Niger Vulnerability Map - March 2014

USAID FROM THE AMERICAN PEOPLE

PURPOSE OF MAP:

The purpose of the map is to identify "hot spots" of vulnerability based on a confluence of a wide variety of overlapping vulnerability indicators. Seeing where many relevant indicators overlap can allow one to begin to question causal relationships and underlying issues in particular zones. Hot spots identified in this map speak to the need for both further assessments (ground truthing) and multi-sectoral approaches to programming. Vulnerability is composed of a complexity of factors and no single intervention can create resilience. This map is primarily meant to be a thought piece to generate further discussions and the evolution of development programming.

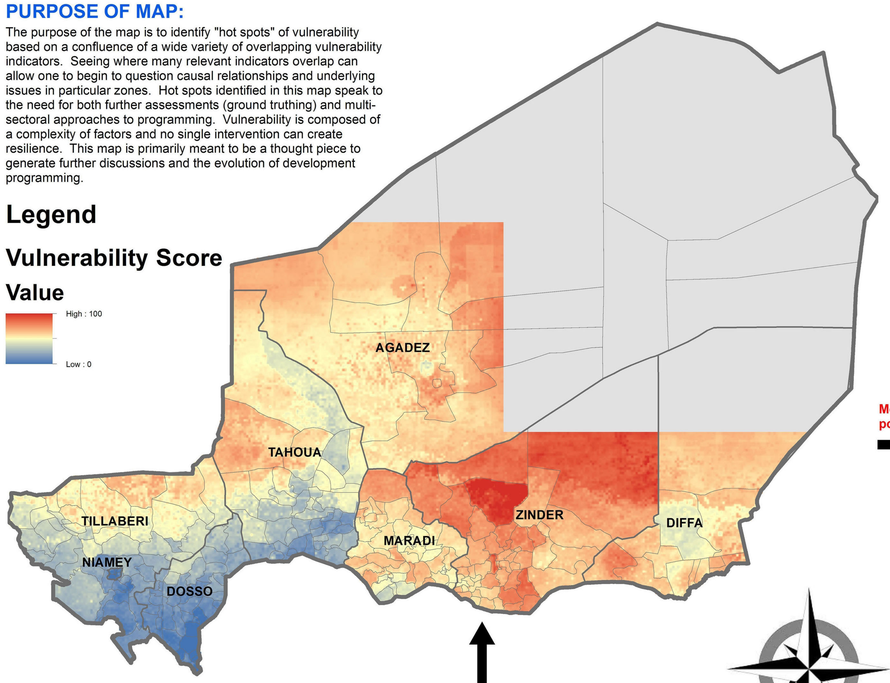
Legend

Vulnerability Score

Value

High : 100

Low : 0



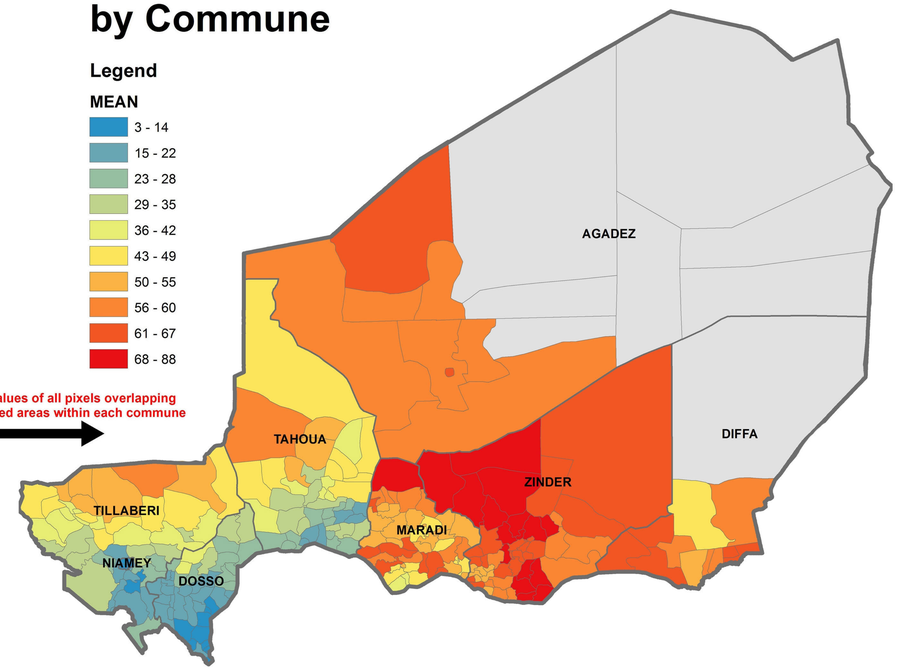
Vulnerability Score by Commune

Legend

MEAN

- 3 - 14
- 15 - 22
- 23 - 28
- 29 - 35
- 36 - 42
- 43 - 49
- 50 - 55
- 56 - 60
- 61 - 67
- 68 - 88

