



Magaria stakeholders are defining risks' areas (disease, drought, flood and crop parasites) using the USGS land use maps to build their communal multi-hazards contingency plan. Photo: TerresEauVie, February 2021..

Mapping the Future: Communal-Based Cartography in Niger Improves Land Use Practices

TerresEauVie Niger

In Niger, the effects of decades of unplanned, uncoordinated land use are myriad and widespread. Community members suddenly dislocated by uncontrolled development. Flood risks escalating in rapidly deforested regions. Water quality worsening as a result of unregulated manufacturing and land degradation. Conflicts on the rise as communities compete for increasingly scarce natural resources. Figuring out how to balance and plan protection of vital, shared resources like water, forests, and pasturelands with the need for improved food security and delivery of public services is perhaps the top challenge facing community and government leaders today in the Saharan nation.

Where to start? Striking a balance requires grassroots (communal level) buy-in as decision-makers assess where, when, and how to permit various categories of land use such as farming, grazing areas, housing and commercial developments, wells and water infrastructure, and construction of schools and other public projects. Yet planners at the communal level have never had access to detailed land use data, or the cartographic tools and knowledge needed to help them make informed decisions and changes – until now.

The USAID TerresEauVie Activity in 2020 began working with leaders and departmental land commissions in 25 communes in Niger to distribute detailed U.S. Geological Survey (USGS) land use and land cover maps, along with related software required to extract and analyze geospatial data. What is extremely important and unique is that two versions of the USGS maps were given to each commune: one showing the land use and land cover situation in the 1980s and the other showing the situation in 2019. TerresEauVie provided in-depth technical training on how to use maps to understand changes overtime in the commune, which types of land in which locations are being used for which purposes, and to develop improved land use planning for the future. This training had a dramatic effect on the communal officials

and technicians driving home the impact of population, lack of natural resource management, climate change, and other human and environmental factors.

The USGS Land Use and Land Cover (LULC) maps are important because they include georeferenced images that provide a “bird’s eye view” of communal areas. They are easy to read and clearly indicate the physical land type (such as forest or open water), helping local planners to document and categorize how people are currently using land to which they have access – for example, for residential, agricultural, commercial, recreational, transportation, or commercial purposes. Crucially, the maps help local planners estimate sizes, distances, and natural resources as they begin to more intentionally allocate lands for public uses and/or plan for future development and investments. The maps provide effective tools to support communal-level deliberation because they help people to actually see the location, scope and current usage of land assets under discussion, enabling better-informed decision making.

Maps are driving change

Across the 25 communes, few community members had ever seen such detailed maps or imagery prior to introduction of the USGS maps. Learning about and understanding how to use the tools was a new experience for all, but the difficulties decreased as TerresEauVie trained local planners and leaders on map-reading, use of the related software, and provided support for understanding legends and symbols. Comparisons between current and historical use of the same areas showed dramatic land use changes in communes, particularly with regard to the (now much larger) areas of land cleared as a result of urbanization and agricultural expansion and the decrease in water resources. Seeing such stark differences allowed leaders to learn how and where land uses changed, over time, and to reflect on the need to better protect natural resources before they are completely depleted.

As Mr. Gonda Balla, a representative from the Guidan Sori Chiefdom in Maradi said: “The training was useful for us to see the comparison between 1986 and 2018; the maps allowed participants to understand the level of degradation and reflect on actions needed to protect the commune’s natural resources.”

Seeing such changes plainly charted in the maps is leading communes to act to better preserve local resources.

In the Zinder Region, after TerresEauVie’s map use training enabled community leaders to compare maps from the 1980s to current maps of the region, they were dismayed to learn how much their traditional grazing areas and livestock corridors – utilized by an estimated 9,400 head of sheep and cattle at the end of each year -- had shrunk, and to understand better why the loss of pasturelands contributed to escalating local conflicts. Leaders from the communes of Damagaram Takaya and Mazamni acted immediately, beginning with measuring and marking perimeters to ensure livestock have adequate room to graze and do not infringe on farmland, and communicating with impacted farmers and herders. The GPS coordinates of the perimeters were taken and the grazing land then legally registered, thereby officially securing land-use rights beyond customary law.

Communes are also using the new land use and land cover maps and knowledge to demarcate “risk areas” – locations that either have experienced or are likely to experience shocks related to droughts, floods, crop infestations or diseases, and epidemics. This enables communities to take measures to arrest deforestation, land degradation, and unchecked housing development, and to identify where infrastructure like water resources is too far from people who need it. Community planners are using the maps to show the public which specific areas are under discussion as risk-prone when explaining their arguments. This has informed community dialogue and improved understanding of where and how communities are at risk and is contributing to evidence-based decisions to prepare for shocks and disasters.

As Albert Einstein once famously said: “You can’t use an old map to explore a new world.” The new USGS maps and analytical skills are helping Nigeriens lay a foundation for resilient, smarter land use planning, to proactively prepare for risks, and improve local capacity to sustainably manage resources.

USAID’s Resilience in the Sahel Enhanced (RISE) project has been implemented in Niger and Burkina Faso since 2012. The second phase, RISE II, continues the same efforts with the overall goal that chronically vulnerable populations in Burkina Faso and Niger, supported by resilient systems, effectively manage shocks and stresses and pursue sustainable pathways out of poverty.

Within RISE II and led by Winrock’s Sustainable Water Partnership, the USAID “TerresEauVie” Activity enhances communes’ self-reliance by making social and ecological systems resilient through three components: (1) Improved water security; (2) Enhanced sustainable productive land use; and (3) Improved management of shocks, risks and stresses.