Approaching Resilience for Displaced People in the Congo

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"UK Aid from the British People"

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Abstract

A multi-organization consortium is engaged in a project to improve resilience among people affected by multiple displacement in the Democratic Republic of the Congo. Funded by the UK Department for International Development (DFID), the project includes humanitarian, peacebuilding, and data collection organizations. System dynamics modeling is an important innovation of this three year project, along with field research and policy advocacy; all leading to pilot interventions on the village scale. While the research phase is ongoing, the SD approach has already yielded insights that build on humanitarian and development mental models, such as short term versus long term trade-offs, and how conditions before displacement and in potential host villages can affect the recovery of the displaced community.

Keywords: Internal displacement; development; humanitarian aid; resilience;

Conditions in the Eastern Democratic Republic of the Congo (DRC) are dire. The latest report from the UN Security Council-appointed Group of Experts (Group of Experts 2015) catalogs a host of problems. Numerous Congolese and foreign armed groups continue to operate, contributing to instability. Civilian populations suffer from violence, intimidation, enslavement, and expropriation of assets by armed groups, causing frequent displacement as people seek safety elsewhere. Parts of the economy and resource wealth of the DRC have been diverted by armed groups and elements within the government. Neither Congolese military (FARDC) nor United Nations forces (MUNESCO) have succeeded in establishing security or rule of law.

Over ten years of intensive efforts by UN agencies and international non-governmental organizations (NGOs) have saved lives but have made little difference in the long-term situation of people in the DRC (White 2014). The acute needs have often overwhelmed planning for the future, leading to calls for taking a long-term development approach even during humanitarian

aid (DFID 2013, Rudolf 2014, Mosel & Levin 2014). This paper reports on work in progress with that approach.

Given the frequency and prevalence of displacement in the Eastern Congo, many approaches have centered on resilience in the face of disaster rather than the prevention of disaster. Resilience in general refers to avoiding or recovering from harm; for the purposes of this project we define it as *the ability of a community to withstand or recover from damage caused by displacement (or other shocks), and return to a state as good or better than before*. In a sense, people of the Kivus have demonstrated remarkable resilience, in that a majority *withstand* the harms of multiple displacement; but neither *recovery* nor *improvement* have been common in the long term. There is clearly room for improvement in the approach of international aid organizations.

One problem has been poor understanding of the nature of resilience; attempts to measure or quantify have failed (Levin 2014). We propose that the trouble is that resilience is not itself a variable or stock that can be built up, but a descriptive feature of system behavior. Because of this resilience is only observed in context, when the community is recovering or not. Models overcome part of this limitation, by allowing users to simulate things that cannot be measured. System dynamics was selected as the modeling paradigm because the system in which community resilience occurs is characterized by the accumulation of assets, flows of production and consumption, and feedbacks between them.

The UK Department for International Development has funded this project, led by the Norwegian Refugee Council (NRC). Climate Interactive is providing modeling and analysis for the project. Our other partners are International Alert, and the Internal Displacement Monitoring Centre (IDMC). The three-year, $9m project includes ongoing research; pilot programs to increase resilience while testing emerging theories of resilience; and advocacy, to use these findings to influence future humanitarian responses to displacement.

Methodology

System dynamics modeling in this project supports the analysis of qualitative and quantitative data, theory building, and communication. The immediate aim is to inform decisions about pilot projects, which will include interventions in areas where people are affected by multiple displacement in an effort to improve their resilience. As the projects operate over the following 18 months, observed results will further inform theory building, allowing us to refine the model. The simulation tool is intended to support both decision making for action on resilience, and for communication and outreach. We plan to use simulation to communicate our findings convincingly, in an attempt to improve the overall humanitarian response to displacement.

