



India's Livestock Sector and Planetary boundaries



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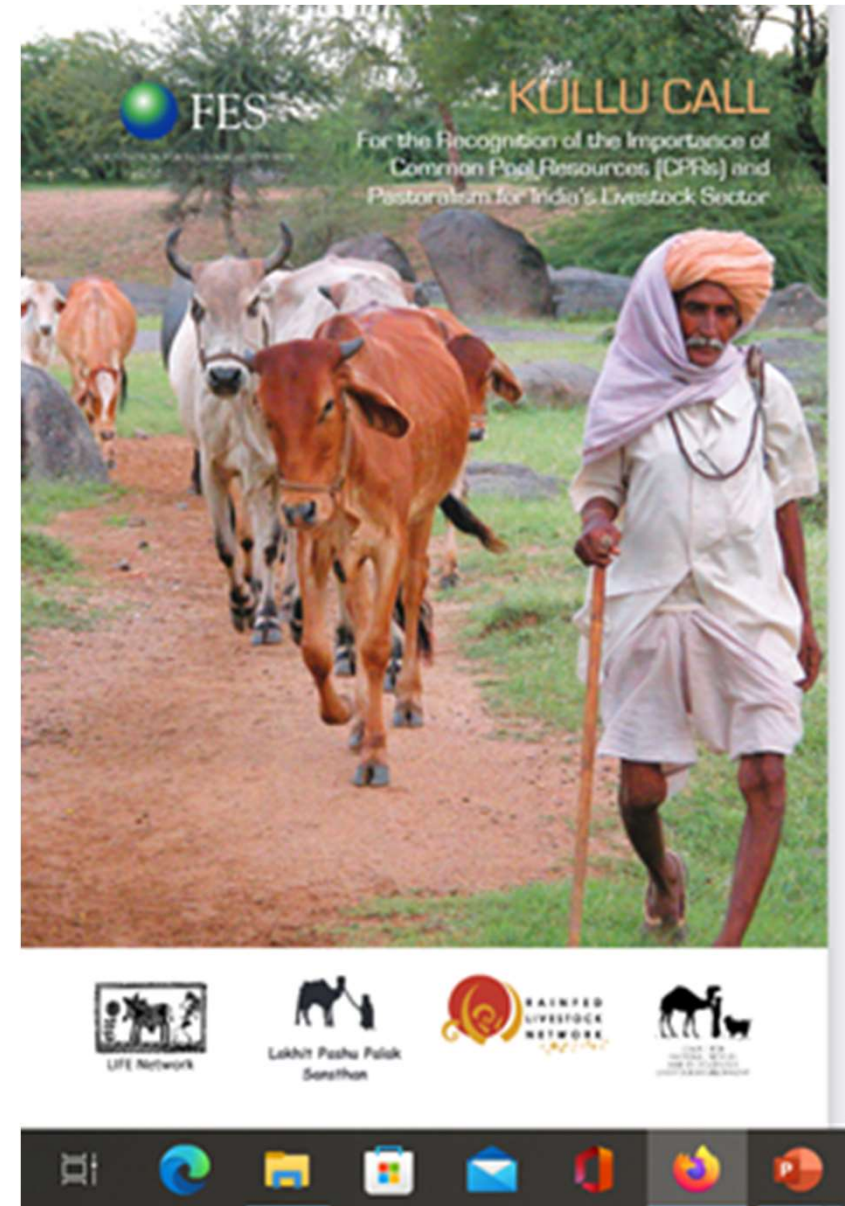


Despite being densely populated (17.5% of global human population), and having a comparatively small land mass (2.3% of global land mass),

India is the world's

- largest exporter of sheep and goat meat
- largest milk producer,
- fourth largest exporter of bovine meat (2020)

It is estimated that more than 70% of its meat and more than 50% of its milk is produced on common pool resources in 'traditional systems' (Kullu Call)



Some relevant figures

- Agriculture employs 41% of the Indian population (2021). Of this almost 50% are livestock keepers.
- India's arable land area of **159.7 mh** is the second largest in the world, after the United States, and its gross irrigated crop area of 82.6 mh is the largest in the world.
- Common lands is 15 percent (reducing about 0.3 % per year), Forest land is 24.6 percent (2021)
- Rice, wheat, pearl millet, sorghum, and maize are the main cereal crops in India.
- The human population is increasing at 1.6% per annum,
- The livestock population is increasing at 0.66% per year.





