HEKS-EPER GUIDELINE ON
MAINSTREAMING COMMUNITY MANAGED RISK REDUCTION

Building Resilient Communities

HEKS
Hilfswerk der Evangelischen Kirchen Schweiz
Swiss Church Aid

Content

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Executive Summary

Throughout the world people are increasingly exposed and sensitive to the risk of shocks (e.g. natural disasters) or stresses (e.g. conflict, impact of climate change, a flagging economy). People living in the developing world are particularly sensitive to these shocks and stresses as they often live in high risk areas, have lower adaptive capacities, that is limited risk cover in the form of resources and assets (socially, economically, environmentally, politically and physically) to withstand or overcome shocks and stresses.

In its International Programme 2013-2017 HEKS-EPER defined its overarching goal of international cooperation to strive for equality and prosperity for rural communities. In order not to impede the achievement of this goal HEKS-EPER, through its programmes and projects, aims to prevent and minimize the adverse effects of shocks and stresses on people of our concern's (PooC) livelihoods and supports them in their efforts of adapting to and coping with shocks and stresses.

The "Guideline on Mainstreaming Community Managed Risk Reduction" serves as a framework on how to systematically mainstream community managed risk reduction and resilience building into HEKS-EPER's main areas of work (i.e. development of rural communities, conflict transformation and humanitarian aid). In accordance with the realities, which HEKS-EPER is facing in the field, the working approach on risk reduction and resilience building adopted by HEKS-EPER (adapted from the Resilience Framework developed by DFID 2011), goes beyond the scope of sudden- or slow-onset natural disasters (shocks) and also encompasses effects of long term stresses such as conflict, climate change and environmental degradation.

The aim of the efforts regarding risk reduction and resilience building is to reduce the sensitivity of the PooC against shocks and stresses. The key to a reduced sensitivity of PooC lies in the reduction of exposure and the strengthening of adaptive capacities, by improving livelihood assets, advocating for processes and structures which favor resilience as well as promoting livelihood strategies which allow to cope with shocks and stresses.

HEKS-EPER programmes and projects already address many aspects regarding the reduction of sensitivity, exposure as well as the enhancement of adaptive capacities. This is reflected in the guideline by presenting examples of good practices from the field. In addition the guideline gives ideas for further resilience building measures. Since HEKS-EPER work needs to focus on few activities and interventions, the close collaboration of all relevant stakeholders (state, private sector, community based organisations (CBOs), other projects) is crucial for sustainably strengthening the adaptive capacity of PooC.

The systematic integration of community managed risk reduction into HEKS-EPER programmes and projects requires that the topic is anchored in the HEKS-EPER Project and Programme Cycle Management (PCM). Thus, in the second, more practical part, the guideline provides step-by-step directions and tools on how to systematically integrate risk reduction and resilience building into programmes and projects.

«We must, above all, shift from a culture of reaction to a culture of prevention. Prevention is not only more humane than cure; it is also much cheaper.... Above all, let us not forget that disaster prevention is a moral imperative, no less than reducing the risks of war.»

Kofi Annan, Former Secretary General of the United Nations (Strategy for a Safer World in the 21st Century: Disaster and Risk Reduction, Geneva, July 9, 1999)

1. Introduction

Throughout the world people are increasingly exposed and sensitive to the risk of shocks (natural disasters, such as earthquakes, volcanic eruption, tropical storms, floods, drought) or stresses (e.g. conflict, impacts of climate change, environmental degradation, a flagging economy), which can hamper years of development efforts within minutes or hours and slow down progress of poverty reduction for years to come. Human beings always had to cope with and adapt to shocks and stresses. However, the potential impact of shocks and stresses has increased worldwide. One reason is that the world population is higher than ever before. Thus, there are more people to be potentially impacted, and more are being forced to

live in high-risk areas. In addition, scientific analysis also indicates that weather related hazards are becoming more frequent and intense due to the impact of climate change. Furthermore, violence and conflicts around the world are taking a new form. Interstate conflicts are being replaced by rising numbers reoccurring internal conflicts. Some 1.5 billion people live in countries affected by repeated cycles of political and criminal violence. The vast majority of these are developing countries. Unlike a few decades ago, today conflicts are increasingly a mixture of political conflicts, socially-motivated violence, petty crime, organised crime, and terrorism to complex cycles of violence that inhibit development. The frequent reoccurrence of violent conflicts particularly increases the vulnerability to disaster and thus impedes building up resilient communities.

People living in the developing world are particularly sensitive to these shocks and stresses as they often live in high risk areas, have lower adaptive capacity and have a limited risk cover in the form of resources and assets (socially, economically, environmentally, politically and physically) to withstand or overcome shocks and stresses. Moreover, their economy mainly depends on the primary sector (i.e. agriculture, fishery and forestry), which is highly climate sensitive.

In its International Programme 2013-2017 HEKS-EPER defined its overarching goal of international cooperation to strive for equality and prosperity for rural communities. In order not to impede the achievement of this goal HEKS-EPER, through its programmes and projects, needs to prevent and minimize the adverse effects of shocks and stresses on People of our Concern's (PooC) livelihoods and support them in their efforts of adapting to and coping with shocks and stresses. HEKS-EPER programmes and projects need to follow a comprehensive approach of risk reduction and resilience building which is integrated into all its main areas of work: Development of rural communities, conflict transformation and humanitarian aid.

The need to integrate measures of risk reduction and resilience building into HEKS-EPER programmes and projects was first mentioned in the HEKS-EPER strategy 2008-2012 and again reinforced in the strategy 2013-2016. Furthermore, it is systematically anchored in the HEKS-EPER International Programme 2013-2017 (p.34/35).

HEKS-EPER programmes and projects already address many aspects regarding the reduction of exposure and sensitivity as well as the enhancement of adaptive capacities. The "Guideline on the Mainstreaming of Community Managed Risk Reduction", however, gives the framework on how to mainstream community managed risk reduction and resilience building systematically into HEKS-EPER programmes and projects. Besides community managed risk reduction another important issue regarding risk reduction within HEKS-EPER is the enhancement of the response capacity of the HEKS-EPER country offices and partner organizations. This is however dealt with in a separate document in the frame of the HEKS-EPER Humanitarian Aid Implementation Concept.

The guideline on mainstreaming risk reductions into HEKS-EPER projects and programmes consists of two main parts:

1. Context & HEKS EPER Approach: A contextual analysis, discussing the background and current debate around risk reduction and resilience building and the HEKS-EPER approach towards risk reduction and resilience building giving the theoretical frame for risk reduction and resilience building and explaining possible spheres of action and examples of good practice from the HEKS-EPER context.

2. Practical Guidance: Integrating risk reduction and resilience building into HEKS-EPER Project Cycle Management (PCM) providing directions and tools on how to systematically integrate risk reduction and resilience building into programmes and projects.

As the concepts and definitions of "risk reduction" and "resilience" are in constant debate the guideline has to be considered as a living document which needs to be complemented and modified over time.

Part I: Context & HEKS EPER Approach

2. Context

2.1. Disasters on the Rise – A Challenge to Sustainable Development

Strong scientific evidence implies that the frequency and intensity of "natural" hazards have increased throughout the world over the past decades. Both 2010 and 2011 with large scale disasters in Haiti, Pakistan, Japan and the Horn of Africa marked record years with respect to damage caused by natural hazards. Different studies show that the number of natural hazards has tripled in the last 30 years (SDC 2008), whereas weather-related (hydrological, meteorological, climatic) events such as tropical storms, floods, heat waves and droughts have increased. In 2012, for example, most hazards were hydro-meteorological in nature with 45% of all 905 loss events caused by storms and 36% by floods and avalanches. 12% were caused by climatological events such as extreme temperatures, droughts and forest fires, while the remaining 6% were caused by geophysical events (earthquakes, tsunamis, volcanic eruptions) (The Brookings Institution 2013).

However, not only the increase of weather-related hazards, but also the considerable increase

of a so-called "risk population", which is highly exposed and sensitive to hazards accounts for the rise of disaster losses. Particularly in developing countries increasing population pressure, urbanization, competition over land and natural resources caused by the over-exploitation of natural resources pushes the poor to live in areas of high risk, for example the large river deltas of Bangladesh, India or Pakistan. Moreover, their high dependency on natural resources and the fact that traditional coping mechanisms and adaptation strategies fail in the face of the new risk scenario makes them particularly vulnerable to hazards.

Not only natural hazards, but also conflicts have to be considered as a "development killer" which can wipe out development gains and hamper the progress towards the fulfilment of the development goals. An increasing number of people live in so-called fragile or conflict affected contexts. New conflicts with a tendency to turn into a protracted crisis, such as the one in Syria have been arising over the past years and long-term protracted conflicts as in Somalia, Sudan, the Democratic Republic of Congo or the Middle East are far from being resolved. Furthermore, there is increased attention on the concurrence of conflict and disasters. From 2005-2009, more than 50% of people affected by 'natural' hazards lived in fragile and conflict affected states.

2.2. Defining Disaster Risk Reduction and the Hyogo Framework of Action

The debate on Disaster Risk Reduction (DRR) first came into the light of the international community with the launch of the International Decade on Natural Disaster Risk Reduction (IDNDR, 1990 – 1999). At the end of the decade a permanent UN structure, known as the International Strategy for Disaster Reduction (UNISDR) was established.

With the creation of the "Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters" and its adoption by 168 countries, another big step in the recognition of the importance of DRR was taken at the UN World Conference on Disaster Reduction in Kobe in January 2005.

Figure 1: HFA Fields of Action

The Hyogo Framework for Action (HFA) recognizes five major challenges in ensuring systematic action on risk reduction (a) governance; (b) risk identification, assessment, monitoring and early warning; (c) knowledge management and education; (d) reducing underlying risk factors and (e) preparedness for effective response and recover. To address these challenges the HFA defines five priorities of action outlined in Figure 1.

The framework has led to increased dialogue between

governments, civil society and academia. Furthermore, it has contributed to greater awareness and understanding of DRR at national and international levels. The Mid-Term Review of the HFA showed that risk reduction strategies are still mainly individual actions on a small scale. Hardly any comprehensive national or even regional strategy has been developed yet. Moreover, risk reduction measures hardly ever touch the grass root level, particularly in risk prone-countries with a high "risk population" (UNISDR 2009). Moreover, although there is growing evidence of the economic benefits of DRR; for every dollar spent on DRR, between 2 and 4 dollars are returned in terms of avoided or reduced disaster impacts, yet less than 4% of humanitarian aid and less than 1% of development assistance is spent on ex-ante disaster prevention (FAO 2013a).

UNISDR (2009) defines DRR as the conceptual framework of elements considered with the possibilities to minimize vulnerabilities and disaster risks throughout a society, to avoid (prevention) or to limit (mitigation and preparedness) the adverse impacts of hazards, within the broad context of sustainable development. The framework of DRR acknowledges the fact that a successful risk reduction strategy must be instigated before disasters strike, and widens the focus from merely responding to disasters to disaster prevention/mitigation and preparedness activities. Hence, it bridges the gap between the traditional fields of action of humanitarian aid and development cooperation.