Information to build the model began with a narrative, describing the general events and effects associated with displacement, assembled with our consortium members with knowledge of the system. We created a first iteration of the model, focused on the causes of displacement and

movement after displacement. The first model was essentially a straw man – known to be "wrong" (more so than the way all models are wrong) but useful for highlighting knowledge gaps. On our first trip to DRC, we showed the simulation to our consortium, in a workshop for Congolese aid workers, and to some of the many international humanitarian staff stationed there.

By showing a model that was very simple but still had plausible behavior, we were able to elicit more detail. Experts were led to explain things they thought were obvious. Within our consortium, we showed how the model changed from day to day, familiarizing them with system dynamics methods. When showing the model was impossible or inappropriate, we conducted semi-structured interviews and focus groups. We held focus groups with internally displaced people in two camps, each separated into male and female groups in respect of cultural norms. In the end we had collected system information from people with various areas of expertise, levels of aggregation, and time-scales of action.

As the important sectors to model were revealed, the consortium decided on research questions, methods, and instruments. The main field data come from surveys, with versions for displaced, host families, and returnees; and qualitative focus groups with the same sub-samples. The data collection was contracted to Congolese partners, to account for language and cultural sensitivity. Data was collected mostly in Kiswahili, with some exceptions in other local languages or French as appropriate. Data analysis produced notes and summaries in French and English.

New information was incorporated into model structure, which was checked with partners and other experts. The model has developed in an iterative process and will continue to change over the course of the project.

The Community Resilience Model

The model developed for the project represents the conditions in a community (in general, a village) over the course of 20 years. Different versions of the model interface have been built for use by or presentation to different audiences. The version provided for this paper allows for up to five episodes of displacement, with policies for emergency and programmed assistance and help from a host community.. In the logic of the model, the village is the *people* rather than the location. When displacement occurs the model follows the people, and simulates their conditions even if they are separated, rather than representing a place and tracking flows of people in and out.

Figure 1 shows the main sectors of the model. People use resources to produce the things they want and need. They can apply that production either to goods that relate to their quality of life, or back into resources for future production. The availability of assets then feeds back to affect people, their conditions such as health and social cohesion. Production depends on both the quality and quantity of labor and resources. Decisions to invest in resources depend in part on the conditions in the community.

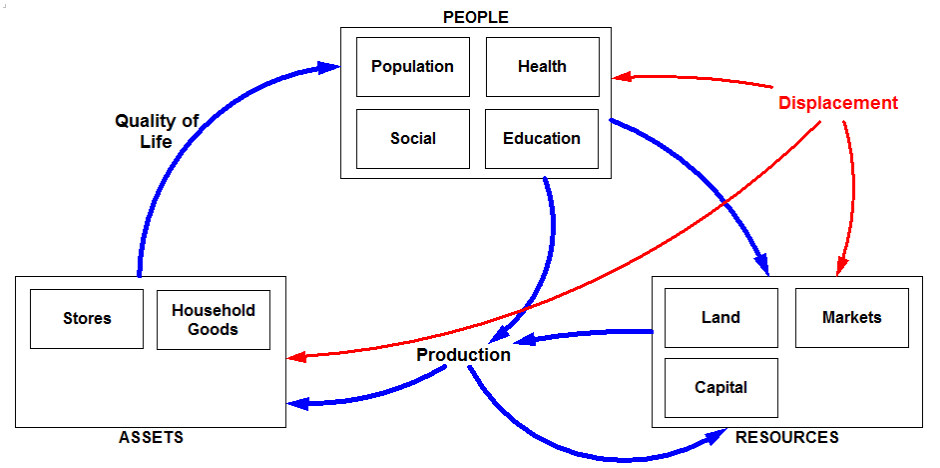

Figure 1: Resilience Model Roadmap

Displacement affects people both directly, and by taking away their possessions and cutting them off from their resources. The most important problem cited in most displacements is being cut off from access to land, this being a predominantly agricultural economy. Land tenure laws in the DRC are complex; there is no private ownership of land, and rights to use are the subject of several overlapping bodies of law, so disputes are common. Even after the end of displacement it can take time to restore access to land.

