

Linking Herders to Carbon Markets

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Presented by Fritz Schneider, based on a synthesis report by Dominique Guenat (project leader), Dominic Blaettler & Therese Haller

● ● ● ● **Bern University of Applied Sciences**
● School of Agricultural, Forest and Food Sciences



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Necessity to restore rangeland: The case of Mongolian mountain steppe

·Private livestock on public land

·ü

·Growing animal numbers / increased stocking rates

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·Increased rangeland degradation

·ü

·Decreased productivity / increased vulnerability

Recent development of livestock numbers

- Wool and cashmere production are part of the animal's basic physiological functions ü less affected by undernourishment
- Goats keep economic productivity on degrading pastures



Fig. 1a and 1b: Evolution of the number of bovines, horses, sheep and goats in Mongolia, from 1992 to 2010 (data source: FAOstat)

Carbon certificates: Incentives for restoring rangeland?

·Prospect of a triple win situation:

1. Greenhouse gas mitigation
2. Improved climate resilience
3. Socio-economic development benefits

· ***A concrete measure to address the issue of overgrazing!***



Main elements of a carbon project

- (Target market: International voluntary carbon market)
- Determine a sustainable level of grazing (carrying capacity)
- Reduce stocking rates to that level
- Restrict regrowth of herds
- Rangeland vegetation recovers:
 - ü **Carbon sequestration in biomass and soil**
 - Increased carrying capacity (limited regrowth of herds allowed) ***Is such a project feasible?***

Case study: Tariat soum (Arkhangai, Mongolia)



·Study site

- 5'000 inhabitants in 1'451 households (954 herder households)
- Total surface: 348'000 ha; **pasture surface: 152'000 ha**, forest 110'000 ha, 77'000 ha National park
- Livestock (2011): 400'000 Sheep Units, mainly sheep, goats, yaks and horses

·Study design

- 5 sub-studies (HAFL): livestock, value-chains, economics, livelihoods & institutions, policy; biophysical sub-study (Unique)

Bringing animals and pastures into balance

- Determining carrying capacity makes only sense in equilibrium systems.
- Tariat's mountain steppe is an equilibrium system, even though non-equilibrium states (extreme climatic conditions) are well-known to the herders.
- Therefore it makes sense to determine the carrying capacity.
 - To achieve sustainable stocking and carbon sequestration, destocking by about 50% would be necessary.
 - Destocking by about 20% would increase productivity, but hardly be enough for rangeland restoration.

Partial compensation of reduced animal numbers by increased productivity?