Mean values of all pixels overlapping populated areas within each commune



Top 50 Vulnerable Communes

COMMUNE	REGION	POPULATION
TANOUT	ZINDER	134074
ZINDER	ZINDER	274530
GOUCHI	ZINDER	47978
TENHIA	ZINDER	21205
DUNGASS	ZINDER	100431
GANGARA	ZINDER	40796
FALANKO	ZINDER	4561
ALBERKARAM	ZINDER	15414
TARKA	ZINDER	89533
WAME	ZINDER	32695
DAMAGARAM TAKAYA	ZINDER	46178
MOA	ZINDER	26290
MALLAOUA	ZINDER	67329
WACHA	ZINDER	67334
DOGO DOGO	ZINDER	42011
GADABEDJI	MARADI	5328
OLLELEWA	ZINDER	105167
DAKOUSSA	ZINDER	54330
GOUDOUMARIA	DIFFA	102800
DOGO	ZINDER	86306
TESKER	ZINDER	34641
GUIDIMOUNI	ZINDER	54579
GAFFATI	ZINDER	43097
ZERMOU	ZINDER	24987
TCADAOUA	MARADI	91507
ARLIT	AGADEZ	112432
TIRMINI	ZINDER	97247
TOUMOUR	DIFFA	1336
MIRRIAH	ZINDER	60805
DOUNGOU	ZINDER	32081
BOSSO	DIFFA	52177
MAZAMNI	ZINDER	8994
KOLERAM	ZINDER	25978
HAMDARA	ZINDER	32006
KANTCHE	ZINDER	51333
GOUNA	ZINDER	55666
TIBIRI	MARADI	114424
GANGARA	MARADI	40796
SASSOUMBROUM	ZINDER	57166
AGADEZ	AGADEZ	124324
ALLAKOS	ZINDER	21279
KELLE	ZINDER	62003
KOROHANE	MARADI	9551
MAIYARA	MARADI	56087
GARAGOUMSA	ZINDER	64257
GUIDAN ROUMDJI	MARADI	88690
AGUIE	MARADI	142182
MAINE SOROA	DIFFA	94074
NGUELBEYLI	DIFFA	1413
ICHIRNAWA	ZINDER	35045

Basic Methodology:

Step 1: Define relevant indicators of vulnerability to use in analysis

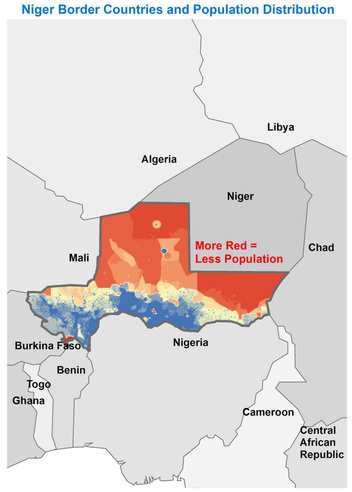
Step 2: Convert geographically disaggregated indicator data to raster format

Step 3: Winsorize data where appropriate based on histogram analysis. This is done to prevent data from being skewed by outlier data.

Step 4: Rescale all datasets to a common 0-100 scale so that they are comparable.

Step 5: Average composites of relevant indicators. Use weighting when appropriate based on expert judgment.

