



## RESILIENCE ANALYSIS IN SUDAN – A POLICY BRIEF

Building more resilient livelihoods is increasingly recognized as **one of the most powerful means to mitigate and prevent food security crises**. Since 2008, the Food and Agriculture Organization of the United Nations, together with other key partners, has been pioneering resilience measurement and analysis with respect to food insecurity through the **Resilience Index Measurement and Analysis (RIMA-I)** model, developed by the FAO Resilience Analysis and Policies (RAP) team. The model is a quantitative approach that identifies the main factors that contribute to household resilience in selected countries. Following its application in over 10 countries, five resilience analysis reports have been published so far: *Senegal 2005, Burkina Faso 1998&2003, Niger 2011, Mali 2009/2010 and Sudan 2009*. They illustrate the main findings of the analysis and serve as a baseline for providing guidance in planning policy interventions. **The brief is a step forward in this direction:** it formulates clear policy indications, aimed at helping government policymakers with their future decisions, and contributes to a framework for humanitarian and long-term development initiatives to build food secure and resilient livelihoods.

### BACKGROUND

Since 1950s and for more than five decades, Sudan has been **intermittently devastated by civil wars**. Crises in Darfur, in the western part of the country, have led to a major humanitarian disaster, with an estimation of 2.7 million people displaced. In 2011, the southern part of the country has gained independence from the northern one: **Sudan has split into two different nations**, the Republic of Sudan (subject of this analysis) and the Republic of the South Sudan.



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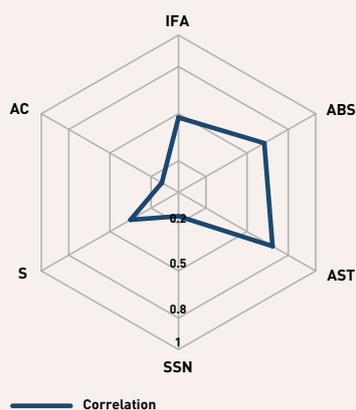
**“RESILIENCE IS THE CAPACITY  
THAT ENSURES ADVERSE  
STRESSORS AND SHOCKS  
DO NOT HAVE LONG-LASTING  
ADVERSE DEVELOPMENT  
CONSEQUENCES”**

*(Resilience Measurement  
Technical Working  
Group definition)*

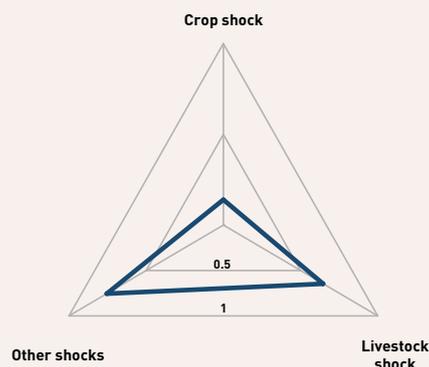


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## RESILIENCE STRUCTURE RELEVANCE OF EACH PILLAR



## RESILIENCE STRUCTURE EXAMPLE OF VARIABLE WEIGHTS IN “SENSITIVITY” PILLAR



Source:  
Author's own calculation, based on NBHS (2009)

The **Republic of Sudan** (from now on Sudan), situated in the Nile Valley, is nowadays the third largest country in Africa. Its geographical position features fertile lands and thus an abundance of livestock: agriculture and livestock raising are the main sources of livelihood in the country. Nevertheless, **almost half of the population is at or below the poverty line.**<sup>1</sup>

## DATASET

The FAO RAP team carried out a household resilience analysis using the RIMA-I model, based on the National Baseline Household Survey 2009 (NBHS 2009). At the time that the survey was designed and implemented, South Sudan had not yet gained independence as a sovereign nation. Thus, the survey was originally intended to collect data from across the regions that are currently officially referred to as the republics of Sudan and South Sudan. However, FAO could not obtain the complete dataset from South Sudan. Given this, this resilience analysis refers only to present-day Republic of Sudan.

A sample of **7915 households** was equally selected among the regions: Darfur, Kordofan, Khartoum region, the Northern, the Eastern and the Central parts of the country.

***This household resilience analysis examines differences in resilience capacity and resilience structure between female- and male-headed households, and between regions.***

<sup>1</sup> University of California Los Angeles African Studies Center. 2008. *Sudan*. Available at: [www.international.ucla.edu/africa/article/96981](http://www.international.ucla.edu/africa/article/96981)



## WHAT IS RIMA-I?

The RIMA-I model identifies and weighs six pillars of resilience and relating factors that contribute to make households (unit of the analysis) resilient to shocks that affect their food security. The model spells out the relevance of each pillar – and the relevance of each variable by pillar – in explaining household resilience through the Resilience Capacity Index (RCI). The pillars that constitute the RIMA-I model are: Income and Food Access (IFA), Access to Basic Services (ABS), Assets (AST), Social Safety Nets (SSN), Sensitivity (S) and Adaptive Capacity (AC).

