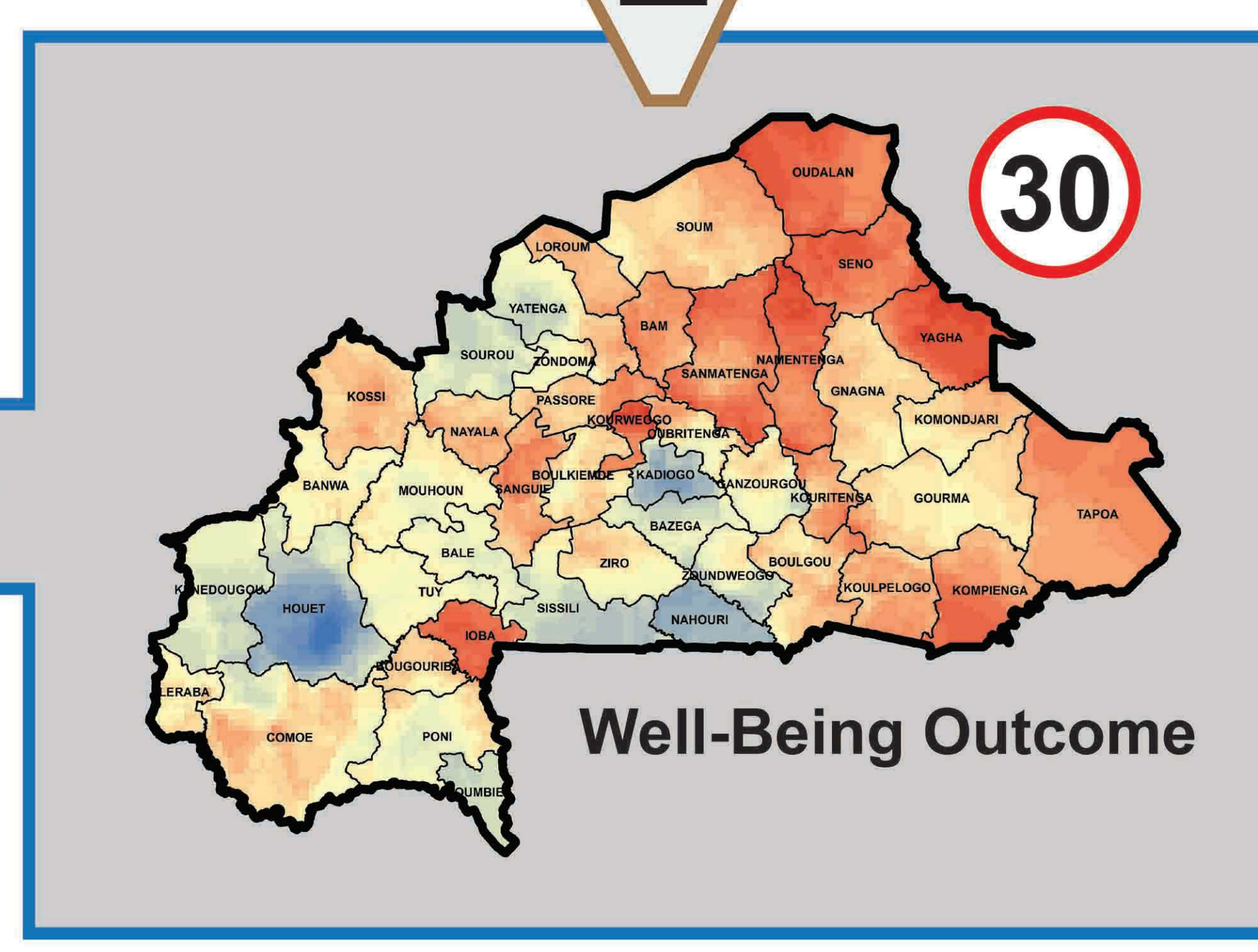
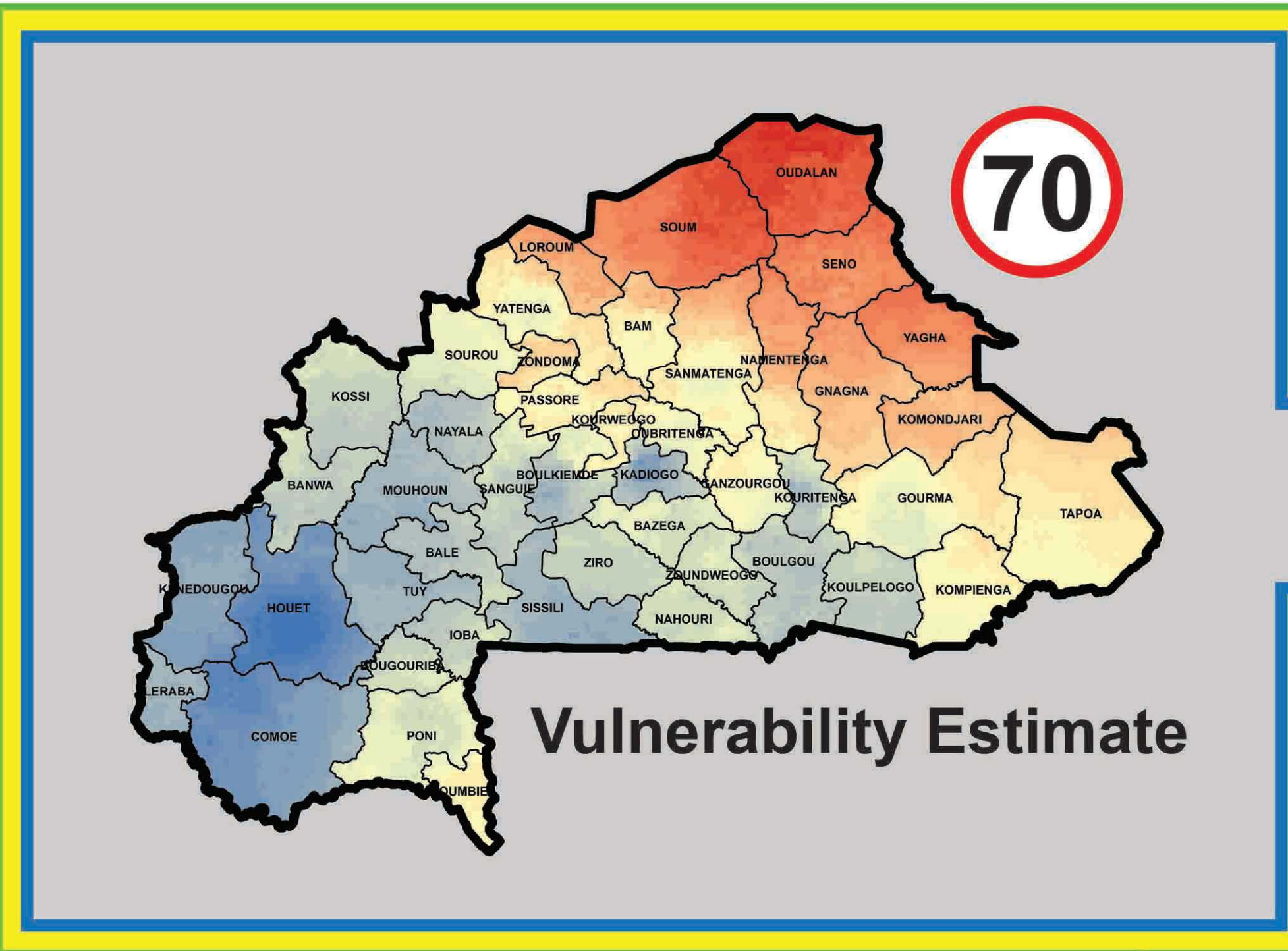
