Innovating for Sustainable Land Management and Restoration in the Sahel Region

Case from the G20 Global Land Initiative,
United Nations Convention to Combat Desertification

United Nations Convention to Combat Desertification | G20 GLOBAL LAND INITIATIVE | START HACK

About the G20 Global Land Initiative

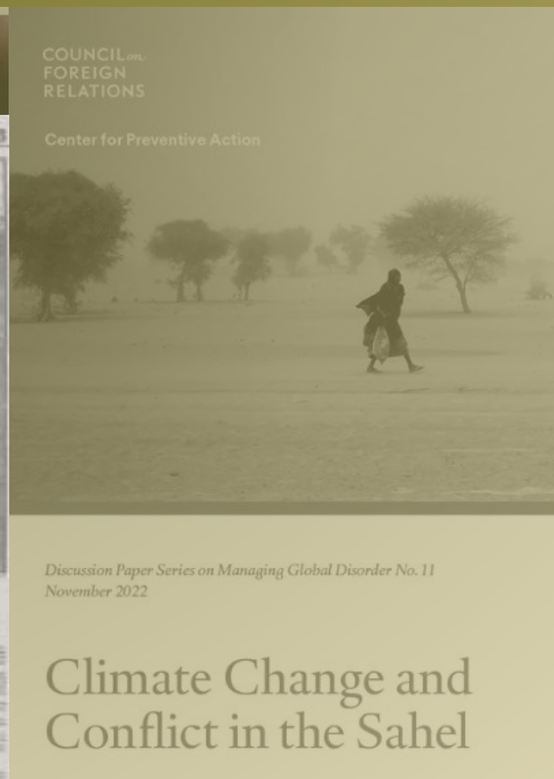
The G20 Global Land Initiative, launched by the United Nations Convention to Combat Desertification (UNCCD), aims to halt and restore 50% of land degradation by 2040, aligning with Sustainable Development Goal (SDG) 15.3.

Pillars of Action

1. **Showcase:** Showcase success stories that benefit nature and safeguard people’s lives, jobs and incomes.
2. **Engage private sector:** Engage the private sector in sustainable land management, land restoration and habitat conservation.
3. **Empower civil society:** Empower civil society and the public on land stewardship for sustainable development.
4. **Share knowledge:** Share knowledge and develop and mobilize capacity between G20 members, non-member countries and other stakeholders to collectively deliver on land conservation and restoration outcomes.

Threat to Sahel: Climate change, Drought and Degradation

- Sahel, semiarid region of western and north-central Africa extending from Senegal eastward to Sudan.
- The Sahel region is a semi-arid belt in Africa with rich ecological and cultural diversity but faces significant challenges.
- Conflicts between farmers, herders, and pastoralist groups arise due to competition over dwindling natural resources like land and water.
- Climate change exacerbates these issues through prolonged droughts, desertification, and land degradation, threatening traditional livelihoods.
- Data and technology, including earth observation and geospatial analysis, help track environmental changes, identify conflict drivers, and support sustainable land



The Hackathon Invites Participants to:

01

Harness global Earth observation data to address key challenges.

02

Promote land restoration, climate impact mitigation, and community resilience.

03

Foster collaboration through environmental science, technology, and social insights.

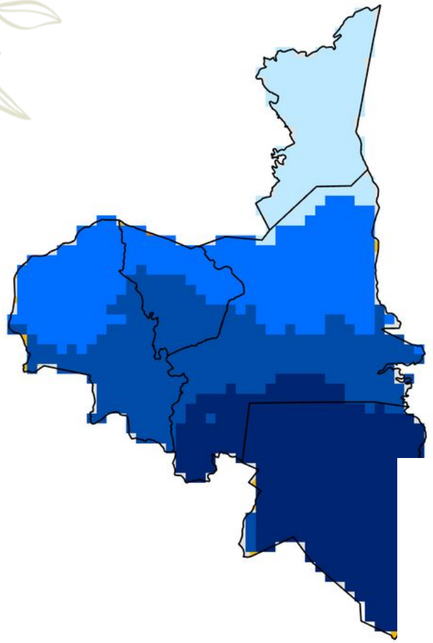
04

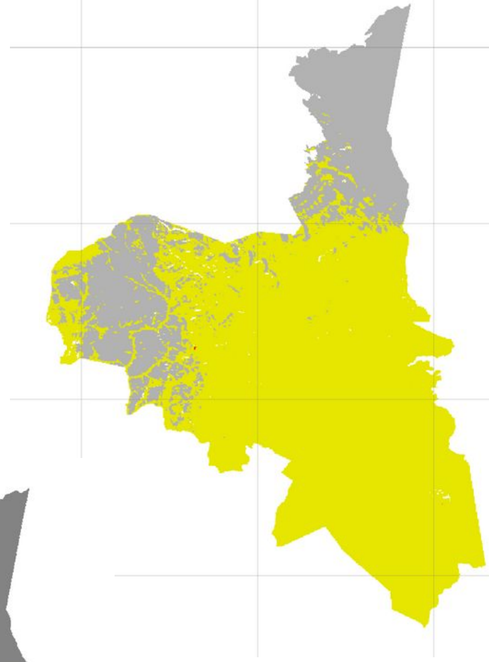
Drive meaningful change for a sustainable and equitable future.