"Markets" in this model means the ability to earn from non-agricultural work. As a supplement to farming, and as sometimes the only income during displacement, people engage in wage labor and small trading. When displacement occurs wages are depressed and product markets are disrupted to the disadvantage of the small trader. Even within the depressed wage market, displaced people tend to be paid less than their host community and neighbors. Theft and prostitution are also reported by displaced people as means of livelihood.

"Capital" includes all possessions that help people to earn a living – seeds, tools, livestock, long-lived plants, bicycles, etc. This is a low tech economy, so capital is less significant than in a western economy – zero capital does not imply zero production, for example – but the it is one means of production that responds dynamically to people's decisions. One of the most important recovery dynamics passes through capital, as shown in Figure 2. Investing in capital competes with basic needs. Especially when access to land is disrupted, a shortage in production can lead to a vicious cycle of declining production. People must sacrifice some quality of life in the present in order to recover in the long run.

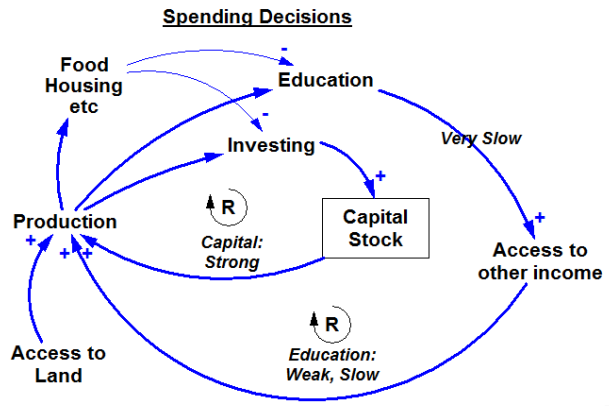

Figure 2: Capital and Education Loops

Education acts in a similar manner, under the assumption that higher education can yield greater production for the community, but it acts over much longer time scales. And, in this economy, there are fairly limited opportunities for higher earning power, so the loop is weaker than the capital loop. Never the less, people continue to place a high priority in keeping children in school when possible, despite high school fees and challenging access. In essence, people's priorities on education must not be based on purely economic considerations. Education should be considered a quality of life issue as well as an economic one.

Other dynamics display the short-versus-long term tradeoff. Most prominently, environmental degradation and land quality show a tradeoff between coping mechanisms and sustainability. The need for immediate consumption can pressure people to use land more intensely, by skipping crop rotation and fallow cycles, not using terracing, or planting and harvesting more frequently than supported by the growing season. As shown in Figure 3, these shortcuts can increase production in this environment, but they may deplete the soil or increase erosion. Over a few years, agricultural production falls below the level before over-intensive practices, further encouraging bad practices.

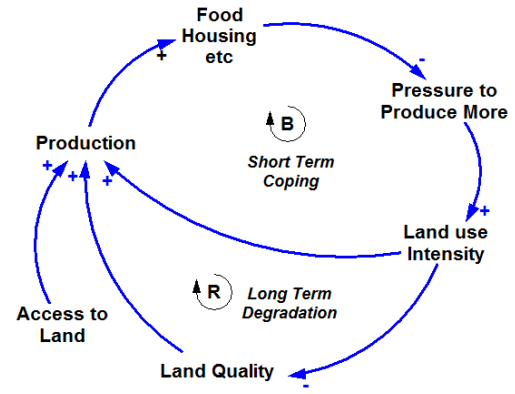

Figure 3: Land Use Intensity and Degradation

Material well-being is central to the feedback loops in this model, so production is an important sector. The humanitarian community uses terms like livelihood, which in this model would include a complex of variables in the production and consumption sectors. Production is calculated in a function similar to Cobb-Douglas – it is multiplicative for the appropriate factors of production, but as mentioned contains a correction to account for the fact that in this low-tech economy, capital is not necessary for there to be some production. The equation for agricultural production is:

$$Base\ Production * \left(\frac{Land}{Base\ Land}\right)^{\gamma Land} * \left(\frac{Labor}{Base\ Labor}\right)^{\gamma Labor} * \left(\frac{Capital + Min}{Base\ Capital + Min}\right)^{\gamma Capital}$$