DRR actions aim at strengthening the capacities and resilience of households, communities and institutions to protect lives and livelihoods, through measures to avoid (prevention) or limit (mitigation and preparedness) the adverse effects of hazards. During emergency response, communities and relief agencies focus on saving lives and property. In post-disaster situations, the focus is on recovery and rehabilitation, however, with a strong imperative on "building back better". This implies that DRR activities need to be carried out in all phases of the disaster management continuum (refer to Figure 2) during response, recovery and rehabilitation interventions as well as before a disaster strikes with measures of prevention, mitigation and preparedness to avoid and limit future risks. The paradigm shift to conceptualize DRR as a continuum reflects the reality that the transition between pre-, during, and post-disaster is fluid, in particular in countries, which are regularly exposed to hazards (FAO 2013a).

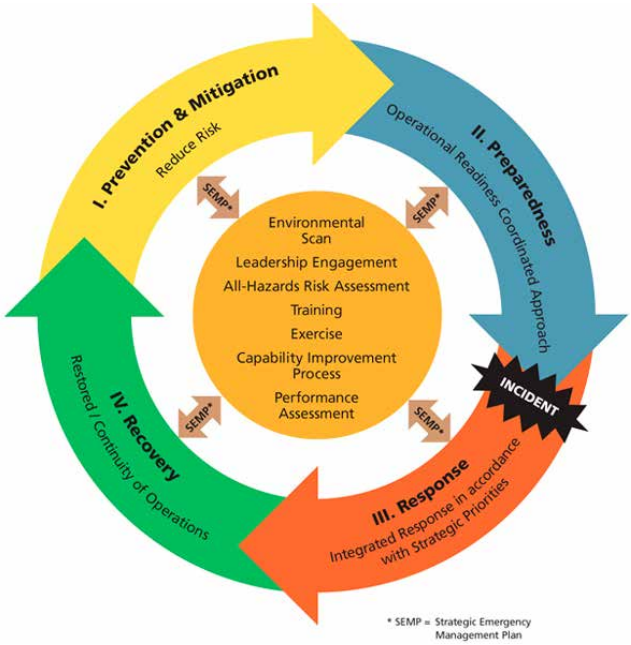

Figure 2: Emergency Management Continuum

2.3. Resilience - Towards a more Comprehensive Approach of Risk Reduction

The latest debates on risk reduction have recognized that the roots of disasters are not merely out of human control and cannot be solved by technical solutions only, but that also addressing socio-economic and political factors that cause people to be at risk is key to strengthening disaster resilience. For example, the Special Report of the Intergovernmental Panel on Climate Change (IPCC) (2012) on Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX) puts vulnerability and exposure at the centre of disaster impact: "The character and severity of impacts from climate extremes depend not only on the extremes themselves but also on exposure and vulnerability. (…) Disaster Risk Management and adaptation to climate change focus on reducing exposure and vulnerability and increasing resilience to the potential adverse impacts of climate extremes, even though risks cannot be fully eliminated."

The increasing complexity of factors which constitute the risk for disaster, such as climate change, environmental degradation, population rise, continued urbanization, food price fluctuations, financial shocks, fragility and conflict call for a more comprehensive approach to risk reduction. Furthermore, the different sector communities, such as the disaster – (HFA), climate – (UNFCCC, Kyoto Protocol), development – (MDG, Livelihood Approach, etc.) and environmental community (natural resource management), which are all dealing with the problems mentioned above, use their own concepts and definitions of risk reduction, preventing them from adopting common solutions and overcoming "silo"-thinking. To address the issue of risk reduction in a more holistic way the term "resilience" is increasingly used by practitioners in the different communities (ODI 2013a/ Bahadur et al. 2010). Moreover, resilience is also the focus of a growing body of research, which is trying to understand what the properties are that make a country, community or household resilient and to establish the principles and processes which strengthen resilience (DFID 2011).

With regard to risk reduction the definition of the UNISDR (2009) is used most widely: "Resilience is the ability of a syst*em, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner".*

2.4. Overcoming "Silo"-Thinking: The Interface between Resilience, Climate Change Adaptation and Conflict Prevention

With regard to the work of HEKS-EPER two recent debates regarding a more comprehensive approach of risk reduction are particularly important: The questions on how to integrate climate change as well as fragility/conflict into a comprehensive approach to risk reduction.

With regard to the interface between disaster resilience and climate change there is strong consensus that changes in climate are affecting the risk for disaster in two ways: On the one hand, as already pointed out above, scientific analysis indicates that a changing climate results

in an increase in the number of extreme climatic events, but also an increase of frequency and intensity of such sudden onset disasters. The spatial distribution of extreme events is likely to change, including impacts in regions with no history of a given hazard. On the other hand, the insidious and long-term effects of climate change-related processes such as sea level rise, ecosystem stress or the degradation of natural resources increases the vulnerability of communities to natural hazards (slow onset disasters) (UNISDR 2008).

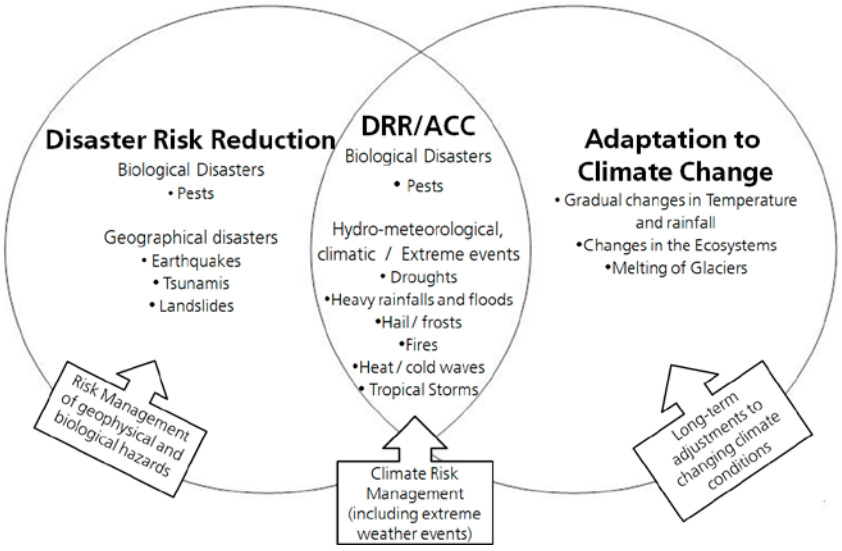

Figure 3: Intersection between Disaster Risk Reduction and Adaptation to Climate Change (adapted from Intercooperation 2007)

The most severe consequences of climate change will likely be on the food security and livelihoods of agriculture-dependent populations in vulnerable countries. Most estimates indicate that climate change is likely to reduce agricultural productivity, production stability and incomes in areas that already experience high levels of food insecurity. Long-term changes in the patterns of temperature and precipitation will shift production seasons, increase the supply variability and risks in the fishing sector, and contribute to the emergence of new animal and plant diseases – or introduce diseases in places where they did formerly not exist. In addition, changes in temperature and rainfall can favour outbreaks of insect infestations. Drought, hurricanes, warmer temperatures and shifting winds resulting from climate change will increase the risk and frequency of wildfires (FAO 2013a).

Although the two approaches stem from different origins, both DRR and Climate Change Adaptation (CCA) are concerned with the increase in the number and scale of extreme climate related hazards, and the changing patterns of risk and vulnerability expected from climate change. Moreover, they use similar tools to monitor, analyse and address adverse consequences (UNISDR 2009). It is now widely accepted that climate change and respective mitigation and adaptation strategies must be taken into account by DRR. Thus, the two approaches should be tackled together. Both the international community, but also countries are trying to overcome the „silo"-thinking and are seeking to systematically link the two fields (Ibid.). The HFA specifically identifies the need to "promote the integration of risk reduction associated with existing climate variability and future climate change". And the Cancun Adaptation Framework on the other hand, promotes enhanced action on "climate change related strategies", taking into consideration the HFA (FAO 2013a).

The latest debate in overcoming the "silo"-thinking between two disciplines is the interface between disaster resilience and conflict prevention (ODI 2013b/UNDP 2011). Many developing countries experience both natural hazards and conflict at the same time. The Horn of Africa drought in 2011 offers a good example for this interface: Drought, food and political insecurity contributed to a full scale humanitarian crisis. The combination of natural hazards, insecurity and fragility provide the recipe for human suffering. It is recently more widely recognized by researchers and the development community that the convergence between natural hazards and conflict significantly compounds development impacts, impairs recovery and increases the risk for future crisis.

The convergence of natural hazards and conflict is twofold: On the one hand, there is evidence suggesting that natural hazards exacerbate pre-existing conflicts. This is especially the case when natural disasters further increase resource scarcity or cause more acute imbalances between areas of scarcity and abundance. This becomes particularly apparent in cases of slow onset disasters such as drought, which can increase tension over natural resources, leading to confrontation between different land users, for example farmers and pastoralists. However, there is also a limited number of cases where natural hazards have led to the resolution of conflicts, as it was the case in post-tsunami Aceh/Indonesia. On the other hand, there is strong evidence that conflict and fragility increase the impact of natural hazards. Conflict can increase disaster risk by displacing people into areas more exposed to natural hazards, such as informal settlements in exposed locations. Conflict also increases vulnerability to natural hazards through the impact it has on physical and psychological health, basic service provision and secure livelihoods. Conflict can drive individuals to sell assets or to use valuable natural capital which in turn increases disaster risk (Ibid.)

The Overseas Development Institute (ODI) (2013) which recently explored the interface between disaster resilience and conflict prevention suggests the following three steps to overcome the "silo"-thinking: "First, as a minimum, it is necessary to make sure that interventions in one field do not exacerbate risks in another. Conflict sensitive approaches to humanitarian and development action could have a role to play here. Second, opportunities for conflict prevention and disaster resilience programmes to contribute to alleviating each other's risks should be explored – for example by contributing to joint analyses, regional approaches, and broad based risk assessments. A third step would be to ensure that managing risk in fragile and conflict affected states is a key feature of the post-2015 agreement on DRR (HFA 2) and that there are clear institutional mandates to tackle this." Achieving state building, humanitarian and development goals will require changes to the way the disaster - conflict nexus is conceptualised. Natural disaster risk reduction must be included in state building and conflict prevention frameworks and vice versa.