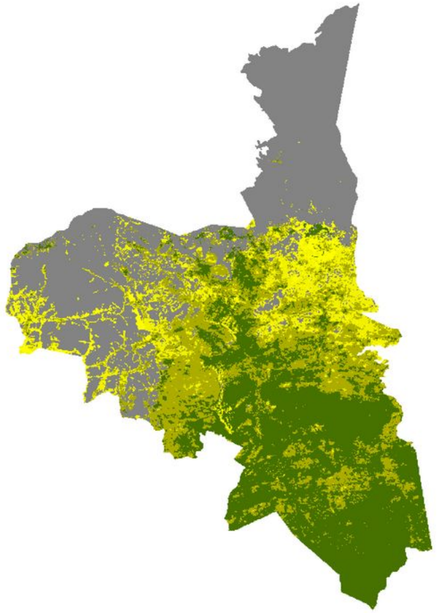
Data Provided

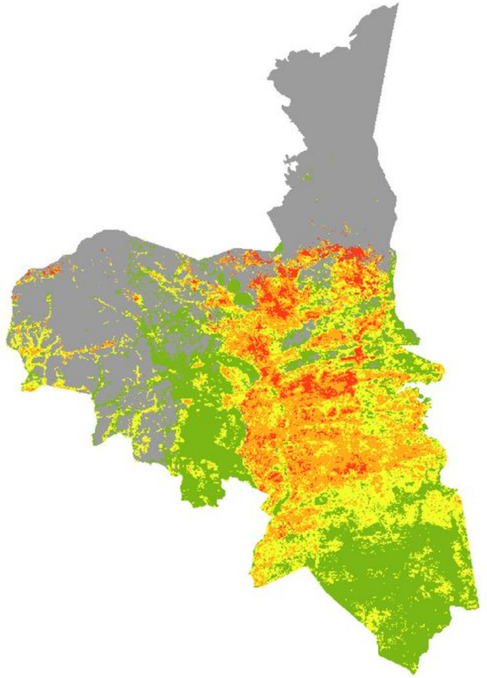
Moderate Resolution Imaging Spectroradiometer (MODIS) Land Cover Type (MCD12Q1) (20 years):	A comprehensive dataset of land cover changes over the past two decades, allowing participants to identify trends in deforestation, urban expansion, water body outlines/quality, and desertification
Climate Precipitation Data from CHIRPS: Rainfall Estimates from Rain Gauge and Satellite Observations (20 years):	Data on rainfall patterns to understand how changing climate conditions contribute to land degradation, water quality issues, and agricultural challenges.
Administrative Boundaries:	Geospatial data on national and sub-national boundaries to help localize trends and identify regions most affected by land-use changes.
WorldPop gridded population estimate:	Information on population density to assess the relationship between human activity and environmental degradation
Road Network Data:	Insights into the role of infrastructure development in driving deforestation and changes in land use.

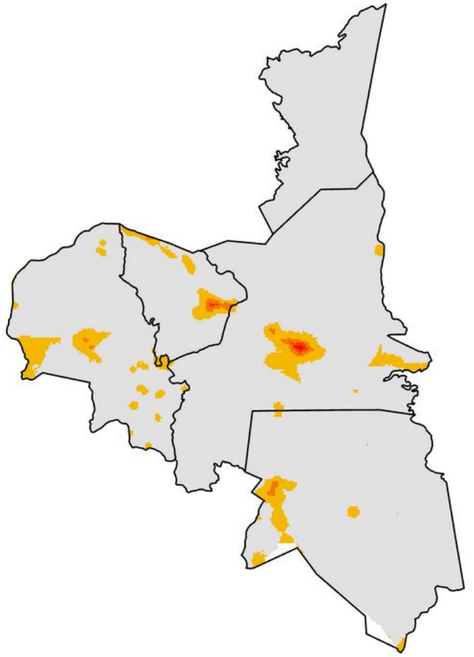
Layers of the datasets provided











Key Insights We Aim to Uncover in This Hack Case

What are the key trends and primary drivers of land cover changes over the past two decades?

What are the hotspots of change in vegetation productivity, and how has urban expansion influenced these patterns?

How can Earth observation data, scientific insights, and social understanding—help inform sustainable land management strategies?

How can dashboard solutions be leveraged to visualize and assess ecosystem health?

How can this integration empower stakeholders, and provide a replicable framework for other comparable challenges?

Final Product and Solution

- *Analytics Tool/Results*
- *Dashboard of Metrics*
- *District Profile*

Judgement Criteria

Judgment criteria are important for the participants to understand the focus of the case. You could either focus more on the technical aspect (coding and programming), on the business aspect (product fitting in the market), or it can be both.

20%	Creativity and Storytelling
20%	Visual design
20%	User friendly and Scalability
20%	Use of the data provided
20%	Use of Additional data

Project Draft Submission

1. Approach
2. Expected outcomes
3. Methodology used thus far

End Presentation

Each team will be given 10 mins where the time is divided as following

1. Seven mins pitch of the case with a demo of the prototype. This 7 mins will include introduction to the: a. Talk about the end users targeted. b. Show how you have used the data sets along with the methodology c. Explain the story line d. Show the prototype
2. Five mins discussion session

Prize for the winning team

DJI Mini 4K Drones

A trip to a sponsored United Nations international event