



Department of Information Engineering and Computer Science
Bachelor's Degree in Computer Science

Food Security and Conflicts: the case of Liptako-Gourma

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FAO REOWA

Internship at FAO-REOWA Dakar, Senegal

- Resilience, Emergency and Rehabilitation
- Regional Office for West Africa/Sahel



1. Help eliminate hunger, food insecurity and malnutrition



2. Make agriculture, forestry and fisheries more productive and sustainable



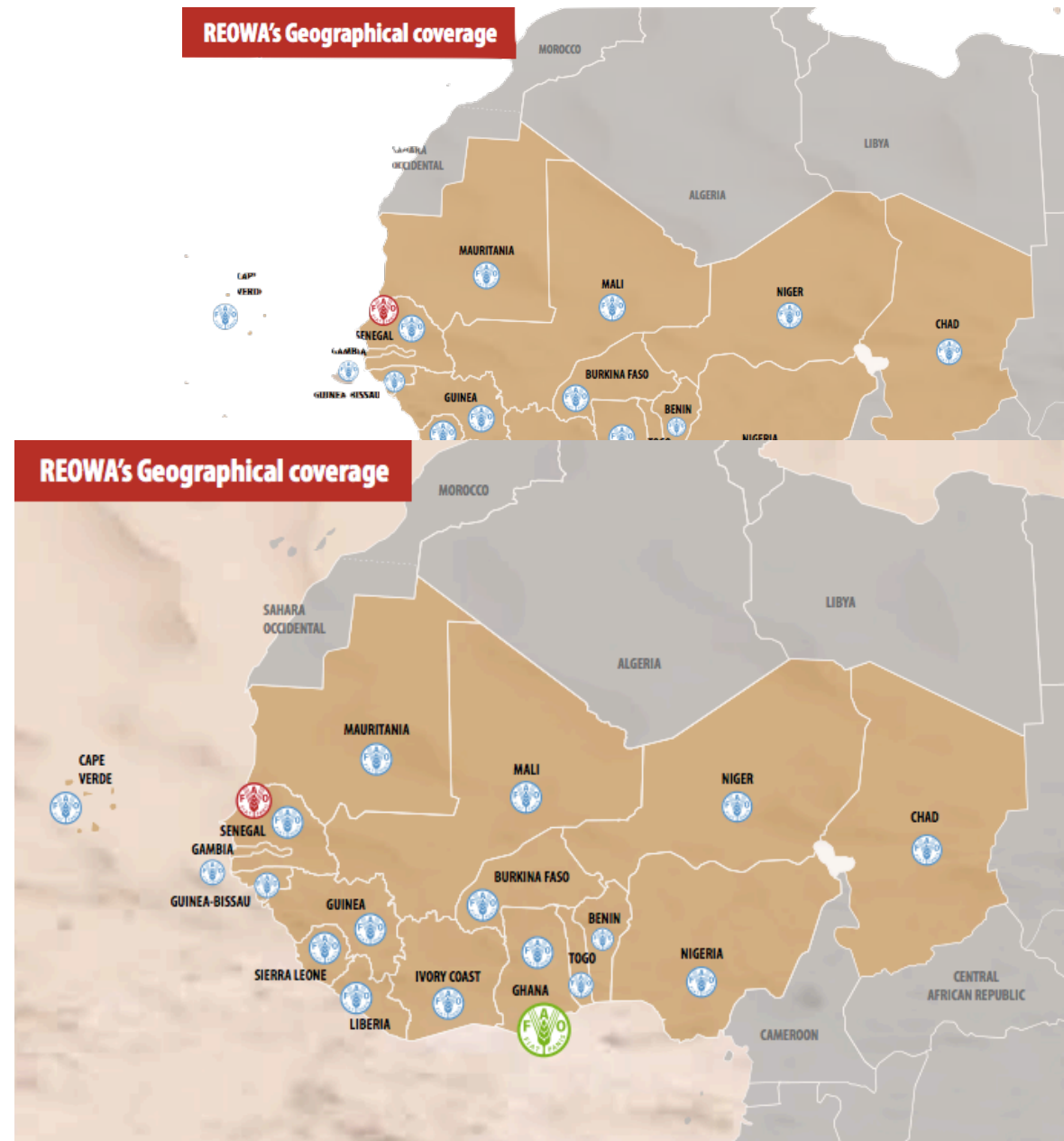
3. Reduce rural poverty



4. Enable inclusive and efficient agricultural and food systems



5. Increase the resilience of livelihoods from disasters



HOW TO INCREASE RESILIENCE

Govern Risks and Crises

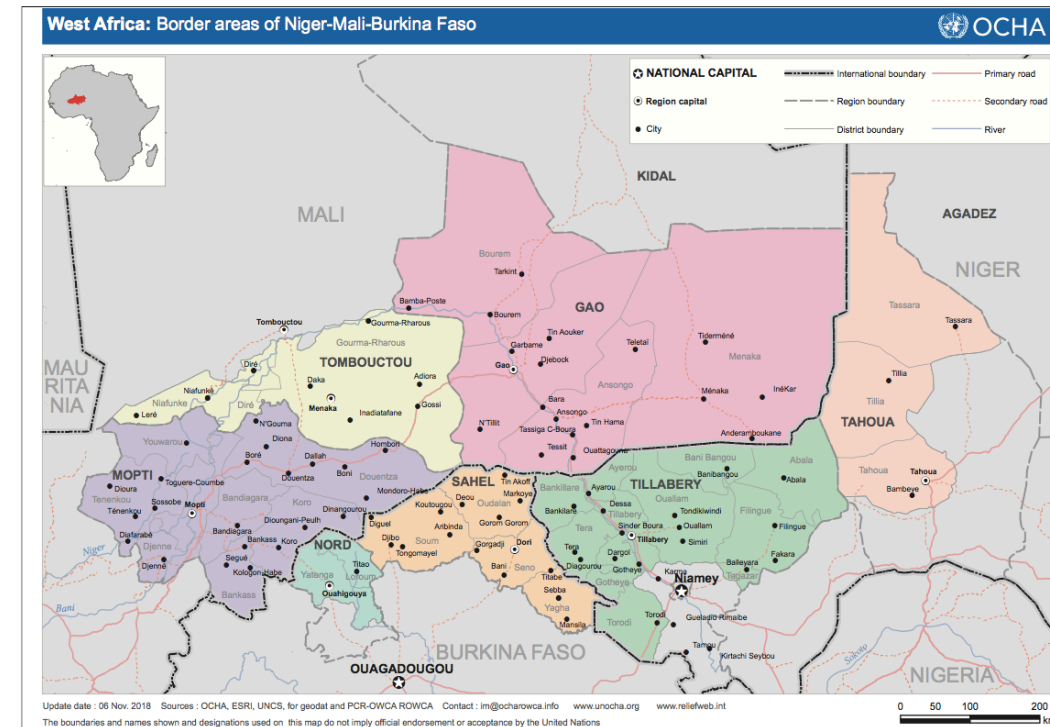
Watch to Safeguard

Apply Prevention and Mitigation Measures

Prepare and Respond to Crises

LIPTAKO-GOURMA

- A landlocked area cross-bordering Burkina Faso, Mali and Niger
- 524,000 km²
- 9.44 million people
