pastoralism



Social challenges to pastoralism

Too rapid socio-economic transformations;

A general decline in per capita herd sizes that reduces herd transfer capacity, social prestige;

Political and cultural bias against pastoralism, negative perceptions by decision-makers

Misrepresentation, lack of leadership

Education (conflicting with traditional knowledge systems);

Poor understanding of pastoralism by both local elites, and international organizations

Some governments initiated policies to sedentarize pastoralists and reduce their herd size and constrain their mobility as their pastoral way of life was perceived as backward and an obstacle to “development” and state control



The tragedy of the influence of “The tragedy of the commons” (Hardin, 1968)

The work of Hardin had large influence over pastoral development policies of most African governments;

Pastoralism was considered responsible for rangeland degradation through overstocking and the associated over-grazing of the communal rangelands

The author later addressed criticisms “To judge from the critical literature, the weightiest mistake in my synthesizing paper was the omission of the modifying adjective “unmanaged.”

“The tragedy of the commons”

The mismanaging of communal land was claimed well before Hardin by XVIII european reformers. In Lombardy all communal lands were privatized but the mountain pastures. Further movements for privatization of “uncultivated land” at the end of XIX century were unsuccessfully;

Overgrazing and bad management of alpine pastures at the end of XIX century were caused by demographic growth and the joint pressure of the state and the market

Positive interactions with agricultural systems (West Africa)

Integration with crop production could develop both in the context of the same agro-pastoral systems or of mutual exchange between pastoralists and farmers

The exchange may deal with:

Milk and Manure provided by pastoralist in return for crop residues grazing

Conflict with Parks

- **During periods of drought, pastoralists traditionally access grazing reserves that are rich in biological diversity and extend over a range of ecological niches**
- **In many newly sub-Saharan African countries, large Protected Area were carved out of areas that pastoralists used as drought grazing reserves**



Brescia



Pastoralism facing the same problems





Bargamasque shepherd



Masai herdsman



Lombard pastoralism
(XV century)
Winter camp



Turkana pastoralism



In Europe pastoralism was slowly marginalized over centuries in favour of mixed agricultural systems. In Africa the process is much faster and traumatic

In some highly developed European areas however pastoralism never disappeared and shows signs of new vitality

In harsh environmental conditions with low rainfall or other constraints pastoralism is the only sustainable form of agricultural production

Conditions for sustainable pastoralism

Pastoralists' adaptation capacities have been eroded as a result of their historical and social marginalisation. The vulnerability to climate change is more a consequence of this marginalisation, rather than climate impacts

The threats of climate however diminishing the capacity of pastoralists to use their adaptive capacities

In order to re-establish pastoralism sustainability it is necessary to reverse policies such as forced settling and mobility restrictions and give pastoralists opportunities to participate in decision-making



Conditions for sustainable pastoralism

Pastoralists' resilience to droughts may be by enhanced defending communal land tenure, deserving respect for pastoral rights, providing livestock markets, and implementing livestock disaster insurance schemes

Education and any kind of technical support should be integrated with the traditional practice and knowledge system

New technologies like satellite estimation of forage availability could be integrated with traditional practices like herds mobility and grazing rotation