2.5. Gender and Resilience

Whilst the entire population suffers from the effects of natural hazards, disaster and conflict, women and children, but also the elderly and other marginalised social groups are specifically vulnerable, as they have a weaker asset base to fall back to in a disaster situation. Moreover, this vulnerability can be further exacerbated in a disaster situation where relocation into safe space cannot be guaranteed. There is also evidence that post-disaster gender-based violence can be caused by frayed safety and protection networks, lack of housing alternatives, economic pressure forcing people back into violent relationships, housing conditions/overcrowding, limited law enforcement and juridical intervention, non-functional shelter or protective networks, lack of security (USGDRA 2012). On the other hand, disasters can also provide opportunities to improve women's position in the long-term. Men and women working side-by-side on emergency activities can have long-term positive impacts on social relations and allowing women to gain organisational and educational experience, which can be useful resources in rehabilitation (Flintan 2011).

The role of women in fostering a culture of resilience is often overlooked and not adequately recognized. Women are important agents of change in post disaster situations. Because, women and men are affected differently by shocks and stresses, they both possess local knowledge and expertise on how to deal with disturbance, which is of relevant use to strengthen existing or promoting new adaptive strategies (UNISDR, UNDP and IUCN 2009).

3. The HEKS-EPER Approach to Risk Reduction and Resilience Building

3.1. The HEKS-EPER Resilience Framework

In order to anchor risk reduction and resilience building on a community level in its three main areas of work: development of rural communities, conflict transformation and humanitarian aid, HEKS-EPER needs to adopt a resilience framework, which includes, but also goes beyond the scope of sudden- or slow-onset natural disasters (shocks), a framework which also encompasses effects of long term stresses such as conflict, climate change or environmental degradation.

The Resilience Framework developed by the UK's Department for International Development (DFID) (2011) fits well with the HEKS-EPER working approaches and offers the chance to work on the interface of the HEKS-EPER working areas as well as link the humanitarian to the developmental sphere. It integrates a livelihood framework, a disaster risk reduction framework and also reflects the recent discussions of a broader understanding of risk reduction including adaptation to climate change as well as fragility/conflict, both most relevant to the work of HEKS-EPER.

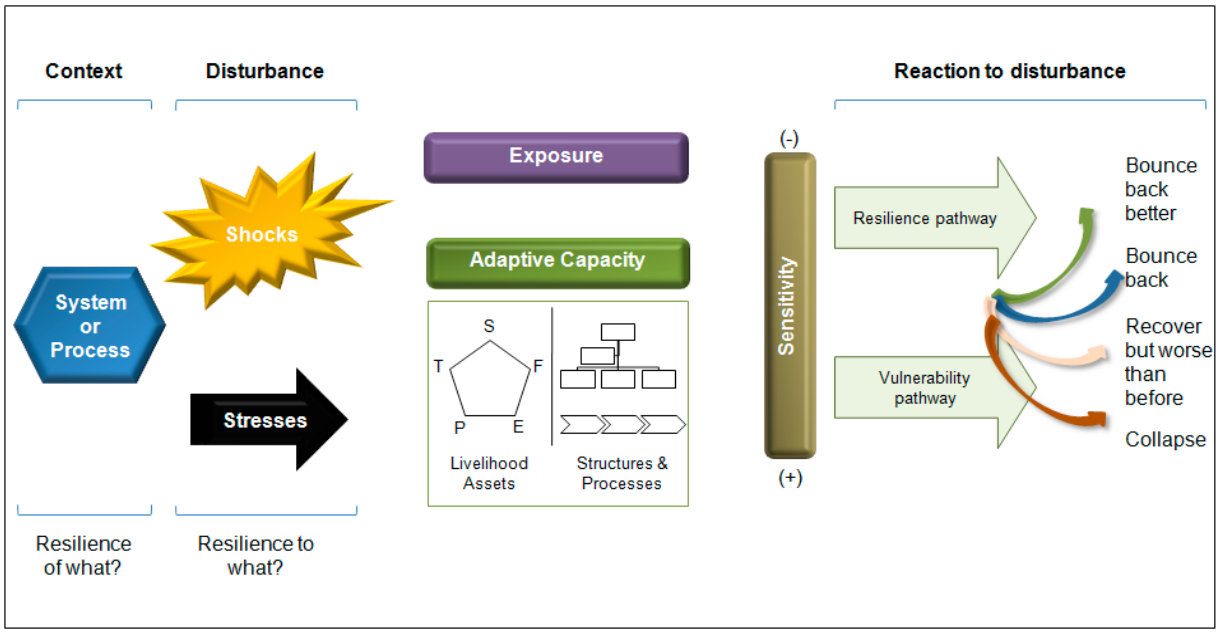

Figure 4: HEKS-EPER Resilience Framework (adapted from DFID 2011/2012)

HEKS-EPER adopts the following working definition of resilience based on DFID (2011): "Disaster Resilience is the ability of countries, communities, and households to manage change, by maintaining or transforming living standards in the face of shocks and stresses without compromising their long-term prospects."

According to DFID (2011) most definitions of resilience share the four common elements of context; disturbance; capacity and reaction which are also visualized in Figure 4 below. The four elements help to examine different kinds of resilience and determine the level of resilience that exists in a given context.

The elements of the resilience framework can be defined as follows:

Context: To define resilience it should always be clearly contextualised – allowing a coherent answer to the question 'resilience of what?' Resilience can be identified and strengthened in a social group, socio-economic or political system, environmental context or institution. Each of these systems will display greater or lesser resilience to natural or man-made disasters. HEKS-EPER mainly concentrates on risk reduction/resilience building on a community level.

Disturbance: The next stage is to understand the disturbances faced, addressing the question 'resilience to what?' These disturbances usually take two forms:

- **Shocks** come in the form of rapid onset or slow onset shocks, that impact on the vulnerability of the system and its components. There are many different types of disaster-related shocks that can strike at different levels. These include disease out-

breaks, weather-related and geophysical events including floods, high winds, landslides, droughts or earthquakes. There can also be conflict-related shocks such as outbreaks of fighting or violence, or shocks related to economic volatility.

- **Stresses** are long-term trends that undermine the potential of a given system or process and increase the vulnerability of actors within it. These can include natural resource degradation, loss of agricultural production, urbanisation, demographic changes, climate change, political instability and economic decline.

Of course, countries will often face multiple interconnected shocks and stresses. In order to analyse the level of disturbance in a programme region/country or in a project, we refer to Chapter 4.1. and 4.2., respectively.

The ability of the system or process to deal with a shock or stress is based on the levels of exposure, adaptive capacity or sensitivity.

Exposure determines the presence of people, livelihoods, environmental services and resources, infrastructure, or economic, social, or cultural assets in places that could be adversely affected. To determine the level of exposure an assessment of the magnitude, frequency and duration of shocks or the degree of stress in a given place is needed.

Adaptive Capacity determines the nature and extent of access to and use of resources in order to deal with disturbance. Adaptive capacity both affects and is affected by the larger context and is comprised of three basic, but interrelated elements livelihood assets; transforming structures and processes; and livelihood strategies.

Livelihood Assets are tangible and intangible assets that allow individuals and households to meet their basic needs. Livelihood security depends on a sustainable combination of six assets/capitals: financial; physical; political; human; social; and natural. Certain assets are interdependent on others. Asset levels and quality can be improved and/or repaired. Landscapes can be restored, soils improved, new skills and abilities can be learned, and new markets can be developed or accessed. Livelihood assets can and should be grown and improved.

Structures and processes are embodied in the formal and informal institutions that enable or inhibit the resilience of individuals, households and communities. Examples include national, regional, and local governments; civil society; religious institutions; trade associations; resource networks; shared customs and norms; informal/traditional governance structures; policies and laws.

Livelihood strategies represent the distinct or combined strategies that individuals and households pursue to make a living and cope with shocks. It is critical to note that different livelihood strategies have various risks associated with potential shocks and

that certain coping strategies may have negative and permanent consequences with respect to resilience.

Adaptive capacities allow actors to anticipate, plan, react to, and learn from shocks or stresses.

Sensitivity is the cumulative outcome of the two previous elements (exposure and adaptive capacity) and determines the degree to which a system will be affected by, or respond to a given shock or stress. This can vary considerably for different actors within a system. Greater sensitivity implies a lower degree of resilience whereas lower sensitivity implies greater resilience.

Whether a system or a process is **resilient** depends on its adaptive capacity. The other side to this is **vulnerability** - the degree to which a system is susceptible to, or unable to cope with, the adverse effects of shocks and stresses. Vulnerability and resilience are properly viewed as processes rather than static states. Individuals, households or communities that are able to use their adaptive capacity to manage the shocks or stresses they are exposed to and incrementally reduce their vulnerability are less sensitive and are on a resilience pathway. Households that are not able to use their adaptive capacity to manage shocks or stresses are sensitive and are likely to go down a vulnerability pathway. In order to analyse the level of exposure, adaptive capacity and sensitivity of HEKS-EPER PooC, we refer to Chapter 4.1.

Reaction to disturbance: In the best case, the reaction to a shock or stress might be a 'bounce back better' for the system or process concerned. In this case capacities are enhanced or sensitivities and exposures are reduced, leaving a system that is more able to deal with future shocks and stresses. An alternative reaction might be a 'bounce back' to a normal, pre-existing condition, or to 'recover, but worse than before' – the latter resulting in reduced capacities. In the worst-case scenario, the system or process might not bounce back at all, but 'collapse', leading to a catastrophic reduction in capacity to cope in the future.

The framework is a simplified representation of the elements to be considered when examining resilience. In practice the picture is more complex: the response curve could be slow and uneven due to, for example, the political context, secondary shocks or lack of information. Stresses can be cumulative, building slowly to become a shock, and both shocks and stresses may result in a number of different reactions.

The overall objective of the resilience framework is to enable policy makers and practitioners to consider processes across different societal levels to holistically strengthen resilience by addressing gaps in key livelihood assets: social/human, financial/economic, environmental/ natural, political, technological/ physical, enhancing the structures and processes of key institutions, and diversifying the livelihood strategies of vulnerable households. Resilience programming must therefore focus on strengthening the adaptive capacity of vulnerable individuals, households and communities. This entails taking incremental steps to reduce their

exposure and hence sensitivity to a variety of shocks and stresses so that they can eventually escape poverty and continually improve their wellbeing (DFID 2012 and TANGO International 2012).

3.2. HEKS-EPER Sphere of Action: Possible Measures of Risk Reduction and Resilience Building

The Sustainable Livelihood Approach with its 'assets' pentagon (refer to Figure 5) developed by DFID in 1999 defines the following resources and assets to build a sustainable livelihood: social/human, financial/economic, environmental/natural, political, technological/ physical. It is broadly recognised that communities practising a sustainable livelihood, hence possess a high degree of adaptive capacity are better able to withstand or overcome shocks and stresses than others. It is therefore crucial to increase different assets around the pentagon to strengthen the adaptive capacity, hence the resilience of PooC (DFID 1999/2011).