Niger Border Countries and Population Distribution



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Adaptive Capacity

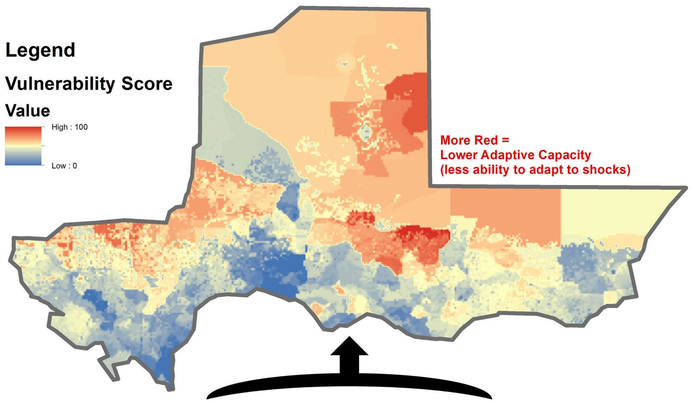
Legend

Vulnerability Score

Value

High : 100

Low : 0



% of Households Farm Landless

SOURCE: World bank 2011 living standards measurement survey (LSMS)

More Red = More Landless

+

Population Count Distribution (general proxy for access to services)

SOURCE: Afripop 2015 Estimate

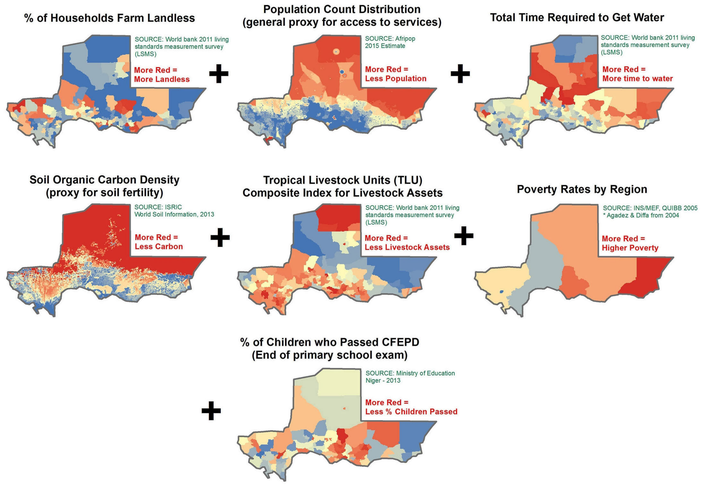
More Red = Less Population

+

Total Time Required to Get Water

SOURCE: World bank 2011 living standards measurement survey (LSMS)

More Red = More time to water



Soil Organic Carbon Density (proxy for soil fertility)

SOURCE: ISRIC World Soil Information, 2013

More Red = Less Carbon

+

Tropical Livestock Units (TLU) Composite Index for Livestock Assets

SOURCE: World bank 2011 living standards measurement survey (LSMS)

More Red = Less Livestock Assets

+

Poverty Rates by Region

SOURCE: INS/MEF, QUIBB 2005 * Agadez & Diffa from 2004

More Red = Higher Poverty

+

% of Children who Passed CFEPD (End of primary school exam)

SOURCE: Ministry of Education Niger - 2013

More Red = Less % Children Passed

+

Sensitivity

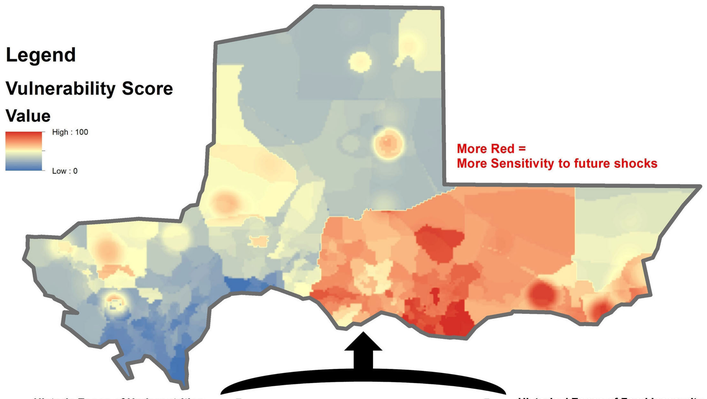
Legend

Vulnerability Score

Value

High : 100

Low : 0



Historic Zones of Undernutrition (SMART, Admissions as % of Pop)

* Double Weighting

More Red = More Undernutrition

HISTORIC Severe Acute Malnutrition (SAM)

* Double Weighting

SOURCE: SMART 2008-2011

More Red = Higher SAM Rate

+

HISTORIC Severe Malnutrition Admissions as % of total Pop.