## FROM RESULTS TO POLICY INDICATIONS

\* **There are apparent disparities in resilience capacity between regions.** Khartoum is the most resilient area, followed by northern, central and eastern regions. Kordofan and Darfur are the least resilient areas in the whole country. Households in Khartoum, northern, eastern and central regions have a higher income compared with households in least resilient areas. Moreover, in Khartoum and in the North, households have better access to food and basic services.

Given this, policy interventions should be oriented to an increase in income generating activities, in access to public electricity network, safe toilets and food. A decrease of the distance to safe water is also to be considered as a key intervention in order to reinforce resilience.

While people in Darfur and Kordofan regions have good access to land and livestock, they still lack of assets and productive assets, which compromise their income generating capacity. Policies should be geared towards agricultural intensification that will enhance production and productivity of households. This includes the use of improved technologies and investment in irrigation schemes.

\* **Concerning gender comparison,** minor differences between female-headed households and male-headed households have been found, but these differences increase when examining the results for specific factors. Female household heads are more efficient at allocating budgets for food consumption than male household heads. However, they have a lower income, are more sensitive to shocks and are less likely to have access to basic services such as electricity, energy for cooking and safe water.

These results call attention on gender policies that should aim at increasing asset endowment and access to credit for female household heads. An increase in resilience capacity could also be achieved by creating new public infrastructures.

Also, female household heads seems to suffer of a low average education level, which is likely to be the side effect of gender discrimination in local cultures. Given this, interventions for improving education should be prioritized, especially in rural areas.

### FROM RIMA-I TO RIMA-II

*Sudan 2009* is the last resilience analysis report based on RIMA-I model. In 2015, the FAO RAP team has improved the methodology and developed a second version. The renovated RIMA-II estimates household resilience to food insecurity with a comprehensive pack which includes both direct and indirect measures. The **direct measure** gives descriptive information on household resilience capacity and it is a valuable policy analysis tool to inform funding and policy decisions of governments, international organizations, donors and civil society, as it allows to target and rank households from most to least resilient. The **indirect measure** provides evidence on the main determinants of households' resilience capacity and it can be adopted as a predictor tool for interventions that strengthen resilience to food insecurity. Through the indirect measure, RIMA-II provides clear policy indications. In RIMA-II the number of pillars is reduced from six to four. Shocks and food security indicators are not included in the pillars' estimation; the shocks are instead adopted as regressors and the food security indicators as resilience outcomes.



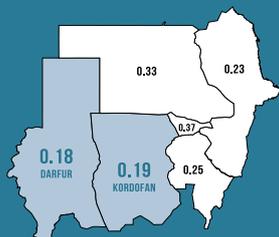
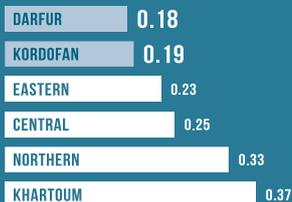
# SUDAN RESILIENCE ANALYSIS IN IMAGES

79 15 HOUSEHOLDS - BASED ON NBHS 2009 DATASET



RESILIENCE CAPACITY INDEX

## REGIONAL DIFFERENCES



## GENDER DIFFERENCES

MALE  
HEADED  
HOUSEHOLDS  
**0.25**



FEMALE  
HEADED  
HOUSEHOLDS  
**0.22**

FEMALE HEADED HOUSEHOLDS  
KORDOFAN **14%** NATIONAL AVERAGE **10%** DARFUR **20%**

RESILIENCE CAPACITY INDEX

LOWER INCOME



WORSE ACCESS  
TO FOOD



WORSE ACCESS  
TO ELECTRICITY



WORSE ACCESS  
TO SAFE WATER



DARFUR  
KORDOFAN



LOWER INCOME



WORSE ACCESS  
TO BASIC SERVICES  
i.e. HEALTH CARE



LOWER EDUCATIONAL  
LEVEL



IMPROVE ACCESS

TO PUBLIC ELECTRICITY NETWORK  
AND DECREASE DISTANCE TO SAFE WATER



INCREASE INCOME GENERATING CAPACITY  
WITH ENHANCED TECHNOLOGIES  
AND INVESTMENT IN IRRIGATION SCHEMES



INCREASE ENDOWMENT  
AND ACCESS TO CREDIT



CREATE NEW PUBLIC INFRASTRUCTURES  
i.e. SCHOOLS



POLICIES INTERVENTIONS

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