Urban Africa Risk Knowledge

Briefing

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Small disasters erode household resilience: the absorptive capacity of flood-prone households in Niamey, Niger

Urban resilience is a product of the capacity of households to absorb stress, adapt to, and transform scope for action in managing risk. This brief outlines a new methodology developed to investigate aspects of resilience in very poor urban contexts where economic assets are universally constrained. It was developed in response to requests from Save the Children to explore scope for adapting a rural food security monitoring tool, the Household Economy Approach (HEA), to urban contexts. The new methodology was applied in Niamey, Niger to a study examining the resilience of households in areas of the city subjected to flooding every rainy season. This brief presents the method, findings, and lessons learnt. Results identified low levels of resilience amongst flood-exposed households associated with inequalities in social capital ties and variable access to food and security post flood. Responding to loss, households expended savings and took on debt. The brief also outlines priority areas for planning interventions and supporting resilience building for low-income urban households.

Piloting a new methodology

Challenges of measuring resilience in urban contexts

Disaster Resilience is defined by the UK Department for International Development (DFID) as "the ability of countries, communities and households to manage change, by maintaining or transforming living standards in the face of shocks or stresses – such as earthquakes, drought or violent conflict – without compromising their long-term prospects".[1]

Measuring household resilience in urban contexts is challenging for humanitarian agencies that have developed tools for use in rural communities. Rural tools cannot be easily transferred to urban contexts.[2]

Box 1: Flooding in Niamey

In Niamey, inadequate land-use planning, limited infrastructure and increasing population pressure, have led to the increased occupation of flood-prone areas. This is notably in the flood plain of the River Niger. These risks are compounded by the variability and extremity of Africa's changing climate.[3]

There has been an increase in the frequency and intensity of floods observed in Niamey over the last decade. Floods are a recurrent event in rainy seasons, with extreme flood events happening in 2010, 2012, and 2013.[4] The September 2015 flood, the focus of this study, is considered part of an 'average' flood year.[5] It affected 1,083 people and destroyed 60 homes in Niamey.[6]

Policy Pointers

- The Household Economy Approach can be successfully combined with additional indicators to measure household resilience in urban areas.
- The piloted methodology revealed that most households in poor areas of Niamey have low resilience and all suffered recurrent losses due to seasonal flooding.
- A regular flood can impact a household in many different areas (health, shelter, food, economy, education, social ties), which requires holistic responses from development workers.
- Most households do not have many adaptive strategies to deal with flooding, and often do not report their problems to authorities. This is an area that policy makers need to address urgently.
- Collecting data needed for compound resilience indicators in low-income contexts is challenging and proxies may need to be used.
- Disaggregating data collection to identify absorptive capacity by gender and age are important next steps.

Box 2: The Household Economy Approach (HEA)

The Household Economy Approach (HEA) is a tool used by development and humanitarian aid organisations to measure rural household food insecurity. It is a livelihoods-based framework, often used to determine household vulnerability to shocks and whether humanitarian intervention might be needed, as well as to plan actions that strengthen existing survival strategies.

The HEA usually entails establishing a 'baseline' of a household's livelihood status over what is considered a 'reference' or average year in terms of economic or climatic shocks. Information for the HEA is usually acquired via focus group discussions, across different 'livelihood zones' – geographic areas where most households share the same livelihood patterns.[7]

First, analysing livelihoods is more complex in cities, as it is far more difficult to determine a household's living standards based on their usual livelihood strategies and location. This is because urban household livelihoods are often very heterogeneous and vary over time so that the specific income sources available to the poor are not only fragile but also multiple and changing, creating diverse patterns of livelihood hazard exposure and vulnerability.

Second, while access to food and economic security factors are fundamental, they are less able to differentiate urban households by resilience where money and food is limited. For the urban poor, differences in life opportunities and thus resilience are often shaped by additional qualities such as social capital: the social ties and networks that dictate common support and cooperation between inhabitants of an area. Social capital plays a large role in influencing survival mechanisms in resource-deprived, poor urban areas, as neighbours and wider social support can determine access to food, other resources, and job opportunities. This is especially the case during periods of shock or stress.[8] Other factors such as health, education, and personal security status are also important determinants of vulnerability and vary for households even in the same neighbourhood.