HEKS-EPER projects already address many aspects regarding the enhancement of adaptive capacities within the scope of strengthening different livelihood assets. In the following the guideline aims to **systematize these efforts, give ideas for intervention strategies and show good examples of the HEKS-EPER work with regard to resilience building.** The measures listed below contributing to risk reduction and resilience building are a selection and not exhaustive. As pointed out above, the prevalent shocks and stresses in a project region are often multifaceted. Hence, in many scenarios it is reasonable, that different risk reduction measures are complemented and completed with each other. It is furthermore crucial to acknowledge, that many of the suggested measures to strengthen the adaptive capacity of PooC are not new and are practiced widely in HEKS-EPER and its partners daily work; what is new, however, is to look at these measures from a risk reduction/resilience building perspective, constantly bearing in mind the possible risk of disturbance which could compromise livelihood security of our PooC and questioning how to prevent or minimize the underlying risk factors.

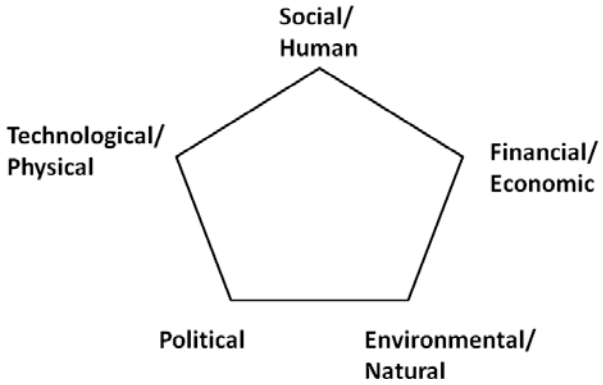

Figure 5: Asset Pentagon (DFID 2011)

Before any decision is taken on how to best increase assets and strengthen the adaptive capacity of PooC in a certain programme or project region respectively, a thorough assessment of imminent shocks and stresses as well as an assessment of the exposure, current level of adaptive capacity and sensitivity is needed. Chapter 4 of the guideline: Integrating Resilience Building Measures into HEKS-EPER Project Cycle Management gives a set of tools on how to conduct such assessments.

3.2.1 Environmental/Natural Assets

Land, water, forest and livestock are fundamental assets for the survival and well-being of rural communities, but are all prone to hazards, particularly to weather-related hazards, such as drought, flood or storm. Besides, long-term stresses, such as environmental degradation and the effects of climate change and climate variability, pose additional challenges to the preservation of environmental/natural assets and the loss of them further exacerbates the sensitivity of individuals, households and communities to shocks.

The intervention measures in this asset sector are manifold and range from measures of preparedness to prevention (adaptation) and mitigation. It is important to bear in mind that rural communities for centuries had to overcome times of shock and stress and had to adapt times and again to new circumstances. Local adaptation strategies are challenged by the frequency and scope of risks which communities have to face today. Nevertheless, it is crucial to always explore the local ways of coping and adapting, and to conform any planned measures of risk reduction and resilience building with local knowledge. Furthermore, the application of appropriate technologies or practices is always location and context specific.

In terms of preparedness measures the building up of seed, harvest and fodder reserves and the safe storage of these can be mentioned. Furthermore, the promotion of local early warning systems can help PooC to sell assets, such as livestock, at a point in time, when they still generate good value, or to scout for alternative water and fodder reserves to overcome time of water and fodder shortage.

Regarding the avoidance or limitation of adverse effects of shocks and stresses in the environmental/natural asset sector, HEKS-EPER promotes practices of sustainable environmental and natural resource management as well as appropriate and/or adapted agricultural technologies . Examples include enhanced management and conservation of water to increase use efficiency and productivity (rainwater harvesting, water storage and conservation techniques), structural measures (terracing, soil bunds, dams, ditches, walls, barriers), vegetative measures (plantation / reseeding of tree, shrub species, grasses and perennial herbaceous plants), soil protection measures as well as better management and development of locally adapted crop species and varieties (varieties which are more resilient to stress such as floods, drought or saline condition) (Liniger et al. 2011).

Annex V gives an overview of the broad measures which can be taken in the field of environmental/natural resource management and adapted agricultural technologies as well as of sustainable land management (SLM) best practices from Sub-Saharan Africa. The lists are not exhaustive. Links for further and more in-depth information can be found in the reference list in Annex IV.

Example from HEKS-EPER practice

Cambodia – Local Agricultural Research and Extension Centre (LAREC)

In Cambodia, 70% of the 14 million citizens live of agriculture. However, the yields of their agricultural production are often too small to cover their own household's needs, let alone to sell a surplus on the market. Unadapted farming practices to the recent increase in extreme weather events, such as longer drought periods or unexpected heavy precipitation, the unavailability of improved/adapted local seed varieties as well as the proceeding degradation of natural resources are major factors for the low agricultural productivity.

Together with the local partner organization Society for Community Development in Cambodia (SOFDEC), HEKS-EPER has established the Local Agricultural Research and Extension Centre (LAREC).

The centre conducts applied and participatory research on the improvement of pre and post harvest technologies of rice and vegetables, particularly in the selection and improvement of seed varieties which are more resistant to natural disasters and which are adapted to increasing climate variability. LAREC puts a special focus on local rice varieties, which are adapted to survive during weather extremes (flood and drought) such as flood or submergence tolerant rice (floating rice) and drought resistant varieties.

Figure 6: Farmer showing his rice paddies

During the floods in 2009 and 2011 it was observed that in some rice fields which were completely submerged for around 10 days, a local floating rice variety was grown, which survived the floods. After water receding, the rice plants started to emerge with new leaves and produced grain almost as normal. Submergence tolerant seeds are hardly cultivated in Cambodia, however, due to poor grain quality and low yields. LAREC therefore does applied research in the improvement of those varieties to support not only an improvement of food security but also an increase in yields, hence in income.

Example from HEKS-EPER practice

***Zimbabwe* - Fambidzanai Permaculture Center – Permaculture Consolidation and Market Linkage Programme**

Climate records demonstrate that Zimbabwe is already beginning to experience the effects of climate change, notably rainfall variability and extreme events. These conditions, combined with warming trends, are expected to render land increasingly marginal for agriculture, which

poses a major threat to the economy and the livelihoods of the poor due to Zimbabwe's heavy dependence on rain-fed agriculture and climate sensitive resources. It is expected that farmers, who represent approximately 62 per cent of the total population, will bear disproportionate impacts of climate change due to their limited adaptive capacity. Consequently, climate change poses a major threat to sustainable development of the Zimbabwean society.

In Matabo District the HEKS-EPER partner Fambidzanai teaches small-scale farmers to better adapt to changing climatic conditions through the practicing of conservation agriculture. Conservation agriculture is a farming practice which combines three key elements: (i) minimal mechanical soil disturbance (no tillage and direct seeding); (ii) use of mulch composed of carbon-rich organic matter to cover and nourish the soil (e.g. straw, leaves, stems and stalks); and (iii) rotations or sequences and associations of crops, including trees.

The protective soil cover shields the soil surface from heat, wind and rain, keeps the soil cooler and reduces moisture losses by evaporation. In drier conditions, it reduces crop water requirements, and makes better use of soil water. Conservation agriculture facilitates rainwater infiltration, reducing soil erosion and the risk of downstream flooding. Crop rotation over several seasons also minimizes outbreaks of pests and diseases. Besides the appliance of the above-mentioned farming techniques, farmers further adapted to changing climatic conditions through planting millet instead of maize. Millet is far more drought resistant than maize and therefore enhances the food security of the communities.

Figure 7: Farmers attending a training on conservation agriculture

3.2.2 Political Assets

As outlined in the context of the guideline, risk reduction and resilience building also have political aspects, as the protection of people from disasters lies in the responsibility of the government institutions. This is also highlighted with "Priority for Action 1" in the HFA 2005-2015, which emphasises to ensure that "risk reduction is made a national and local priority with a strong institutional basis for implementation". Whilst many governments have started to set up structures to address the issue of DRR at national level, it is often the same governments that are responsible for pushing the most vulnerable into places with high exposure for disturbances. The accentuation of the struggle for fertile land and valuable resources, but also proceeding degradation of natural resources, the effects of a changing climate and the risk for conflict, forces the most vulnerable to move to places with high exposure, hence further inc-

reasing their sensitivity to disturbance. The problem is accentuated that these are often places with a high population density leading to a further increase of sensitivity.

Political assets can be understood as the relationships of power, but also the access to and influence on the political system and government processes. It is therefore important that HEKS-EPER also in the field of risk reduction and resilience building works with a Human Rights Based Approach (HRBA), making PooC aware of their rights of being protected, but also about their duties on how to act in a disaster situation. PooC should be enabled to lobby for better protection of their communities and to hold government authorities accountable for shortfalls, such as the lack of thorough risk assessment, establishment of early warning systems with adequate information dissemination or the forced settlement or re-settlement of citizens in unsafe areas. On the other side, HEKS-EPER and its partners can collaborate with local authorities on the development and implementation of strategies regarding risk reduction and resilience building.

Moreover, with its focus on "conflict transformation" HEKS-EPER works towards the prevention and the resolution of violent conflicts adding to risk reduction and resilience building in conflict affected or fragile regions. And finally, the emphasis of HEKS-EPER work on "access to land and resources" which strives for secure use of land and resources of PooC can add to enhanced resilience through the securing of a livelihood base.

Example from HEKS-EPER practice

Niger – ZAMTAPO – Securing the Mobility of Pastoralists

To adapt to the climatic conditions in the Sahel region, dominated by dry and rainy seasons, the pastoralist in Niger follow a century old pattern of mobility. With their herds they migrate in a yearly cycle from the North to the South of the country and back, in search for adequate

Figure 8: Passage corridor

Figure 9: Well in Konkaré

pasture and water to raise their animals and in order to guarantee a balanced use of the scarce resources in the whole region. The South of Niger is dominated by sedentary agriculture. Recurrent drought and population growth have led to increasing pressure on natural resources, which again brought the sedentary population to cultivate their crops in the passage corridors, where the pastoralists traditionally used to pass through. This has led to conflict between the two population groups. In order to countervail the problem, the Government of Niger put in place in 1993 the "Code Rural", a law which regulates the land use of the sedentary population, but also guarantees right of use of passage routes for the pastoralists. The idea of the law is to set up "land user commissions", involving government officials, traditional authorities and representatives of both user groups as well as the civil society, on all administrative levels, who will negotiate and agree the use of the contested land. The setting up of the commissions, however, has so far only proceeded slowly.

With the Zamtapo project, which started in 2011, HEKS-EPER facilitated the forming of the required land user commissions in the Southern district of Mayayi and supports them in their process to negotiate and agree on land user rights for sedentary farmers and pastoralists. An important instrument to reconcile the conflict potential between the two groups is the clear demarcation of passage corridors for the pastoralists and their herds. The land user commissions are in charge to lead these negotiations between all parties involved, as well as to monitor the compliance with the agreed rules and to mediate in case of conflict. In the past two years 531 kilometres of passage corridors could be secured and demarcated.