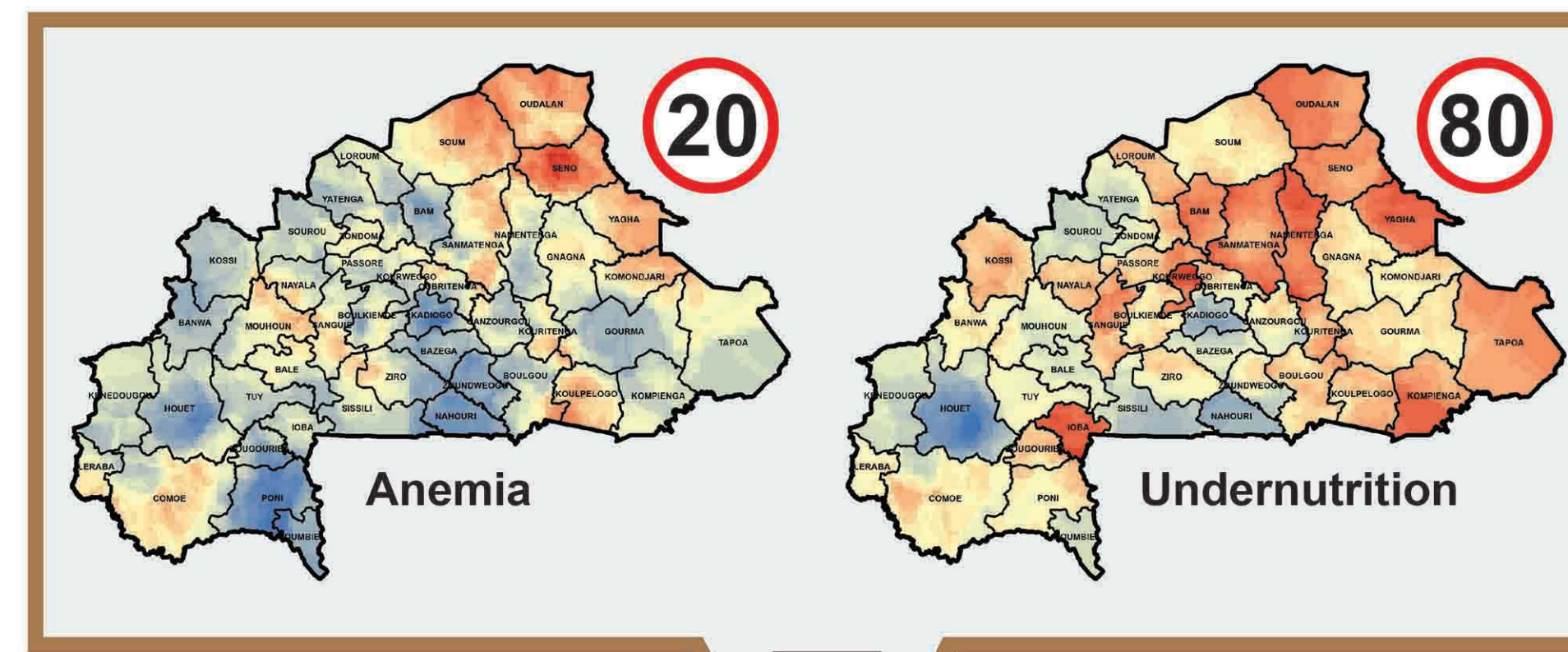