Non-agricultural production is similar, but with the Markets variable in place of land. Production accumulates in the Stores stock, from which Consumption draws to be allocated between Household Goods, Investment / Capital, Current Spending (or Immediate), Education and other costs. The basic stock and flow is shown in Figure 4

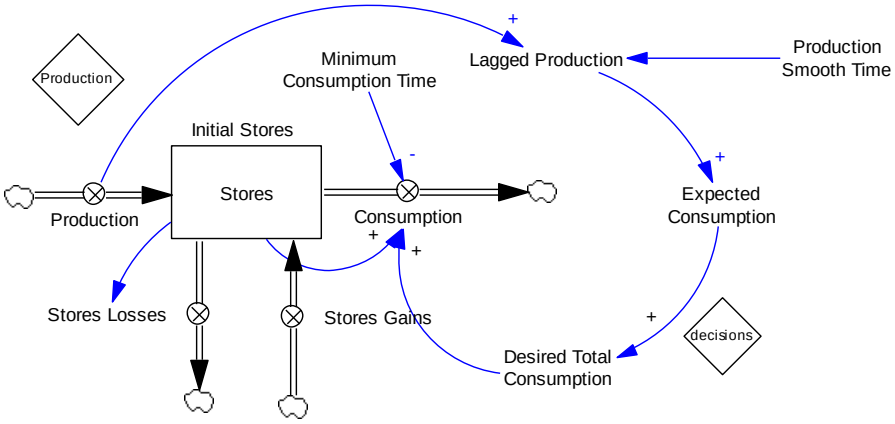

Figure 4: Production and Consumption

For parsimony, consumption in the model is split into categories that have the same dynamics or effects on other variables, as shown in Figure 5. Production can also be saved, accumulating in the Stores stock. The level of Household Goods, and the flow rate of Immediate Consumption, together determine Quality of Life. Quality of Life is both an important output metric, and a determinant of other variables such as Health and Social Cohesion.

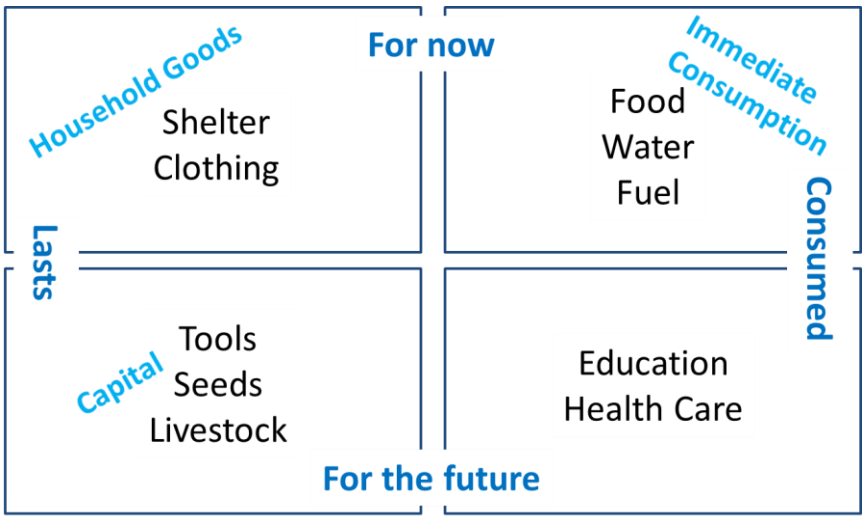

Figure 5: Types of Expenditures

Decisions in the model are based on simple floating goals: people act to close the gap between current levels and accustomed levels, where the accustomed levels slowly adjust to current. The time constants are such that people get used to improved conditions more quickly than they accept degraded conditions.