Absorptive capacity as an expression of household resilience

Responding to urban contexts, this study has developed a household resilience measurement tool that incorporates elements of the rural HEA. This allows for the nuances of urban resilience to be captured, while still allowing for an HEA analysis to be extracted. In this brief we limit discussion to the analysis of household resilience. Our recommendation is that the HEA should be adapted to measure urban risk and resilience. The proposed tool calculates statistically derived resilience classes to distinguish between households. The calculation is based on seven resilience components: nutrition, economic assets, security, social assets, health, education and shelter.

This research focuses on absorptive and adaptive capacity. Absorptive capacity is the ability of a household to experience a shock and stress and continue functioning. Absorption is measured through the stability of the seven resilience components, calculated based on the change in status before and after seasonal flooding in 2015. Adaptive capacity is the ability of a household to adjust practices to mitigate future risk and is recorded through direct interview discussions.

Calculating resilience classes

Between July and August 2016, 300 household heads were interviewed in three zones of Niamey where flooding had occurred in 2015: 140 peri-urban (highly flood prone); 115 inner city (moderately flood prone); and 45 inner city (slightly floodprone). Heads of households were asked to recall the status of different resilience components, before and after this flood.

For each resilience component, households were arranged into quintiles and awarded scores: 1 (very limited) to 5 (excellent). Based on calculated resilience scores, households were attributed to four different resilience 'classes' with analysis examining the performance of each class over the flood event to determine the pathways through which resilience is expressed, built, or eroded for each class. Each component was formed of several indicators derived from the household questionnaire.

Findings

Table 1 describes the characteristics of each resilience class. Notably no households achieved a score above 4 (high resilience).

Nutrition

Before the flood, all resilience classes had enough food to meet all their daily energy requirements. For the lower resilience classes, this was achieved in part through small-scale religious donations. After the flood, access to food decreased for all households, and for very low-resilience households, went below 100 per cent of required intake. After the flood, all groups suffered a significant decrease in food diversity, with the highest resilience class experiencing the largest comparative loss.

Economic assets

All resilience classes experienced a small decrease in income after the flood, with the most affected being agricultural income from the low resilience class.

Food was the highest category of household expenditure across all resilience classes. Expenditure increased after the flood, with slight differences in prioritisation for different resilience classes (shelter, health, basic foodstuffs, transport).

Table 1: Common characteristics of the resilience classes

Resilience class (% of total sample)	**Descriptor**	**Resilience score range**	**People sleeping in the household (mode)**	**Mean daily income per household** (in West African CFA francs)	**Sources of income**	**Type of house (mode)**	**Education of head of household (proportion)**
A (38.8%)	**Very low resilience**	**corresponds to scores 1.21–1.84**	**5 (14%)**	**3,965**	**Agricultural (16%), daily (67%), waged (17%)**	**Thatched (25%), Banco (75%)**	**Illiterate (26%), literate (48%), primary (16%), secondary (8%), higher (2%)**
B (18.4%)	**Low resilience**	**corresponds to scores 1.85–2.44**	**7 (14%)**	**4,327**	**Agricultural (20%), daily (63%), waged (17%)**	**Banco (80%)**	**Illiterate (32%), literate (15%), primary (34%), secondary (17%), higher (2%)**
C (4%)	**Moderate resilience**	**corresponds to scores 2.45–3.2**	**9 (33%)**	**4,710**	**Agricultural (8%), daily (75%), waged (17%)**	**Mixed (Banco and cement) (80%)**	**Illiterate (8%), literate (8%), primary (26%), secondary (8%), higher (50%)**
D (38.8%)	**High resilience**	**corresponds to scores 3.3–3.83**	**10 (36%)**	**4,860**	**Agricultural (15%), daily (59%), waged (26%)**	**Permanent hard structure (75%)**	**Illiterate (2%), literate (2%), primary (2%), secondary (19%), higher (75%)**

Levels of debt and savings showed the biggest differences before and after the flood. Debt levels were common and low before the flood amongst all groups, and elevated afterwards, with higher resilience households taking on the most debt. High resilience households had the largest savings, but also experienced the greatest reduction in savings post flood.

