



# **Adaptive Social Protection in Rwanda: A No-Regrets Approach to Increased Resilience in a Territorial Planning Context**

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International Conference:  
“Social Protection for Social Justice”  
Institute of Development Studies, UK  
13–15 April 2011

March 29, 2011

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*Paper prepared for Conference on:  
“Social Protection for Social Justice”  
Institute for Development Studies (IDS)  
University of Sussex, Brighton, UK  
April 13-15, 2011.*

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## **Abstract**

Rwanda is a country characterized by a rapidly growing rural population and high rates of rural poverty, along with high population density and pressures on the natural resource base. These factors are a threat to Rwanda's future (Diamond, 2005). One response by Government of Rwanda to poverty, vulnerability, and environmental unsustainability has been to pilot a social protection (SP) project, called the Vision 2020 Umurenge Program (VUP), managed by the Ministry of Local Government (MINALOC). VUP provides public works employment for members of extremely poor households with able-bodied members, and direct cash transfers for poor households without members who can work (Devereux and Ndejuru, 2010; Devereux, 2010). Many of the public works projects are designed to build, strengthen and protect assets and livelihoods in order to lower vulnerability and increase resilience (to create a virtuous cycle). There is an emphasis on public works projects for land conservation and building of terraces, improving water resource management and water harvesting, and afforestation/reforestation (Gatsinzi, 2010). Thus, VUP attempts to invest in assets and livelihoods and sustainable economic, social and environmental development. VUP also carries out explicit risk reduction strategies that include awareness building related to basic needs such as food security, health, nutrition, water and sanitation, housing. However, VUP administrators recognize the need to deal with increased frequency and severity of natural hazards (e.g., droughts and floods) and related hazards (e.g., illness, malnutrition, high food prices).<sup>1</sup> Thus, there is interest in "climate-proofing" VUP to explicitly integrate disaster risk management (DRM) and climate change adaptation (CCA) with SP.

As such, MINALOC is in the process of trying to adopt the concepts of "adaptive social protection", which advocates integrating CCA, DRM, and SP (IDS, 2008; Davies, Oswald, Mitchell, 2009 and Davies, et. al., 2009), and also the "no-regrets approach" to increased resilience (Heltberg, Siegel, Jorgensen, 2009; 2010; UNDP, 2010; Siegel and de la Fuente 2010; Siegel, 2010) which advocates mainstreaming of adaptive social protection into a territorial planning context that includes real-time monitoring and evaluation in support of early warning and rapid response systems. The foundation of such a holistic approach is community-based early warning systems that can trigger rapid responses, with the VUP being flexible to update its targeted beneficiaries and benefits and public works activities based on changing economic, social, and environmental conditions. Several Government Ministries and agencies, along with several donors and UN agencies are involved in this attempt to set up a multi-hazard early warning and rapid response system with objective triggers. There are several ongoing and new initiatives that need to be integrated and mainstreamed, including establishment of a Ministry of Disaster Management, reintroduction of USAID's FEWSNet, the new UNDP project on Early Warning and Watershed Management in the Gishwati area, the recently completed National Land Master Plan and ongoing land registration process, WFP's vulnerability analyses, and work by DFID on a climate change strategy. VUP is considering how to mainstream and integrate these activities in a pilot project to implement and operationalize adaptive SP using a no-regrets approach to increased resilience. There are many new and exciting applications of geographic information systems (GIS) and information and communications technology (ICT) in Rwanda that can be utilized for this goal. The proposed system would draw on the Ethiopia Productive Safety Nets Project, Kenya Arid Lands Resource Management Project, and Kenya Hunger Safety Net Project and other relevant international experiences. This paper presents advances in implementing adaptive SP in Rwanda using a no-regrets approach to increased resilience in a territorial planning context.

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<sup>1</sup> The VUP's lack of attention to climate-related hazards was noted in a recent review of the program (see Devereux and Ndejuru, 2010).

## I. Introduction

Rwanda is a land-locked country in Eastern Africa with a population of about 10 million people<sup>2</sup>. It is characterized by a rapidly growing rural population with high rates of rural poverty, high population density, and pressures on the natural resource base. These factors threaten Rwanda's future (Diamond, 2005). Since the 1994 civil war and genocide, Rwanda has been on a positive development trajectory. However, despite the gains, Rwanda remains a poor country, with close to 60% of the population living below the poverty line, and almost 40% extremely poor. Responding to the challenges, the Government of Rwanda (GoR) developed the *Economic Development and Poverty Reduction Strategy* (EDPRS) in 2007, which seeks pro-poor and inclusive growth, and faster poverty reduction. Vulnerability to periodic natural disasters, mainly in the form of droughts and floods (and linked problems related to food insecurity and health epidemics) is a major concern for Rwanda (Prywes and Veriwimp, 2005; UNISDR, 2005; Red Cross, 2009; WFP and NISR, 2009). It is estimated that during 1974-2007, about 4 million Rwandans were affected by droughts and 2 million by floods. Given this high level of exposure to natural hazards, it is important that Rwanda's development strategies help reduce vulnerability and increase resilience.<sup>3</sup>

The most densely populated country in Sub-Saharan Africa, Rwanda is dealing with problems related to deforestation, small and fragmented landholdings, shrinking amounts of land available per household, and unsustainable land-use management. This has resulted in soil erosion, declining land productivity, and increased vulnerability to different hazards; with local differences over the country (Government of Rwanda, 2009a). There seems to be an increasing problem of floods and also droughts in certain parts of the country. There is some "evidence" of changes in climate patterns, but it is hard to substantiate because Rwanda's hydro-meteorological system was destroyed during the conflicts of 1994 (Mutabazi, 2008; Mutabazi, 2010a). The lack of meteorological stations means that there is a lack of weather/climate<sup>4</sup> data and early warning systems (EWS), so there is a lack of current and time-series weather/climate information to make forecasts and to track possible changes over time. On the other hand, people in the field report changes in rain and temperature patterns, and a great deal of uncertainty about planting and harvesting times and practices.

In Rwanda, there are strong links between poverty, food insecurity, lack of sustainable land management (SLM), and environmental quality; and the vicious cycles need to be broken. The Government of Rwanda (GoR) is in the process of addressing these issues through new national programs and strategies for social protection, environment and natural resource management, disaster management, a land-use master plan, agricultural transformation, and climate change (DFID, 2009; Mutabazi, 2010b).

Increasing concerns about multiple hazards that are directly and indirectly linked to climate variability and extreme weather events provides an opportunity for integration of disaster risk

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<sup>2</sup> Rwanda's population in 2010 was estimated to be 10 million persons.

<http://www.indexmundi.com/rwanda/population.html>

<sup>3</sup> See background paper to the new Rwanda Country Assistance Strategy: [http://www.gfdrr.org/docs/CAS\\_Rwanda.pdf](http://www.gfdrr.org/docs/CAS_Rwanda.pdf)

<sup>4</sup> The differences between *weather* and *climate*. **Weather** is the day-to-day state of the atmosphere, and its short-term (minutes to weeks) variation. Popularly, weather is thought of as the combination of temperature, humidity, precipitation, cloudiness, visibility, and wind. **Climate** is defined as statistical weather information that describes the variation of weather at a given place for a specified interval. In popular usage, it represents the synthesis of weather; more formally it is the weather of a locality averaged over some period (usually 30 years) plus statistics of weather extremes. **Climate change** is considered in terms of years, decades or even centuries.

management (DRM), climate change adaptation (CCA) and social protection (SP). The availability of geographic information systems (GIS) and spatial data infrastructures (SDI) and information and communications technologies (ICT) have opened new possibilities for community-level and territorial approaches to risk management.<sup>5</sup> These combined efforts aim to increase resilience by integrating early warning and rapid response systems, territorial planning, ongoing monitoring and evaluation efforts that improve forecasting of hazard events, and understanding of sources of vulnerability and the capacity to manage hazards/risks (Siegel, 2010; UNDP, 2010).

## II. Definitions and Concepts: Risk, Hazard, Vulnerability, Capacity, Resilience

Given the multidisciplinary aspects of climate change and responses to climate change, there are many definitions used in different strands of literature and by different practitioners. Here we briefly provide some key definitions used in this paper, drawing on the *risk-vulnerability chain*.<sup>6</sup> The risk-vulnerability chain conceptualizes the relationship between risk, hazard, vulnerability, capacity and resilience (see Annex 1, including Figure 1).

$$\text{Disaster Risk} = \text{Hazard} \times \text{Vulnerability} - \text{Disaster Risk Management Capacity}$$

*Hazard* is a potentially damaging event, *vulnerability* summarizes the conditions determined by physical, social, economic, and environmental factors or processes, which affect exposure and sensitivity (i.e., *susceptibility*) of households or a community to hazards, capacity is the ability to lower vulnerability, and *disaster risk* includes the potential negative impacts from a hazard event (for a given vulnerability and capacity). *Resilience* is the ability of a system to adjust to changing conditions, by lowering vulnerability and increasing capacity to manage hazards/risks. See Annex 1 (including Figure 1 for more details).

With respect to climate change and disaster risk, we ask: “what is really changing?” To what extent is it climate (e.g., and/or different hazards associated with climate) and/or the vulnerability and/or capacity to manage risks that is changing? Clearly, the answers to these questions will influence the appropriate policy decisions. **This paper will highlight the potential for SP policies and programs in Rwanda to increase household and community resilience by lowering vulnerability and increasing the capacity for poor and vulnerable households, by explicitly integrating SP with DRM and CCA.**

The term *resilience* has been increasingly used in the development community to indicate a proactive asset/livelihood approach to DRM, CCA, and SP that specifically targets poor and at-risk individuals, households and communities (Siegel, 2010). We refer to this proactive people and place oriented approach to building resilience as a “no-regrets” approach because it focuses on transforming, strengthening and protecting assets and livelihoods, including the provision of basic needs (including security), for all persons. “No-regrets” actions are actions by households, communities, and local/national/international institutions that can be justified from economic, and social and environmental perspectives whether natural hazard events or climate change (or other hazards) take place or not. “No-regrets” actions increase resilience, which is the ability of a “system” to deal with different types of hazards in a timely, efficient,

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<sup>5</sup> See Nedović-Budić and Budhathoki (2006) for definitions of GIS, SDI, ICT and the inter-relationships.

<sup>6</sup> Different studies define risk and vulnerability and other key terms of the SRM risk-vulnerability chain differently (see, Alwang, Siegel, Jorgensen, 2001; Adger, 2006). This presentation follows Siegel and de la Fuente (2010).

and equitable manner. Increasing resilience is the basis for sustainable growth in a world of multiple hazards (see Heltberg, Siegel, Jorgensen, 2009; 2010; UNDP, 2010; Siegel 2010).

## **II.1 Social Protection (SP) and Early Warning Systems (EWS)**

Globally, there has been an increasing focus for countries to have social protection (SP) programs that provide basic needs and services (food security, health, nutrition, education, water and sanitation) for the chronic poor and special assistance to the non-poor and poor when there are exogenous hazards and/or disasters (i.e., “shocks”) that result from climatic factors and/or any economic, social, or environmental factors. The attention to both poor and non-poor individuals and households is an important aspect of SP (World Bank, 2001; Holzmann, Sherburne-Benz, and Tesliuc, 2003), even though the focus remains on the poorest individuals and households and those classified as “vulnerable groups” (such as the elderly, disabled, infirm, orphans, female headed households, socially marginalized minorities and/or refugees). New programs such as community-driven development, social funds, conditional cash transfers (CCTs), cash transfers to vulnerable groups, attempts at “universal” health care and education, public works programs, health insurance, unemployment programs, micro-finance and micro-insurance, social inclusion programs, and emergency assistance have all opened up new possibilities for decreasing vulnerability and building resilience, with a focus on community-based risk management (see Grosh, et. al., 2008; World Bank, 2009b; World Bank, 2011).

An example of the focus on increased resilience as a response to multiple hazards includes the World Bank’s *Building Resilient Communities: Risk Management and Response to Natural Disasters through Social Funds and Community-Driven Development Operations* (World Bank, 2009b). It must be emphasized that the change in focus to community-driven DRM/CCA/SP does not mean that there is not a critical role for local, national, and international governments and institutions. For risk pooling and risk sharing it is important to consider other levels because natural disasters result, in fact, when households and communities are overwhelmed by the burdens of natural hazards events. It is critical to have national and international financial and technical assistance, and for access to more distant labor and financial markets (and remittances). There have been major advances in ICT technologies and increasing access by households and communities to information (e.g., via cellphones and internet) about hazards and actions that can be taken to facilitate risk management. These ICT technologies transcend political boundaries and link individuals, households and communities with other levels for a wide array of purposes, including labor, financial and product markets, awareness building about hazards, vulnerabilities, risk, and also entertainment.