Structural Vulnerability Map of Burkina Faso - Feb. 2015

Definition of Structural Vulnerability:

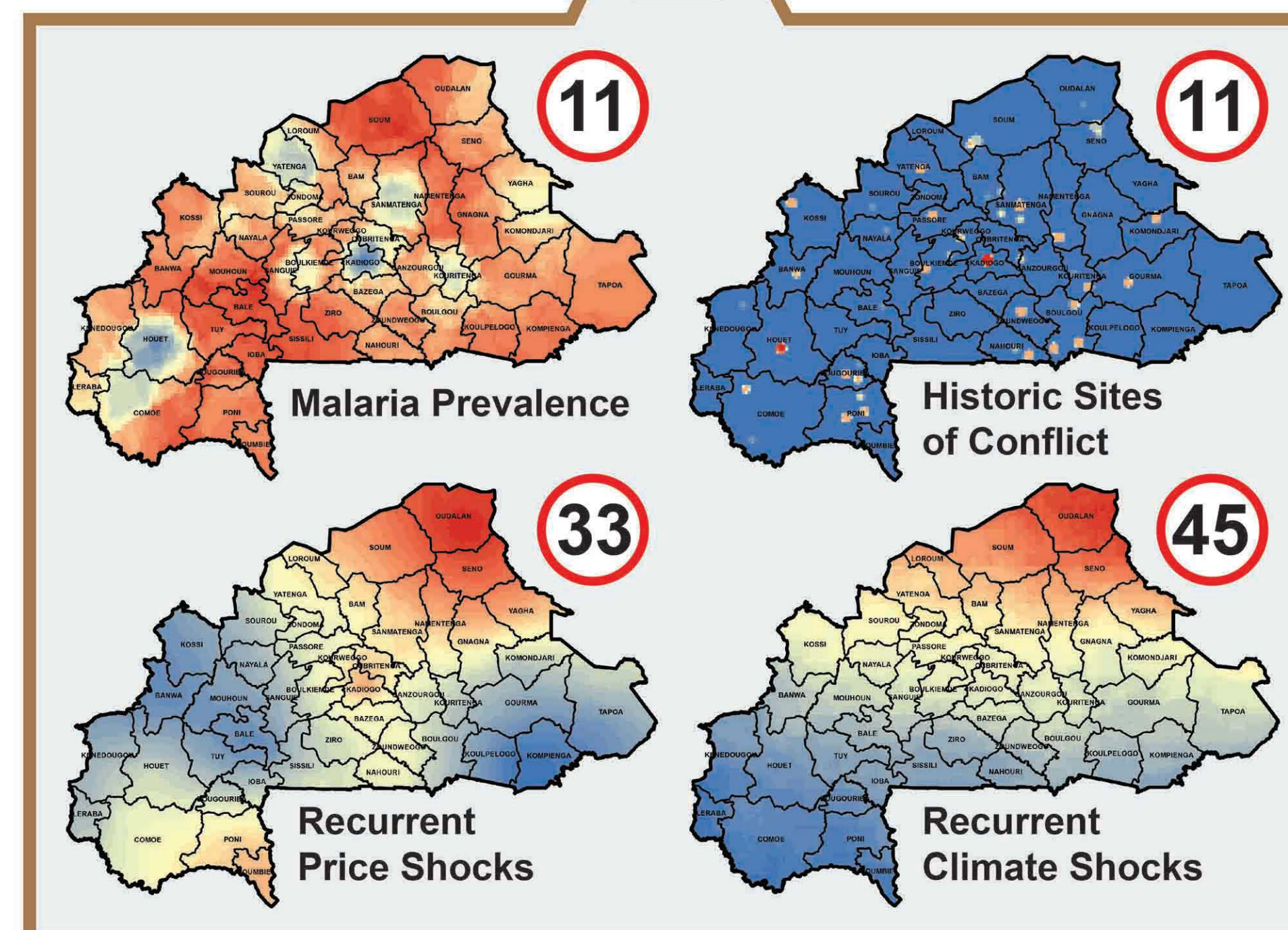