* Double Weighting

SOURCE: FEWSNET 2007-2013

More Red = More Admissions (as % pop)

+

HISTORIC Chronic Malnutrition Rates

SOURCE: SMART, 2007-2012 Surveys

More Red = Higher Chronic Rate

+

Conflict/Stability Composite Index

More Red = More Conflict Risk

HISTORIC Locations and Intensity of Conflicts (ACLED Database)

* Double Weighting

SOURCE: ACLED 1997 thru Jan. 2014

More Red = More Conflict

+

Current Refugee Locations and by Count (UNHCR)

SOURCE: UNHCR February, 2014

More Red = More Refugees

+

CVE Core and Non-core Communes (USAID - PDEV)

SOURCE: USAID PDEV Program

More Red = More USAID CVE work

+

Historical Zones of Food Insecurity (FEWSNET, SAP, WFP)

More Red = Higher Prediction of Food Insecurity

HISTORIC Food Insecurity Outlook IPC Ratings (FEWSNET)

SOURCE: FEWSNET Outlooks, 2009 - 2013

More Red = Higher Avg IPC score

+

HISTORIC SAP (national early warning system) Vulnerable Communes

SOURCE: SAP 2005 thru 2012

More Red = More Vulnerable

+

HISTORIC WFP % of Pop. Severely Food Insecure

SOURCE: WFP 2006-2011 & 2013

More Red = Higher Food Insecurity

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Exposure

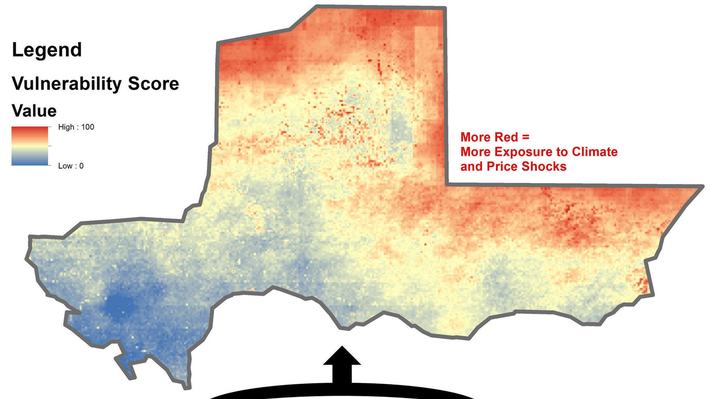
Legend

Vulnerability Score

Value

High : 100

Low : 0



HISTORIC Frequency of Dry Spells (no rain for >=15 days during season)

SOURCE: ARC2 - gridded daily rainfall estimates (RFE) - 1994 to 2013

More Red = Higher Frequency of Dry Spells

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HISTORIC Average Temperature (during rainy season, JJAS)

SOURCE: University of East Anglia's Climatic Research Unite (UEA/CRU) - 2000 thru 2011

More Red = Higher Average Temperature

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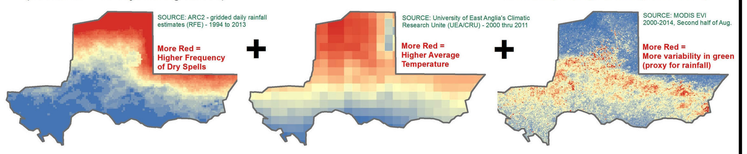
HISTORIC Coefficient of Variation of NDVI (variability of "greenness"- 2000 onwards)

* Double weighting since cvNDVI is such a commonly used dataset (as a proxy) for measuring rainfall variability

SOURCE: MODIS EVI 2000-2014, Second half of Aug.

More Red = More variability in green (proxy for rainfall)



HISTORIC Rainfall Variability (cvRFE)

SOURCE: FEWSNET cvRFE 2001 - 2013

More Red = Higher Rainfall Variability

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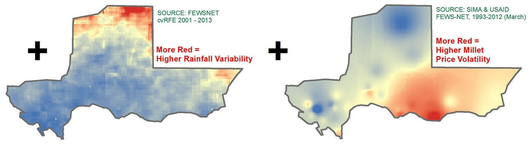
HISTORIC Millet Price Volatility (price shock)

* Double weighting to balance against large amount of climate shock data layers. This layer represents the only PRICE SHOCK data layer.

SOURCE: SIMA & USAID FEWS-NET, 1993-2012 (March)

More Red = Higher Millet Price Volatility



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