There is also increasing awareness in the land governance community about the ability to incorporate geo-referenced data about hazards/risks, vulnerabilities and capacities using modern ICT, GIS and SDI technologies have created new ways to help decision-makers at community, local, national and international levels. Good land-use management and territorial planning, in turn, is the key to achieving poverty-reducing sustainable growth and to effective DRM, CCA and SP (Siegel, 2010; UNDP, 2010). Early warning systems (EWS) can help predict the onset of a hazard event (“shock”) to move from an ex-post reactive response, to an ex-ante proactive action. Through improved preparedness it is possible to act before a disaster is manifested and thus be ready for a rapid response when the hazard event (“shock”) takes place.

What is needed is a balance between bottom-up and top-down, formal/informal, public/private/civil society approaches with a community-based focus and strong national and international cooperation and coordination. In short, there is a need to simultaneously think and act globally and locally, while striving for local community-based DRM/CCA/SP plans with options for external funding and risk pooling and transfer from outside the narrow confines of households and communities (especially for poor and at-risk communities). In addition, there are ongoing discussions about migration (temporary and permanent, including resettlement from hazard-prone areas) and remittance policies to help manage negative impacts of natural hazards. Innovative insurance and risk pooling and transfer products are increasingly being proposed and tested by international development agencies, including for large-scale disasters (Pollner, Kryspin, Nieuwejaar, 2008; Hill and Torrero, 2009; Hellmuth, et. al., 2009; Heltberg, Siegel, Jorgensen, 2010; World Bank, 2010b).

**The key for timely and efficient and equitable risk management systems is having multi-hazard early warning systems (EWS) and policies and programs in place to facilitate rapid response.** Having people/place specific DRM programs (e.g., preparedness) and EWS are a necessary, but not sufficient condition for rapid response (e.g., relief and rapid recovery). Having existing SP programs that can be scaled up in times of a hazard event obviously can be helpful in most circumstances, except when there is a totally devastating earthquake or flood destroys the existing social networks (Vakis, 2006; ALNAP, 2008; IDL, 2009; Heltberg, Siegel, Jorgensen, 2010; Siegel and de la Fuente, 2010; World Bank, 2010e).

## **II.2 Adaptive Social Protection (ASP): Integrating SP with DRM and CCA**

SP/DRM/CCA have a lot in common, but they have historically been dealt with by different disciplines and communities of practice, operating in different institutions and using different conceptual and analytical frameworks and terminologies. All three agendas attempt to manage hazards/risks by transforming, strengthening and protecting assets and livelihoods, including efforts to improve institutional capacities, and to decrease vulnerability and build resilience and thereby promote poverty-reducing sustainable growth. However, each has a different focus in terms of timing, purpose and target groups.

The concept of *adaptive social protection* (IDS, 2009; Davies, Oswald, Mitchell, 2009; Davies, et. al., 2009; OECD, 2009<sup>7</sup>) is a good starting point to consider integration of SP, DRM and CCA. Adaptive SP includes actions that transform, strengthen, and protect assets and livelihoods in a manner that households and communities are resilient and adaptive to changing economic, social and environmental conditions and multiple hazards. Although there has been limited explicit integration of policies and practices of SP/DRM/CCA, in practice, there has been some convergence or overlap in the realm of projects. For example, there are efforts to develop different types of weather-index insurance, and there public works projects that are considered as SP projects but the actual work being done is relevant for DRM and/or CCA (e.g., land conservation and tree planting). World Bank (2010a) highlights how post-disaster infrastructure can be built using SP programs for public works projects that can also be considered for DRM and/or CCA (see Annex 2).

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<sup>7</sup> OECD's chapter on: "Climate Change Adaptation, Disaster Risk Reduction and Social Protection" in the 2009 publication: "Promoting Pro-Poor Growth: Social Protection (OECD, 2009),

Adaptive SP focuses attention on initiatives that transfer income (cash or in-kind) or assets to the poor, and protect the poor and vulnerable non-poor against hazards/risks, and enhance the social status or empowerment of the poor and marginalized. As such, SP initiatives can be categorized in terms of their objectives (see Davies, Oswald, Mitchell, 2009):

- a) *Protective measures*: which provide relief from deprivation,
- b) *Preventive measures*: designed to prevent deprivation,
- c) *Promotive measures*: aimed at enhancing income and capabilities, and
- d) *Transformative measures*: which seek to address issues related to social justice, and social/economic/political inclusion and empowerment.

### **Adaptive Social Protection (ASP): Achieving Climate Change Adaptation (CCA) and DRM Disaster Risk Management (DRM) through Social Protection (SP)**

| <b>SP category</b>    | <b>SP instruments</b>  | <b>CCA and DRM benefits</b>   |
|-----------------------|--|---|
| <i>Protective</i>     | <ul style="list-style-type: none"> <li>- social service provision</li> <li>- social transfers (food/cash), including safety nets</li> <li>- social pension schemes</li> <li>- public works programs</li> </ul>   | - protection of those most vulnerable to climate risks, with low levels of adaptive capacity  |
| <i>Preventive</i>     | <ul style="list-style-type: none"> <li>- social transfers</li> <li>- livelihood diversification</li> <li>- weather-indexed crop insurance</li> <li>- social insurance</li> </ul>   | - prevents damaging coping strategies as a result of risks to weather-dependent livelihoods   |
| <i>Promotive</i>      | <ul style="list-style-type: none"> <li>- social transfers</li> <li>- access to credit</li> <li>- asset transfers or protection</li> <li>- starter packs (drought/flood-resistant)</li> <li>- access to common property resources</li> <li>- public works programs</li> </ul> | <ul style="list-style-type: none"> <li>- promotes resilience through livelihood diversification and security to withstand climate related shocks</li> <li>- promotes opportunities arising from climate change</li> </ul> |
| <i>Transformative</i> | <ul style="list-style-type: none"> <li>- promotion of minority rights</li> <li>- anti-discrimination campaigns</li> <li>- social funds</li> <li>- proactively challenging discriminatory behavior</li> </ul>   | - transforms social relations to combat discrimination underlying social and political vulnerability  |

Source: OECD (2009, p.205)

### **III. Description of Rwanda's Vision 2020 Umurenge Program (VUP)**

The Vision 2020 Umurenge Program (VUP) is a social protection (SP) program in Rwanda managed and implemented by the Ministry of Local Government (MINALOC)<sup>8</sup>. Implementation began in 2008 with cash transfers for public works to extremely poor households. The VUP is active in the 3 poorest sectors in all 30 districts, and there are plans to expand to another 30 districts by mid 2011 (there are 416 sectors in Rwanda).

#### **The Institutional Structure in Rwanda**

|                     |        |
|---------------------|--------|
| Provinces           | 5      |
| Districts           | 30     |
| Imirenge (Sectors)  | 416    |
| Akagari (Cells)     | 2,148  |
| Umdugudu (Villages) | 14,837 |

There are 4 provinces (Northern, Southern, Eastern and Western) and in addition Kigali City has equivalent status, each with a local government institution.

<sup>8</sup> See Government of Rwanda (2007), Devereux and Ndejuru (2009); Devereux (2010) for descriptions of VUP.



The VUP goal is to contribute to the national target to reduce **extreme income poverty** from 36.9% in 2005/6 to 24.0% in 2012. The purpose is to **accelerate the reduction of extreme poverty in VUP target Imirenge**.

This is achieved through interventions which build, strengthen and protect household and community assets and livelihoods, increase resilience by reducing vulnerability and by increasing capacity and productivity, by providing transfers and finance plus technical assistance for family planning, hygiene and financial literacy, etc., and public works to improve natural resource management and environmental quality (e.g., land conservation and terraces, reforestation, improved water resource management and water harvesting, irrigation). It is the stated program objective to have VUP beneficiaries “graduate” from the program, over time on a sustainable basis (Devereux, 2010).

Targeting of beneficiaries is done by classifying households using the community-based *Ubedehe* system. There are 6 household (HH) *Ubedehe* categories – Category 1: poorest, no able bodied person(s), Category 2: very poor, with able body person(s), Category 3: poor, some land and housing, Category 4: resourceful poor, HH Category 5: food rich, and Category 6: money rich. Communities carry out the *Ubedehe* classifications. Periodically, the *Ubedehe* information for each sector is recorded as *social maps*, which are hand-drawn community maps that indicate where different types of households are located. Information about individual households on the social maps could be digitized on community maps used for the national land registration. This could be the basis of a community-based management information system (MIS).<sup>9</sup> In fact, MINALOC has recently conducted a national *Ubedehe* exercise to categorize households as part of a national MIS.

There are 3 basic types of benefits from VUP, a) **direct support payments** to the poorest households without able-bodied members, b) **public works** for poor households with an able-bodied member, and c) **access to (subsidized) credit** (and other financial services). Households in *Ubedehe* categories 1 and 2 can qualify for direct support or public works depending whether or there is an adult in the household capable of participating in public works. Households in *Ubedehe* categories 1, 2 and 3 can access credit under the financial services intervention. Households in categories 4, 5, 6 can also access finance, but only if they participate in groups that include HHs from the lower 3 categories. Through 2010, almost 60% of VUP benefits were dispersed as transfers for direct support or public works, and the remainder for financial services. The design of Rwanda’s VUP is very similar to Ethiopia’s Productive Safety Net Project (PSNP) (see World Bank, 2010e). VUP-funded public works projects are dominated by anti-erosive ditches and radical terracing of hillsides, which explicitly aim at environmental protection (Devereux, 2010). Such public works have clear DRM and CCA aspects as they reduce the exposure to natural disasters (e.g., droughts and floods), improve soil productivity and also expand the amount of cultivatable land. As such, the SP public works can reduce vulnerability and build resilience and increase incomes and food security in a virtuous cycle that links SP with DRM and CCA. The multiple benefits from a similar type of SP program have been documented for the Ethiopia PSNP (World Bank, 2010e).

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<sup>9</sup> Discussions have been ongoing with SwedeSurvey, a consulting firm that assisted the NLC on the National Land Use and Development Plan, about the technical and financial aspects of undergoing such an exercise.

The classification of potential VUP beneficiaries is conducted once a year, and there are different benefit packages set based on local conditions (e.g., wage rates for public works are set based on prevailing wages).<sup>10</sup> Contracts for public works are negotiated on a project-by-project basis, with cash transfers set at or near local market wage rates.<sup>11</sup> Payments for public works are made after each 2-week work cycle.

Direct support cash transfers are based on a national scale of monthly amounts paid for a year, with payments made (to bank accounts of beneficiaries) approximately every month. The amount of the payment reflects the number of household members on a reducing scale up to a maximum of 5 household members.

Financial terms for micro-loans, including interest rates and repayment schedules, are agreed upon at time of processing the loan. The concept of receiving money from government that needs to be repaid is a new concept for poor rural households, and the incentives to default are high.

Project beneficiaries also receive technical assistance for capacity-building, and that many beneficiaries qualify for benefits from other social programs (and the VUP helps the beneficiaries access these other programs). There are all examples of efforts by VUP to provide a range of vulnerability-reducing and resilience-increasing activities (e.g., family planning, hygiene, nutrition and improved cooking technology, business and financial literacy). These vulnerability-reducing resilience-building interventions are also examples of the overlaps between SP, DRM and CCA (Siegel and de la Fuente, 2010; Siegel 2010).

Thus, the VUP has components that are protective and preventative promotive and transformative, but it lacks explicit attention to helping poor and vulnerable (non-poor) households manage climate-related hazards/risks and other types of shocks.

### **III.1. Need for Risk Management Dimension of VUP: “Climate-Proofing” the VUP**

A major role for a SP programs like VUP is to deal with problems related to seasonality and vulnerability during the year, in addition to dealing with vulnerability between years (Devereux and Cipryk; 2009; Devereux, 2010). VUP administrators recognize the need to deal with increased frequency and severity of natural hazards (e.g., droughts and floods) and related hazards (e.g., illness, malnutrition, high food prices).<sup>12</sup> Thus, there is interest in “climate-proofing” the VUP to explicitly integrate SP with DRM and CCA. Such an approach requires community-based EWS that can trigger rapid responses, with the VUP being flexible to update its targeted beneficiaries and benefits and public works activities and benefits based on changing economic, social, and environmental conditions. Note, when we refer to “climate-proofing” of VUP, we are using a broad definition of climate-related hazards (really all causes of fluctuations in real incomes and consumption) and are thereby promoting a multi-hazard approach.

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<sup>10</sup> There has been some debate on whether to provide a “livable wage” near or above the “market wage”, or a wage that is lower than the “market wage”, thereby to prevent any artificial upward pressure on wages.

<sup>11</sup> It should be noted that one of the problems faced by VUP, to date, has been the lack of available public-works to cover all the persons who qualify and/or to provide enough work for all of those already participating.

<sup>12</sup> The VUP’s lack of attention to climate-related hazards was noted in the first annual review of the program (see Devereux and Ndejuru, 2010).

