



TRANSFORMATION OF TRADITIONAL LIVESTOCK SYSTEMS UNDER LAND USE CHANGES FROM THE 1970s TO THE 2018/2019 IN LADAKH, INDIA

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Background and Objective

- Ladakh in N-India is a remote region in the Himalayas
- Largely characterised by highly adapted and sustainable subsistence agriculture and nomadism
- Rapid rural-urban transformation since 1970s, assumed main driver is tourism

Goal of this study is to analyse:

- 1) Land use change processes and urbanisation
- 2) Drivers of change
- 3) Adaption mechanisms of local farmers

- Comparison of two sites: Leh (urbanized) and Diskit (rural), additionally study of local nomads

Materials and Methods

Three major study sites: Leh and Diskit (agro-pastoralists, Fig. 2) and Kharnak (nomads, Fig. 5)

- Structured interviews with 98 agricultural HH during 08 & 09/2019 covering agriculture, livestock, socioeconomics - for 1999 and 2019:

- Changes in agricultural practices and socio-economic conditions over time
- Mainly descriptive data analysis

- Remote sensing and GIS approach:

- Data from 1970s – 2000s – 2018/19
- Land use changes (LUC) and pace of urbanization

Results

- Agriculture :

- Increasing urbanization at the cost of agricultural areas (Fig. 1)
- From subsistence to income generation (Fig. 6)

- Livestock:

- Declining herd diversity, especially in the more urban site of Leh (Fig. 3)
- Focus on bovines, esp. cattle (milk) in urban areas and focus on goats (pashmina fibre) in rural nomadic areas (Fig. 3 & 4)