Major exporter of grain for intensive livestock keeping

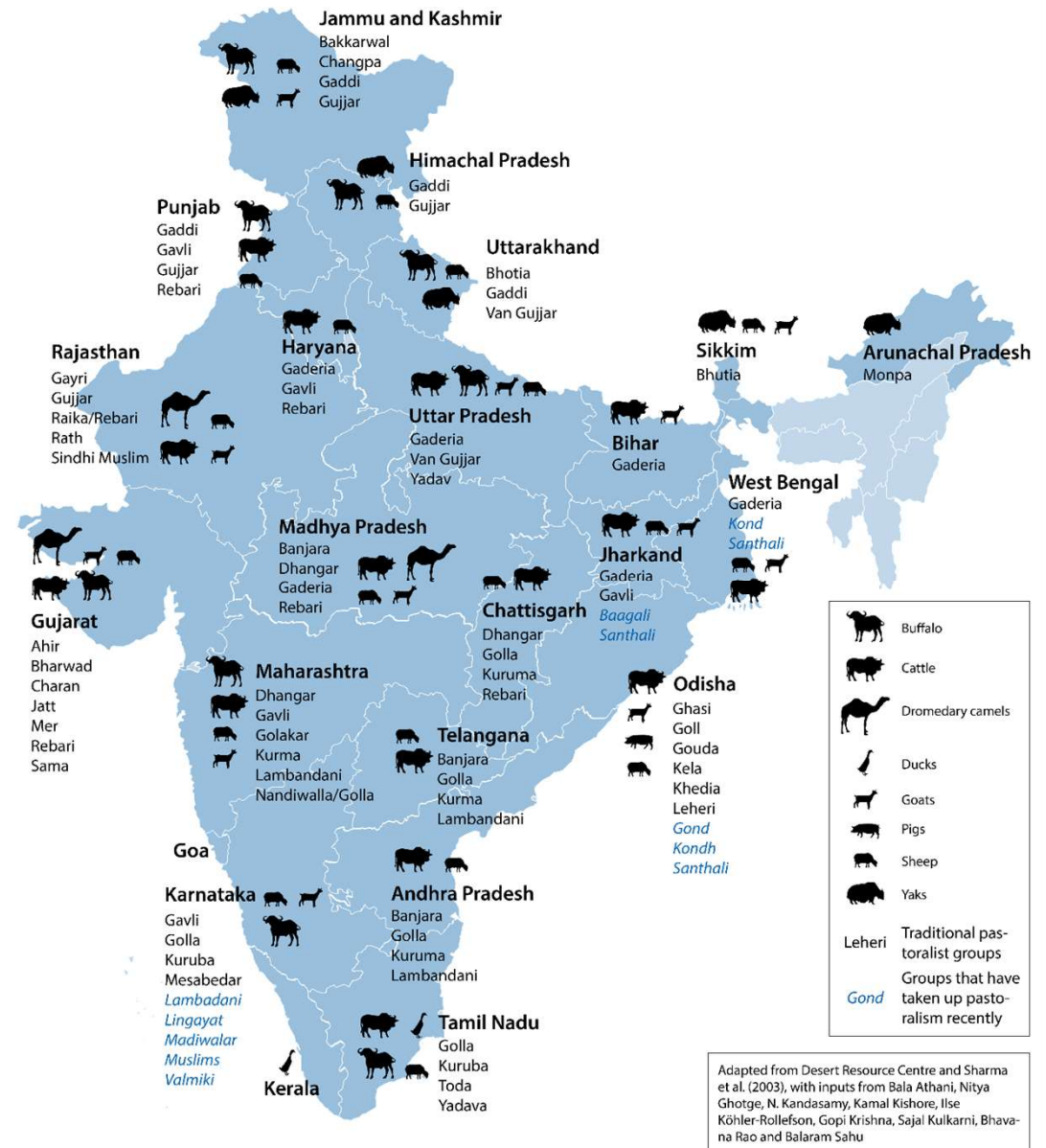
- In 2021, India exported **28 lakh tons** of **maize** and **18 lakh tons** of **oil meal cakes**, two of the largest requirements for intensive livestock keeping.
- Our **buffer stock** requirement of cereals is **24.3mt** whereas we are holding **109.4mt** after quite sizable free distribution to our citizens
- The production of food grains in the country is estimated at a record **338.31 million tonnes** which is higher by 3.77 million tonnes than the production of food grain during 2020-21.
- The production during 2021-22 is higher by 23.80 million tonnes than the previous five years' average production of foodgrains.