As mentioned previously, the identification of potential VUP beneficiaries is done once a year (Devereux, 2010). However, during the year, households are vulnerable to various hazards, including climate-related hazards (“shocks”), like droughts and floods and climate-related epidemics that manifest themselves through food insecurity, malnutrition, diseases, lack of water/sanitation, unemployment, crop failure, livestock losses, loan defaults, etc. Such hazards can force VUP households to adopt unplanned coping strategies that can destroy/harm assets and livelihoods, and even destroy/damage benefits of the project (e.g., households can “fall back”, by moving from category 2 to 1, or from category 3 to 2). In addition, non-VUP households in Categories 3, 4, 5 and even 6 might also suffer losses in assets and livelihoods (e.g. through crop failure). The increases in human and environmental vulnerability can have possible irreversible damages to individuals/households.

Climate variability and extreme weather events and possible climate change can make things worse. There is a need for objective early warning “triggers” to facilitate rapid response, and flexibility in the targeting of beneficiaries and benefit packages (e.g., the ability to scale up direct support or mobilize “off-the-shelf” public works projects). The Ethiopia PSNP has recognized the need to provide early warning and rapid response mechanisms with a well-defined institutional structure that links levels of decision-making and governance (from the community to district to national levels and across sectoral ministries and in cooperation with donors and NGOs (IDL, 2009; World Bank, 2010e). The Ethiopia PSNP has recently created a *Risk Financing Component* that integrates early warning systems with preparedness and contingency plans and contingency financing in a manner that is community-based and linked to district and national levels for implementation.

#### **IV. New Strategies for Social Protection (SP), Disaster Risk Management (DRM), Climate Change Adaptation (CCA), Food Security/Malnutrition**

The Government of Rwanda recognizes the links between DRM, CCA, food security, and SP, and the need to link and integrate the respective national strategies and implementation plans. However, as in other countries, there are strong institutional factors that act as a constraint on greater linkages and integration. The VUP Project Coordinator recently participated in the DFID-World Bank-IDS sponsored International Workshop on “Making Social Protection Work for Pro-Poor Disaster Risk Reduction, and Climate Change Adaptation” in Addis Ababa in mid-March 2011 to learn how to better integrate SP, DRM and CCA.<sup>13</sup> This is part of ongoing efforts by Rwanda to learn from international best practices for adaptive social protection.

The table below summarizes recently-developed and evolving strategies within the Government of Rwanda which need to be interlinked to provide an integrated and effective response to the impact of shocks on the vulnerable households and communities:

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<sup>13</sup> See <http://www.ids.ac.uk/go/events/making-social-protection-work-for-pro-poor-disaster-risk-reduction-and-climate-change-adaptation-international-workshop>

| Strategy                            | Own ing Ministry | Key objective  |
|-------------------------------------|------------------|--|
| National Social Protection Strategy | MINALOC          | To provide support to the most vulnerable people and groups in Rwanda  |
| Disaster Risk management Strategy   | MIDIMAR          | To provide an effective response in the event of a disaster  |
| Climate Change Adaptation           | MINELA           | To develop climate resilience strategies for Rwanda and to strengthen existing social protection programs by expanding coverage to consider climate change |
| Food Security/Malnutrition Strategy | MINISANTE        | To improve nutrition amongst the poorest people in Rwanda  |

Although some strategies recognize the need for a multi-sector approach one of the biggest challenges facing the Government is to harmonize activities across ministries to avoid duplication of effort, align priorities across the different stakeholder institutions, make most efficient use of limited funds and deliver the best response for the vulnerable communities in Rwanda.

These Strategies are each outlined below and then the implications are developed in Section V.

**National Social Protection (SP) Strategy:** several Ministries and agencies have collective responsibility for social protection in Rwanda, including the Ministry of Local Government (MINALOC), the Ministry of Health (MINISANTE), and the Ministry of Education (MINEDUC). The National Social Protection Strategy (NSPS) was approved by Cabinet in January 2011 (Government of Rwanda 2011). A major pillar of the NSPS is the VUP.<sup>14</sup>

The National SP Strategy is a broad based document which seeks to harmonise existing SP interventions, conduct feasibility studies to identify how particular vulnerable groups (e.g., the aged, children, and people with disabilities) can best be supported and also to improve the regulatory framework around such issues as a minimum wage. The NSPS was revised in November 2010 to include a special section on risk management that highlights the need to integrate social protection with climate change adaptation, disaster management, food security to deal with different hazards (see Section: 3.3.6, p.42-43 “*Risk mitigation and responsiveness to shocks*”).

Work is currently under way to develop a five year Implementation Plan for the NSPS. Although not yet complete the diagnostic work which has been done recognizes a number of factors critical to the successful implementation of the plan including a) capacity building for those involved in SP, at all both national and sub-national level b) a review of institutional mechanisms and the clear assignment of roles and responsibilities within the SP sector c) a sector wide monitoring and evaluation process, built around a national MIS.

Below is an excerpt from the new Rwanda National SP Strategy (Government of Rwanda, 2011, p.42-43) that details an integrated and comprehensive approach to risk management.

<sup>14</sup> See Government of Rwanda (2007), Devereux and Ndejuru (2009), Devereux (2010).

## ***Risk mitigation and responsiveness to shocks ( from new Rwanda SP Strategy)***

*The social protection programmes and complementary activities already described under this strategy combine protective and productive measures, which will work together to reduce household and community poverty and vulnerability. However they largely address chronic needs and it is crucial to prevent progress from being undermined by shocks and disasters. Commonly experienced risks/disasters are linked with climate related factors, and increased climate variability and possible climate change makes things worse.*

*Shocks and disasters impact the poor most negatively because their asset base is low and livelihoods highly exposed; their risk management options are limited; and their coping mechanisms may entail heavy costs (such as in terms of nutrition, education, health and even a shift in burden to less affected households) which all negatively impact on human development and perpetuate accelerated vulnerability.*

*It is important therefore that social protection systems are complemented and strengthened by risk mitigation and rapid response systems. Pillars of effective risk management are:*

- a) Effective early warning systems in place to indicate the need for a response as early as possible;*
- b) Contingency plans in place so that when a shock is indicated key actors in the system have already thought through how they need to respond;*
- c) Contingent financing resources need to be ready and available to avoid negative consequences of a delayed response; and*
- d) Adequate institutional arrangements and capacity in place or able to be put in place quickly to allow the prepared plans to be implemented.*

*By anticipating and responding to shocks early, people can be provided with appropriate and timely support, and will be able to avoid destructive coping mechanisms, and minimise negative impacts of shocks.*

*There are a range of stakeholders involved in early warning, risk mitigation, climate adaptation and disaster management and response in Rwanda. There is great potential across them for greater linkages, coordination and synergies in strategies, plans, programs, data management and information systems, and responses.*

*Within the social protection sector, there is potential to utilize early warning information and for existing programs (such as the VUP Direct Support and Public Works) to be refined in order to be able to scale up when needed to meet transitory needs in response to shocks. Much of the infrastructure and systems for delivery are already in place, and modifications could include increased payments to existing beneficiaries and an extension of program coverage.*

*The government will therefore establish a technical working group to strengthen linkages and coordination between all government and non-government organizations involved in early warning, risk mitigation, climate adaption and disaster management. Its objective will be to strengthen the effectiveness and potential impact of early warning, risk mitigation and response systems.*

*The above section from the new Rwanda National SP Strategy draws on experiences in other countries, especially the Ethiopia Productive Safety Nets Program, notably the parts about*

having triggers for flexible/responsive and “scalable” SP programs (see IDL, 2009; Wiseman and Hess, 2009; World Bank, 2010c; World Bank, 2001e) and the Kenya Arid Lands Resource Development Project (GEF, 2007, <http://www.aridland.go.ke/index.php>), notably the focus on community-based and nationally coordinated system (via districts) for DRM/CCA.

<sup>15</sup> There are also similarities with the Kenya Hunger Safety Net Project (HSNP).<sup>16</sup>

***Disaster Risk Management (DRM) Strategy:*** the Ministry of Disaster Management and Refugee Affairs (MIDIMAR) is a new Ministry (established March 2010) with new offices, ongoing hiring of staff and capacity building. The National Disaster Management Center (NDMC) has been historically linked to the Office of the President (and the Prime Minister’s Office). There is a desire to be the key player in disaster management, broadly defined. A draft strategy was prepared December 2009 (see Government of Rwanda, 2009b), and work has begun on preparation of an implementation plan. The Disaster Management Strategy does not explicitly refer to climate change and/or the need to link with climate change, food security and social protection (but MINALOC is a member of the National Steering Committee). There are district level offices for MIDIMAR and the desire for a decentralized command structure that emphasizes and is based on community-level DRM. There is a need to re-assess the institutional structure of MIDIMAR, and relationships with other institutions (especially regarding linkages to CCA and SP and food security) at different levels (e.g., international, national, district, community). This is true especially in light of the mention made of DRM in the new National SP Strategy.

***Climate Change Adaptation (CCA) Strategy:*** the Ministry of Natural Resources, Environment, and Land (MINELA) is the Ministry charged with responsibility for climate change, with the Rwanda Environmental Agency (REMA) being the agency directly responsible. The recent *Rwanda State of Environment and Outlook* (Government of Rwanda, 2009), highlights the need to develop climate resilience strategies for all sectors, vulnerable regions and populations, and to strengthen existing social protection programs by expanding coverage to consider climate change. A DFID-funded study: “Economics of Climate Change in Rwanda.” (DFID, 2009) concluded that “increasing social protection” (p.41) is an essential component of a climate change adaptation strategy for Rwanda.

In November 2010 there was a launch of a DFID-funded “Climate Change Strategy for Rwanda” that will make some concrete proposals for dealing with climate change adaptation and mitigation (with a focus on low-carbon growth). At the November 2010 launch, which included the Minister of MINELA, it was made clear that there is a need for integration and cooperation of existing/planned initiatives, and that the new Climate Change Strategy was a good opportunity to promote linkages of CCA and SP (with DRM and food security).<sup>17</sup>

***Food Security/Malnutrition Strategy:*** the Multisectoral Strategy to Eradicate Malnutrition, is a new (August 2010) initiative by the Ministry of Health (MINISANTE). According to the strategy (Government of Rwanda, 2010, p.6): “... effective nutrition interventions have a high impact in reducing death and disease and avoiding irreversible harm to health and

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<sup>15</sup> In Kenya, community-based information is collected to produce a district report. District reports are assessed by a national multi-sectoral agency dealing with National Food Security Assessments.

See: <http://www.aridland.go.ke/inside.php?articleid=547>

<sup>16</sup> See [www.hsnap.or.ke](http://www.hsnap.or.ke)

<sup>17</sup> See <http://www.smithschool.ox.ac.uk/project-launch-a-rwandan-national-strategy-on-climate-change-and-low-carbon-development/>

cognitive development due to under nutrition. Recent economic studies, found that such interventions are highly cost-effective, with major returns to individual intellectual development, and earnings and national economic growth.”

A key feature of this new strategy is that it is explicitly multisectoral, and brings together MINISANTE, Ministry of Education (MINEDUC), Ministry of Agriculture (MINAGRI), and MINALOC as key Government ministries. In particular, there is support for vulnerability reducing activities for households, and community-based monitoring. The FAO is providing some technical assistance (TA) to MINAGRI for an implementation plan, and FAO has indicated that it would consider funding a similar TA for VUP/MINALOC toward an implementation plan for this strategy.

It is important to note that the Ministry of Health is already introducing community-based health monitoring and the use of ICT to transmit information as the basis for early warning and rapid response systems (Frasier, May, and Wanchoo, 2008; Lagie, Rowson and Ndagje, 2008). Community-based monitors are trained with some basic health skills and check on the status of vulnerable groups such as pregnant mothers, and new-born babies and send out warning notices if there is a problem. This system of community-monitors using ICT to transmit information can be applied to an early warning and rapid response system for climate-related hazards.

## **V. “Climate-Proofing of VUP”: Findings and Recommendations**

As mentioned previously, VUP administrators recognize the need to deal with increased frequency and severity of natural hazards (e.g., droughts and floods) and related hazards (e.g., illness, malnutrition, high food prices). Thus, we will focus attention on how to “climate-proof” VUP to explicitly integrate DRM, CCA, and food security together with SP. As evidence of their concerns about “climate-proofing” the VUP, their recent proposal for staffing requirements includes hiring a local consultant to focus on implementation of the risk management aspects of the new National SP Strategy, especially “climate-proofing” of the VUP.

To “climate-proof” the VUP by integrating concerns for SP with concerns for CCA and DRM and food security will require coordination among VUP/MINALOC and other stakeholders (see Annex 4 for a list of major stakeholders). Some decisions and actions will be taken outside of VUP/MINALOC, per se, but hopefully with inputs from VUP and/or MINALOC. A major guiding principal is “*do not reinvent the wheel*”, which means that there is a need to adapt and link existing institutions and programs to the extent possible to “climate-proof” VUP. Again it is emphasized that “climate proofing” of the VUP is viewed as an “entry point” to a multi-hazards approach to risk management. The role of MINALOC is critical because MINALOC offers a combination of national coverage and strong local government and a community presence, and they can help coordinate early warning and preparedness systems to anticipate the impacts of climate hazards, and help mobilize a post hazard event response.