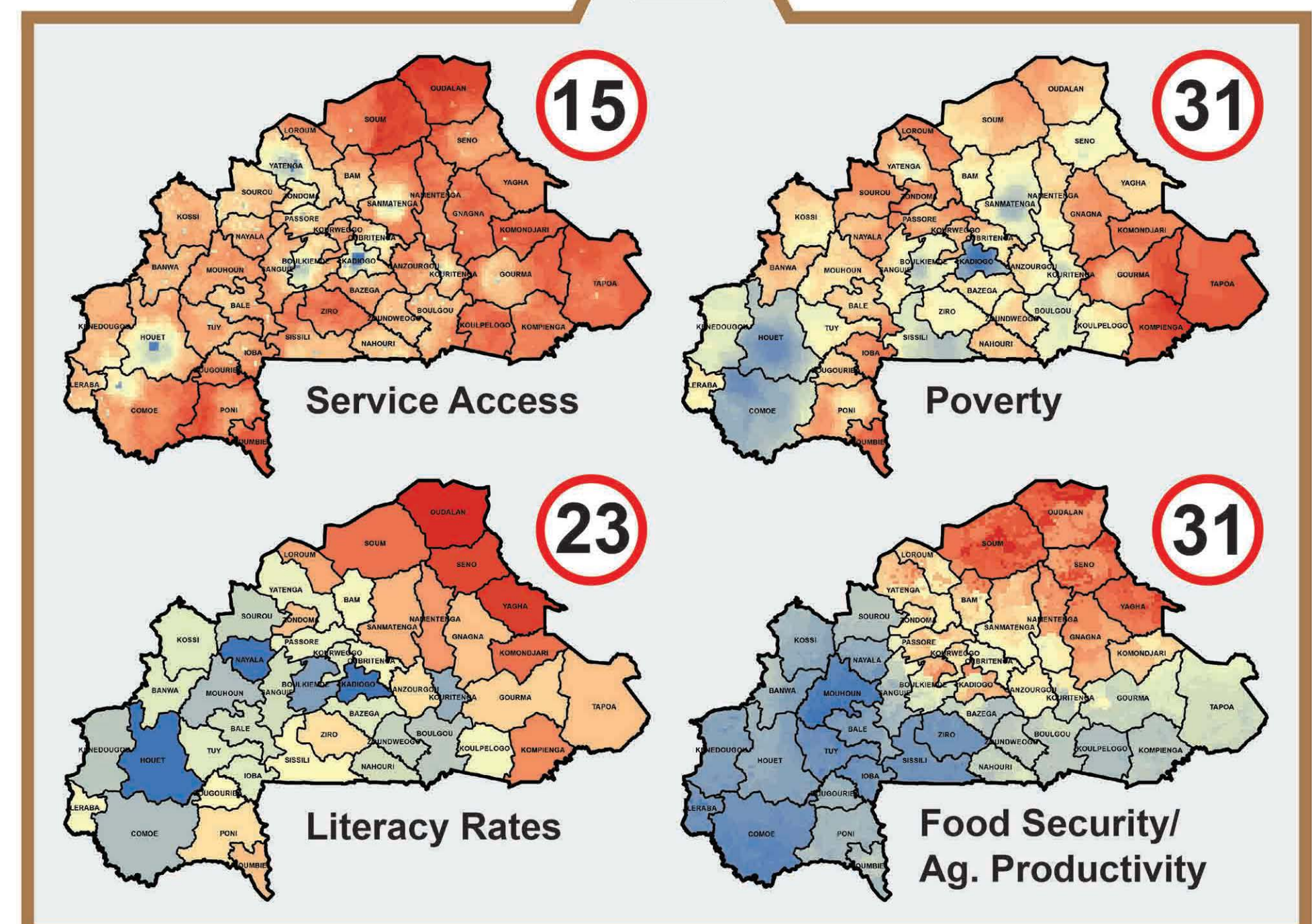
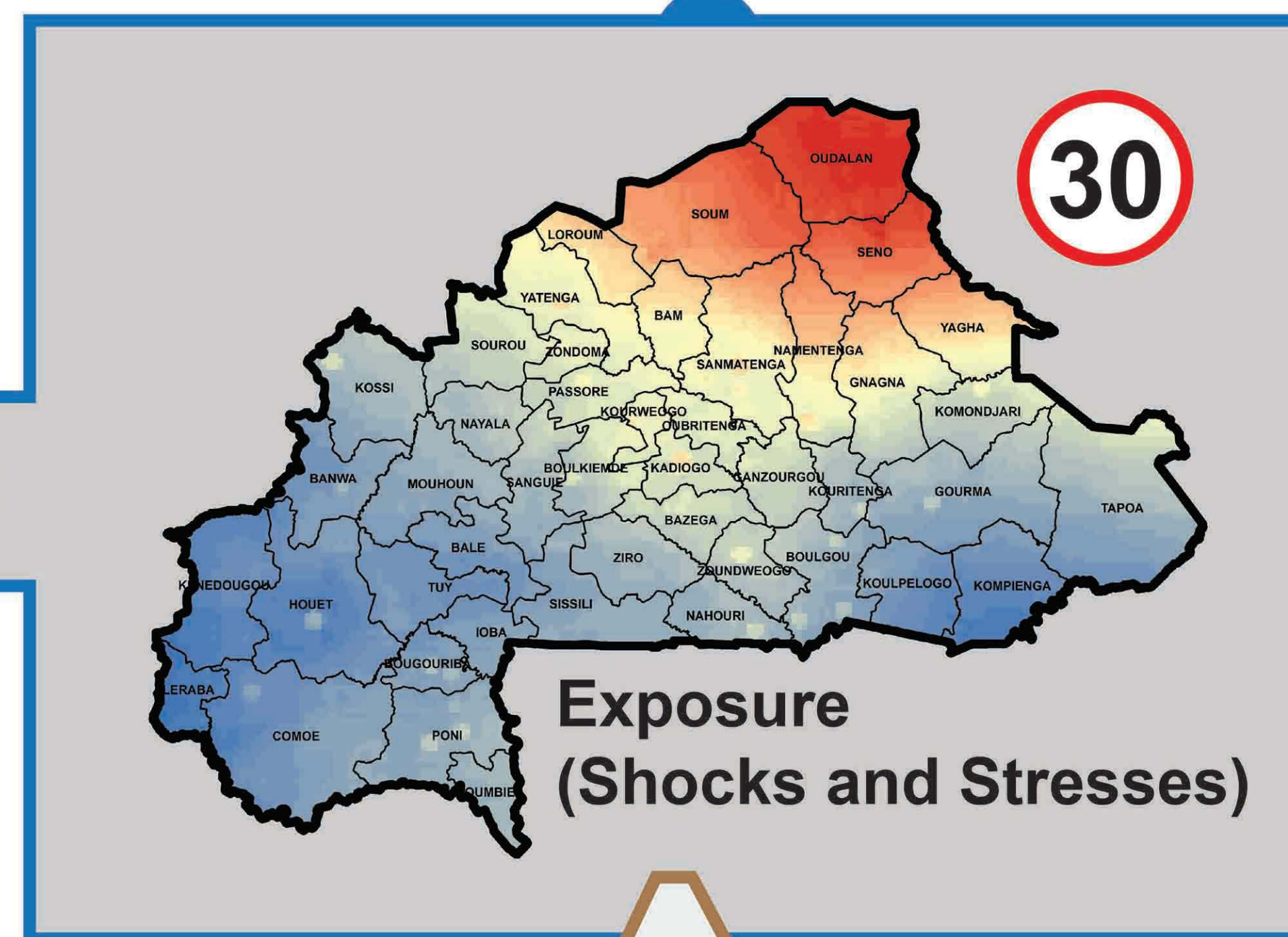
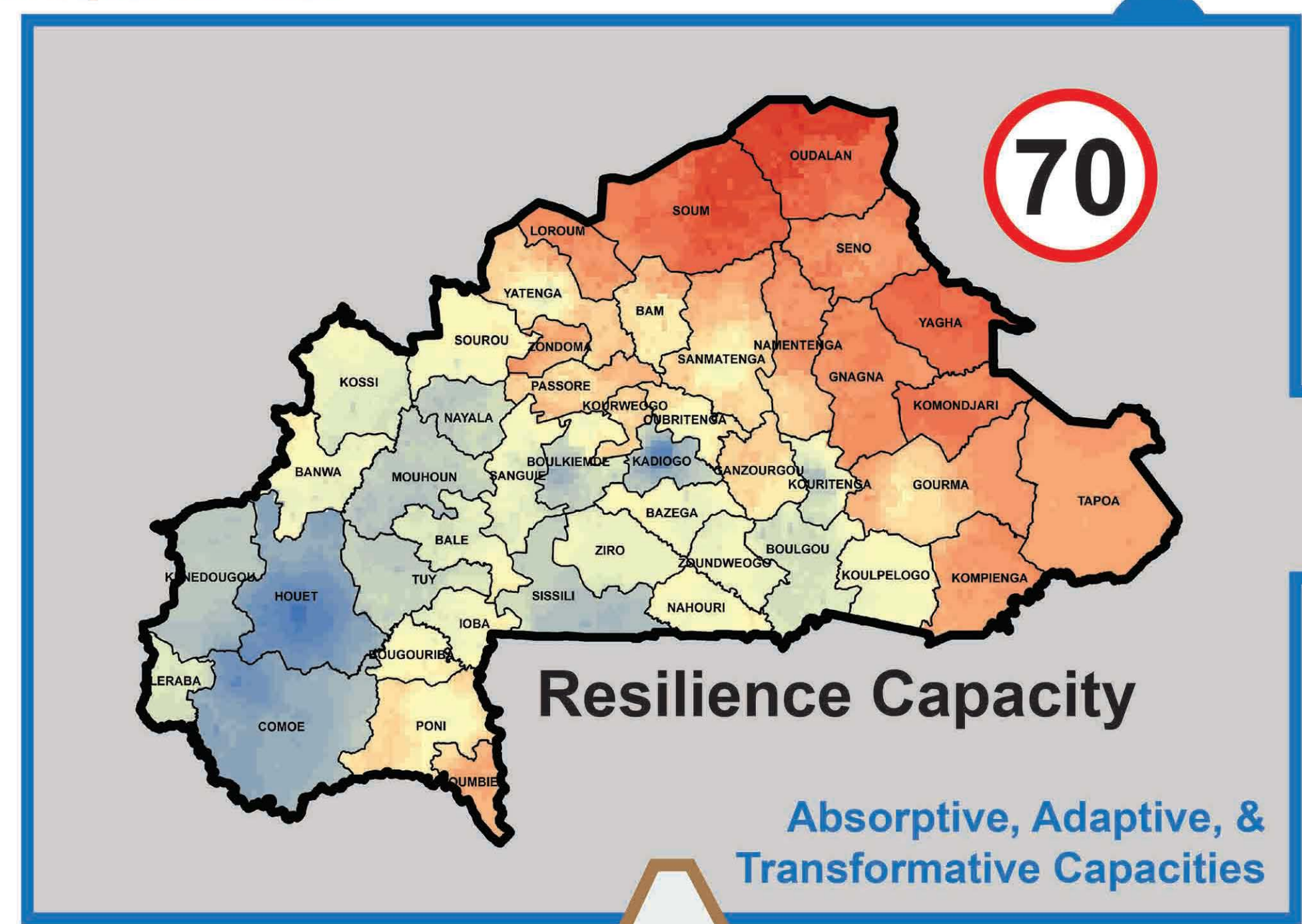
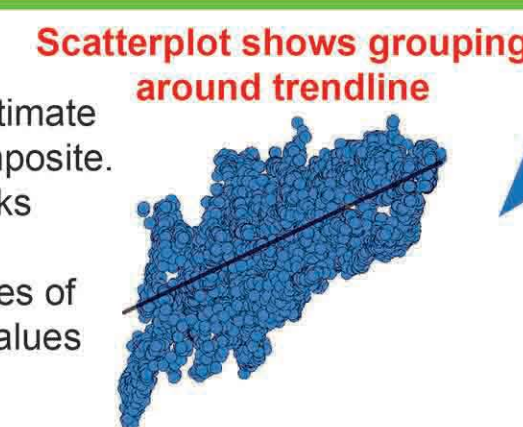
Structural vulnerability is a tendency to be in a state of high-risk to negative well-being outcomes (ie. undernutrition, anemia) on account of persistent exposure to various potential shocks (ie. climatic, price) in combination with a chronic resilience deficit (ie. lack of absorptive, adaptive and transformative capacities).