So how does India support such a huge livestock population and still manage to export feed?

- With exception of the commercial poultry sector, India's livestock is not industrialized, does not depend on grain.
- Instead, livestock graze on Common Property Resources and in forests
 - About half of the annual fodder requirement is obtained by grazing on common property resources, the other half met from crop residues and cultivated fodder.
- Only 4-5% of arable land is used for fodder production

The secret lies in agro-pastoralism!

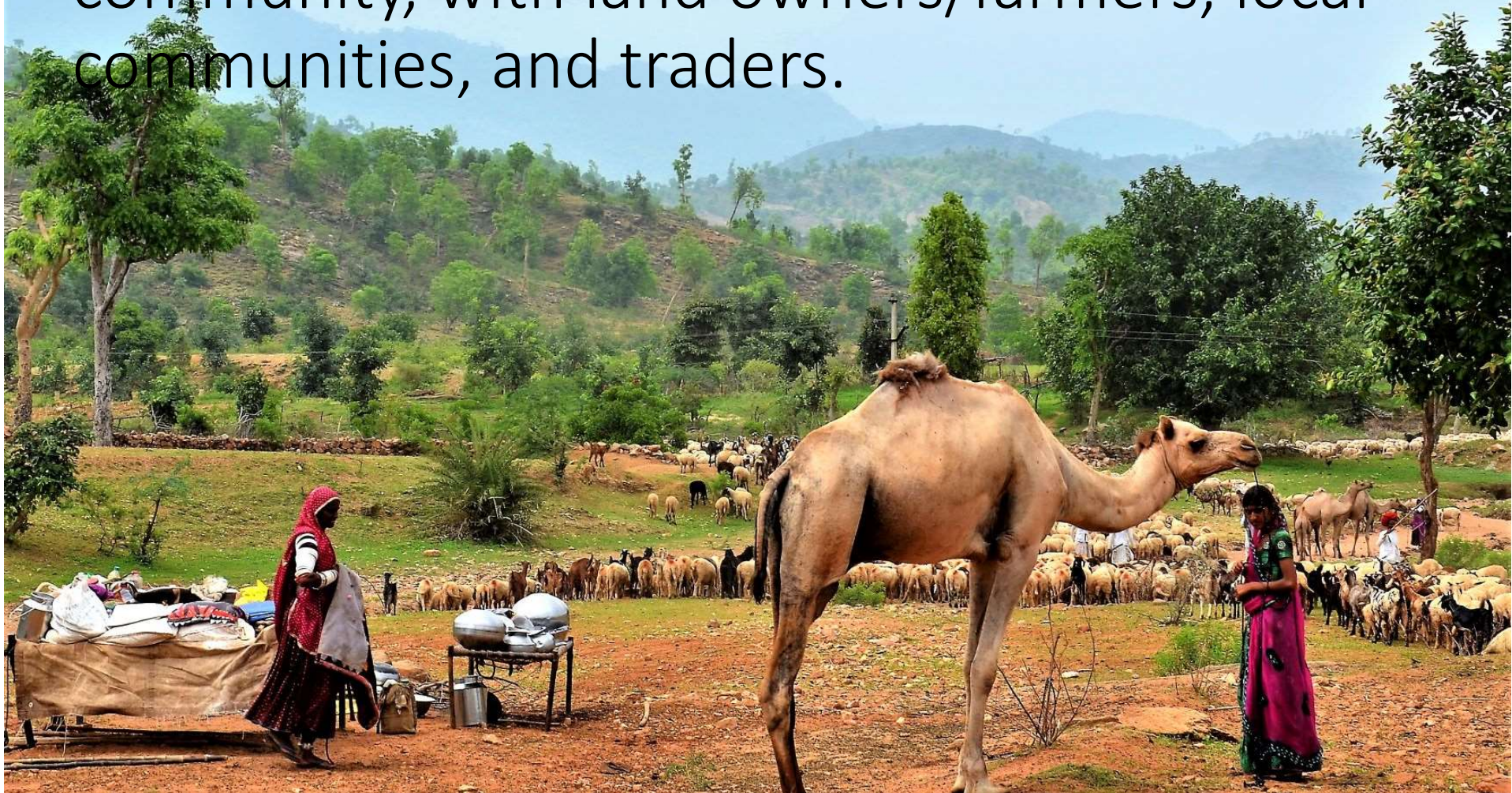
Prevailing perception:
„India is land of ‚farmers‘.“