With the ability to cause displacement in the simulated environment, the resilience of the community is seen through the behavior over time of its variables. One can look at the qualitative behavior and end point of indicator variables: Quality of Life (QoL), Total Production, Total Assets. We also calculate the ratio of some variables six months after the start of recovery compared to their peak, pre-displacement values. Resilience is again, not a variable but a description of how the system responds to a shock.

A model text file written in Vensim (DRC Community Resilience SDS 2.mdl), and associated files accompanies this paper.

Model Behavior

The behavior of key model variables to a simple displacement that takes away half of the community's possessions and access to land is shown in Figure 6. When displaced, people immediately lose assets. They are also cut off from their land, and markets are disrupted, so their production fallf immediately as well. In this case, people still have some access to land, so during the displacement their QoL rises slowly even during the displacement. After the displacement is ended, the community slowly regains access to their land, allowing production – and therefore assets and QoL – to recover. There is a small bump in QoL as people have enough to save some stores. None of these variables ever quite reaches its starting point, because people have become used to a lower level of capital.

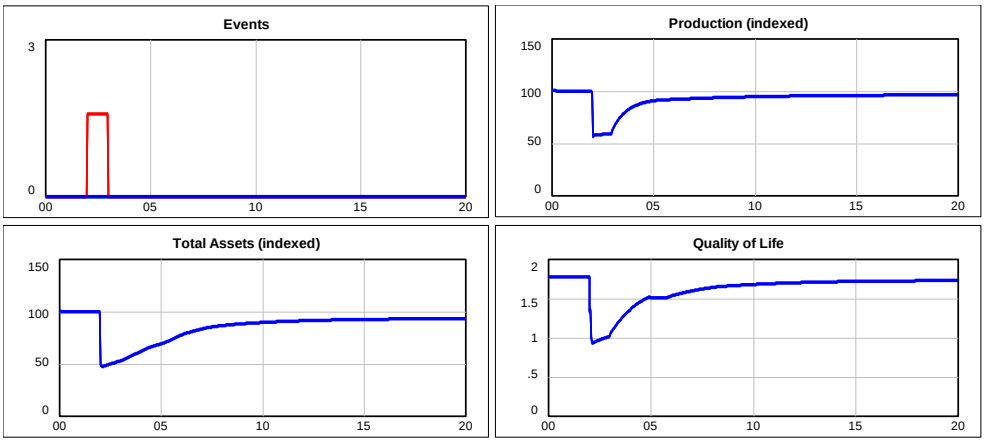

Figure 6: Response to a One-year, 50% Loss Displacement

In a more severe displacement, where land access is only 5% of the pre-displacement case – not only does production fall farther than before, but conditions continue to degrade over the course of displacement. See Figure 7.