Below is a situational update and recommendations for several key issues related to “climate-proofing” the VUP. The 1<sup>st</sup> set are national and district level activities that are outside the “control” of MINALOC and would mostly be dealt with at the MINALOC ministerial level (with inputs from VUP), and the 2<sup>nd</sup> set are activities that are more directly under the control

of VUP, and could be coordinated with MINALOC . The details are drawn largely from the Social Protection and Climate Change Mission Wrap-up Presentation of December 3, 2010 (Siegel, Gatsinzi and Kamurase, 2010), which is an Annex to the Aide Memoire co-signed between the World Bank and Government of Rwanda.

***V.A. National and district level activities to be primarily managed by MINALOC as a key stakeholder, and with VUP participation and support.***

***a) Improve National, District Watershed Level Systems for Climate Data, Forecasting and Early Warning***

The meteorological stations currently operational in Rwanda are not representative enough to provide a true picture of climate variability and change (Mutabazi, 2008; Mutabazi, 2010b). However, observations and analysis from existing data indicate that over the last 30 years some parts of Rwanda have experienced unusual irregularities in climate patterns including variability in rainfall frequencies and intensity, and persistence of extremes like heavy rainfall in the northern parts and drought in the eastern and southern parts of the country (Government of Rwanda, 2009a).

The top priorities of Rwanda's National Adaptation Programmes of Action (NAPA) of 2006 (Government of Rwanda, 2006) are: a) use watershed/territorial approaches to land-use management at the level of District in areas vulnerable to droughts and floods, and b) establish hydro-meteorological stations as basis for an early-warning system to monitor and forecast climate variability and change. The *Rwanda State of Environment and Outlook* (Government of Rwanda, 2009) also highlights the need for: "Setting up an information system for early warning of hydrological and agro-meteorological systems and rapid intervention mechanisms." And the DFID-funded study on *Economics of Climate Change in Rwanda*, 2009 states: "There are a number of urgent priorities for building adaptive capacity in Rwanda that should be fast-tracked, notably in relation to meteorological and hydrological data collection, monitoring and forecasting, early warning systems, as well as information provision, monitoring networks and focal points." There has also been a suggestion for constructing a "climate change observatory" that could serve as a regional climate change center. DFID also supports the Climate for Development in Africa Programme (ClimDev-Africa) which is based in Addis Ababa and became operational in October 2010.<sup>18</sup> ClimDev-Africa is a consortium of the African Development Bank (AfDB), African Union Commission (AUC), and Economic Commission on Africa (ECA).

A major overlap between DRM, CCA, food security and SP is through early warning and rapid response systems (Siegel, 2010), and, improved hydro-meteorological stations are critical for Rwanda. A strategy for the Rwanda Meteorological Service was prepared in 2010 (Government of Rwanda, 2010b) and was recently approved by Parliament. At the end of November 2010, there was a scoping mission from the UK Meteo Service to prepare TORs for a year-long technical assistance support to the Rwanda Meteo. Initial assessments indicate

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<sup>18</sup> See: <http://www.afdb.org/en/topics-sectors/initiatives-partnerships/climate-for-development-in-africa-climdev-africa-initiative/#> ClimDev-Africa consists of three components. a) build the capacity of African climate institutions to generate and widely disseminate climate information necessary for planning. This should ensure that reliable, useful and useable climate- related data are generated and made widely available to policy- makers, policy support organizations, and the general population., b) enhance the capacity of end-users, particularly national development policy-makers, to be able to mainstream climate change into development plans on the continent, and c) implement adaptation programs and projects that incorporate climate-related information, to learn lessons and identify good climate change adaptation practices.



a lack of equipment and weather stations, and low capacity of the existing staff. However, there is a desire to transform the Rwanda Meteo into a “state-of-the-art” institution for weather/climate forecasting and analyses. The existing Meteo Strategy does not explicitly include MINALOC as a stakeholder, but it is important for VUP/MINALOC to be represented in the preparation of the implementation plan.

Given the void in the national meteo service (notably the lack of weather stations), there has been a proliferation of weather stations (and/or plans for weather stations). However there has been a notable lack of coordination with the Rwandan National Meteo Service. There is interest from projects (e.g., the UNDP-UNEP EWS Project<sup>19</sup>, tea growers, agricultural research stations, and NGOs dealing with a range of environmental issues). This proliferation of weather stations is a “threat” to an organized and coordinated and “certified” national system.<sup>20</sup> In January 2011 the Meteo’s new national strategy was adopted and Cabinet approved the decision to make it an autonomous agency (Meteo has been part of the Ministry of Infrastructure). This will hopefully emphasize the broader multi-sectoral aspects of the Meteo as a consumer and supplier of weather data and climate analyses.

Furthermore, the USAID-funded Famine Early Warning Network (FEWSNet) is planning on re-establishing a presence in Rwanda in the beginning of 2011, after an absence of several years. FEWSNet is a program designed to provide early warning of hazards, food insecurity, vulnerability to food insecurity, and famine to USAID, the US Government, and to national governments (and regional, international and non-governmental organizations). FEWSNet, which is implemented with small country offices, as well as via additional regional and remotely monitored offices internationally (both offices utilize satellite-based remote-sensing and ground-based surveys), builds capacity in the areas of early warning and food security monitoring and assessment capabilities (see Annex 3 for details about FEWSNet). USAID and FEWSNet decided to have a country field office to complement the regional office in Nairobi, to better facilitate ground-based monitoring to complement remote sensing. USAID-FEWSNet is planning on providing funds for capacity building for policy analyses, and its major counterpart to date has been MINAGRI, but TORs will be updated/revised, so there so it is possible to broaden and deepen the role of MINALOC.<sup>21</sup> The actual “ownership” of FEWSNet is an issue, because the real client is USAID and not the Government of Rwanda. It is critical for the Government of Rwanda to make sure that it FEWSNet is appropriately integrated into the Rwandan early warning and rapid response systems.

In November 2010, the International Finance Corporation (IFC) of World Bank Group announced that it will provide a grant of \$1.6 million to MINAGRI and MicroEnsure, Inc. to pilot weather-index insurance in 6 Districts using FAO-MINAGRI (manually operated) rain gauges. The plan is to try and start piloting the weather-based (“rainfall”) insurance this season, and to reach farmers through financial institutions and input suppliers. There is

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<sup>19</sup> See <http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=647&ArticleID=6752&l=en&t=long>

<sup>20</sup> By “certified” national system of weather stations, we are referring to a system can be decentralized, but all information flows are coordinated and monitored and recorded by strict measuring standards.

<sup>21</sup> USAID FEWSNet’s Remote Food Security Monitoring uses satellite info for forecasting droughts and floods (e.g., NDVI, Rainfall Estimation, WRSI, BERM). See [www.fews.net](http://www.fews.net). They also carry out mapping of: a) livelihood zones and seasonal calendars allows for analysis of impacts on key indicators of well-being for different livelihood zones and groups within zones, consider crops and livestock and non-agricultural livelihoods, and b) crop production and marketing flows and prices. FEWSNet will produce Monthly Remote Food Security Monitor, Monthly Price Watch Bulletin (web-based). If an “anomaly” is identified, send team for rapid assessment, or emergency response depending on the type of “alert”.

already consideration of expanding to other Districts (and also interest for a new IFAD Project).<sup>22</sup> This initiative with weather-index insurance is important as an “awareness-building” exercise for various stakeholders in Rwanda. However, there is a lack of “best practices” experiences in the world that use manual rain gauges for commercially oriented weather-index insurance (Mapfumo, 2007, Hellmuth, et. al., 2009). The use of automated and secure weather stations is critical for the successful implementation of this pilot and for future scaling up.

There is additional international interest in Rwanda from global climate change initiatives (and funds). For example, in the end of November 2010 there was a FAO-funded mission from the UNFCCC Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (REDD). There is interest in using satellite remote-sensing and ground-based monitoring, to assess the extent of deforestation, reforestation and forest maintenance. So, there might be additional resources available for Rwanda to improve its own hydro-met systems.

**Recommended actions:** Good weather and climate data are the foundation of any attempts to deal with climate variability and change, and extreme weather events (VARG, 2006). There is an immediate need for the Rwanda Meteo Service to “take charge” of the situation.<sup>23</sup> This includes better coordination with FEWSNet, the new UNDP-UNEP EWS Project, the proposed Climate Observatory, other initiatives like REDD, and the weather-index insurance pilot project (among other initiatives, by NGOs and others). The Rwanda Meteo Service Strategy should have broad stakeholder participation and consultation for its implementation plan, including VUP/MINALOC (which are potential users and providers of information)<sup>24</sup>. Strengthen the organizational structure of Meteo Service, internally and with others, to better provide baseline, forecasting and early warning weather/climate information.

There is a need to prepare an inventory/registration of all hydro-agro- meteo stations and have a quality control and “certification program” for stations that meet the “standards” set by Meteo. The Rwanda Meteo Service needs to provide on-going quality control and calibration services, and to update the inventory of weather stations over time. The Rwanda Meteo Service needs to publicly provide information on recommended hydro-agro-meteo stations for different purposes, with the possibility that they could be linked into national system.

Because of its hilly terrain with variations in climate, it would be good to consider the possibility of installing automated weather stations at the sector level and inexpensive manually operated rain gauges (and temperature gauges) at the community-level. Weather-index insurance and the physical, human and institutional infrastructure associated with such insurance is better when using automated and secured weather stations. “Good” coverage of

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<sup>22</sup> The World Food Program (WFP) and International Fund for Agricultural Development (IFAD) are major proponents of using weather index insurance as part of early warning systems (EWS) that can trigger rapid responses to pending disasters, thus preventing the need for emergency humanitarian assistance after the event. The Weather Risk Management Facility (WRMF) is a joint WFP/IFAD initiative to support the development of weather risk management instruments in developing countries. See <http://www.ifad.org/ruralfinance/wrmf/index.htm> and <http://www.ifad.org/ruralfinance/pub/wrmf.pdf>

<sup>23</sup> Rwanda Meteo is also considering becoming an independent agency associated with the Ministry of Infrastructure as a means to assert its multidisciplinary roles and responsibilities.

<sup>24</sup> VUP/MINALOC can help with collection of weather/climate data and household and community based information, along with market information in the area. In turn, households and communities are interested in the data and information to help them plan their asset/livelihood activities (including risk management).

dependable and accurate (and secured) weather stations is especially important for representative areas and for vulnerable areas, for forecasting and EWS and for analysis of data over time. It is important to note that there are multiple stakeholders interested in this information, including persons with livelihoods dependent on weather/climate and others who work in finance and insurance and might be useful for risk transfer and/or risk sharing.

The “bottom-line” is that it is critical for the newly autonomous Rwanda Meteo Service to move ahead quickly on its implementation plan with TA from the UK Meteo Service. It should also take advantage of the many alternative sources of partners and funding and TA. Thus, it is important to determine the “ideal Meteo system” for Rwanda, and then encourage donors, NGOs, regional and international institutions to agree to support a holistic system, and then maybe they can “adopt a station (or more)”.

b) Expand National, District, Watershed Level Planning and Use of Geographic Information Systems (GIS), and Spatial Information Systems (SDI) and Information and Communication Technology (ICT)

Rwanda has been making considerable progress with mapping, geographic information systems (GIS), and is beginning to establish spatial data infrastructures (SDI) using different information and communications technology (ICT) to help manage the GIS data.

There has been a major effort to generate a National Land Use and Development Master Plan, led by the National Land Commission (NLC). A draft from August 2010 was presented to Government. Along with the National Use and Development Master Plan, there are guidelines for preparing district-level land use plans (LUP) and training programs to prepare and manage LUP. District land-use plans should incorporate climate-related hazards, and risk/vulnerability mappings. In addition, as part of the National LUP, there are maps that identify high risk areas for floods and droughts, areas not suitable for agriculture. There are proposed “pilot projects” for District Planning using land-use maps Kayunsa (Eastern), Gasaba (Kigali), Rubuvu (West).

Also, since 2008, there is a major effort underway in Rwanda to create a National Land Registry, with private land titles (Nkurunziza, 2010). For the National Land Registration Project, there are aerial photos of almost all of Rwanda with low altitude digital aerial photography, used to produce digital orthophoto images with resolution of 0.25 meters (there is a base map of entire country at 1:50,000). These maps, in turn, can be used to produce community-level maps at high resolution. This allows stakeholders to produce hand-drawn plot boundaries based on community-level processes. There has been ongoing progress with the community-mapping and land registration processes, along with capacity building for GIS, creation of spatial data infrastructure (SDI).<sup>25</sup> The NLC is the Government agency charged with creating and maintaining the national SDI.