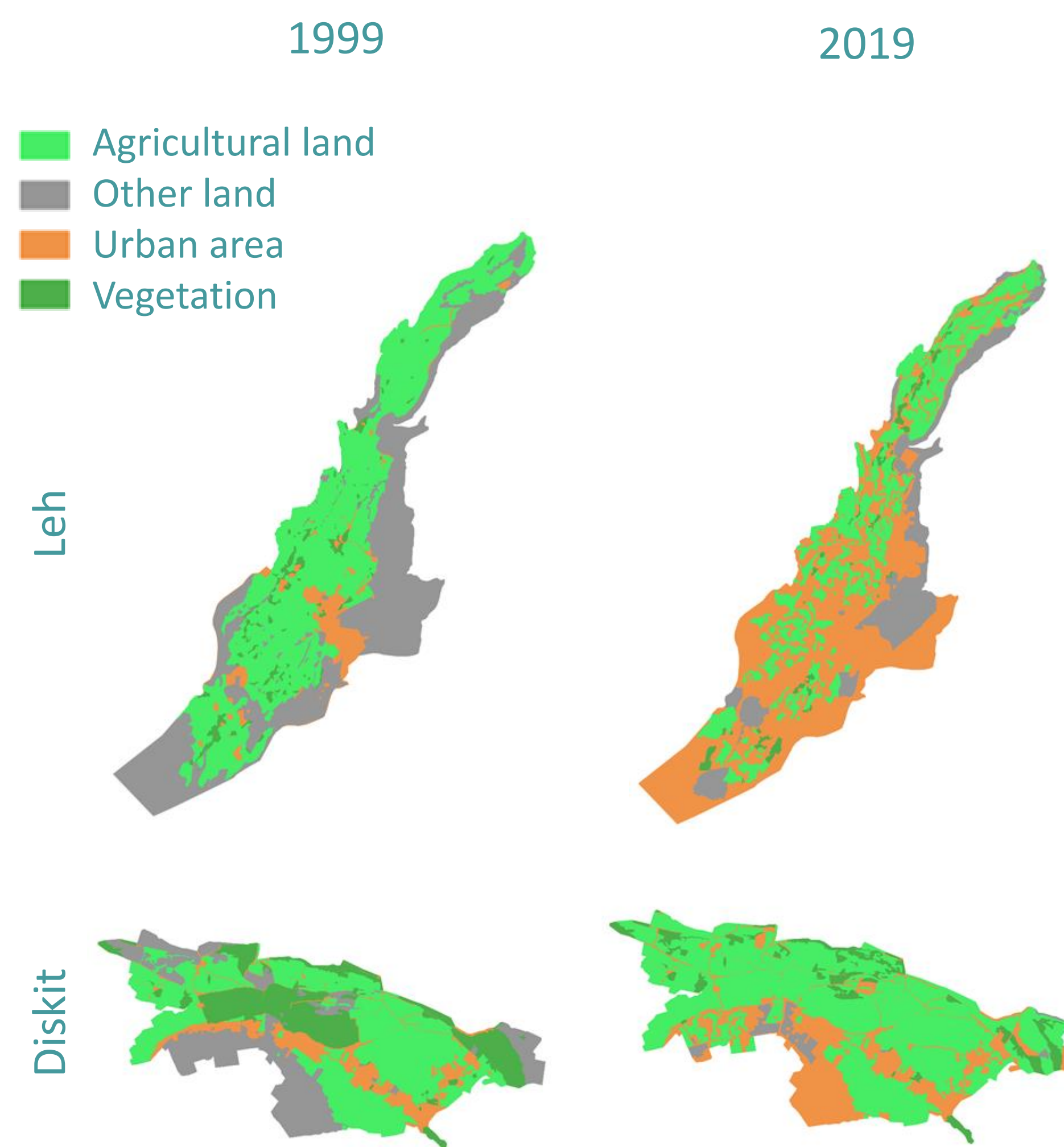


Fig. 1: Land use changes in Leh and Diskit over time



Fig. 2: Aerial photo of Leh (above) and Diskit (below)