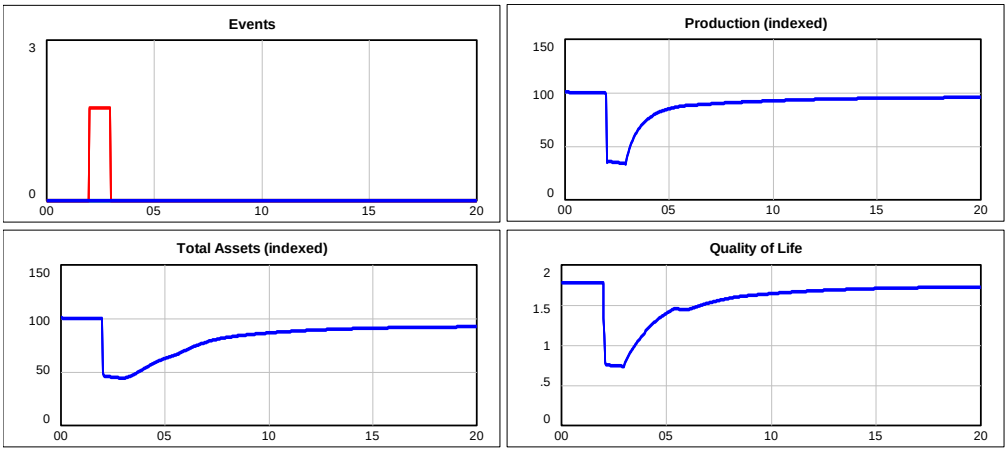

Figure 7: A Displacement with 50% Loss of Assets and 95% Loss of Land Access

With multiple displacements, both the immediate and long-term conditions are worse. As shown in figure 8, even after the recovery has progressed for a couple years, and has nearly recovered in Production, some assets are still below sustainable levels; QoL drops further than before and the eventual recovery point is even lower.

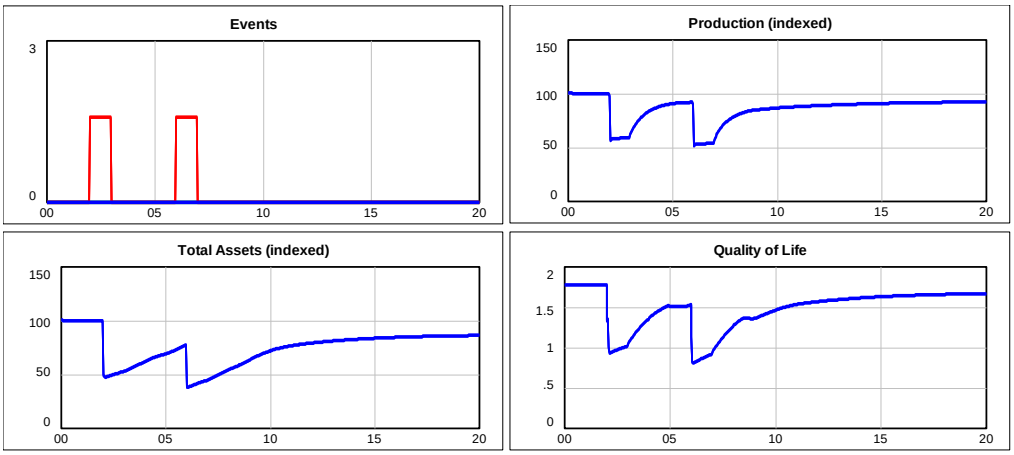

Figure 8: Two One-year, 50% Loss Displacements

Finally, the model allows for different types of aid as well as different conditions of displacement. Figure 9 zooms in on the QoL graph with three different aid treatments on the same displacement event. The no-aid case is shown for comparison: in this event QoL falls, remains steady throughout displacement, then rises with increasing access to land and build-up of assets. A cash distribution has an immediate and obvious change in quality of life, but almost no long term effect – in neither case does QoL reach its pre-displacement level in the new steady state. In fact, increasing the amount of cash cannot overcome that dynamic. In contrast, a distribution of capital has very little effect on QoL immediately – just a small impact as presence of free capital frees up production to be assigned to household and immediate needs. But the capital aid does have a long term effect, causing QoL to exceed the pre-displacement level, an outcome not possible with any amount of cash. It is a graphic demonstration of the tradeoffs shown in Figure 2 above.

