Project fact sheet CoExist

Monitoring environmental-related transhumance patterns and assessing the risk for population displacement

---

Funded by:

Federal Ministry
for Economic Affairs
and Energy

Raumfahrtmanagement

Contact person: Jens.Danzeglocke@dlr.de

Project start: October 2019

Project duration: 2 years

Realized by: RSS - Remote Sensing Solutions GmbH (RSS)
Dingolfinger Str. 9, 81673 München, Germany
Contact person: franke@rssgmbh.de
Tel: +49 (0)89-48954766

In cooperation with: International Organization for Migration (IOM)
The UN Migration Agency

Background

Transhumance is one form of pastoralism that is determined by the seasonal migration of livestock herds and their shepherds in search of water and pasture. Seasonal migratory movements associated with transhumance often occurs across different agro-ecological regions and country boundaries. Pastoralism relies on the sustainable use of natural vegetation, which is spatio-temporally variable and fragile. Transhumance can flexibly and quickly adapt to major seasonal and interannual variations of natural resources. This type of livestock farming is an important agri-ecological production system in many African countries which provides resilience to climatic events such as droughts. With increasing number of extreme weather events and increasing cropland expansion, local subsistence farmers and seasonally migrating pastoralists are more and more competing for the same natural resources such as water and grazing land. Such conflicts have increased in both number and severity, often result in violent clashes and with the effect of forced displacement of communities or some populations groups.

The International Organization for Migration (IOM) provides stakeholders in the conflict areas with technical and operational support on migration issues, analyzes the root causes of migration and proposes development-oriented solutions. IOM has an information demand on spatial patterns of transhumance and causes of population displacement. Currently, there is limited information on migratory routes, grazing locations, overlay areas or home ranges and nomadic herding practices adopted by pastoralists. This inevitably limits our understanding of the drivers of transhumance patterns and possible sources of conflicts and associated displacement patterns (Motta et al. 2018).

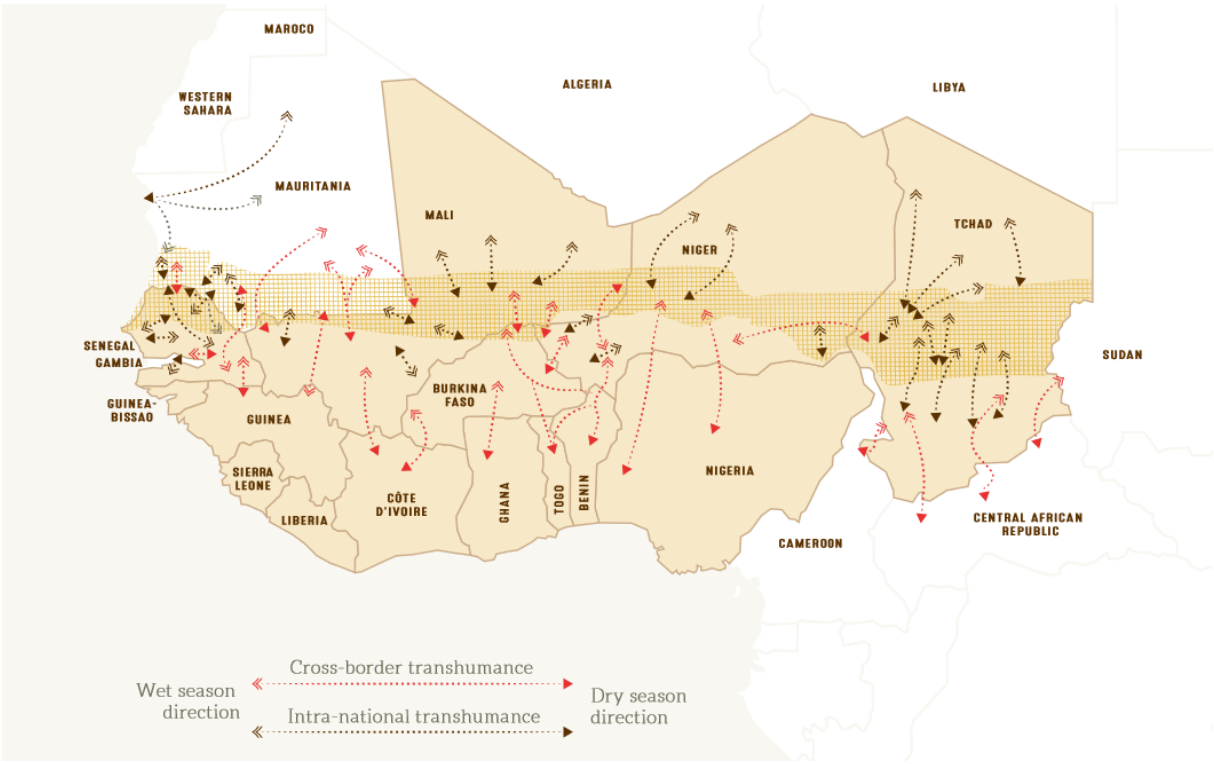

Figure 1: Intra-national und cross-border transhumance in the Sahel in 2013 (Inter-Reseaux, 2017)

Goals of the project CoExist

By combining new technologies, such as modern Earth Observation (EO) capacities and artificial intelligence data analytics, CoExist will analyze the spatio-temporal dynamics of transhumance and the associated risks of conflicts and population displacement. Relevant parameters such as the availability of surface water and its temporal dynamics, productivity of pasture, various agricultural systems, drought indicators and fire frequency are derived from EO data. These data are then analyzed together with additional data on spatial characteristics (e.g. protected or fenced areas, central wells, veterinary stations etc.) and data from the "Transhumance Tracking Tool" as well as from the "Displacement Tracking Matrix" of IOM. The aim is to provide a better understanding of the patterns of transhumance and identify potential areas of conflict to help plan effective, conflict-sensitive solutions by governmental and civil actors. IOM contributes to the economic and social development of states through development-oriented solutions, and the project outcomes should directly support these activities in the target region. The demand-oriented information products should support timely crisis prevention or intervention at the local level and aim at contributing to the establishment of an early-warning system.

Project region

New space-based monitoring capacities, particularly those of the European Copernicus Programme, allow to derive timely, continuous and thematically diverse information feeds about environmental parameters over larger areas at high level of spatial detail. These will be the basis for monitoring environmental-related factors related to transhumance migratory patterns and that may be used to explain population displacement patterns along the border areas between Chad and the Central African Republic. IOM's activities will be directly supported in this region and the approach might be transferred to other countries in which IOM is active such as Cameroon, Burkina Faso or Mauretania.

Figure 2: This Sentinel-2 satellite image of the Mandoul region in southern Chad shows the complex pattern of cropland (bright areas), burned areas (dark red) and natural vegetation (green) which has an influence on migratory routes of pastoralists.