Linear Regression Analysis:

A linear regression was run to determine how well the Vulnerability Estimate composite model predicts (correlates to) the Well-Being Outcome composite. The assumption is that if Resilience Capacities and Exposure to Shocks and Stresses are combined to form a Vulnerability Estimate, the vulnerable zones identified therein should correlate to geographic zones of negative well-being outcomes (ie. undernutrition). Modeled grid cell values from both geographic models were used for the regression analysis.

R-Squared = 0.39



Purpose of Map:

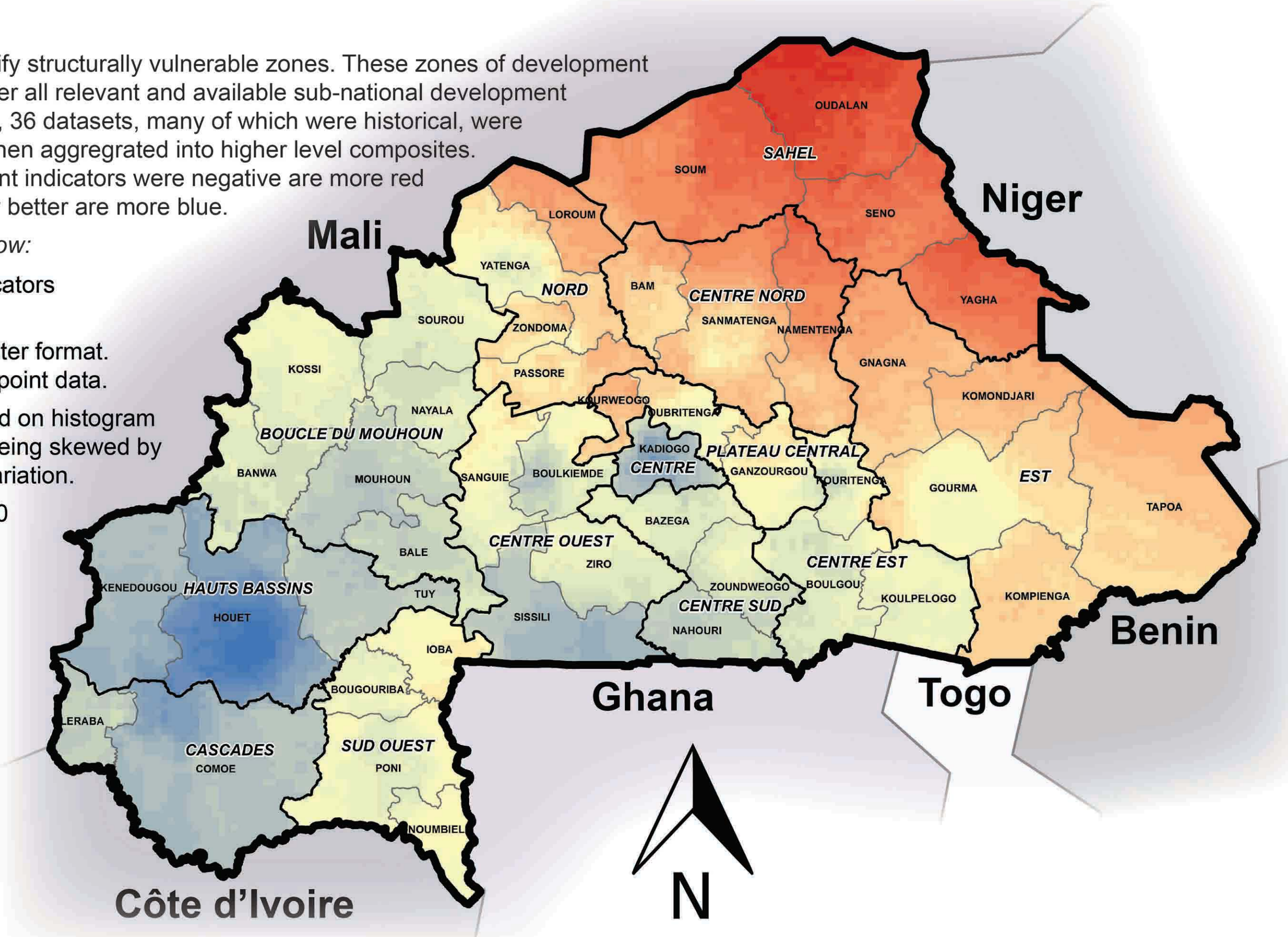
The purpose of the final vulnerability map is to better identify "hotspots" of structural vulnerability in order to better geographically target longer term resilience investments (development adapted to vulnerable contexts) where the need is greatest. Improved geographic targeting of the most vulnerable is critical to decision making regarding strategic investments for resilience and redressal of social justice related grievances which may lead to conflict.

Basic Methodology:

Big data analytics were leveraged to identify structurally vulnerable zones. These zones of development need were calculated by averaging together all relevant and available sub-national development indicators across a broad spectrum. In all, 36 datasets, many of which were historical, were aggregated into composites, which were then aggregated into higher level composites. Geographic areas where most development indicators were negative are more red and areas where indicators were relatively better are more blue.

Basic data processing steps are listed below:

- 1) Identify most relevant sub-national indicators available for the analysis.
- 2) Convert each geographic dataset to raster format. Use Kriging interpolation in the case of point data.
- 3) Winsorize data where appropriate based on histogram analysis. This prevents the data from being skewed by outlier data and amplifies geographic variation.
- 4) Rescale all datasets to a common 0-100 scale so that they are comparable for averaging to create composites.
- 5) Average datasets using weighting based on consensual subject matter expert judgement to create composites.



Final Vulnerability Map

Legend:

how to read this infographic

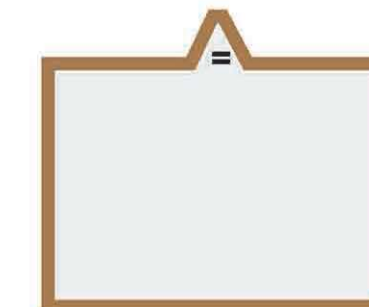
- 1) Red Zones on all maps are most vulnerable and the blue zones represent least vulnerable relatively.



- 2) Boxes with blue border contain composite index maps. The + sign between composite maps signifies that they are averaged together to form yet another composite map. Follow the arrow symbol with = sign to see which composite they create when averaged together.



- 3) Boxes with brown border contain sub-composite index maps. All sub-composite maps in brown bordered boxes are averaged together to form the composite maps they feed into (see the tip of brown box with = sign in it). It should be noted here that subcomposite maps in this infographic are based on other component maps not visualized on this infographic. The table at right gives the specifics about datasets used and the nature of the components maps that were aggregated using a weighted average to produce the subcomposite maps you see in this infographic.