3.2.3 Technological/Physical Assets

Technological/physical assets include any sort of infrastructure, such as shelter, roads, energy and water supply or communication, but also the availability of technological services. In terms of disaster risk reduction this means that any built infrastructure is constructed in a way to not harm, but to protect people's lives and livelihoods. This becomes particularly apparent in terms of housing and social infrastructure, which should be built in a way to withstand any shocks, such as earthquakes, storms or floods. The destruction of buildings in a disaster situation not only results in immediate deaths, but in rendering people homeless, thus can result in subsequent deaths from exposure to, for example, weather extremes and disease.

In the HEKS-EPER working context the building of houses or social infrastructure, such as schools, are realised in the reconstruction phase after a disaster. Any reconstruction needs to follow the premise of "building back better" than what the people had before. Thus, any construction must be realised in a disaster prone way, e.g. must be earthquake, storm or flood proof. The place for reconstruction needs to be chosen in a secure location, for example on solid and not sandy ground in an earthquake prone region, making sure not to expose PooC to new possible disturbances. In most situations it is reasonable to complement a reconstruc-

tion project with secondary preventative measures such as reforestation or flood protections.

Further measures of preparedness and prevention in the physical asset sector, can be the building of safe shelter for livestock, save storage facilities for food, seed or fodder; flood, avalanche or mudflow protection measures such as dams, walls and barriers or the building of steady access roads which serve the communities in two ways, on the one hand bringing in relief supplies and on the other, providing escape routes in the event of disasters. It needs to be ensured that evacuation routes are clearly demarcated and PooC are informed about these.

With regard to technological assets and risk reduction, the existence of functional meteorological or seismological prediction services or a tsunami warning system can be mentioned. Whilst, the disposition of such technological services lies in the responsibility of the government and their existence is only useful to the PooC if the information gathered is disseminated timely to the people at risk. NGOs can support PooC to lobby for functioning early warning systems or on the other side, support governments in the building up of such (refer also to political assets).

Any measures taken in the physical/technological asset sector need to be complemented with awareness creation amongst the risk prone population. Even the safest building or the best evacuation route does not protect people enough, if they do not know how to react in case of a disaster or once they are warned about the arrival of such. The residual risk can only be further minimised through adequate information dissemination, simulation trainings, workshops, seminars, exhibitions, etc. at all levels (refer also to human/social assets).

Example from HEKS-EPER practice

Haiti – Reconstruction of Earthquake and Hurricane Proof Houses

On the 12 January 2010 the Caribbean island Haiti was devastated by an earthquake with a magnitude of 7.3 on Richter scale. The earthquake left over 220'000 people dead, 300'000 people injured and 1.3 million people homeless. In Petit Goâve, a provincial town of 150'000 inhabitants, 30 kilometres away from the epicentre, 6000 houses were completely and 24'000 houses partly destroyed. HEKS-EPER has reconstructed 400 individual partly or completely destroyed houses in Petit Goâve. All houses are built according to the imperative of "building back better", thus are earthquake and hurricane resistant.

Earthquake resistant houses consist of a concrete framework that rests on structurally carefully designed and reinforced underground pad footings. The superstructure framework consists of horizontally and vertically tied concrete beams and columns. Walls are made of hollow concrete blocks with tested compressive strength and confined masonry is used for a firm bond between blocks and stiffener columns. Concrete quality is controlled through testing of ingredients, i.e sand and gravel.

For cyclone resistance it is crucial to have a firm connection between superstructure and roof elements. Wooden posts on verandas are fixed by steel anchors to the concrete foundation, roof purlins are bolted to concrete tie beams and wooden roof parts are joint by steel connectors. The roof covering of corrugated iron sheet is also bolted to the rafters.

Besides the reconstruction of houses, the project aims to train 80 local craftsmen (carpenter and masons) in earthquake and hurricane resistant building techniques.

There are some secondary preventative measures such as digging canals around the houses to prevent floods and stabilisation of slopes (upstream and downstream).

Figure 10: Earthquake and hurricane resistant house

3.2.4 Human and Social Assets

Human and social assets enclose access to information, knowledge and skills, but also access to and participation in networks, groups, formal and informal institutions.

In terms of risk reduction and resilience building this means that PooC should be adequately informed about the risks of disturbances and about how to protect themselves against these threats. PooC should be enabled to themselves assess, monitor and manage risks. This can be achieved through workshops, seminars, exhibitions or through simulation trainings where individuals, households or the whole community conduct a risk assessment for their living area and are informed and learn about how to best prepare for and react to a disaster situation. This can for example be a training simulating the case of a tsunami or earthquake, where protection measures and evacuation are actively practiced (disaster drills). Another effective tool for resilience building is the integration of risk reduction into the school curriculum. Children often act as multipliers of knowledge for their families and help to build a culture of safety.

Further preparedness measures which fall into this asset sector can be the preparation of emergency kits, containing food and other items (e.g. identification card, torch, first aid supply) crucial for the survival in the first two or three days after a disaster before external help arrives, but also the acquisition of new practical skills such as first aid or swimming.

It is furthermore crucial to ensure that early warning mechanisms exist at all levels of society and that PooC are timely and adequately informed about an imminent disaster, such as a typhoon or a tsunami, so that they have time to rescue themselves and seek shelter. It needs to

be ensured that evacuation routes are clearly demarcated and that communities are informed about safe evacuation spots or shelter.

In terms of community capacity building disaster preparedness committees can be set up. The committees are composed of key representatives in a community, who will take the leading role in a disaster situation and guide the community. On a more professional level this could also include the building up of rescue and civil defence entities.

Moreover, networks and alliances which were formed before an emergency can ensure social support and security in times of a disaster event or an outbreak of violent conflict. In the context of HEKS-EPER work religious and spiritual communities can play a crucial role in the event of an emergency as they offer a sense of belonging and comfort for its members. Churches, mosques, synagogues or temples can become safe sanctuaries for people fleeing from a natural or man-made disaster and the religious institutions often offer support in the time of a disaster, providing shelter, food or first aid services.

Example from HEKS-EPER practice

Indonesia – LP2M – Disaster Preparedness Committees in Padang and Padang Pariaman

On the 30th September 2009 a heavy earthquake with a magnitude of 7.6 on Richter scale severely affected the districts Padang and Padang Pariaman, West Sumatra, Indonesia. The quakes, which epi-centered in the Mentawai Strait, 57 km west of Pariaman and at a depth of 71km resulted in 1.195 casualties, 619 people were seriously, and 1.179 people were slightly injured. Final data showed the damage on 249,833 housing units, 2.512 educational and 1.010 government facilities.

Figure 11: First aid simulation

HEKS-EPER intervened in the region together with the local partner organization LP2M, first with an emergency relief, later with a rehabilitation project. In the rehabilitation phase a strong focus was put on risk reduction. In six project villages "Disaster Preparedness Committees" consisting of key community representatives were established. The committee members were intensively trained in safety and security, evacuation, first aid, logistics, setting up and maintenance of an evacuation tent including a public kitchen, radio communication and conduction of a rapid needs assessment. In order to fulfill their tasks the teams were furthermore equipped with a radio communication system, fire extinguishers, an emergency tent, ropes, karabiners, life vests and safety clothing. In case

of a disaster the committees will act as the main coordination body for their community; they will ensure early warning, evacuation and first emergency relief. Moreover, they will be in close contact with the local authorities over radio communication coordinating the help coming from outside.

In terms of preparedness the committees hold regular meetings with the community to discuss issues of risk reduction, such as different risks of disturbances, composition of emergency kits and evacuation routes. They conduct regular earthquake simulation trainings (emergency drills) where the whole community, including schools and local authorities practice the safe behavior in a disaster situation. The government authorities of the districts Padang and Padang Pariaman took an interest in the committees and have now built up committees according to the HEKS-EPER-LP2M models in all communities of the two districts. The committees are linked to each other in a broad network.

3.2.5 Financial/Economic Assets

Financial/economic assets comprise assets to diversification of income, savings (risk reserves), credit (risk taking) and risk financing (risk transfer) such as insurance.

An effective measure of risk reduction and the main risk management strategy at the household level represents the diversification of income. Having different sources of income ensures that in case one income branch fails due to a disaster event the family can fall back on another one.

The accumulation of savings (risk reserves) ensures greater resilience as households can buffer the loss of income during a disaster situation. Furthermore, savings help to ensure quick reconstruction efforts, which can be settled by an individual or family on their own.

Credits (risk taking) are mainly taken for purposes of livelihood diversification and allow income diversification into more value added activities. This creates disposable assets for further risk reduction and transfer. However, households in developing countries have hardly any risk transfer tools, which in turn limits the availability and range of credit offered by banks.

Risk financing (risk transfer), such as insurance, can play a critical, complementary role to risk reduction interventions by facilitating rapid recovery from low-frequency, but severe climatic shocks like prolonged droughts. Further, risk financing stabilizes income, prevents asset loss and facilitates risk taking. For instance, with insurance in hand, smallholders can make potentially optimal production decision even in the face of uncertainty, meaning they can afford to plant high-yield seeds purchased on credit despite the uncertainty of future precipitation levels.

Insurance that is accessed by the low-income population (microinsurance) differs from traditional insurance in that it is adapted to the circumstances and demands of the poor: premiums

are low, products have simple designs, it is offered through well-trusted and innovative channels (e.g. mobile technology), premium payments are flexible and claims are settled promptly. The following two different arrangements for premium payments exist: Premium-for-cash and premium-for-work which is designed for households who cannot afford to pay in cash. The premium-for-work-model obviously requires an independent source of financing. Importantly, the payout has to be set up to occur as soon as the loss-causing event is detected. In the case of insufficient rains, this gives smallholders resources and time to manage a shortage in food production. In cases of an earthquake where damage to the homes is one problem, however the loss of their productive means leaves people temporarily without work and without income, immediate insurance payouts play a crucial role in rehabilitation by preventing households from using negative coping strategies.

In the HEKS-EPER work context the main risk management strategy remains the diversification of income trough agricultural value chain development. For purposes of livelihood diversification HEKS-EPER also promotes and facilitates access to savings and credit associations and programmes.

Example from HEKS-EPER practice

India – Country Programme – Diversification of Income

The India country programme aims to improve the self-determination and living standard of marginalized rural communities in arid areas in the South Indian States of Tamil Nadu, Karnataka and Andhra Pradesh. PooC are mainly landless wage laborers and small marginal farmers who can hardly earn enough money to make ends meet. In order to support PooC in their efforts of adapting to and coping with shocks and stresses, the programme promotes the diversification and enhancement of livelihoods. Income diversification strategies play thereby a crucial role. The programme specifically tackles the following sources of income:

(i) Agricultural activities: In regards of agricultural activities small marginal farmers are encouraged and supported in diversifying their agricultural production and expand into other agricultural commodities. Specific focus is given to organic farming and small livestock keeping. Landless wage laborers are supported in land mobilization mainly for the purposes of cultivation. Furthermore, the programme facilitates access to savings and credit associations and programmes in order to enhance market facilities for agricultural products.