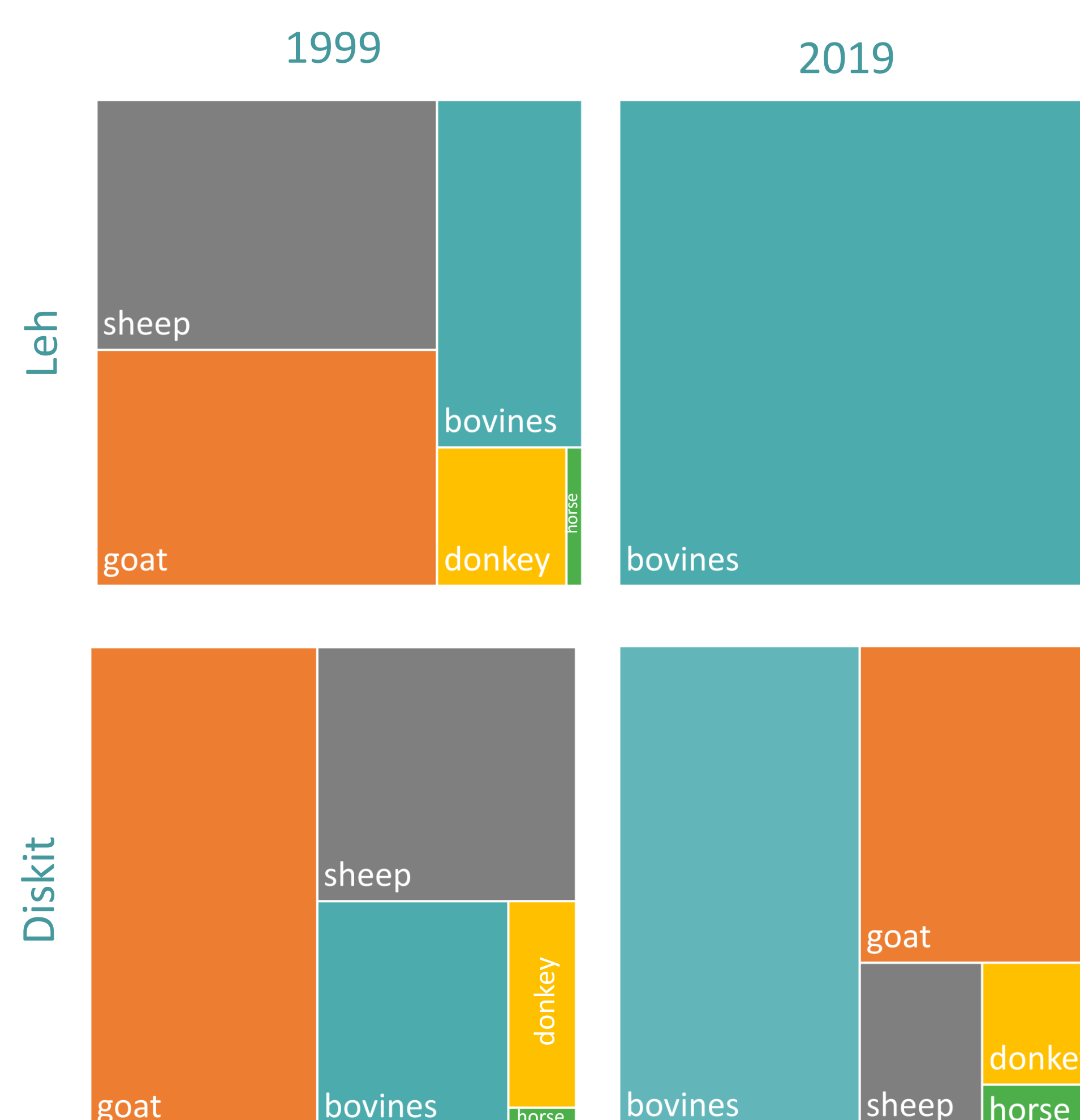


Fig. 3: Herd composition in Leh and Diskit over time

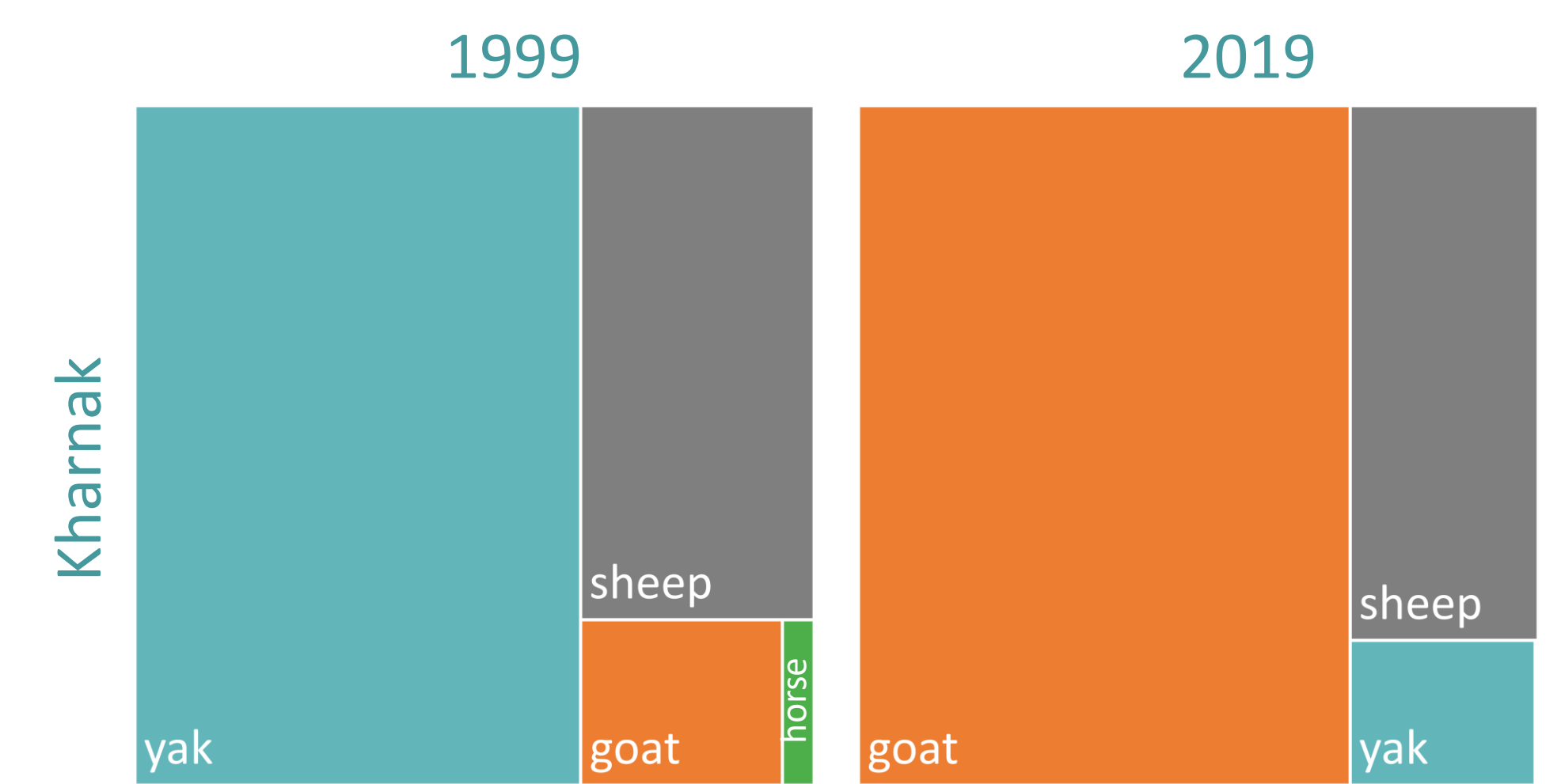


Fig. 4: Herd composition of HH in Kharnak over time



Fig. 5: Alpine nomadic pasture

Results

- Socioeconomic changes:

