

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 Sahel



CONVERGING CHALLENGES, COMPOUNDING RISKS A REGION UNDER HIGH PRESSURE

In the Sahel, extreme poverty, fast-growing populations, climate change, recurrent food and nutrition crises, armed conflicts and insecurity are building up to a perfect storm threatening the lives of communities already living on the brink of crisis.

The region is one of the world's **climate change hotspots**. Increasingly unpredictable weather patterns, more frequent droughts and floods and land degradation threaten the livelihoods of a population in which the majority

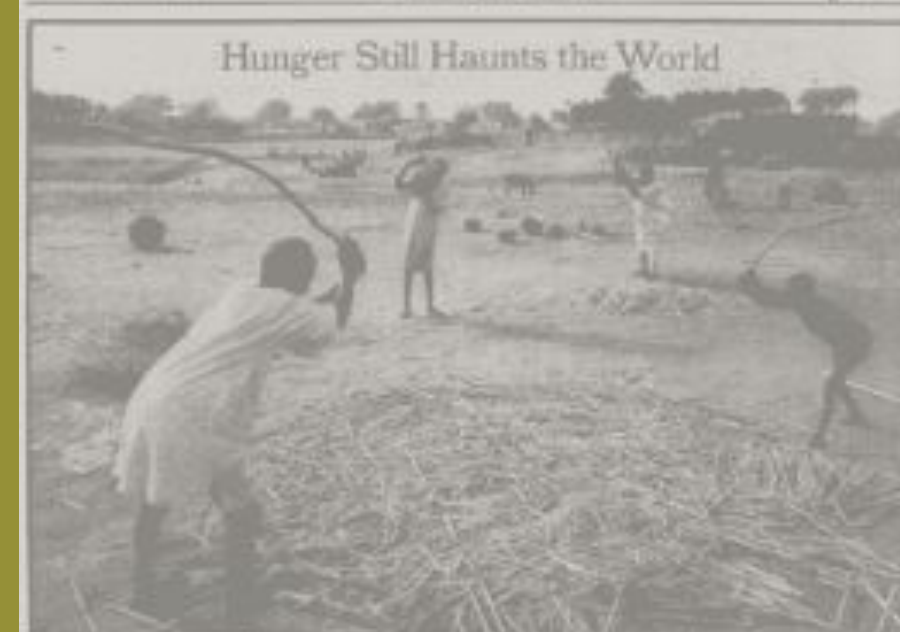
relies on agriculture for survival. Environmental shocks, insecurity, chronic hunger and malnutrition have a dangerously symbiotic relationship in the Sahel. A **spike in armed conflict and violence** worsens the Sahel's chronic hardship and has led to new peaks in displacement across the region. Lack of opportunities and unemployment, deteriorating security, economic and social inequality expose youths to risks of radicalization and recruitment. Many seek brighter

prospects elsewhere, fueling the **global migration crisis**.

Faced with serious threats, Governments risk channeling more resources to address security challenges at the expense of social development. Past gains and future development prospects are at stake. If these challenges remain unaddressed, the prospects for the region are dire, and the most vulnerable communities will suffer the most.



THE NEW YORK TIMES



COUNCIL ON
FOREIGN
RELATIONS

Center for Preventive Action



Discussion Paper Series on Managing Global Disorder No. 11
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Climate Change and Conflict in the Sahel



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.

