Food and Agriculture Organization of the United Nations

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RIMA-II: MOVING FORWARD THE DEVELOPMENT OF THE RESILIENCE INDEX MEASUREMENT AND ANALYSIS MODEL

Building more resilient livelihoods is increasingly being recognized as one of the most powerful means to mitigate – or even prevent – food security crises.
Since 2008, FAO has been at the forefront of efforts to measure the resilience capacity of people to food insecurity and the effectiveness of resilience strenghtening interventions. In this framework, FAO has pioneered the development and the use of Resilience Index Measurement and Analysis (RIMA).
RIMA is an innovative quantitative approach that allow explaining why and how some ***households cope with shocks and stressors better than others do****. The first version of RIMA has been technically improved based on its application in 10 countries.*
As a result, the new RIMA-II methodology provides better support for more effectively designing, delivering, monitoring and evaluating assistance to populations in need, based on what they need most.

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RIMA-II: AN EVOLVED METHODOLOGY FOR RESILIENCE ANALYSIS

Measuring resilience is challenging, since it is multidimensional and cannot be observed or quantified directly. FAO RIMA-I and RIMA-II methodologies estimate resilience through a set of pillars, which are then aggregated through latent variable models.

RIMA-I and RIMA-II answer questions such as:

- **who** is most in need?
- **where** should investment focus in terms of geographical location?
- **which** dimensions of resilience need to be supported?
- **to what extent** have interventions increased or decreased target populations' resilience?

RESILIENCE IN RIMA-I AND RIMA-II

RIMA perfectly fits several definitions of resilience. FAO defines resilience as "the ability to prevent disasters and crises as well as to anticipate, absorb, accommodate or recover from them in a timely, efficient and sustainable manner". RIMA-I and RIMA-II were created using the following definition: "resilience is the capacity of a household to bounce back to a previous level of well-being (for instance food security) after a shock".

The definition of Resilience Measurement Technical Working Group, the expert consultation group established under the Food Security Information Network, (www.fsincop.net/topics/resilience-measurement/technical-working-group) states: "Resilience is the capacity that ensures adverse stressors and shocks do not have long-lasting adverse development consequences".

WHAT'S NEW – FROM RIMA-I TO RIMA -II

- RIMA-II estimates household resilience to food insecurity with a comprehensive pack which includes both direct and indirect measures:
  - direct measure suits descriptive purposes;
  - indirect measure provides causal inference;
- shocks are considered exogenous and included into a regression model for estimating their impact on food security and on resilience;
- food security indicators are the outcome of resilience and are not included in the resilience estimation model.

HOW SHOCKS FIT INTO RIMA-II?

Households can be affected by several types of shocks that range from relatively minor to very severe and recurrent ones. For this reason RIMA-II runs regression analyses that take into account:

- **idiosyncratic shocks**, such as livestock death, job loss and illness of a household member. These shocks are all directly reported by households in surveys;
- **covariate shocks**, which in turn are divided into:
  - *climate shocks*, such as droughts, floods, temperature variations, rainfalls and other natural hazards;
  - *conflict shocks*, such as fightings, murders and public disorders.

Following the first application of RIMA-I in over 10 countries, in 2015 FAO improved the methodology and developed a second version. The renovated RIMA-II measures resilience both directly and indirectly, a feature that ultimately translates into a more comprehensive estimation of resilience and sounder policy indications. RIMA-II predicts the determinants of changes in resilience capacity and food security; it also establishes statistically sound causal relationships between food security determinants and outcomes, under a dynamic framework.

In RIMA-II the number of pillars that constitutes the direct measure is reduced from six to four. Shocks and food security indicators are not included in the estimation model; they are instead adopted as regressors (shocks) and resilience outcomes (food security).

RIMA-II directly measures resilience through the **Resilience Capacity Index (RCI)** and the **Resilience Structure Matrix (RSM)**: the first estimates the capacity of households to cope with shocks and stressors and avoid long-term damages, while the second explains how much each pillar contributes in determining the resilience capacity.


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The **direct measure** provides 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 allowing to target and rank households from most to less resilient.

RIMA-II also measures resilience indirectly to provide evidence on the main determinants of households' resilience capacity. The **indirect measure** of resilience can be adopted as a predictor tool for interventions that strengthen resilience to food insecurity. It provides new depth and breadth to resilience analysis and supports decision makers and other stakeholders to better understand the dynamics of positive trends in resilience and thus develop strategies that will yield positive results.