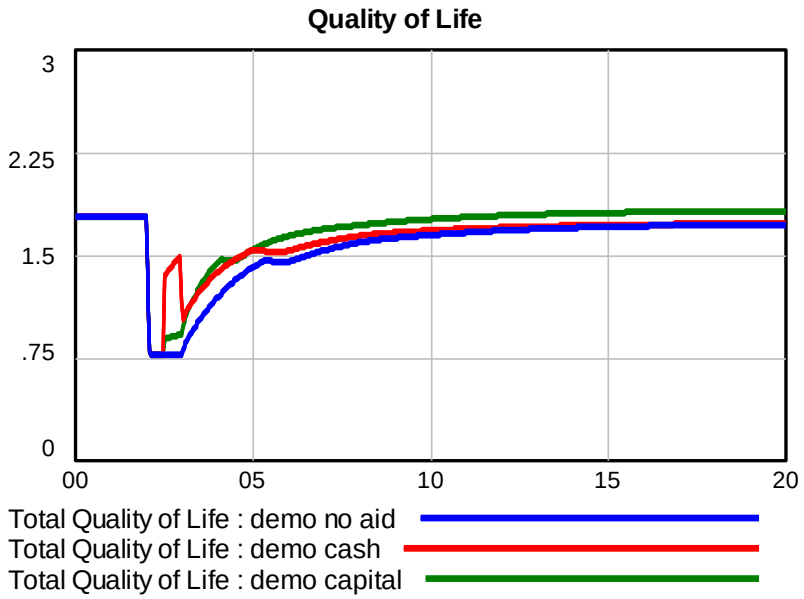

Figure 9: Cash Aid versus Capital Improvement

Results, Insights, and Next Steps

The modeling for this project is designed to be iterative. An important part of the cycle is to show the simulation to Congolese and international experts in situ, to test for both model validity and for its usefulness for outreach and education. Showing the simulation has already yielded insights as people react to model behavior and compare it to their own experience. Some of the structure in the current version was elicited precisely because of experts' reaction to the concrete example of prior versions. Thus many of our insights are in the form of new phenomena to be investigated through field research, modeling, and further feedback.

The capital recovery dynamic is the most important determinant of resilient behavior in the model. While we investigate whether capital is the only or most important mechanism, it is clear that some kind of immediate versus future tradeoff guides the recovery dynamics.

Figure 2 would seem to imply that people just need to learn to set priority on capital if they wany to recover or improve their conditions, but that is not the whole story. Figure 10 expresses the same tradeoff in a different way, highlighting the limits on people to be able to invest. If immediate needs are not met, then health and the related ability to work suffer, lowering production even further. Shifting priorities either way can lead to a spiral of vicious cycles, dragging down the conditions and production in the community.

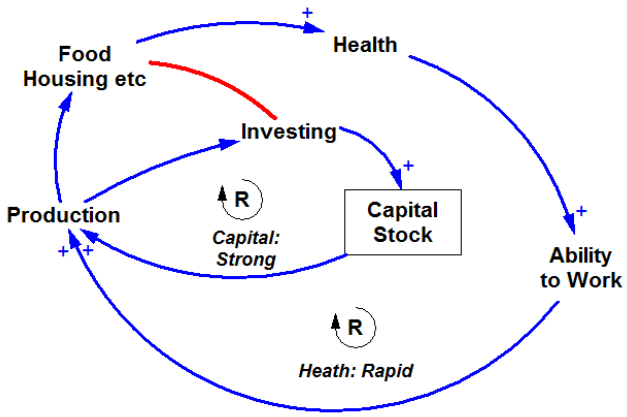

Figure 10: Health and Investment, Tradeoff and Spirals

Even given adequate resources to invest in the future while not sacrificing current needs, people might not be able to make it work. Both the rationality of and ability to apply available resources to the future are affected by conditions that are themselves affected by displacement. It makes no sense to invest in capital if one expects to lose it in a future displacement next year. There is both a rational expectation and an emotional aspiration component to the decision to forgo present consumption for future gain, both of which could be expected to fall with repeated displacements.