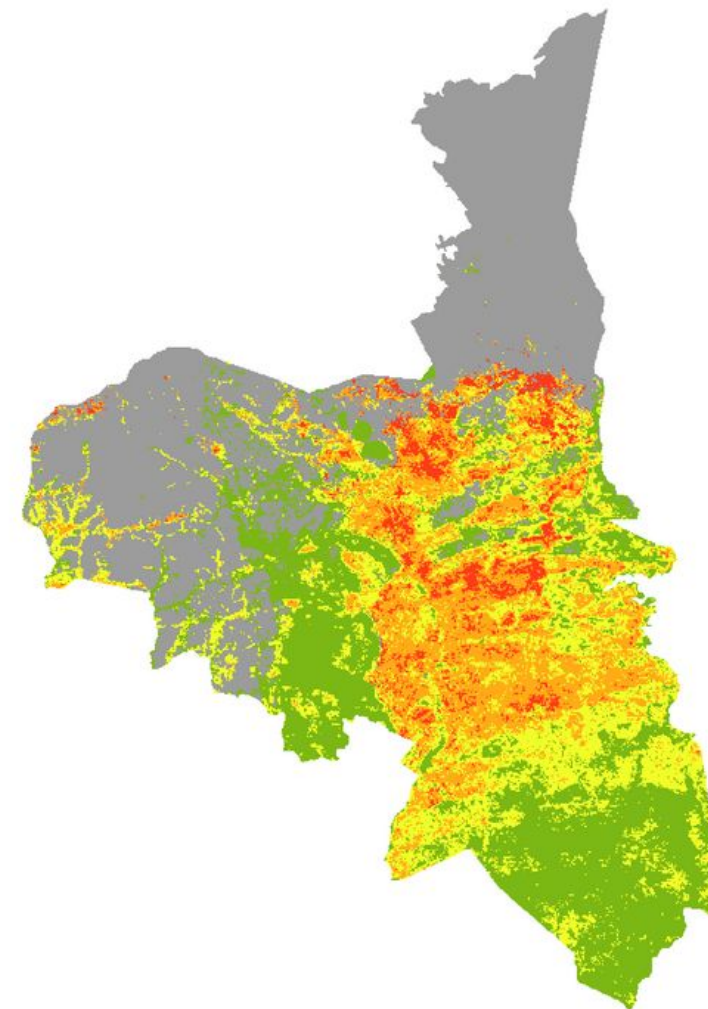
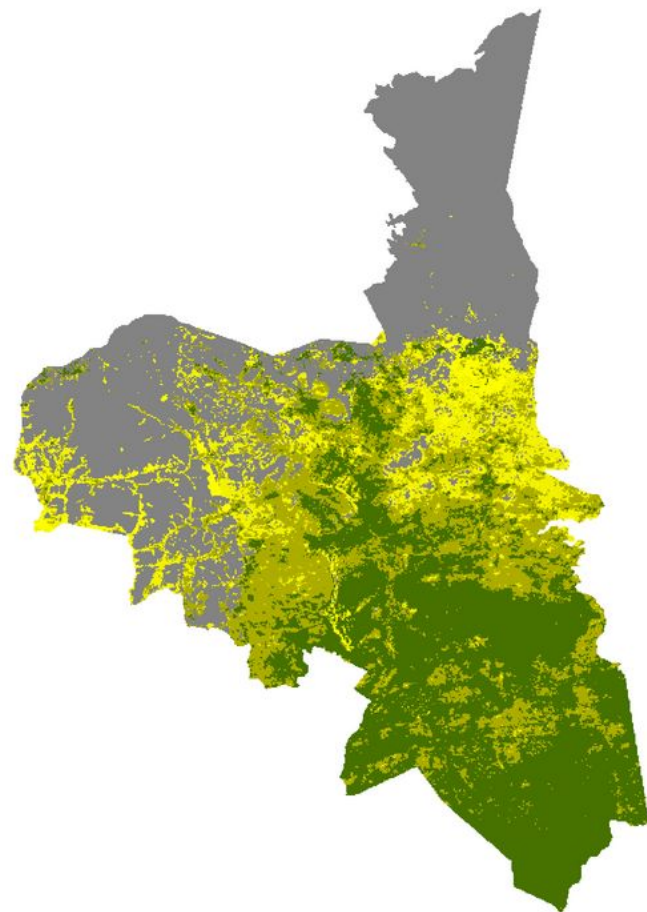
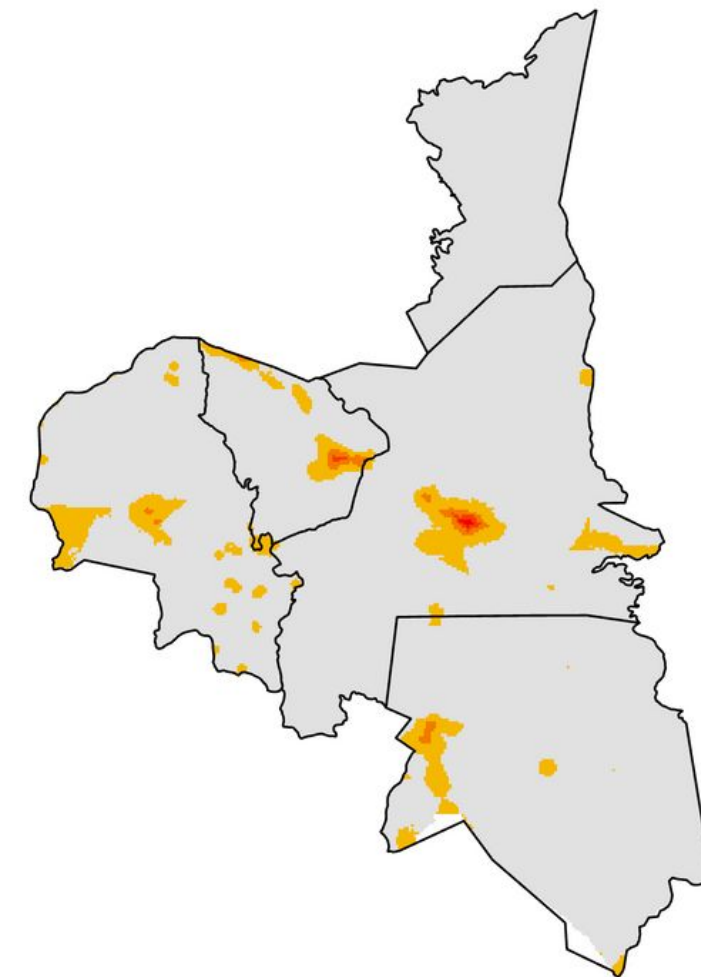
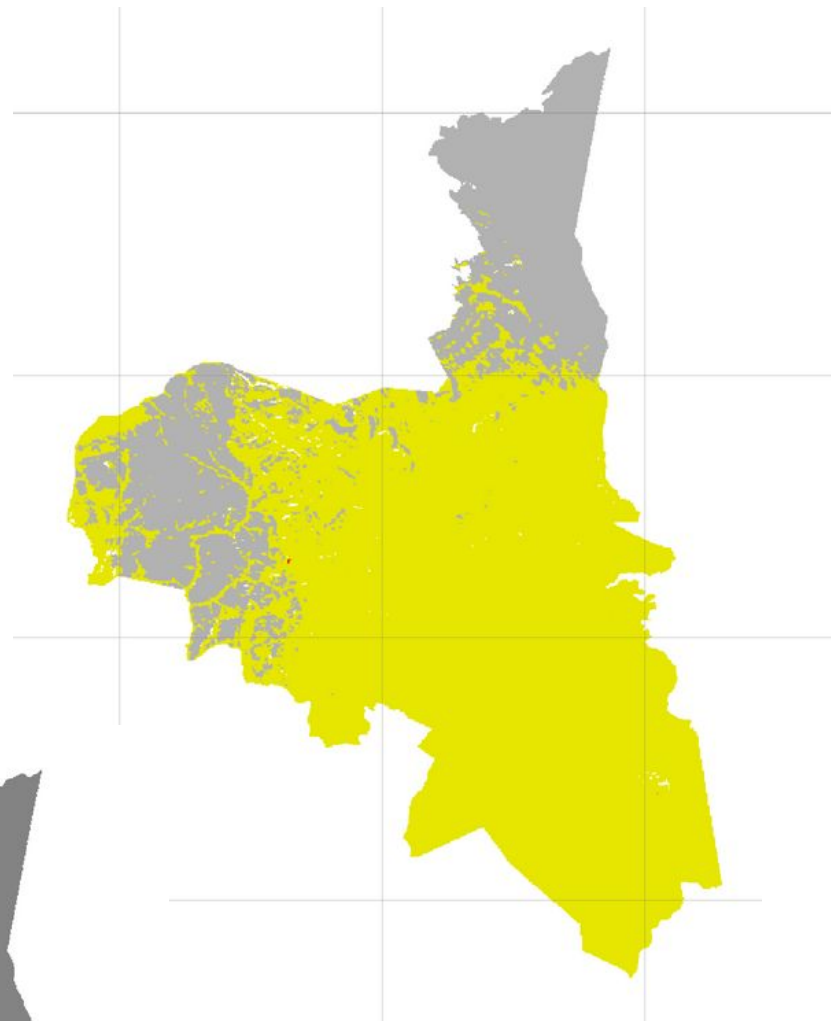