There is a new UNDP/UNEP Project: “*Reducing Vulnerability to Climate Change by Establishing Early Warning and Disaster Preparedness Systems and Support for Integrated Watershed Management in Flood Prone Areas*”, that was launched in July 2010. REMA is the executing agency. The geographical focus of this project is the Gishwati Watershed,

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<sup>25</sup> Some of the improved capacity for GIS is from the Center for GIS (CGIS), National University of Rwanda (NUR). CGIS has capacity for carrying out work with GIS and satellite imagery, and training programs. Some CGIS students/graduates have found work in the NLC. A Regional and Urban Planning Program recently began at CGIS-NUR, and there were 30 graduates from the 1<sup>st</sup> class in 2010.

which is a “flood-prone” area in western Rwanda that has been experiencing increased climate-related hazards (e.g., too much and/or too little rain) and environmental stress. According to project documents, district-level LUP are to be produced using participatory processes. In the meantime, MINAGRI recently prepared LUP for Gishwati watershed area, and has begun a \$25 million land-use management project in area. Based on some addendums to the original project documents, it was decided to invest in automated district-level weather stations, and weather-kits for all secondary schools.<sup>26</sup> There seems to be some flexibility with respect to the exact location of UNDP-UNEP project (so it is possible to try to coordinate the exact locations with the VUP).

USAID is also considering a watershed approach for a new project for drought-prone watersheds in Eastern and Southern Provinces. This new project is expected to begin by mid 2011. Similar to the UNDP/UNEP project, this project will focus on water resource management, and integrated approaches to CCA, DRM and food security, that could also be linked to SP.

**Recommended actions:** The Government of Rwanda should take advantage of new opportunities for improved land-use planning and management using GIS/SDI/ICT. It would seem that it is a good opportunity to use the new UNDP-UNEP Project (managed by REMA) in the Gishwati area as an example of an integrated approach to watershed management that explicitly links SP, DRM, CCA and food security concerns. One way to do this is to try to select districts/sectors that overlap geographically with VUP sectors.

Also it would be good for the UNDP-UNEP EWS project to work with NLC to produce the first District Land-Use Plans (that include hazard/risk/vulnerability mappings), including use of NLC guidelines and training courses. Attempts should be made to incorporate the MINAGRI land-use study for the Gishwati watershed area into District Land-Use Plans.<sup>27</sup> As part of the process of producing District-Level Land-Use plans, NLC and MINALOC/VUP should explore possibilities for establishing community and sector level GIS/MIS systems (e.g., digitizing of social maps using community-level maps from land-titling exercises).<sup>28</sup> The desire by VUP/ MINALOC to have community-based management information systems (MIS) for VUP interests and for broader MINALOC interests would benefit from this focus on GIS/SDI/ICT as applied to DRM/CCA/SP.

Also, it seems beneficial for the UNDP/UNEP Project in the flood-prone Gishwati watershed (and the executing agency REMA) to coordinate with the proposed USAID project for the drought-prone Eastern and Southern Provinces (implemented by MINAGRI), so that lessons can be generated from watershed approaches to flood-prone and drought-prone areas. Also, attention should be focused on establishing hydro-agro-met stations in the vulnerable areas of the flood-prone watershed and the drought-prone watershed for the UNDP/UNEP and USAID projects.

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<sup>26</sup> The Director General of REMA is a strong supporter of having weather kits in all secondary schools, and for increasing class time devoted to climate-related issues. The Ministry of Education (MINEDUC) is interested too.

<sup>27</sup> District-Level Land Use Plans are legally required by Government.

<sup>28</sup> It has been suggested that there be a pilot project with VUP and NLC to digitize social maps onto land maps in VUP communities with land registration process underway, and start to establish community-based spatial data infrastructure as a management information system (MIS) for social protection and land-use planning (including resettlement and land consolidation for risk management and improved productivity). This could include possible internship opportunities for graduates and students from universities (eg., CGIS at NUR).

c) Improve Coordination and Integration of Meteorological Data, EWS, GIS, SDI, and ICT for Climate Resilience: Technical and Policy Perspectives that Link DRM, CCA, SP

There is an urgent need for greater coordination and integration of meteorological data, EWS information, GIS, SDI and associated ICT to improve the integration of planning for CCA, DRM, SP and food security under the overall “umbrella” of *climate resilience*. This needs to be done within Rwanda, however it is also possible for Rwanda to draw upon a wide range of SP expertise in the African region and the world (Devereux and Cipryk, 2009).

For example, there are several Regional Centers that could provide assistance:

- Africa Regional Disaster Management Centre of Excellence (RDMCOE): helping members prepare a 3-year plan to focus on Disaster Preparedness and Response initiatives and Community Development Programs in view of the emerging climate change concerns. See <http://www.rdmcoe.org/>
- IGAD Climate Prediction and Applications Centre (ICPAC): regional centre of excellence in climate prediction and applications for climate risk management, environmental management, and sustainable development. See <http://www.icpac.net/>
- Regional Center for Mapping of Resources and Development (RCMRD): set-up to promote the *Development and Use of Geo-information in Sustainable Development of Africa*. See <http://www.rcmrd.org/>
- UNISDR-Africa: aimed at facilitating integration of disaster risk reduction into development programs of member states and institutional programs. See <http://www.unisdr.org/africa/>
- African Climate Policy Centre (ACPC): including the ClimDev-Africa Programme aim to improve the capacity of African countries to carry out applied climate science and assessments of climate vulnerability, risks and impacts; to and help identify national policies and sectoral priorities and responses for managing climate risks, and guide the related investment strategies. <http://www.uneca.org/acpc/index.php?Page=home>

**Recommended actions:** There is a need to harmonize strategies and implementation plans related to SP, CCA, DRM and food security (malnutrition), especially with respect to overlaps in information and data collection, analysis and dissemination. It is proposed that there be a Technical Working Group (and also a Policy Working Group) that focuses on *Meteorological Data, Geographic Information Systems, EWS and ICT for Climate Resilience*. There is a need to assess the current institutional structure of stakeholders in DRM/CCA/SP and food security dealing with these issues related to risk management, and how you make it more equitable and efficient.

The Technical and Policy Working Groups should examine the institutional linkages and optimal design for Rwanda concerning *Meteorological Data, Geographic Information Systems, EWS and ICT for Climate Resilience*, and make proposals how to best organize at national, district, sector, community levels and link to international levels. This is also a good opportunity and context to create standards and norms for GIS and SDI, and the use of appropriate ICT. There is need for a forum to discuss EWS and response plans with MINALOC, REMA/MINELA, MIDIMAR, METEO, and possibly others (Mutabazi 2008, 2010b).

It is important for Rwanda to take advantage of resources that are available from different regional and international institutions to support initiatives related to CCA, DRM, SP and

food security with respect to data and information. For example, strengthen ties to RDMCOE, ICPAC, RCMRD, UNISDR-Africa, ACPC/ClimDev and others (e.g., REDD), and learn from best practices in other countries, especially in Africa. Also try to solicit funds and provide support for training and capacity building. There are also projects in Ethiopia (Productive Safety Nets Project) and Kenya (Arid Lands Resource Management Project) that provide a lot of guidance in the design of national early warning and rapid response systems that are community-based. The Institute for Development Studies (IDS) is also a good resource for conceptual, analytical and operational frameworks for *adaptive social protection* that links SP with DRM and CCA.<sup>29</sup> The Addis Ababa office of the International Policy Research Institute (IFPRI) has long been a long-time leader in dealing with risk and vulnerability in Africa (along with it also being a focus of DC-based staff). It is suggested that Rwanda take full advantage of opportunities to be a global innovator and leader in these issues.

***B. Community and district level activities primarily managed by VUP as the key stakeholder, and with MINALOC participation and support***

As mentioned previously, VUP's recent proposal for staffing requirements includes a local consultant to be hired to focus on implementation of the risk management aspects of the new National SP Strategy, including "climate-proofing" of the VUP. Besides the issues above that are mostly out of the 'control' of VUP, here are some issues that VUP can directly undertake.

***d) Upgrade Community-Based Early Warning and Rapid Response Systems***

The key to a multi-hazard rapid response system is having community-based EWS in place, which, in turn, requires a system of real-time community-based planning/monitoring/evaluation (UNDP, 2010; Siegel, 2010). Since the VUP has a strong community presence, this is a good starting point for district- and national-level early warning and rapid response systems. The community-based EWS should be linked to ongoing analytical work to identify poor and vulnerable households and communities, such as the current Household Census exercise that is being carried out by NISR, and the next round of the WFP-NISR Comprehensive Food Security and Vulnerability Analysis and Nutrition Survey.

The World Food Programme (WFP) and National Institute for Statistics Rwanda (NISR) carried out a Comprehensive Food Security and Vulnerability Analysis and Nutrition Survey in July 2009 (see WFP, 2009). This report identifies direct and indirect climate-related hazards (droughts, floods, illness) in rural areas, using quantitative/qualitative methods, mapping of livelihood zones and high risk/vulnerability zones and households. There is a recommendation in the report to integrate food security, nutrition and disaster management with the national poverty reduction program to create a ***vulnerability strategy***.<sup>30</sup> There is interest from NISR to repeat this exercise every 2 years and also to extend it to urban areas, and to focus more attention on household/community assets and changes in assets. This could provide baseline information for comparisons over time of household/community assets, risk, vulnerability and resilience. It might be possible to explore links with International Food Policy Research Institute (IFPRI), regional office in Addis Ababa, and ongoing research at the World Bank on the use of household surveys with information that can be correlated to climate variables. For example, there is some new research in the World Bank's

<sup>29</sup> See the IDS website: <http://www.ids.ac.uk/go/idsproject/adaptive-social-protection>

<sup>30</sup> See "Consultation on the Identification of Food Security and Nutrition Interventions, February 2010." (WFP, 2010), a follow-up to the Comprehensive Food Security and Vulnerability Analysis and Nutrition Survey, 2009 (WFP, 2009).



Development Research Group (DECRG) that is supported the Gates Foundation to fund household censuses with GPS'ed environmental (and climate) data to be correlated with social-economic data collected in surveys.

In mid-2010 the WFP circulated a Concept Note on Food and Nutrition Security Monitoring System (which is still under review), in which they proposed expanding their *sentinel sites surveillance approach*<sup>31</sup> that uses data collected 4 times a year in select communities (*imidugudu*). WFP sentinel sites are located in vulnerable areas (in all food economy zones) identified by the 2009 Comprehensive Food Security and Vulnerability Analysis and Nutrition Survey. If there is in fact an “early warning” from communities, WFP sends in a Rapid Assessment Team. If there is a “problem”, WFP has a program called “food-for-assets”, and is also starting a “cash-for-assets” program. The food and cash for assets programs both provide support for public works projects that lower vulnerability and increase resilience. This could serve as the basis for a community-based early warning and rapid response system for VUP communities that have been selected as sentinel sites (and/or nearby communities).

WFP's new proposal for their work program for Rwanda, including possible access to global climate change funds, includes a commitment to support community-based early warning and rapid response systems, with a focus on climate-related hazards. Given WFP's existing programs in Rwanda and their interest in getting involved in climate change and the interface with DRM and SP, VUP has entered into exploratory talks about the possibility to “pilot” an integrated DRM/CCA/SP approach to food security. WFP could draw on its existing institutional infrastructure in Rwanda, and try to obtain additional funds to help finance the additional costs associated with the risk management system (especially the contingency funding). VUP and WFP need to agree on details of how to work together, and these discussions have begun. One possibility is for the WFP to manage the early warning and rapid response systems (and disaster preparedness systems) in VUP sectors, with WFP managing the community-based EWS that is proposed below.

There already is significant progress by the Health Ministry (MINISANTE) with respect to the use of community-based health monitors and cellphones to transmit key data/information to other levels (Frasier, May, Wanchoo, 2008; Lagie, Rowson, Ndagje, 2008). There are ongoing efforts to have community-based monitors that carry out basic paramedic duties and monitoring. They have ongoing monitoring and emergency alerts, and a monthly survey form, with a focus on health status of vulnerable individuals and households, and “early warning” if there are problems for individuals or households (where information is transmitted by cellphones).

**Recommendations:** Promote an approach for VUP that has community-based EWS that can trigger rapid responses, with the VUP being flexible to update its targeted beneficiaries and benefits and public works activities based on changing economic, social, and environmental conditions. As a starting point for improved community-based early warning and rapid response systems, there is a need to combine low-tech and high-tech approaches, with existing social structures and institutions. The early warning and rapid response aspects of VUP should be implemented in the context of MINISANTE's new Multisectoral Strategy to

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<sup>31</sup> See <http://home.wfp.org/stellent/groups/public/documents/ena/wfp206013.pdf> for details on WFP food security and health monitoring.