- Agro-pastoral subsistence economy
- Malian crisis 2012-2013
- Rise in conflicts since 2018
- Lack of food security and stability by governments



DATA GATHERING

Open Data, at sub-national level:

Cadre Harmonize - Food Security and Nutrition
Working Group West and Central Africa

Millet Prices - World Food Program (WFP)

Violent Conflicts - ACLED Project

Internal Displaced Persons (IDPs) - International
Organization for Migration (IOM)

HOW TO INCREASE RESILIENCE

- **Food Insecurity:** percentage of food insecure people
- **Food Access:** average annual food prices
- **Food Stability:** food prices stability

- **Conflict Size:** number of fatalities
- **Conflict Severity:** fatalities divided by conflicts

- **IDPs Size:** number of IDPs

RESERACH QUESTIONS

For the 3 most afflicted provinces:

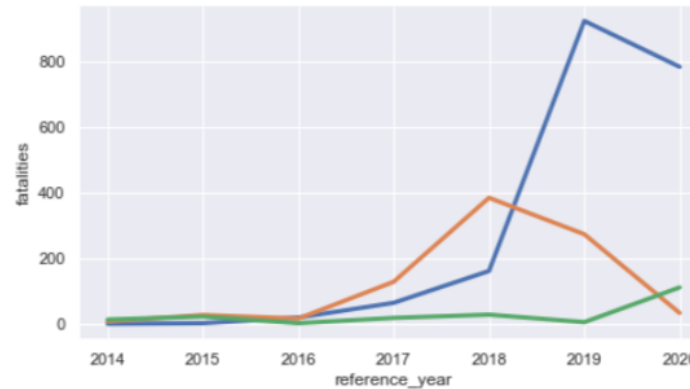
- What can you infer from the comparison of the provinces dimensions in 2020?
- How did each province dimension evolve through the years since 2014?