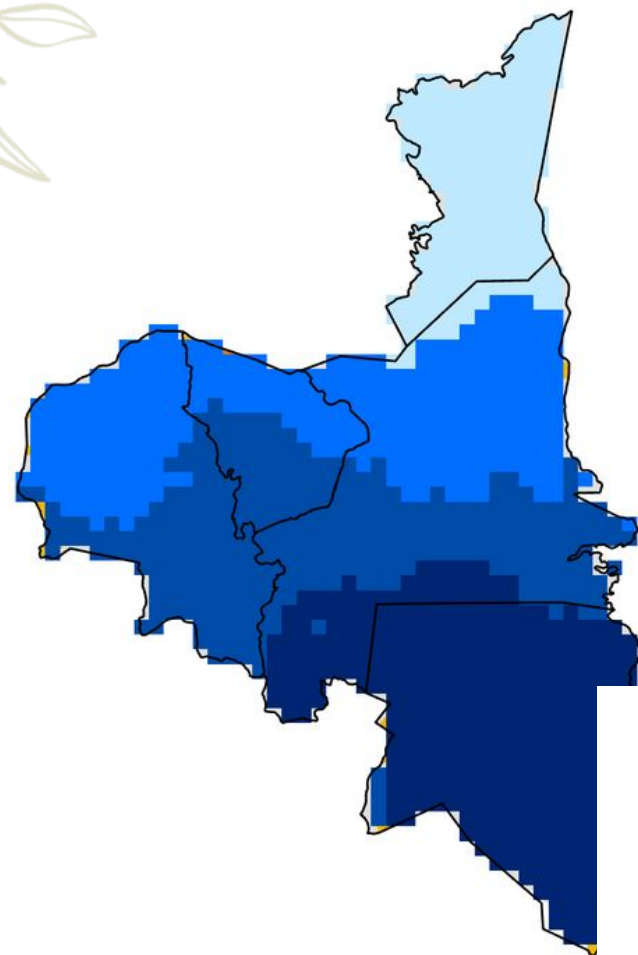
**The Hackathon
Invites Participants
to:**



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