Eradicate Malnutrition, which has a broad mandate, together with the new National SP Strategy.<sup>32</sup>

It is suggested that VUP try to pilot some early warning and rapid response systems in VUP communities where there are WFP sentinel sites, and/or nearby such sites. It would be important to also coordinate with MIDIMAR (and REMA) to work with vulnerable communities on preparedness and rapid response plans. An international NGO based in Kigali, Adventist Development and Relief Agency (ADRA), has expressed interest in working with VUP on its “climate-proofing” and multiple hazard management, and should be further consulted.

A “simple” idea is proposed to stimulate the foundation for a community-based EWS. It is suggested that communities compile a “scorecard” with about different 20 variables that reflect nutrition, health, status of crops and livestock, food /feed in storage, market prices of key consumption items, environmental indicators, climate data, etc. with 1-5 scale for each indicator that can be added up to create a “*vulnerability index*”, and thereby signal an “alert” or “warning” if necessary, with community ownership of the process/results. This is a semi-objective and transparent “trigger” to signal the need for assistance. It is possible to use a range of objective and “objectively obtained” information to generate “triggers” that signal the need for a rapid response, such as the information generated by weather-index insurance. The scorecards should provide valuable information for the present and future, and also provide a historical record for ongoing analyses.

There is a possibility for VUP staff and/or health monitors and/or NGOs to conduct participatory exercises with community to score the different indicators. Possibly use Health Ministry communication systems to send information. There is a need to coordinate flows of information, especially “alerts”/“warnings” with MIDIMAR District Offices. Rapid responses should be managed by MIDIMAR and WFP and UNICEF (and NGOs), in coordination with VUP-MINALOC.

It is important to provide support for coordinated, consolidated and streamlined community-based monitoring systems to build a “bottoms-up” system to compliment and strengthen the new FEWSNet and meteorological service weather and hydrology forecasts that are “tops-down”. This entails creating a system of clear and easy-to-measure indicators that can be monitored to generate an objective and transparent set of early warning “triggers” and have a menu of “off-the-shelf” rapid responses that are well targeted and protect assets and livelihoods, and build more resilient assets and livelihoods. The Ethiopia Productive Safety Net Project has several lessons that can help guide Rwanda (see, for example, World Bank, 2010c, p.20). See also the example for parametric weather risk insurance in Malawi, World Bank, 2010c. p. 34-35). Annex 3 describes the FEWSNet system and how it can be linked to community-based EWS.

#### *e) Facilitate Activities that Reduce Vulnerability and Increase Resilience*

A key aspect of social protection is reducing vulnerability and increasing resilience through improved management of household/community assets and livelihoods. There is a need to focus attention on management of short-term climate variability and extreme weather events, and directly/indirectly related hazards. Managing the seasonality of food, labor and cash flows are all critical determinants of well-being for poor and near-poor households. However,

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<sup>32</sup> FAO offered to fund a Technical Assistance to prepare an implementation plan for VUP.



there is much that the communities and households can do for themselves - and mobilising community resources is an important aspect of the design of VUP. As such, VUP is sensitising beneficiaries about social services, including access to family planning, improved cooking and nutrition, improved sanitation and hygiene, improved food storage, training for small businesses, etc. Such programs help lower household/community vulnerability and increase resilience.

In addition, as highlighted by Gatsinzi (2010), many of the public works projects associated with VUP are focused on improving land-use management (e.g., terracing, reforestation, water harvesting and management, etc). Thus, there are inherent links to DRM and CCA. To make sure that VUP's public works are environmentally friendly and beneficial, REMA has placed a technical specialist in VUP to help with environmental assessments of VUP funded public works projects. For an effective early warning and rapid response system, it is important that there be "off-the-shelf" public works projects that can be scaled up and down in response (and in anticipation of) different hazard events.

**Recommendations:** Strengthen cooperation and coordination between VUP with other Ministries for awareness building and other activities that help decrease vulnerability and build resilience. In particular, VUP should coordinate its activities with MINISANTE's new Multisectoral Strategy to Eradicate Malnutrition, which has considerable overlap with the National Social Protection Strategy. VUP should discuss with FAO the possibility that they fund TA for an implementation plan for this strategy.

It is important to focus public works projects on activities that reduce vulnerability and increase resilience, work closely with REMA and MINAGRI on activities that improve land-use and water resource management, and productivity. This focus on "sustainable land management"<sup>33</sup> has considerable overlap with approaches to DRM, CCA, food security and SP (UNDP, 2010; Siegel, 2010). Two recent World Bank projects in the agricultural sector, the Second Rural Sector Support Project (2008) and the Land Husbandry, Water Harvesting and Hillside Irrigation Project (2009) are based on principles of "sustainable land management".<sup>34</sup>

It would be helpful for VUP to carry out an exercise whereby it applies the social risk management (SRM) framework or adaptive social protection (ASP) framework (or another framework) to help articulate an integrated risk management strategy that identifies roles of different stakeholders and the types of activities that can reduce exposure/sensitivity to hazards/risks, and build assets. This would include the search for "no-regrets" policies and investments that have economic, social and environmental benefits for society whether yes/no there is climate change. This will provide guidance for VUP and for policy makers and planners in MINALOC (and other agencies) trying to implement multi-hazard risk management for poor and vulnerable households and communities.

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<sup>33</sup> See <http://www.undp.org.rw/Prodoc-SLM-MSP00044067.pdf> and [http://www.undp.org.rw/Environment\\_Project44067](http://www.undp.org.rw/Environment_Project44067).

<sup>34</sup> See <http://web.worldbank.org/external/projects/main?pagePK=64283627&piPK=73230&theSitePK=40941&menuPK=228424&Projectid=P105176> and <http://web.worldbank.org/external/projects/main?pagePK=64283627&piPK=73230&theSitePK=40941&menuPK=228424&Projectid=P114931>

*f) Improve Systems for Transfer Payments and Access to Finance/Insurance Services*

VUP uses transfer payments for direct support and for public works (beneficiaries are required to open bank accounts at a local bank or micro finance institution and transfers are deposited to beneficiaries' own bank accounts). In addition, there is a micro-credit component of VUP. For poor households, the dependability (i.e., timeliness) and security of cash flows is critical, and it is important for VUP to improve the dependability of its transfer payment systems (see Devereux and Ndejuru, 2010; Devereux, 2010).

By having their own bank accounts, VUP beneficiaries can potentially benefit from a range of finance and insurance services. That is, improved mechanisms/systems for transfer payments can improve access to finance/insurance services and promote a holistic approach to providing a holistic system. The use of bank-to-bank transfers has both advantages and disadvantages. It minimises fiduciary risk and improves financial literacy amongst a target group who would not otherwise have access to the banking sector – this is important in terms of the subsequent development of successful small business opportunities. It also provides a mechanism for saving.

Direct support beneficiaries are fully indemnified against bank charges but for public works beneficiaries bank charges are regarded as a normal cost of work and are paid by the beneficiaries themselves. However the key challenge is getting the transfers to the beneficiaries. Inevitably the financial infrastructure within the poor rural communities is weak and in the remote communities this can mean the use of local microfinance institutions (MFIs) as the banking institution, which adds significantly to the time it takes to execute the transfers. The second issue is the beneficiaries' with a significant travel time to collect their money – a recent study indicated the average travel time to the bank was 1.6 hours (Kimetrica 2010). The same study also indicated that beneficiaries frequently travel to the bank in groups on market day and, knowing when beneficiaries get paid, market traders hike their prices on those days.

In principle there are five alternatives to the traditional “come to the branch” banking service: a) mobile banking (e.g., an armored van which drives to the communities to deliver cash), b) ATMs, c) debit cards, d) point of sale (POS) devices, and e) agent banking (e.g., using shopkeepers to issue money).

The current situation in the banking sector can be summarized as follows:

- Banque Populaire Rwanda (BPR) has the largest branch network of 179 branches, but only 41 are connected to their core banking system. BPR offers a mobile banking service, Rabobank is looking at this for Rwanda, using the model established in Tanzania;
- The major providers of mobile telecommunications are introducing money transfers. MTN<sup>35</sup> already has a system of money transfers (Tigo and Rwandatel are in the process of setting up similar systems). MTN has a network of around 200 agents in Rwanda, but inevitably they are concentrated around the urban areas which is not where VUP's beneficiaries are;
- The regulatory framework around agent banking has yet to be developed;
- Ministry of Economy and Finance (MINECOFIN) recently agreed to provide a subsidy of US\$4 per card for chip and pin cards and is intending to stimulate 100,000

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<sup>35</sup> See <http://www.mtn.com/>

cards over the next 2 years. The cost of the cards is volume based and ranges from US\$5.50 to US\$8.00 per card depending on the volume ordered.

Saving within VUP is voluntary, but is highly encouraged and the majority of VUP beneficiaries have or do save (and since it is voluntary, it is not monitored explicitly by VUP.) In the context of VUP saving has two important effects: a) It enables beneficiaries to make investments. Research suggests that, apart from satisfying immediate consumption needs (food, clothing etc), beneficiaries use the transfers to improve their living conditions, to purchase small livestock (rabbits, goats etc) which can produce income and for social services, notably health insurance (“sainte mutuelle”) and school fees, and b) saving is an important form of “self insurance” against the impact of shocks. This could be a gap between public works projects, unexpected delays in receiving the next payment, sickness. There is evidence that VUP beneficiaries use their savings in this way.

Orwego Opportunity Bank, which expressed interest to work with VUP, has received a grant from Gates Foundation to subsidize “smart cards” for transfers and financial services. Orwego is also designing a range of insurance and finance products for poor and vulnerable households. In November 2010 MicroEnsure received support from IFC to promote weather-index insurance, and they have been conducting some capacity-building exercises at MINAGRI. There are 6 districts (with 3 rain gauges per district) covered by the new offerings of weather-based insurance for staple foods.

**Recommendations:** The #1 priority is to improve the flow of cash transfers, focusing on timeliness and predictability transfers. And the #2 priority is to improve the access to savings accounts and withdrawals. Then #3 priority is to improve credit/insurance offerings (credit-life/disability insurance, livelihood insurance). It should be noted that credit-life/disability insurance is rather simple to administer. VUP should explore options with Rwanda-based institutions for mobile banking, ATMs, debit cards, point of sale devices, agent banking and with Orwego Opportunity Bank about “smart cards” for transfers and financial services. VUP should also follow-up with MicroEnsure to examine the possibility of offering weather-index insurance to VUP beneficiaries and/or finance institutions and/or for VUP itself to purchase. That is, VUP could even purchase weather-index contracts in high-risk areas and then allocate indemnity payments to beneficiaries. VUP should contract an e-finance expert to review options and help produce a tender for a prototype system(s) that can be quickly tested in some VUP communities. In addition, there are projects in neighboring neighboring countries, especially Kenya – with m-PESA<sup>36</sup> and different instruments being used by the Kenya Hunger Safety Net Project (see <http://www.hsnp.or.ke/>).

## **VI. Moving Ahead to “Climate-Proof” the VUP**

Rwanda’s new National SP Strategy recognizes that, by anticipating and responding to shocks early, people can be provided with appropriate and timely support, and will be able to avoid destructive coping mechanisms, and minimise negative impacts of shocks. :Pillars of effective risk management are: a) effective early warning systems in place to indicate the need for a response as early as possible; b) contingency plans in place so that when a shock is indicated key actors in the system have already thought through how they need to respond; c) contingent financing resources need to be ready and available to avoid negative consequences

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<sup>36</sup> See <http://www.telecentre.org/profiles/blogs/emoney-in-kenya-the-story-of>

of a delayed response; and d) adequate institutional arrangements and capacity in place or able to be put in place quickly to allow the prepared plans to be implemented.

In this paper we have updated the situation in Rwanda and highlighted recommendations for:

***A. National and district level activities to be primarily managed by MINALOC as a key stakeholder, and with VUP participation and support.*** a) Improve National, District, Watershed Level Systems for Climate Data, Forecasting and Early Warning, b) Expand National, District, Watershed, Planning and Use of Geographic Information Systems (GIS) and Spatial Information Systems (SDI) and Information and Communication Technology (ICT), and c) Improve Coordination and Integration of Meteorological Data, EWS, GIS, SDI, and ICT for Climate Resilience: Technical and Policy Perspectives that Link SP, DRM, CCA and food security.

***B. Community and district level activities primarily managed by VUP as the key stakeholder, and with MINALOC participation and support.*** d) Upgrade Community-Based Early Warning and Rapid Response Systems, e) Facilitate Activities that Reduce Vulnerability and Increase Resilience, and f) Improve Systems for Transfer Payments and Access to Finance/Insurance Services.

Some preliminary feedback was received to the recommendations presented in the previous section, as part of the recent review of the VUP (see Devereux, 2010). An excerpt from the annual review of the VUP, notably the section on *Vulnerability Proofing*, can be found in Annex 5. In general, there are endorsements for the various recommendations to increase the flexibility of VUP to have some risk management. However, there are some warnings about capacity constraints of VUP to carry out its mandated roles responsibilities - without adding “climate-proofing”. There are also some warnings not to focus only on climate-related hazards, but to have a multi-hazard approach. The capacity constraints of VUP are indeed a serious limitation and require a phased approach (and the need to hire consultants or additional staff). As highlighted in this paper, “climate-proofing” of the VUP is an “entry point” to a broader multi-hazard resilience building approach.