Agro-pastoralism is India's
dominant livestock
production system

Agro-pastoralism depends on complex and wide-ranging social arrangements, within the community, with land owners/farmers, local communities, and traders.



Agro-pastoralism

- utilizes mosaic of grazing resources, incl. crop aftermath, natural vegetation, loppings
- generates a ,second crop' out of a field, while also fertilizing it.
- provides de-weeding and germination services.
- utilizes any kind of biomass.
- often sylvi-agro-pastoral systems.



Importance of manure



Manure is an important source of income for livestock keepers, highly in demand by farmers, and its aggregate value far exceeds that of meat and milk.



General differences between Indian and ,Northern' livestock systems

India

- Optimizes use of biomass/ vegetation on CPR, in forests and on fields
- Only 4-5% of land used for feed cultivation
- Goes with the flow – low input livestock is resilient and can cope with fluctuation in feed supply
- ,Solar-powered': livestock walks to forage
- Circular economy – manure is major source of income
- Depends on animal and herd intelligence

Conventional European

- Major dependence on imports of nutrient rich feed (80% of protein)
- Ca. 30% of land used for cultivation of fodder crops
- High performance animals must have regular nutrient rich standardized diet to thrive, sensitive to disturbances.
- Cultivated feed brought to animals
- Manure is a liability –nutrients turn into pollutants, it costs money to dispose of it.
- Animals are reduced to feed converters

What does this mean for Planetary Boundaries?

- As no or only small areas are set aside for cultivation of feed, India's livestock contributes only minimally to **biodiversity** loss, if at all. It may even enhance biodiversity.
- For the same reason, rural livestock is not implicated in **land use change**
- While ruminant livestock emits methane, it also prevents CO² emissions on a major scale, because it saves chemical fertilizer and walks to its feed. Overall, its effect may be **climate change** mitigating or carbon neutral.
- Because India's livestock is dispersed and in balance with plant resources, it does not interfere with **nitrogen/phosphorus cycles**.

Conclusions

- India is so productive in terms of livestock output, because animals and crops are **integrated** in the form of agro-pastoralism, forming a circular economy.
- This system depends on the availability of common property resources, on native breeds that are adapted to specific agro-eco-systems and can walk well, and on the knowledge of communities in managing livestock as part of the landscape.
- Its rationale is based on **making optimal use of biomass** rather than on maximising output per individual animal.

Recommendations

- Document and value the existing systems which are basically in tune with planetary boundaries, as they use what nature provides.
- Urgently protect the CPR that are the basis of India's livestock production.
- We must stop looking at livestock and crops in isolation, or specializing in only of them, and instead take a systemic perspective.



We need to revise ,efficiency' as metric for ,sustainability'

- Efficiency is measured by output versus input; typically amount of feed versus body weight or milk yield.
- is based on *uniformity and stability*, can only be applied to controlled systems in which humans have created artificial environment.
- Leads to typical comments such as ,*Output per sheep is low...growth rates do not compare to western countries*', and ignores both positive and negative impacts of livestock
 - Positive: provision of organic manure, independence from fossil fuels, support for biodiversity
 - Negative: pollution of air, soil and water, land use change, biodiversity loss, animal welfare
- Is therefore in conflict with keeping livestock within Planetary Boundaries

,efficient‘



,inefficient‘



My opinion:

- India should not ape the ,highly efficient' industrial livestock systems of the North - which come under so much criticism.
- Instead it should build on its vast and diverse agro-ecological heritage to carve an alternative path for livestock development that is in tune with planetary boundaries.
- We all need to work towards replacing ,efficiency' as guiding principle for livestock development.

Thank You!



.....and the Indian pastoralists who show us the way to livestock keeping within Planetary Boundaries!!!