RIMA-II estimates the impact of shocks on resilience capacity using data collected through satellite images. The use of spatial technologies allows to objectively find causal relationships between shocks and resilience capacity or food security.

RIMA-II IN ACTION: A CASE STUDY ON UGANDA

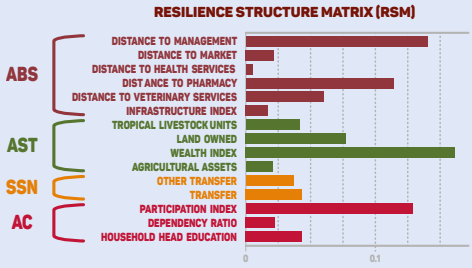
Since the end of the civil war in the 1980s, Uganda has become a relatively peaceful, stable and prosperous country. Although the economy has been growing at a fast pace for the last two decades, food security remains however a problem in several parts of the country, where poverty incidence is still quite high and natural shocks – such as floods and landslides – are frequent.

The first application of RIMA-II in Uganda using data from 2009 to 2012 shows that:

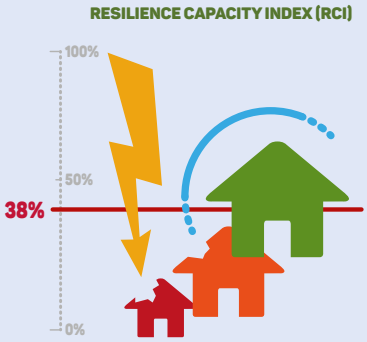
- **what:** Animal loss and climatic variations are the most commonly experienced shocks and the most frequent coping strategies include relying on savings, getting support from family and friends and changing dietary patterns;
- **how:** The Resilience Capacity Index of Uganda decreased from 2010 to 2011 and partially recovered in 2012; there are subsamples of population that did not completely recover their food security level;
- **who:** The less resilient populations are female-headed households and people living in rural and north areas;
- **what dimensions:** Providing access to agricultural assets and infrastructures and reducing the distance to markets are the most relevant interventions to guarantee prompt recovery from food security loss.

RIMA-II INFOSHEET - UGANDA

The chart above presents the results of a resilience analysis conducted with FAO RIMA-II in Uganda using a rotating panel dataset from 2009 to 2012.



The Resilience Structure Matrix graph illustrates how the resilience capacity was structured in a specific point in time.



The Resilience Capacity Index, ranging from 0 to 100 percent, is a measure of the household recovery capacity.

The chart on resilience main determinants indicates the three most important variables that build Ugandan household capacity.

RIMA-II RESILIENCE PILLARS

In RIMA-II the number of pillars changes. Assets (AST) becomes the only pillar that provides information on income, allowing a better capture of the real household revenue. Shocks and food security indicators are considered exogenous and not included in estimation procedures.

PILLARS OF RESILIENCE	DEFINITION
Adaptive Capacity (AC)	Adaptive Capacity is the ability of a household to adapt to a new situation and develop new livelihoods strategies.
Social Safety Nets (SSN)	The Social Safety Nets pillar measures the ability of households to access help from relatives and friends, from government and timely and reliable assistance provided by international agencies, charities, and NGOs.
Assets (AST)	Assets comprise both productive and non-productive assets. Productive assets are the key elements of a livelihood, enabling households to produce consumable or tradable goods. Examples of indicators include land, livestock and durables. Context-specific sets of productive assets which are able to determine the creation of the household income are evaluated. Other tangible non-productive assets such as house, vehicle, and household amenities reflect living standards and wealth of a household.
Access to Basic Services (ABS)	Access to Basic Services shows the ability of a household to meet basic needs, and access and effective use of basic services; e.g., access to schools, health facilities; infrastructures and markets.

HOW RIMA-II SUPPORTS POLICIES

Resilience analyses conducted with RIMA-II aim at informing policy and decision making processes by:

- serving as a baseline for evaluating the impact of resilience strengthening programs;
- assessing the resilience capacity over the years, thus providing helpful guidance in planning future interventions;
- Reviewing resilience policies to measure their actual impacts.