- Tourist numbers and touristic businesses increased rapidly (Fig. 3)
- Fewer HH depend solely on agriculture (Fig. 4)

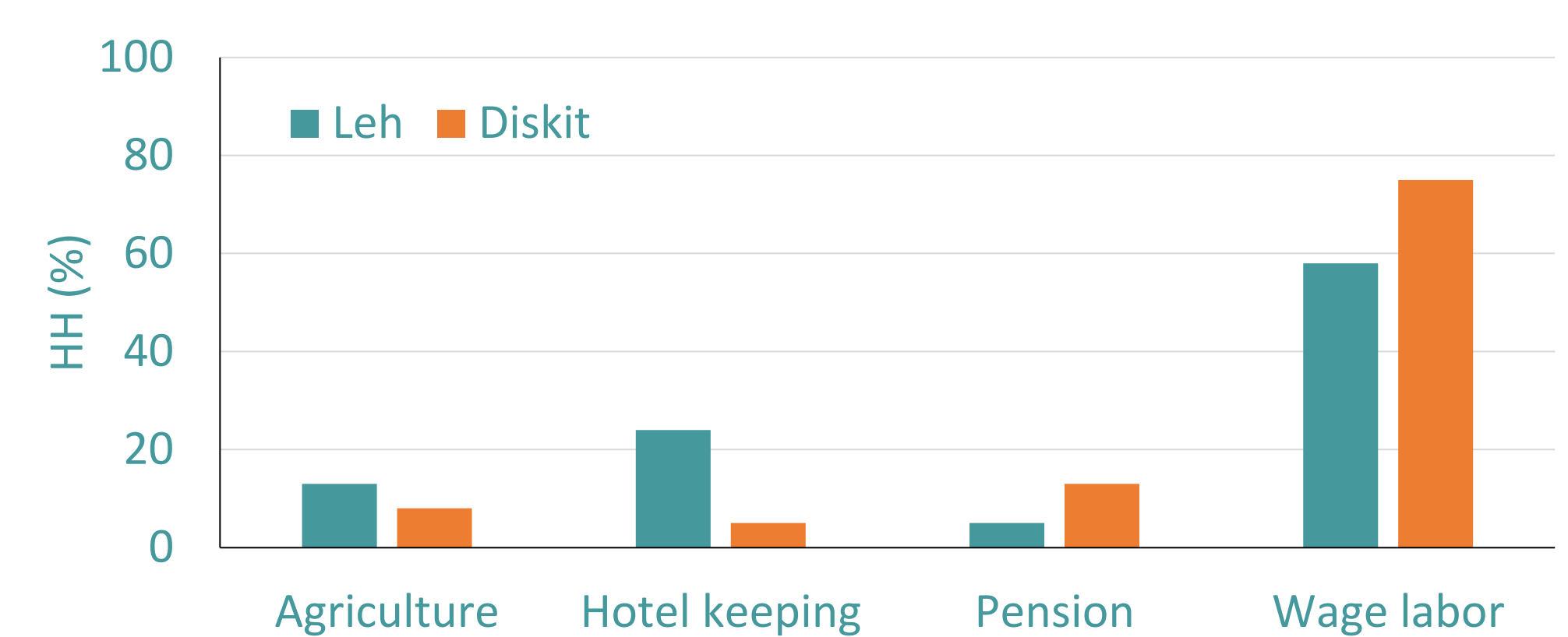


Fig. 6: Most important income sources in 2019

Conclusions

- 1) LUC: mainly driven by urban expansion, due to tourism (new facilities) and overall economic growth – the more tourists, the more rapid urbanisation
 - 2) Drivers of change: Local infrastructure initially improved by military, later and most prominent changes due to tourism
 - 3) Adaption mechanisms: Agro-pastoralists and nomads alike change from subsistence to market-oriented practices, additionally many venture in the tourism sector whenever possible
- If these trends persist, the traditional and highly sustainable Ladakhi agriculture might vanish in the long run

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