For the 3 countries:

- How does the food insecurity-conflicts dimensions correlate?

EMPIRICAL ANALYSIS

Conflicts Size: number of fatalities



All the dimensions grew since 2016

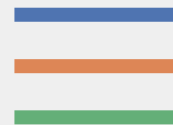
Menaka's Conflict Size started decreasing in 2018

Food Insecurity: percentage of people

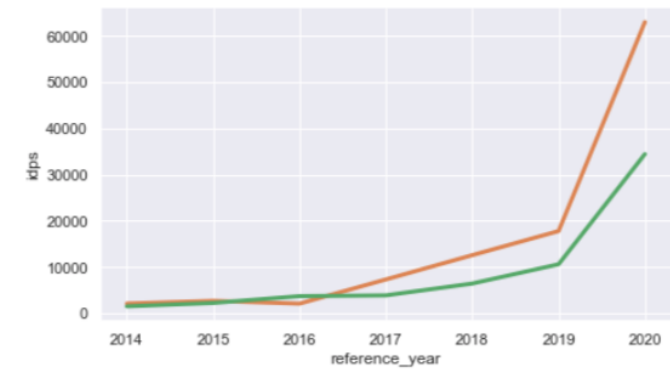


Legend:

- Soum
- Menaka
- Bourem



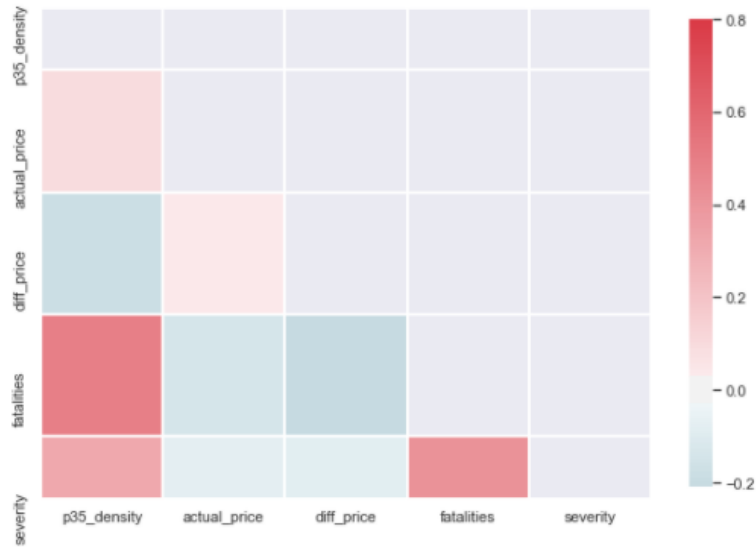
IDPs Size: number of IDPs (only for Mali's provinces)



CORRELATION

	p35_density	actual_price	diff_price	fatalities	severity
p35_density	1.000	0.095	-0.186	0.498	0.324
actual_price	0.095	1.000	0.045	-0.141	-0.077
diff_price	-0.186	0.045	1.000	-0.210	-0.080
fatalities	0.498	-0.141	-0.210	1.000	0.414
severity	0.324	-0.077	-0.080	0.414	1.000

Correlation table for Liptako-Gourma



Correlation graph for Liptako-Gourma

Food Insecurity, Conflict Size, Conflict Severity and IDPs Size are solidly correlated

Average Food Prices and Food Prices Stability are not correlated with the other dimensions

NEXT STEPS

Amplify the Food Prices dimensions to a vector of variables (cereal prices, livestock prices, average income, income variance)

Livestock open data is missing

Amplify IDPs dimension to Burkina Faso and Niger too

Burkina Faso's open data available since 2020, Niger data is missing

An expansion of the open data is necessary to better describe the food insecurity-conflict vicious cycle

TAKE HOME MESSAGES

The food security-conflict vicious cycle that is hampering the region of Liptako-Gourma feeds himself.

A plan of humanitarian intervention which aims to strengthen the resilience of the countries is crucial to break the vicious cycle of food insecurity and conflicts.

THANK YOU

Photos: Alfredo Cáliz
Locations: Mali