Below are some of the tangible actions planned by the VUP to move ahead with “climate-proofing” of the VUP.

- 1) The targeting policy for VUP has been reviewed and strengthened. Minimising inclusion and exclusion errors will help to ensure that the most vulnerable members of poor rural communities are included in VUP.
- 2) The budget policy for VUP has been reviewed and will, for the 2011-12 financial year, incorporate the following aspects:
  - a) Establishment of a “**Risk Management Fund**” which will enable additional funds to be made available for VUP sectors which are subject to shocks;
  - b) The sector level budgets for direct support and public works will be established taking account of the poverty profile and vulnerability of the sectors themselves
- 3) The Financial Services component of VUP continues to develop:
  - a) The Ubudehe Credit Scheme (under which the loans are provided) is being supplemented with a matched-funding grant based “**Challenge Fund**”;
  - b) Financial literacy training for loan fund beneficiaries.

The **Risk Management Fund** was first established in the 2011-12 budget and it provides resources which can be mobilised in the event of a covariate shock. The fund is small – 2% of the programme budget – but it enables the scheme to be piloted.

The Rwandan Risk Management Fund is loosely patterned after the Ethiopia PNSP's Risk Financing Mechanism (see IDL, 2009). Following the March 2011 conference in Addis Ababa on "Making Social Protection Work for Pro-Poor Disaster Risk Reduction, and Climate Change Adaptation" Rwandan and Ethiopian counterparts have agreed to increase the exchange of information and have study visits to learn from their respective experiences, especially the Risk Financing Mechanism; and other links between SP, DRM and CCA.

VUP is working with a microfinance expert to improve the financial services component, The Ubudehe Credit Scheme (UCS) was launched in 2010 (the first transfers were made in March 2010 and loans advanced in April 2010. Lessons learned to date include a) the need for strengthening monitoring of loan repayments b) for agricultural projects ensuing the loan advance is aligned with the agricultural season and the need to be flexible with repayments in the event of unusual climatic conditions (delays in/failure of the rains, floods etc) c) the need to provide financial literacy training to improve internal management of the financials by the loan beneficiaries.

As a consequence of the experience to date the UCS is being evaluated and the policy will evolve accordingly. In parallel a **Challenge Fund** is being piloted. This scheme provides a matched fund grant for groups of beneficiaries who want to make a major investment (e.g., farm equipment and machinery, storage facilities, etc.).

Discussions have been started on how to incorporate insurance – either health and/or crop insurance – into the financial services component. Different options are being explored. Work continues on seeking ways to streamline payment processes, and options are being identified and evaluated. The National SP Strategy contains proposals for a national management information system/database, which needs to be coordinated with various proposed activities for "climate-proofing" the VUP. In the meantime VUP is considering how its own data collection/processing systems can be strengthened. Terms of reference for a consultancy in this area have been prepared.

### **V.I. Concluding Comments: Toward Increased Resilience in a Territorial Planning Context**

SP/DRM/CCA need to be mainstreamed and integrated into land use and natural resource management (NRM) planning processes and applied within broader territorial planning approaches (ICLEI, 2008; UNDP, 2010). The key unifying theme for SP/DRM/CCA and territorial planning approaches is that they require good ICT systems. There is a critical role of geographic information systems (GIS) and spatial data infrastructures (SDI), and other communications technologies that are satellite-driven such as cellphones and personal digital assistants (PDA), and web-based systems (Mitchell, 2009; Murthy, 2009). However, generating and collecting data is not the end of the game. It is the only beginning, since there is also the process of data analysis and dissemination. There is a need to convert the data to information, and use it to inform spatially enabled governance (Enemark, 2009; 2010).

Information and communications technology (ICT) can potentially play a pivotal role in DRM (Wattegama, 2007). Remote sensing for early warning is made possible by various available technologies, including telecommunication satellites, radar, telemetry and meteorology. ICT encompasses both traditional media (radio, television) as well as new media (cell broadcasting, internet, satellite radio), all of which can play a major role in educating the public on the risks of a potential or impending disaster. Before natural hazards strike, ICTs can be used as a conduit for disseminating information on an impending danger, thereby making it possible to take the necessary precautions to mitigate the impact of these disasters. In order for this to be possible, it is critical that there be consistency in the application of ICT and the dissemination of warning messages to at-risk areas. Such warning dissemination must be widespread and should educate the public on the potential risks to the local area.

The role of GIS, SDI and ICT and good governance is fundamental for linking SP/DRM/CCA in a virtuous cycle of increasing resilience that is based on territorial planning and ongoing M&E (Murthy, 2009; Enemark, 2009; 2010). Murthy (2009) details how a community-based GIS using parcel-level data can be used for multiple purposes for SP/DRM/CCA and planning and monitoring and evaluation (M&E) for a territorial approach to planning and management, noting that a **timely and accurate inflow of appropriate information and its reliability is a pre-requisite for an integrated approach**. Satellite remote sensing from its vantage point in space, with a large synoptic coverage, timely, accurate and cost effective data provider, is an ideal tool for generating such a spatial information base. The plans for land and water resource development are prepared with consideration of land conservation (environmental) and development (economic/social/political) objectives. Further, to meet household and community information needs and provide inputs into territorial plans, the integration of the information available at the land parcel level with a broader GIS and SDI are needed. Geo-referencing of cadastral maps (showing land parcels and community boundaries) using high-resolution satellite data as the reference can help generate other “products”. Spatial information generated using remote sensing and GIS techniques, and socioeconomic data are integrated with geo-referenced cadastral maps. Community-level planning can be carried out using spatial/non-spatial information. Participatory GIS (P-GIS) techniques can be used, which draw on participatory livelihood methods.<sup>37</sup> The use of P-GIS can encourage locally designed indicators of vulnerability and indicators relevant for EWS and rapid response and ongoing participatory M&E to facilitate a virtuous cycle of planning and M&E.

In addition to all of the geo-referenced socio-economic and environmental data, and linking into remote-sensing systems for natural hazard modeling and EWS, it is possible to also think about installing simple community-based weather stations that measure daily high and low temperatures and rainfall, and maybe other basic indicators such humidity and wind patterns (to assess evapo-transpiration). Community-based weather stations could be linked to remote-sensing systems, and provide ground-truthing if combined with additional community-level data collection that is relevant to monitoring of key vulnerability indicators and potential hazards. Periodic community surveys that monitor key socio-economic and environmental indicators linked to basic needs would clearly be critical for a real-time EWS and rapid response systems.

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<sup>37</sup> See [http://www.iapad.org/participatory\\_gis.htm](http://www.iapad.org/participatory_gis.htm) and <http://community.eldis.org/.59d0724b>

Thus, logistics and timing are critical, and actions must be appropriate to the situation, and appropriate to the individuals/households/communities/nations being assisted. Ironically, however, many of the technologies that have been developed for ICT for SP/DRM/CCA have been developed by national intelligence agencies and/or the Defense Ministries and/or armed forces. Thus, the need for ever increasing flows of information needs to be balanced with the need to possibly protect certain information. This will be a major challenge going forward, because there is a need for multi-sectoral and multi-institutional coordination and free access to ICT/GIS/SDI for effective and equitable SP/DRM/CCA in the context of spatially enabled governance.

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## ANNEX 1: Concepts and Definitions = Risk-Vulnerability Chain

The risk-vulnerability chain conceptualizes the relationship between risks, risk management arrangements, and household vulnerability (see Figure 1).<sup>38</sup> This presentation follows Siegel and de la Fuente (2010).

$$\text{Disaster Risk} = \text{Hazard} \times \text{Vulnerability} - \text{Disaster Risk Management Capacity}$$

The hazards, and the exposure and sensitivity of assets and livelihoods to them together, determine expected losses. Households use risk management strategies that are either ex-ante (prevention, reduction, compensatory arrangements) or ex-post (coping) actions. Risk, the probability of a loss of well-being, depends on the hazards, exposure and sensitivity, expected impacts and losses, and ex-ante and ex-post risk management strategies.

*Hazard.* Hazard is an event that can cause danger, damage, loss, injury, or any other undesirable consequences for a household (or an individual or a community). Hazards can also interact. Many disaster risks are the result of linked hazards and have inter-related impacts. Moreover, losses associated with natural hazards interact with other hazards stemming from, for example, markets or policy failures.

*Vulnerability (Exposure and Sensitivity of Assets and Livelihoods).* Households' risk exposure and sensitivity depend on their asset portfolio, asset allocation, and livelihood strategies (e.g., crop and livestock mix and varieties, diversification of farm and off-farm or non-farm activities). The risk exposure and sensitivity of households is based on their asset and livelihood decisions, which are shaped by the policy, institutional, and structural context outside their control.

*Expected Losses.* The expected losses from any hazard depend on the probability of a hazard event occurring and the exposure/sensitivity of assets/livelihoods. Expected losses denote the severity of potential negative impacts from risks before a hazard event is manifested and before any ex-ante or ex-post risk management.

*Risk Management Strategies: (ex-ante and ex-post):* Households and societies manage risks through multiple complementary strategies that can be taken independently by households and/or through planned societal actions.<sup>39</sup> These strategies all have real and opportunity costs and can be separated into *ex-ante* (before a hazard event occurs), and *ex-post* strategies (after a hazard event has occurred).<sup>40</sup> Risk management, if successful, results in increased *resilience*, the ability to avoid the negative impacts of hazard events and to recover from them.

*Ex-ante risk management strategies:* Prevention or reduction: actions to reduce the probability of hazard events (e.g., cloud seeding to change rainfall patterns); Reduction of

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<sup>38</sup> Different studies define risk and vulnerability and other key terms of the SRM risk-vulnerability chain differently. For different definitions of vulnerability in the literature see Alwang, Siegel, and Jorgensen (2001); and Adger (2006).

<sup>39</sup> This is the difference between “autonomous adaptation” and “planned adaptation”.

<sup>40</sup> The costs of risk management are often overlooked. Yet both ex-ante and ex-post risk management have real and opportunity costs, even as the risky event may not occur or, if it occurs, ex-ante actions may not have success. It is also often overlooked that even the best of ex-ante strategies need to be complemented with ex-post coping (insurance, for example, rarely compensates for the entire loss).

exposure and sensitivity reduction: actions to reduce household vulnerability to given hazards (e.g., asset and livelihood diversification); and arrangements for compensation if there is a future hazard-generated loss (e.g., formal insurance, holding of savings, and social networks), and planned coping.

*Ex-post risk management strategies*: Coping actions are taken to compensate for losses after realization of a hazard event. Coping costs are rarely shared equally within households but borne according to age, gender, and status (for example, poor households forced, withdraw boys or girls from school, or reduce food consumption of some members). In many cases, for poor and vulnerable households, ad-hoc coping (see below) results in the degradation of assets and reduction of livelihoods and well-being, and a downward spiral that might even be irreversible (or require a long time for recovery). *Ad-hoc (i.e., unplanned) coping* after a hazard event is realized and arrangements for compensation either do not exist or are insufficient to cover losses.

*Risk* is the expectation of losses of well-being should a hazard event occur. Well-being proxies such as poverty lines and health and nutritional status are often used as a benchmark to determine the severity of a loss relative to the overall well-being indicators. Thus, an individual or household is considered “at-risk”, if the hazards can result in a loss that pushes the household below the well-being benchmark (say, the poverty line). In our definition, risk depends on the characteristics of the vulnerability (exposure and sensitivity) to the hazards; expected impacts and losses; and risk management capacity. *Resilience* is the ability to resist the potential negative impacts of risky events and the extent to which households can recover from negative impacts of risky events.