Security

Security was difficult to analyse, as respondents preferred not to discuss specific events. Perceptions of risk were used instead, asking household heads to estimate risk using rating scales. Reported fear of physical aggression increased after the flood, especially for the higher resilience classes.

Although all classes perceived a loss in security, the difference is highest amongst the high resilience class. This may reflect the fear that the few (but relatively greater) assets held by higher resilience households are at greater risk of theft post flood.

Social assets

Social support was measured through the monthly attendance at neighbourhood associations, religious and non-religious groups, and monetary/food support offered from family members. For all resilience classes, attendance in associations and groups decreased post flood. This was especially marked for the lowest resilience class, in attendance of religious groups. This was explained as a consequence of lack of money and time post flood, along with reduced physical accessibility. However, support from family members increased after the flood, with low resilience households receiving the most support.

Box 3: Challenges of data collection

The study employed trained enumerators from the Université Abdou Moumouni in Niger, who asked household heads to reflect on the status of different facets of household life, before and after the 2015 flood. While household heads can provide a wealth of information, as they are responsible for many of the economic decisions made in the household, they may only have a partial view on the lives of each family member. They may also be subject to recall bias.

For three of the resilience components (health, shelter, and education), a clear 'before and after' analysis was difficult to obtain. For health and shelter, household heads were often unable to reflect on the status of these components before and after the flood. For education, this was difficult to determine because the flooding took place during the long holiday period.

Losses

Low resilience households with houses made of banco clay were particularly badly affected, with around one-fifth of all compound walls (walls surrounding a family compound, but not the dwelling walls) collapsing completely. No compound boundary walls collapsed completely in the high resilience class.

Economic impact and loss of assets were highest in high resilience class households. Informal sector and day labourers in the markets or in transport suffered

most as they lost income on flood days, while those working in waged work with monthly salaries reported little if any impact on income.

Adaptation strategies

Adaptation strategies differed markedly among resilience classes. More than a third of households for all but the most resilient class had no strategy to deal with flooding. Higher resilience classes, perhaps due to their greater educational attainment, were more aware of the responsibility of authorities to support flood risk management and were more likely to complain or ask for help. Lower resilience classes, due to the destruction of their homes, were often forced to temporarily relocate. Few households participated in monitoring river levels during the rainy season.

Conclusions

Measuring resilience amongst very poor at-risk urban households in fragile contexts poses key challenges. The methodology described here recognises the diversity of components shaping household resilience in urban contexts. The tool measures the capacity of households to absorb and continue functioning during and after a stress. Social capital was confirmed as a key constituent indicator of resilience and included informal and formal social ties.

Adaptive strategies were defensive and often undermined long-term sustainability of the household – for instance through increased debt and reduced savings as a result of coping with flooding. There was also a high number of households for which the only coping mechanism was to temporarily relocate.

Analysis did not seek to capture the ability of households to transform their living environments and life chances through advocacy or organised collective action. This analysis would be possible with the inclusion of additional interviews with agencies responsible for key service provision. The analysis presented here is a household-centric view.

Efforts to measure and to improve resilience cannot just target economic aspects. While all households were located in poor areas of Niamey and all had quite a low absorptive resilience, there were significant differences among households in terms of overall levels of resilience, and for different resilience components. This reinforces the idea that poverty and resilience, while correlated, do not always match. More resilient households had stronger linkages to formal organisations; less resilient households relied more on neighbours for support. Despite the flood being small households assets wre eroded thorugh coping. Oftentimes, higher resilience households, while having higher levels of well-being than lower resilience households, experienced a higher comparative loss.

To sum up, both low and high resilient households often had very few adaptive strategies to cope, rarely reported their situation to authorities, or received advance information about flood risk and management. It is clear that city authorities and non-governmental organisations should work together to provide transparent information and assistance services to households living in flood-prone areas.

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Notes

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