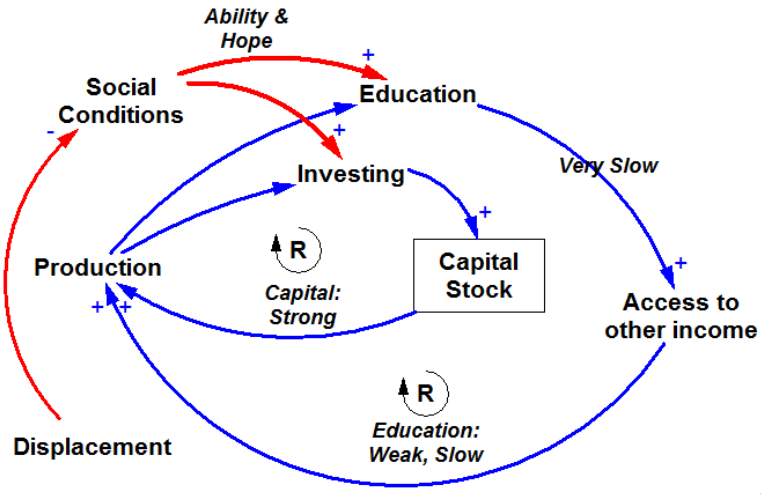

Figure 11: Social Interactions with Investing and Education

There are also mechanisms within the community that enable setting aside for the future. Each household might have a little extra; the community as a whole might have enough to invest for the community's well-being; but if that savings cannot be brought to bear on the problems at hand it does not matter. Community credit and savings schemes are built on trust, which can be damaged when the displaced community is split up among different sites.

In exploring the validity of the capital recovery dynamics, several ideas came out that warrant further elicitation. The network of factors is illustrated in Figure 12. Even if ore than basic needs are met, the ability to recover is dependent upon: external factors, like security and access; economic factors, like markets; personal factors, like skills and perception. Many of these are dependent on social phenomena – the psychosocial impact of being repeatedly uprooted. Social cohesion can cut across many of these factors by affecting credit, cooperation, expectation, and hope.

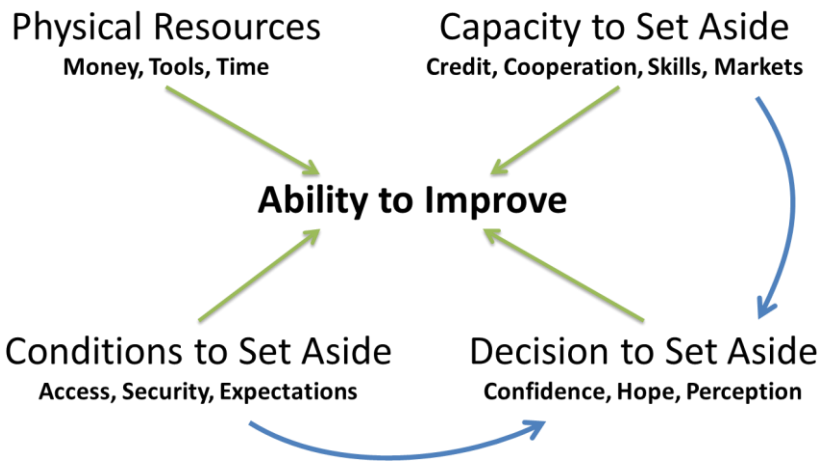

Figure 12: Factors in the Ability to Recover or Improve through Investment

It is also an important insight of the research that host communities affect displaced communities. Most of the time in the Eastern DRC, displaced people are staying in the homes of a host family. Even when they are not, sites of displacement are near or in an existing community, whose resources affect and are affected by the presence of displaced people. In addition to social cohesion within communities, relations between communities are important. One leverage point to improve resilience might be to support regions so that if any community suffers a disaster, other communities are more able and more willing to help.

Thus the research program for the next iteration of model development has a deeper focus on how social factors affect material well-being, and how those social factors are themselves affected. The next iteration n the model structure will include two communities and the transfer of people, goods, and good will (or disputes) between them. Pilot projects are expected to start this calendar year, yielding more insight as our theories of resilience are tested in action.

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