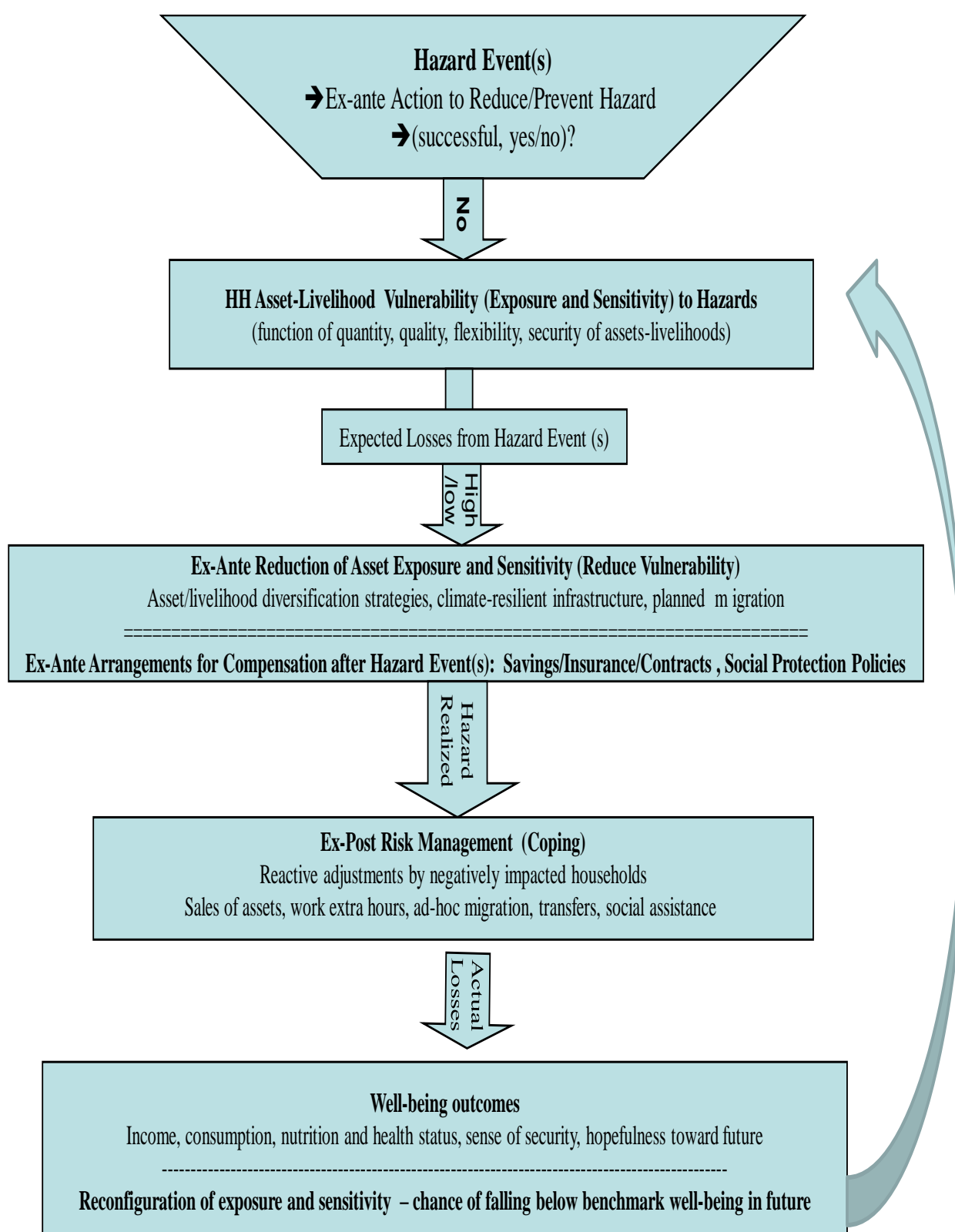
### **Similarities and differences between SP, DRM, and CCA:**

***Social Protection (SP)***: focus on provision/guarantee of "basic needs" through asset and livelihood enhancement and risk management for multiple-hazards (e.g., environmental, socio-economic, cultural) using mixed quantitative/qualitative methods. Includes public and private sector interventions to strengthen and protect assets and livelihoods of individuals and households and improve access to basic needs, and help manage hazards from economic, social, natural sources. Special focus on "vulnerable groups" (e.g., poor, elderly, sick, disabled, unemployed, children, socially excluded). Objective to proactively reduce vulnerability and increase resilience via enhancement and protection of assets/livelihoods.

***Disaster Risk Management (DRM)***: focus on natural hazards (hydro-meteorological, and geo-physical) and extreme events, and emergency responses. Hazard forecasts for future based on past, try to lower vulnerability ("reduce the risks") in short-term to medium-term.

***Climate Change Adaptation (CCA)***: focus on natural hazards and direct/indirect impacts of climate-related factors (extreme weather events and changes in climate variability). Hazard forecasts for future based on past, present, future and try to lower short-term and longer-term vulnerability. Adjustments over time (i.e., adaptation) as climate change takes place (or is expected to take place), with proactive actions.

**Figure 1: The Risk-Vulnerability Chain**





**ANNEX 2: World Bank (2010a) “Incorporating Social Dimensions in the Infrastructure Recovery and Assets (INFRA) Platform.” INFRA Guidance Notes, IN-4.**

[www.worldbank.org/infra](http://www.worldbank.org/infra)

To date, employment has been the most important social objective of crisis-related operations and remains an important objective, but there is also scope for attention to broader social opportunities and risks. Employment impacts can be enhanced and speeded up by choosing labor intensive construction techniques and by investing in maintenance, rehabilitation, and ‘shovel-ready’ projects. Approaches such as workfare, community-driven development, and labor-intensive maintenance are particularly suited. In addition, project design may emphasize institutional mechanisms that ensure maintenance of assets as well as opportunities to enhance access to basic infrastructure services and promote local socio-economic development. With these approaches, infrastructure development can be a very useful tool to promote employment and social inclusion, setting the foundations for inclusive growth.

**The speed and magnitude of employment is important in a crisis context. Direct employment can generally be created fairly quickly in maintenance or “shovel-ready” (or “off-the-shelf”) projects, but will take much longer for projects on the drawing board. Indirect employment via multiplier effects can result fairly quickly as well, for maintenance and shovel-ready projects, but little is known about the size of the multiplier effects in different infrastructure sectors in developing countries.**

As a rule of thumb, maintenance, rehabilitation, and retrofitting of ongoing projects deliver more timely employment than new infrastructure projects and can therefore be of great value in situations where employment is adversely impacted by economic crisis. ‘Shovel-ready’ projects also offer opportunities for relatively timely employment creation but still need to be screened for opportunities to maximize the social impacts. Even “shovel ready” projects shouldn’t be rushed without stopping to consider broader social risks and opportunities, for example via design changes that maximize employment and local development impacts.

Also see: <http://www.worldbank.org/financialcrisis/>



### **ANNEX 3: U.S. Agency for International Development's (USAID) Famine Early Warning Systems Network (FEWSNET) and Rwanda**

It is the combination and integration of satellite-based technologies (top-down) and community-based systems (bottom-up) that complement one another for establishing early warning systems that can provide the basis for rapid emergency relief and rapid responses. The U.S. Agency for International Development's (USAID) Famine Early Warning Systems Network (FEWSNET), which began in the mid-1980s and currently operates in about 20 countries in sub-Saharan Africa, several in Central America, along with Afghanistan, and Haiti, is an example of an integrated "tops-down" and "bottom-up" EWS that can facilitate (i.e., "trigger") a rapid response based on set operating rules and procedures and transparency. FEWSNET is a multi-disciplinary project that collects, analyzes, and distributes community, local, sub-national, national, and multi-national information to provide to decision-makers about potential or current food insecurity, natural hazards, or socio-economic-related hazards, thereby allowing them to authorize timely responses to prevent food-insecure conditions (or other crisis situations) to become famines (or disasters). FEWSNET uses sophisticated remote sensing technologies and links to ground-based community and local level M&E of key economic, social, and along with indicators of crop and livestock well-being, inventories of food staples, indicators of basic needs (e.g., nutrition, health, school attendance) and labor market conditions. In addition, there is also expanding interest in participatory GIS (P-GIS) that allows for communities and local governments to use GIS and SDI to receive and send data and information, and use this information for planning. The conceptual framework used for FEWSNET is:

#### **Disaster Risk = Natural Hazard x Vulnerability – Capacity**

For FEWSNET, information on components of 'vulnerability' (including assets, sources of food and income, expenditure patterns) and hazard managing capacities, are collected and organized by livelihood zones and disaggregated by livelihood groups. The 'hazard' information is derived from climate, production, policy, market and other information. The 'disaster risk analysis' combines both sets of information in order to judge the likeliness of a severe gap in household food access. Market and trade information, crop assessments and satellite data provide important information on potential hazards. When filtered through the livelihoods lens it tells us how these hazards will impact households. Clearly, a system like FEWSNET is only effective if there is good governance at all levels, from community to local to national to international, and back again.

The main advantage of a community-based EWS anchored in analyses of vulnerability (asset-livelihoods) and capacities is that it provides a contextualized perspective of food and livelihood security within a defined territorial region and/or entire country. Having a location-specific understanding of how households perform "normally", analysts can better assess the impact that a hazard will have on household assets and livelihoods and food/income access. FEWS NET's livelihoods framework is essential for answering key food security questions such as, "How, and to what extent, have households' normal patterns of food and income access been impacted by an event?" and "Are households likely to face food or livelihood deficits as a result?" The World Bank's Ethiopia Productive Safety Nets Project, is an example of an approach that uses community-based means testing to identify potential SP program beneficiaries and FEWSNET technology and information to support early warning and rapid response systems, with a contingency fund to finance resilience-building public works (Devereux and Guenther, 2007; Gilligan, Hoddinott, Taffesse, 2008; Wiseman and Hess, 2008; Davies, et. al., 2009). There are other countries with similar systems, but there is no unique blueprint or "one-size-fits-all" approach.

**Annex 4: Stakeholders for Mission: Climate Change (CC) and Social Protection (SP)  
Mission, November 15 – December 7, 2010. Trust Fund for Environmentally and  
Socially Sustainable Development (TFESSD – TF094621),**

World Bank

Ministry of Local Government (MINALOC)

Rwanda Environmental Management Agency (REMA)

Ministry of Disaster Management and Refugees (MIDIMAR)

National Land Center (NLC)

Meteorological Service, Ministry of Infrastructure

Ministry of Agriculture (MINAGRI)

Ministry of Health (MINISANTE)

CGIS, National University of Rwanda

World Food Programme (WFP)

FAO

UNDP

UNICEF

DFID

Smith School of Enterprise and Environment, Oxford University

USAID

European Union (EU)

Care International

ADRA - Adventist Development and Relief Agency

SwedeSurvey

Urwego Opportunity Bank

UK Meteorological Service

Regional Disaster Management Center of Excellence (RDMCOE)- based in Nairobi

CARANA Corporation

Send-A-Cow

**Annex 5:** **2nd Annual Review of DFID Support to the  
Vision 2020 Umurenge Programme (VUP), Rwanda**  
**Report commissioned by the Department for International Development**  
by  
**Stephen Devereux**

*Centre for Social Protection, Institute of Development Studies, UK*

December 2010

Here is a brief review of some of the recommendations with respect to “climate-proofing” of VUP, that is part of a broader in-depth review of the VUP.

### **3.5. Vulnerability-proofing**

During 2010 attention was drawn to the fact that the VUP is not very responsive to short-term shocks. For instance, since the decision was taken to retarget every 12 months instead of every six months (which was recommended in the 1<sup>st</sup> Annual Review), the VUP only reacts to changes in levels of need – numbers and severity – once a year. A World Bank consultancy (Siegel, *et al.* 2010) made several proposals to ‘climate-proof’ the VUP, including:

1. ***Using community-level scorecards to compile a ‘vulnerability index’.*** This proposal is endorsed, subject to two qualifications: firstly, ‘vulnerability’ should be defined more broadly than climate risks, to include risks (for instance) to human and livestock health; secondly, the routine VUP M&E system is already stretched, so monitoring vulnerability should not be introduced if it places too much stress on monitoring the VUP itself.
2. ***Strengthen linkages between VUP and other programmes and sectors*** – including MIDIMAR, MINAGRI, MINISANTE (the Multi-sectoral Strategy to Eradicate Malnutrition), WFP and UNICEF. This proposal is endorsed, since inter-sectoral coordination is always necessary for a more integrated programme design and strengthened political buy-in.
3. ***“Focus public works projects on activities that reduce vulnerability and increase resilience”.*** This is already practised, with Public Works projects dominated by activities that have environmental protection objectives – terracing for improved and more sustainable land use, trenches to reduce soil erosion, water resource management.
4. ***Weather-indexed insurance:*** where payouts are triggered by low aggregate rainfall rather than by individual assessment of crop losses. This proposal is also endorsed, subject to the results of a pilot test that is currently underway, as part of a broader effort to introduce insurance mechanisms to the social protection system in Rwanda.
5. ***Extend Financial Services to include life and disability insurance.*** This proposal is also endorsed in principle, under the broad objective of enhancing access to social insurance for vulnerable Rwandans. But it might be too early to introduce new financial products until the VUP savings component and the Ubudehe Credit Scheme have been evaluated.

While welcoming the focus on ‘climate-proofing’ rural livelihoods, this review argues that the VUP should provide more effective protection against the broad range of vulnerabilities that Rwandans face, of which climate risks are only one component. For instance, the VUP needs to be more aware of seasonality – in agricultural production, farm labour requirements, off-farm employment opportunities, food prices, health and diseases. Seasonality operates in different ways and to different extents in different parts of the country, but the VUP is not sensitive to these variations over time and across geographical areas. Seasonal awareness should inform the design and implementation of VUP, such as the optimal timing of Public Works projects, and ensuring that Public Works and Direct Support payments are made on time during the annual pre-harvest ‘hungry season’.