- 6) Numbers in red circles represent relative weighting of each composite or subcomposite as it contributes to the average. Weightings are represented as a percentage out of 100%. The reason that some of the weightings are odd numbers is because they were derived from an initial intuitive weighting based on double-weighting, half-weighting, one and a half weighting etc., based on a group consensus of subject matter experts. These informal weightings were then converted to a percentage of 100 to calculating weighted averages to form composites.

XX

For more information:
 Jeremy Chevrier
 USAID/Senegal
 Sahel Regional Office
 JChevrier@usaid.gov
 or
 Siaka Millogo
 USAID/Burkina Faso
 Millogos@state.gov

Top 50 Most Vulnerable Communes

Rank	Department	Province	Region	Vulnerability Score	POP (2005 Census)
1	THIASSALÉ	Doubaire	SAHEL	95.9	21,013
2	DIOUHA	Doubaire	SAHEL	91.5	75,173
3	DIOUHA	Doubaire	SAHEL	91.9	15,566
4	GORKOM-GORKOM	Doubaire	SAHEL	88.8	104,346
5	MAKROUFI	Doubaire	SAHEL	88.5	27,478
6	KOUDOUSSOU	Sourou	SAHEL	88.4	18,005
7	TITARE	Yagha	SAHEL	87.5	20,039
8	PANZOURGOU	Sourou	SAHEL	86.5	18,180
9	PANZOURGOU	Yagha	SAHEL	85.2	18,433
10	ABIMBINE	Sourou	SAHEL	84.5	25,000
11	SIBBA	Yagha	SAHEL	84.1	52,374
12	BOURKIBRE	Sourou	SAHEL	83.9	22,773
13	BOURKIBRE	Sourou	SAHEL	83.7	29,913
14	DOUHA	Sourou	SAHEL	82.6	103,808
15	SOTYENGA	Sourou	SAHEL	82.2	11,385
16	BOURKIBRE	Centre Nord	SAHEL	81.6	46,232
17	BOURKIBRE	Yagha	SAHEL	81.1	25,100
18	NAKINGOUA	Centre Nord	SAHEL	80.9	16,004
19	DIAMPELLE	Sourou	SAHEL	80.6	19,277
20	LONGOUANVILLE	Sourou	SAHEL	80.2	70,172
21	NAKINGOUA	Sourou	SAHEL	80.1	20,186
22	BANI	Sourou	SAHEL	79.6	59,278
23	VALLE	Centre Nord	SAHEL	78.7	31,643
24	BELO	Sourou	SAHEL	78.3	24,557
25	MANSLA	Sourou	SAHEL	78.2	42,805
26	PIRE	Centre Nord	SAHEL	77.9	26,138
27	LONGOUANVILLE	Sourou	SAHEL	76.3	60,042
28	DOUHA	Centre Nord	SAHEL	76.2	20,707
29	DOUHA	Sourou	SAHEL	75.0	8,989
30	TOUSSOURI	Centre Nord	SAHEL	74.4	76,824
31	DOUHA	Sourou	SAHEL	72.8	17,536
32	BARANDELE	Sourou	SAHEL	72.0	29,883
33	BARANDELE	Centre Nord	SAHEL	71.8	42,052
34	BARANDELE	Centre Nord	SAHEL	71.8	29,883
35	BARANDELE	Centre Nord	SAHEL	71.8	42,052
36	BARANDELE	Centre Nord	SAHEL	71.8	42,052
37	BARANDELE	Centre Nord	SAHEL	71.8	42,052
38	BARANDELE	Centre Nord	SAHEL	71.8	42,052
39	BARANDELE	Centre Nord	SAHEL	71.8	42,052
40	BARANDELE	Centre Nord	SAHEL	71.8	42,052
41	BARANDELE	Centre Nord	SAHEL	71.8	42,052
42	BARANDELE	Centre Nord	SAHEL	71.8	42,052
43	BARANDELE	Centre Nord	SAHEL	71.8	42,052
44	BARANDELE	Centre Nord	SAHEL	71.8	42,052
45	BARANDELE	Centre Nord	SAHEL	71.8	42,052
46	BARANDELE	Centre Nord	SAHEL	71.8	42,052
47	BARANDELE	Centre Nord	SAHEL	71.8	42,052
48	BARANDELE	Centre Nord	SAHEL	71.8	42,052
49	BARANDELE	Centre Nord	SAHEL	71.8	42,052
50	BARANDELE	Centre Nord	SAHEL	71.8	42,052

All datasets used for composites (datasets averaged based on weightings listed):

Title	Source	Date Range	Adult Level	Methodology notes	SubComp. Weight	Composite Title	Composite Title	Composite Weight	Top Index Composite	Final Weight
FoodNet	FAO/WHO	2008-2014	Food Security	Average IPC score per area over entire time period.	50%	Food Security	Food Security	50%		33%
FAO	FAO/WHO	2008-2014	Food Security	Composite score generated by taking the number of times a country is in the top 10% of the world for each indicator over the entire time period.	45%	Food Security	Food Security	45%		33%
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