(ii) Entrepreneurship: Besides the development of agricultural production the programme seeks to promote local entrepreneurs and supports the integration of non-entrepreneurs in local and regional businesses (and value chains) under fair condition. This means that wage earners and farmers who earn very meagre amounts from agriculture products will be facilitated to become entrepreneurs.

(iii) Public poverty reduction and employment schemes: In India, another important strategy to diversify income sources consists of gaining access to public poverty and employment schemes. The programme specifically promotes income diversification through facilitating access to income generating programmes (e.g. MGNREGA), ration cards and social security schemes for people living below the poverty line as defined by the government (i.e. less than 1000 Rupees family income per month; CHF 15). MGNREGA guarantees 100 days of wage-employment in a financial year to a rural household whose adult members volunteer to do unskilled manual work. The employment includes for instance road works, well deepening, de-silting of waterways, deepening of water bodies. A household eligible for this programme can earn 132, 137 and 155 Rupees per day in Tamil Nadu, Andhra Pradesh and Karnataka respectively, amounting up to 14'000 Rupees (approx. CHF 210) on average per year. This represents an important income possibility for PooC especially during the lean season February to June. Ration cards are stamps or cards issued by the government and allow PooC to buy groceries at a cheaper rate from the public distribution system. Social security schemes include pension for old people, destitute physically handicapped, destitute widow and deserted wives.

3.2.6 Reflection and Outlook

The description of measures contributing to risk reduction and resilience building as well as the examples of good practice from HEKS-EPER work have shown that HEKS-EPER applies many of the suggested measures to strengthen the adaptive capacity of PooC covering all assets of the livelihood pentagon. Being in line with the implementation concept on the development of rural communities (HEKS-EPER 2011b) and the conflict transformation concept (HEKS-EPER 2012) special focus is given to environmental/natural and political livelihood assets. Since risk reduction interventions regarding financial/economic assets are quite limited in HEKS-EPER work, it is suggested to explore the potential of risk financing (e.g. insurance), a risk transfer strategy that complements existing risk reduction and risk management strategies, such as savings (risk reserves) and credit (risk taking).

Furthermore, the HEKS-EPER sphere of action demonstrates that HEKS-EPER programme and projects focus on few activities and interventions only. The close collaboration of all relevant stakeholders (state, private sector, community based organisations (CBOs), other projects) is therefore crucial for sustainably strengthening the adaptive capacity of PooC.

Finally, it has to be kept in mind that any measures taken to build the resilience of communities need to build on and be sensitive to local values and norms, allow flexibility, adaptation and innovation to improve the livelihoods of PooC. Moreover, it is important to be sensitive not to promote strategies of mal-adaptation (do no harm). For example the selling of firewood is often a measure to diversify household income, however, by doing so deforestation, hence environmental degradation, can be advanced.

Part II: Practical Guidance

4. Integrating Resilience into HEKS-EPER Programme/Project Cycle Management

As outlined in the introduction the HEKS-EPER International Programme 2013-2017 emphasises the importance to integrate community resilience into its country/regional programmes and projects in order to strengthen PooC's resilience against shocks and stresses as well as to guarantee the long-term sustainability of the HEKS-EPER development investments and successes. Hence, it is central that resilience building is anchored in the HEKS-EPER PCM. Figure 12 gives an overview of the different steps on how to integrate resilience building into HEKS-EPER country/regional programmes and projects and gives information on "who" needs to be involved at different levels as well as what tools can be used and where the results need to be documented. Refer to Annex VI and VII, respectively for a list of core characteristics of disaster-resilient communities and generic indicators as well as templates of reporting tables and examples of completed tables for the respective tools introduced in this chapter.

Besides integrating resilience building as a mainstreaming topic into programmes and projects, HEKS-EPER aims to also initiate an increasing number of projects with a specific focus on risk reduction and resilience building.

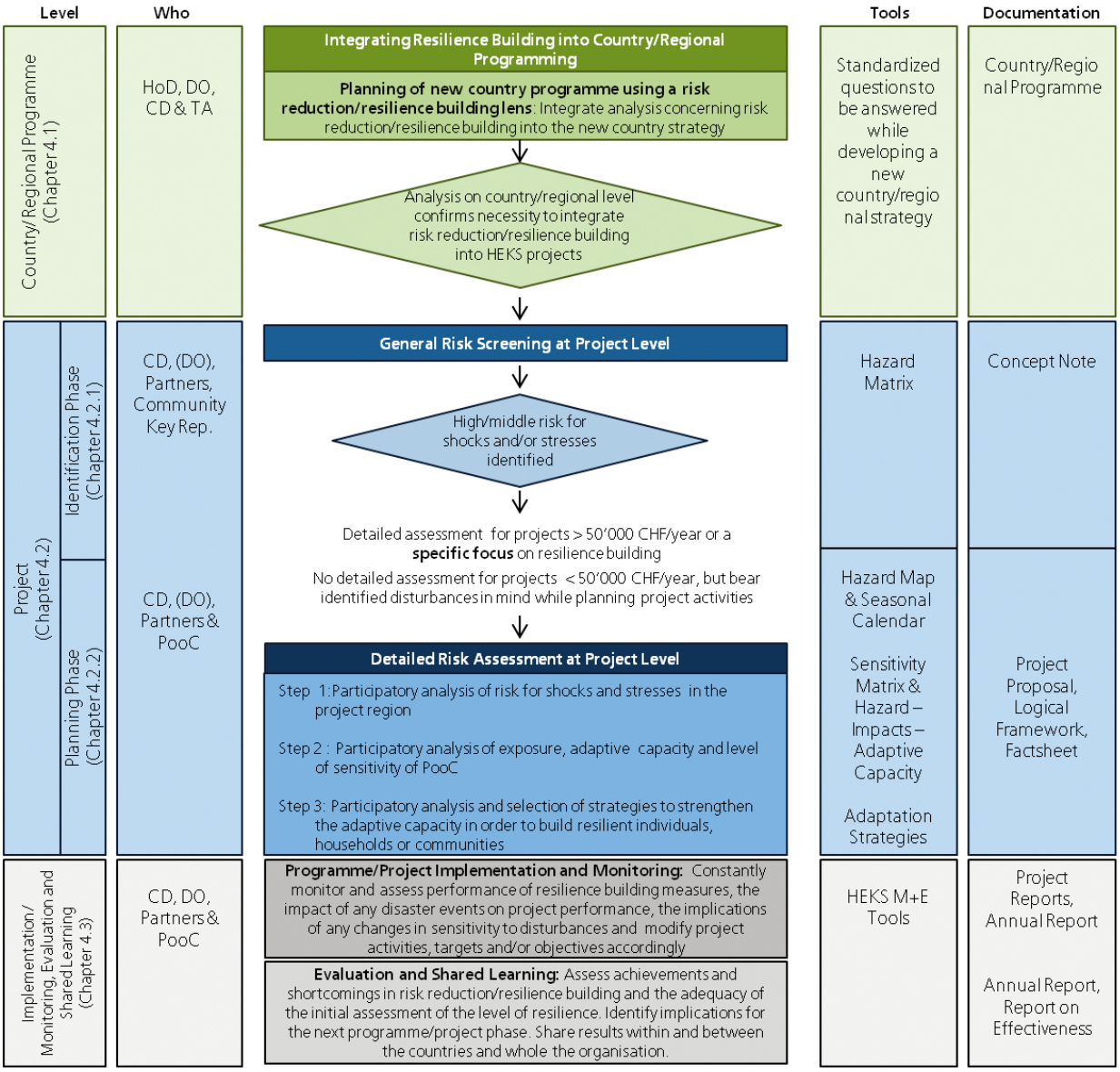

Figure 12: Integrating Resilience into HEKS-EPER Programme/Project Cycle Management

4.1. Integrating Resilience into Country/Regional Programming

In order to steer the work of HEKS-EPER effectively and coherently in its focus countries, overall goals and foci for each country or region are defined in country- or regional programmes respectively. Country programmes are generally revised every four years and set the basis for the further development or redesign of the projects in a country or region. It is therefore crucial that already in the country- or regional programme, the level of disturbances in the country as a whole and the project regions specifically as well as the level of exposure, adaptive

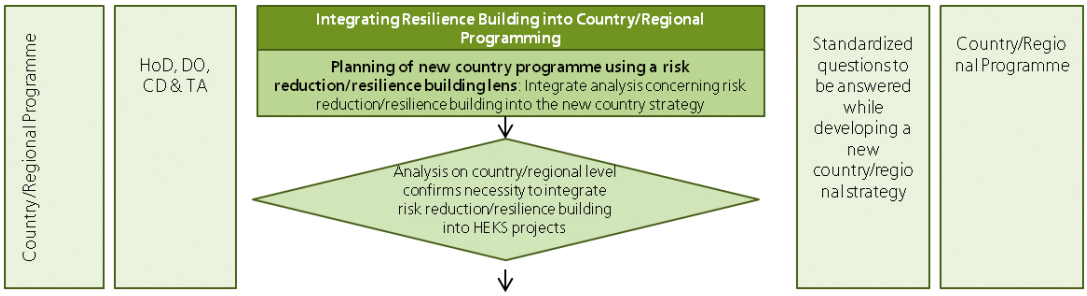

Figure 13: Integrating Resilience into Country/Regional Programming

capacity and sensitivity of PooC are assessed. For a successful achievement of the goals set in a new programme phase, it is essential to bear in mind the possible implications of shocks and stresses on the implementation of the country/regional programme and to think of possible measures on how to prevent or reduce the risk of possible disturbances.

In order to analyse the level of disturbances in a programme region or country as well as to identify adaptive strategies, HEKS-EPER developed a standardized questionnaire to be answered when elaborating a new country/regional strategy (refer to Table 1). The performed analyses will form the basis for the decision, if the mainstreaming of resilience building into the HEKS-EPER projects is sensible in a specific country/regional context and/or, if even projects with a specific focus in resilience building are necessary for a given risk scenario in a HEKS-EPER project region. The programme document is usually worked out by the country director (CD)/office and desk officer (DO) in consultation with the partner organisations, thematic advisors (TA) and the head of department (HoD) at HEKS-EPER Headquarters (HQ).