Overall, RIMA-II is a rigorous methodology that contributes to a **framework for humanitarian and long-term development initiatives** to build food secure and resilient livelihoods.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MAKING A DIFFERENCE THROUGH PARTNERSHIPS

Partnerships Overall, RIMA-II is a rigorous methodology that contributes to a framework for humanitarian and long-term development initiatives to build food secure and resilient livelihoods. essential component of FAO's strategy to promote, develop and implement RIMA-II at global, regional and country levels. In particular, FAO works in collaboration with international organizations (e.g. IFAD, UNDP, UNICEF, WFP, IFPRI and World Bank), regional bodies (e.g. EU, IGAD and CILSS) and universities (e.g. Florence, Cornell, Tulane, Tufts) as shown below:

	ACTIVITY	PARTNERS
GLOBAL	A Resilience Measurement Technical Working Group (RM-TWG) has been set up to oversee the technical development of resilience measurement models	FAO, IFAD, European Union, World Bank, WFP, Food Security Information Network Initiative (FSIN)
REGIONAL	FAO and its partners are focusing on developing the mixed-method (quantitative/ qualitative) approach for measuring resilience.	FAO, IGAD Resilience Analysis Unit, CILSS
COUNTRY	RIMA has been tested in the West Bank and Gaza Strip, Kenya, Sudan, Somalia, South Sudan, Ethiopia, Uganda, Niger, Burkina Faso, Tanzania, Malawi and Nigeria.	FAO, National institutions, World Bank, UNICEF, WFP

THE WAY FORWARD

FAO's work on resilience measurement and analysis will continue to be improved based on experiences in applying RIMA-II. According to the "Strategy for Promoting Resilience Measurement and Analysis (2015-2018)", FAO will strengthen RIMA's role in resilience measurement and policy making by:

- effectively contributing to resilience programming in priority regions and selected countries through country-led resilience analysis and identifications of policy issues;
- developing capacities within countries and regional institutions, international and partner organizations in order to conduct resilience analysis at scale;
- consolidating RIMA as one of the main corporate tools for resilience programming and integrating it with other FAO indicators on resilience to climate change and poverty.

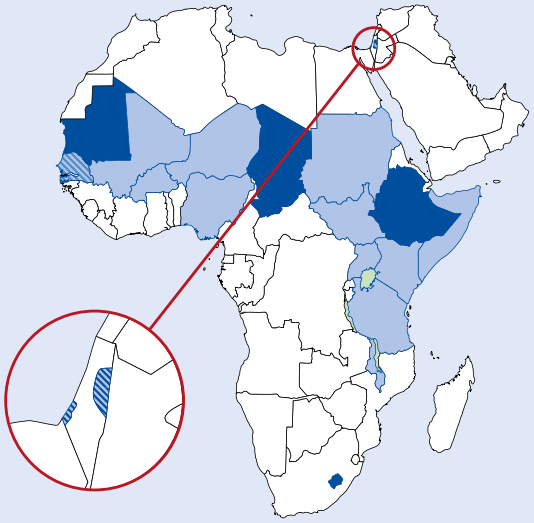
RIMA ANALYSIS AS OF 2016

RIMA - FINALIZED ANALYSIS

Burkina Faso, Kenya, Malawi Mali, Niger, Nigeria, Senegal, Somalia (Dolow, Somaliland and Puntland), South Sudan (Upper Nile and Jonglei), Sudan (Kordofan), Tanzania Uganda, West Bank and Gaza Strip.

RIMA - ONGOING ANALYSIS

Chad, Ethiopia, Lesotho, Mauritania, Senegal, West Bank and Gaza Strip



Map accurate as of April 2015. © Wikipedia cc / Canuckguy.

RESILIENCE MARKER

A resilience-focused approach is central to guarantee successful humanitarian and development interventions.

To ensure that resilience is systematically considered and included in all stages of project cycles, FAO has developed a tool, the **Resilience Marker**, which will both be based on and feed RIMA-II analyses.

The Resilience Marker can effectively operationalize the concept of resilience by predicting and evaluating the expected impact on on resilience capacity. The marking process is conducted through a participatory approach that will include the actors involved in the design, implementation and evaluation of projects.

The Resilience Marker is a cutting-edge tool for resilience analysis that will greatly facilitate the assessment of the relevance of humanitarian interventions and development assistance vis-a-vis to resilience.

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