- Destocking ü better nourished animals ü higher productivity

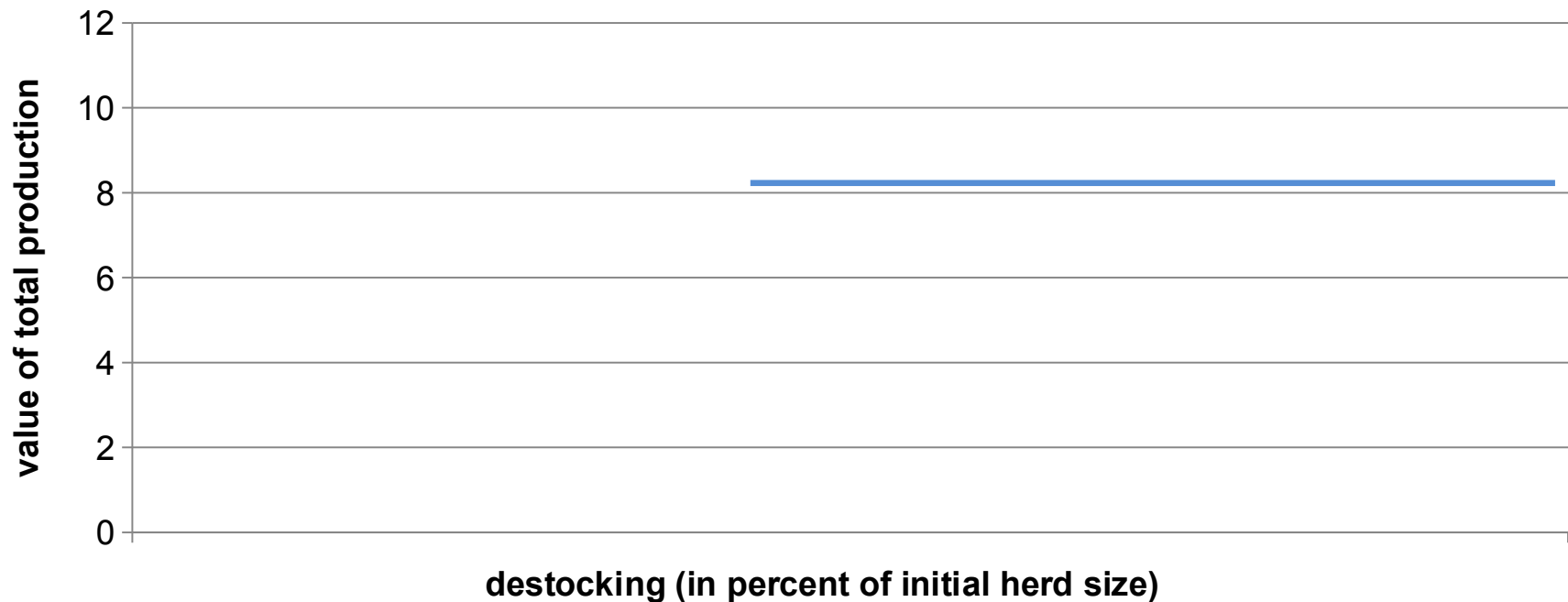


Fig. 2: Effect of destocking on a herd's output depending on initial level of nutrition

Destocking must be a measure among others

- During winter, insufficient forage (in quantity and quality) ü weight losses;
- To achieve the possible productivity potential, destocking alone is not sufficient;
- Complementary measures needed: adapt practices

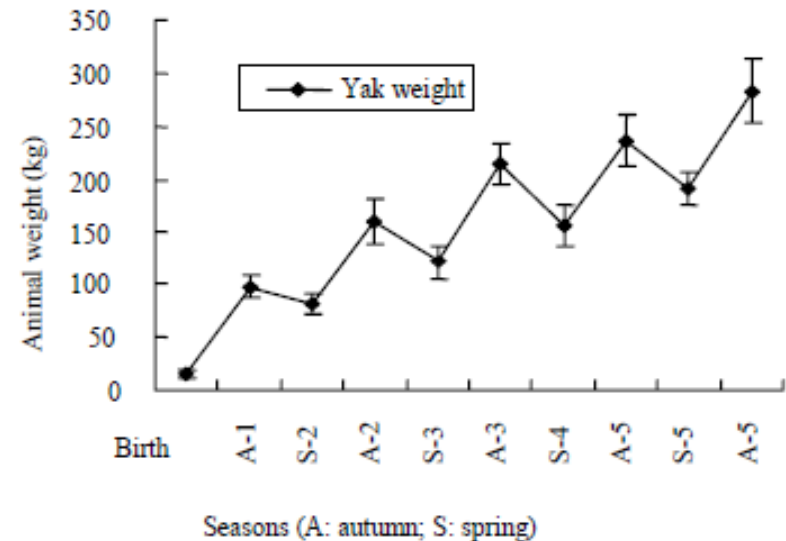


Fig. 3: Body weight development of male yaks (n=180)

Source: modified from Lu (1980)
in Wiener et al. (2003, p.128)

Preconditions for the feasibility of a carbon credit project in Tariat soum (Mongolia)

Herders must be convinced about destocking

•ü Institutional and policy setting

- User rights / carbon rights must be defined (legal base)
- Institutions (herder collectives) must be strengthened; collective action is needed
- Supportive policies are crucial for the success of carbon project; contradictory policies must be avoided

•ü Market development

- Market should reward quality instead of quantity of herders'

Ecological evaluation

- Pasture degradation must be stopped and reversed!
- Destocking allows rangeland restoration and secures long term productivity.
- Herders' vulnerability towards extreme climatic events is reduced.
- The project contributes to globally reduce greenhouse gases.



Economic evaluation

- Destocking by 50%,
 - ü herding income (incl. cc compensation) is reduced.
- Selling animals for destocking generates high cash income
 - ü opportunities to invest in alternative economic activities needed!
- Provisions / insurance for extreme climatic events needed!

Fig. 4 Comparison of the evolution of benefits in the two options: with and without the cc project

Social evaluation

- Herders' livelihood is directly linked to their herds, small herders (<100 animals) would suffer too much when destocking ü they should be exempted.
- Large herders should destock most; they offer jobs which would get lost ü alternative job opportunities needed.
- Destocking is a very sensitive issue: High destocking is unlikely to be accepted.
- The carbon project itself does not address poverty.

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Conclusion

- A feasible approach and appropriate measures to address the issue of overgrazing has yet to be developed.
- Convincing herders may require a lot of resources and time.
- Prior to a project implementation in Tariat soum, a number of measures are needed to get herders on board; they concern

Thank you for your attention!