Question	Sources
Analysis of the ***level of disturbances*** (shocks and stresses) in the country generally and in the project region(s) specifically a) What are the predominant natural hazards? What were the damages caused by the identified hazards over the past programme period? b) What are the implications of climate change on the country or project region(s)? What future climate change scenario is projected? c) What is the level of environmental degradation in the project region(s)? What implications do natural hazards and climate change scenarios have on the level of environmental degradation? d) Are there any conflicts or potential for conflict?	Literature and internet research; dialogue with local experts; local data on hazards; knowledge and experience of CD, partner organisations, PooC etc. Natural hazards: *Preventionweb:* www.preventionweb.net, *Global Network of Civil Society Organizations for Disaster Reduction:* http://globalnetwork-dr.org/home.html, *EM-DAT:* http://www.emdat.be/, *Munic Re:* http://www.munichre.com/de/reinsurance/business/non-life/georisks/natcatservice/default.aspx, *HFI progress reports:* http://www.preventionweb.net/english/hyogo/progress/reports/?pid:222&&&pil:1

Question	Sources
	UNISDR – general information: http://www.unisdr.org/, *country specific information:* http://www.unisdr.org/partners/countries, g*lobal assessment report:* http://www.unisdr.org/we/inform/gar Climate change: *IPCC Report (2007; new report due in 2014):* http://www.ipcc.ch/publications_and_data/publications_and_data_reports.shtml, *UNDP Climate Change Country Profiles:* http://www.geog.ox.ac.uk/research/climate/projects/undp-cp/ *UNFCCC National Communications:* http://unfccc.int/national_reports/non-annex_i_natcom/items/2979.php; *and National Adaptation Programmes of Actions (NAPA):* http://unfccc.int/adaptation/workstreams/national_adaptation_programmes_of_action/items/4585.php *World Bank – Climate Change Knowledge Portal:* http://sdwebx.worldbank.org/climateportal/index.cfm *and country specific information:* http://sdwebx.worldbank.org/climateportalb/home.cfm?page=country_profile Conflict: *International Crisis Group:* http://www.crisisgroup.org/
Analysis of the ***level of exposure, adaptive capacity and sensitivity*** of HEKS-EPER PooC a) What are the magnitude, frequency and duration of shocks or degree of stress which HEKS-EPER PooC are exposed to? b) What is the capacity of the HEKS-EPER PooC to withstand given disturbances (shocks and stresses)? What assets (natural/environmental, political, technological/physical, social/human, financial/economic) of PooC are most at risk by given level of disturbances? c) Which government institutions and other organizations are engaged in DRR and ACC? What are the national priorities (policies, strategies and programmes) with regard to DRR and ACC? What are the responsibilities of the government in case of a disaster?	Dialogue with PooC, partner organisations, local experts; knowledge and experience of CD/DO, partners

d) Are there early warning system in place; local, governmental, etc.? Who can access these? Are HEKS-EPER PooC informed about risks of shocks and stresses and are they warned if a disaster is imminent? e) What possibilities for civil society organizations exist at national, regional and local level to influence policies and processes regarding risk reduction/resilience building? f) What are relevant factors influencing current and future sensitivity of HEKS-EPER PooC? g) Can the overall sensitivity of the HEKS-EPER PooC to disturbances (shocks and stresses) be classified as high, middle or low?	
Implications on the country/regional programme a) What conclusions need to be drawn for objectives and priority activities in the HEKS-EPER program countries/regions? b) What measures need to be foreseen to prevent the risks of shocks and stresses in order not to compromise the programme success? c) What activities does the programme foresee to strengthen the adaptive capacity of the HEKS-EPER PooC?	Interpretation of the above analysed results

Table 1: HEKS-EPER Questionnaire to analyse the Level of Disturbance in a Programme Region/Country

To enhance HEKS-EPER competence in resilience building at focus country level in the long run, it would be sensible to appoint a person responsible for the topic of risk reduction/resilience building at every country office. Possible tasks in the portfolio of this person could be a) the constant monitoring of the level of disturbances as well as exposure, adaptive capacity and sensitivity; b) maintaining the contact to government institutions, regional and local experts; c) consultancy and monitoring of projects mainstreaming or with specific focus on resilience building; d) exchange of knowledge and experience with the HEKS-EPER HQ.

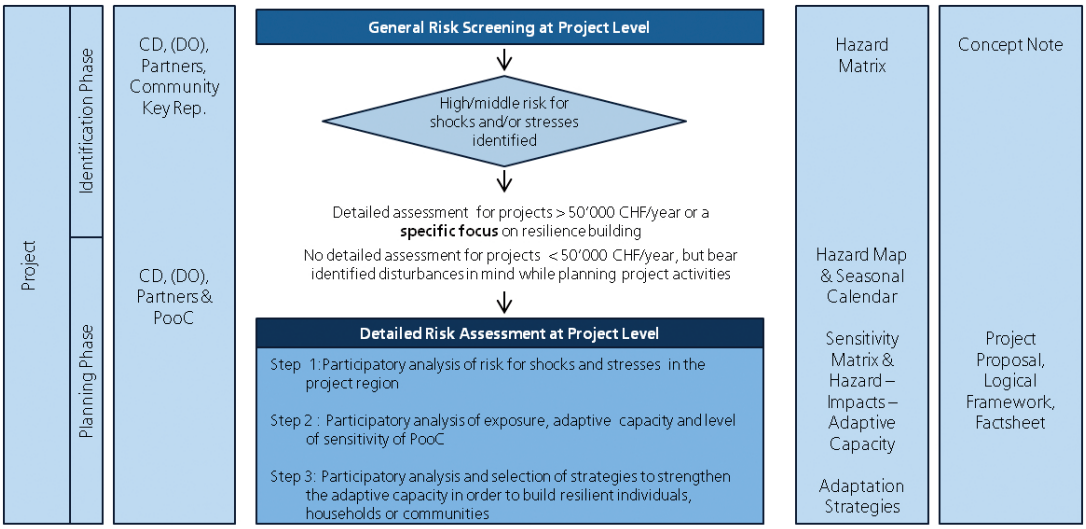

Figure 14: Project Planning

4.2. Integrating Resilience Building into Project Planning

As a basis for HEKS-EPER project planning regarding resilience building, parts of the "Participatory Assessment of Climate and Disaster Risks" (PACDR)[1] are used. PACDR was developed in collaboration between Bread for All (BfA), Bread for the World and HEKS-EPER as a simple, easy-to-use participatory tool, which serves as a basis for making a decision on how to integrate considerations of risk reduction and resilience building into all kinds of community-level development activities. The PACDR tool can be associated with community managed risk reduction and adaptation as well as sustainable livelihood approaches. More specifically, the tool seeks to help users to:

- understand how disturbances (shocks and stresses) affect the sensitivity of the local population and their livelihoods in the project area,
- learn how the local population (men and women) currently deals with the identified disturbances,
- evaluate how existing or planned projects affect exposure, adaptive capacity and sensitivity of PooC, considering gender-specific issues,
- identify existing and/or new strategies to strengthen adaptive capacity,
- adjust existing projects or design new activities/projects in order to strengthen the PooC's adaptive capacities to deal with shocks and stresses.

1 Please use the following link to view or download the complete documentation of PACDR: http://www.heks.ch/fileadmin/user_upload/domain1/1_news_and_service/pdf/Materialien/2010_CliDR_Englisch.pdf

With regard to the different implications that shocks or stresses can have on men and women and the difference in the level of adaptive capacities, it is sensible to analyse the impact of disturbances as well as the level of exposure, adaptive capacity and sensitivity of women and men separately (BfA and HEKS-EPER 2012).

4.2.1 Identification Phase - General Risk Screening at Project Level

For the identification phase a short participatory exercise (approx. 1 hour) to identify predominant disturbances in the project region is foreseen (refer to General Risk Screening; Hazard Matrix). The exercise needs to be done together with the representatives of the local partner organisation and a small group of key representatives from the project area (representatives of government agencies, CBOs, community elders, etc.).

When doing and particularly when interpreting the outcome of the exercise the project planning team should bear in mind the results of the analyses conducted during the elaboration of the country/regional programme.

If, after the conduction of the general risk screening, the overall level of disturbance is judged to be high or middle it is recommended to conduct a detailed assessment during the planning phase of the project. Projects with a yearly budget above CHF 50'000 CHF in an area with middle to high level of disturbance or a specific focus on resilience building must always conduct a detailed assessment. For projects in an area with a low level of disturbance or with a yearly project budget below CHF 50'000 no detailed assessment is required, however identified disturbances should be taken into account while planning project activities.

General Risk Screening (identification of predominant shocks and stresses) (Hazard Matrix)

1. Objectives

- To identify shocks and stresses (climate, natural, and human-made hazards)
- To analyse changes in hazards over the last 10/20/30 years (depending on age of participants)
- To analyse changes in seasonal hazards as well as changes in their intensity and frequency

45 minutes for drawing (15 minutes) and discussion (30 minutes)

Key representatives from project area and partner organisation

2. How to Facilitate (15 minutes)

a) Prepare a matrix in advance (refer to Figure 9): Provide sheets of paper (minimum size 50 cm x 100 cm) and a pencil.

b) As a first step, ask participants which hazards they are struggling with in daily life:
   i. Natural hazards: typhoons/cyclones, flood, drought, El Nino (warming), La Nina (cooling), earthquakes, volcanic activities
   ii. Climatic hazards: temperature, precipitation, (annual, seasonal, daily) sea level rise (erosion of beaches/cliffs, changes in tides/rivers/bays), extreme events (drought, heavy rainfall, wildfire etc.)
   iii. Man-made hazards: Socio-political conflicts, littering, deforestation etc.

c) Is any relevant or important hazard missing? When the participants have agreed that the hazards are representative for the project region, begin the second step: identifying the three or four most important hazards.

d) Ask the participants to name the three to five most important hazards. Try to summarize certain hazards if the participants named a lot of similar ones. For example various illnesses such as malaria, diarrhoea and typhoid can be summarized as human diseases.

e) Ask the participants in what frequency and intensity these hazards occur (medium, low, high) and depict them in a hazard matrix as illustrated in Figure 9 below.

! Do not confuse hazards with their impacts. The latter will be analysed in the next step. Climate change is a long term phenomenon (over decades), thus a change occurring once in the last ten or twenty years is not due to climate change.

3. Learning and Discussion (30 minutes)

When the list of hazards is complete, ask the group members the following questions:

- Are the hazards different now than they were 10/20/30 years ago (depending on age of participants)? Are the hazards changing in frequency and intensity?
- Are there any differences in the timing of seasonal hazards compared to 10/20/30 years ago (depending on age of participants)?

4. Interpretation of exercise (by project development team)

- Are the hazards and seasonal changes (e.g. rainy/drought season, sea level rise etc.) identified in the exercise consistent with the analysis made for the development of the country/regional programme?
- Can the level of shocks and stresses identified be judged as low, middle or high? (To answer this question an overall qualitative evaluation of the exercise, based on the experience of the project team needs to be undertaken. No exact scale on how to judge the level of the overall disturbance can be given.)

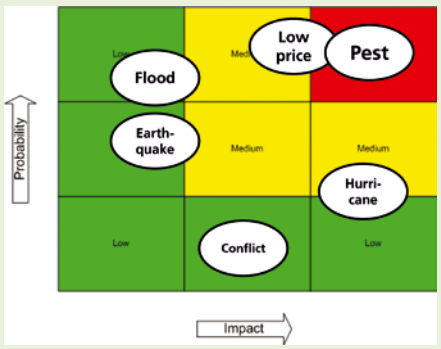

Figure 15: Hazard Matrix elaborated in a workshop

5. Expected results

Main hazards incl. their frequency and intensity are known.

4.2.2 Planning Phase – Detailed Risk Assessment at Project Level

If the general risk screening undertaken during the identification phase calls for a detailed assessment or the project has a specific focus on resilience building, the following exercises need to be performed during the project planning phase. In a first step, the assessment will identify disturbances (shocks and stresses) affecting the community as well as their change over time (refer to Hazard Map and Seasonal Calendar). In a second step, the project team together with the workshop participants assess the impact of disturbances on the community's livelihood assets and strategies as well as their adaptive capacities (refer to Sensitivity Matrix and Hazard – Impacts – Adaptive Capacity). Finally, in a third step, strategies on how to strengthen the adaptive capacity of the community are developed in a participatory manner (refer to Adaptation Strategies).

The assessment can be conducted in a minimum of one day, but can take up to two days if further assessment activities (refer to suggestions Steps 1-3) than the exercises suggested here are undertaken.

When doing and particularly when interpreting the outcome of the exercises the project planning team should take into account the results of the analyses conducted during the elaboration of the country/regional programme.

Step 1: Participatory Analysis of Disturbances (shocks and stresses)

In a first step, disturbances (shocks and stresses) affecting the community and their change over time will be identified. In order to identify disturbances affecting the community, the workshop participants draw a map of their village, indicating the areas put at risk by certain climatic, natural or human-made hazards. Furthermore, the participants discuss the changes of frequency and intensity of the hazards in the past (refer to Hazard Map).

Hazard Map

1. Objectives

- To become familiar with the community, and to see how the place is perceived by different groups within the community
- To identify important livelihoods resources in the community, and who has access and control over them
- To identify areas and resources at risk from climate, natural or human-made hazards
- To analyse changes in hazards and planning for risk reduction

120 minutes for both drawing (90 minutes) and discussion (30 minutes)

The information should be gathered through stakeholder consultations with the local population in gender-separated workshops.

2. How to Facilitate (90 minutes)

a) Prepare the exercise (refer to Figure 10): Provide sheets of paper (minimum size 50 cm x 100 cm) and coloured pencils to draw the map. It helps at the start if you have an idea of the boundaries of the district / villages that the project is working in or have already drawn them on the sheets of paper.
b) Explain to the participants that you would like to build a map of their community.
c) First, build the community map. If you have not already drawn the boundaries yourself, ask the participants whether they can do it.

! You should help the participants to get started but let them draw the map by themselves. Use signs or symbols to draw facilities, resources etc. Try to avoid written names. Create a key for the symbols and signs used (refer to Figure 10).
Time management: Do not spend too much time drawing the boundaries, settled areas and facilities. Try to focus on the main information (resources and hazards).

d) Ask community members to draw the location of:
   i. Settled areas: villages and cities
   ii. Facilities: roads, churches/mosques/synagogues/temples, health clinics, schools, wells
   iii. Resources: forested areas, water bodies, agricultural land, fishery zones, pasture, spiritual places
e) Is there anything missing that seems relevant or important to you? When the community members have agreed that the map is representative of their community, begin the second step: identifying the hazards.
f) Which areas are at risk from different types of hazards?
   i. Climate hazard: temperature, precipitation, (annual, seasonal, daily) sea level rise (erosion of beaches/cliffs, changes in tides/rivers/bays), extreme events (drought, heavy rainfall, wildfire etc.)
   ii. Natural hazards: typhoons/cyclones/hurricanes, flood, drought, El Nino (warming), La Nina (cooling), earthquakes, volcano
   iii. Human-made hazards: socio-political conflicts, littering, deforestation etc.

! Do not confuse hazards with their impacts. The latter will be analysed in the next step. Hazards that affect the whole area (not location-specific) are noted in the margin of the board.
Climate change is a long term phenomenon (over decades), thus a change occurring once in the last ten or twenty years is not due to climate change. Also keep in mind that recent events are often more present and impressive and therefore often overvalued by participants.

Figure 16: Hazard map elaborated in a workshop with female fishers in the Philippines (Photo: M. Künzler)

3. Learning and Discussion (30 minutes)

When the map is complete, ask the group members the following questions:

- Are the hazards different now than they were 10/20/30 years ago (depending on age of participants)? Are the hazards changing in frequency and intensity?
- Who is most affected by them?

4. Expected Results

Important livelihood resources and areas at risk from hazards are identified.

After having completed the hazard map, the workshop participants make a calendar indicating important events, particularly periods of stress due to natural or man-made hazards to identify the change of the disturbances over time. Moreover, the participants discuss the changes of frequency, intensity, and seasonality of the hazards in the past (refer to Seasonal Calendar).

Seasonal Calendar

1. Objectives

- To identify periods of stress, disaster, disease, hunger, debt, vulnerability, etc.
- To understand main community activities/events and their coping strategies
- To analyse changes in seasonal activities, intensity, and frequency and their link to climate change

75 minutes for drawing (45 minutes) and discussion (30 minutes)

The information should be gathered through stakeholder consultations with the local population in gender-separated workshops.

2. How to Facilitate (45 minutes)

a) Prepare the exercise (refer to Figure 11): Provide sheets of paper (minimum size 50 cm x 100 cm) and coloured pencils. Prepare the table and mark off the months of the year on the horizontal axis.

b) Explain to the participants that you would like to develop a seasonal calendar to show key events and activities that occur during the year.

c) Ask people to list seasons, events, conditions, etc. along the vertical axis. The list should include:
   i. Rainfall season
   ii. Activities such as planting and harvest seasons, livestock keeping, or fishing season
   iii. Timing of climatic variables or hazards: typhoons/cyclones, flood, drought, El Nino (warming), La Nina (cooling), earthquakes, precipitation
   iv. Periods of stress: food scarcity, water shortage, diseases
   v. Times of migration
   vi. Important holidays/festivals

d) When the key events have been listed, plot their timing in the table based on agreement among the participants.

Time management: Do not spend too much time completing the exercise as the discussion is very important.

Events	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Long rains			X		X							
Short rains										X	X	X
Farm cultivation		X						X	X			
Planting & weeding			X	X						X	X	
Harvesting	X						X					
Livestock & chicken keeping	X	X	X	X	X	X	X	X	X	X	X	X
Collecting firewood	X	X	X	X	X	X	X	X	X	X	X	X
Fetching water	X	X	X	X	X	X	X	X	X	X	X	X
Cooking	X	X	X	X	X	X	X	X	X	X	X	X
Mary-go-rounds	X	X	X	X	X	X	X	X	X	X	X	X
Bricks making					X	X	X	X	X	X		
Vegetable selling	X	X	X	X	X	X	X	X	X	X	X	X
Sweet potatoes selling						X	X	X	X	X		
Pease selling				X					X	X	X	
Water selling							X	X	X			
Initiation for boys								X				
Wedding				X				X	X			
Foot-and-mouth disease	X											
Newcastle poultry disease							X					
Malaria		X	X								X	X
Amoeba/typhoid/brucella					X	X	X	X	X	X		
Diarrhoea/vomiting						X	X	X	X			
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec

Figure 17: Seasonal calendar elaborated in a workshop with female farmers and pastoralists in Kenya

3. Learning and Discussion (30 minutes)

When the calendar is complete, ask the group members the following questions:

- Are there any differences in the timing of seasons and events as compared to 10/20/30 years ago (depending on age of participants)?
- Are there any trends or changes in the frequency or intensity of events over time?

4. Interpretation of exercise (feedback of project analysis team to beneficiaries)

- Are the hazards and seasonal changes (e.g. rainy/drought season, sea level rise, etc.) consistent with the results of the analysis conducted during the elaboration of the country/regional programme?
- Explain your interpretation of the results to the participants.

5. Expected results

Periods of stress in seasonal activities and coping strategies of communities are identified.

If time permits it might make sense to combine the above mentioned exercises with other Participatory Rural Appraisal (PRA) tools[2], such as a transect walk, historical timeline, semi-structured interviews with community representatives (e.g. community elders) or a venn-diagram.

Step 2: Participatory Analysis of Sensitivity and Adaptive Capacity

In a second step, the impact of disturbances on the community's livelihood assets and strategies as well as their adaptive capacities will be assessed. More precisely, the workshop participants will identify the most important hazards, the main impacts as well as the adaptive capacity of the local population. Furthermore, the most important livelihood resources are identified and their vulnerability to natural hazards is analysed (refer to Sensitivity Matrix and Hazard – Impacts – Adaptive Capacity).

Sensitivity Matrix

1. Objectives

- To determine the main hazards that have the most serious impact on important livelihoods assets
- To determine which livelihoods assets are most susceptible to shock and stresses

90 minutes for drawing (80 minutes) and discussion (10 minutes)

2 For more information on PRA tools, we refer to the FAO PRA manual, which can be viewed and downloaded using the following link: http://www.rlc.fao.org/en/publications/pra-manual/

2. How to Facilitate

a) Prepare a matrix in advance (refer to Figure 12). This can be done on sheets of paper (minimum size 50 cm x 100 cm).

b) Ask the group to identify their most important livelihoods assets. You are encouraged to categorise the assets according to the following classification. Ideally, at least three assets in each category will be identified.

i. Natural/Environmental: land, water, livestock, wildlife, biodiversity, and environmental resources
ii. Financial/Economic: access to savings and credit, risk financing
iii. Human: Skills, knowledge and information, and ability to labour in good health
iv. Social: Access to and participation in networks, groups, formal and informal institutions
v. Physical: Basic infrastructure (transport, shelter, energy, communications, water).
vi. Political: Relationships of power and access to and influence on the political system and governmental processes.

If you have time management problems, concentrate on the assets that are affected by the hazards mentioned in the hazard map.

c) Ask the group to identify the two or three main hazards to their livelihoods identified in the previous exercises (the number of hazards identified will depend on time management so far) and list them horizontally across the top of the matrix, again using symbols if necessary.

Livelihoods		Hazard			Sum
		Drought	Changing rainfall patterns	Human diseases	
Natural	Livestock	3	3	2	8
	Land for agriculture	3	3	2	8
	Pasture	3	2	0	5
	Water	3	2	3	8
Financial	Marketing of livestock	3	1	2	6
	Marketing of agriculture	3	3	2	8
	Jobs / employment	2	0	3	5
	Loans	3	2	1	6
	Shops	2	0	2	4
Human	Health	3	3	3	9
	Security	3	0	3	6
Social	Pastoral families	3	2	3	8
	Farmers families	2	2	3	7
	Church	2	0	3	5
	Community based organisation	3	0	3	6
Physical	Schools	0	0	0	0
	Hospitals	0	0	0	0
	Roads	2	0	0	2
	Cattle dip	0	0	0	0
TOTAL		43	23	35	
Ranking		1.	3.	2.	

Figure 18: Sensitivity matrix elaborated in a workshop with male farmers and pastoralists in Kenya

d) Rate the impact of every hazard on the assets. The scoring system is as follows:
   3 = significant impact on the asset
   2 = medium impact on the asset
   1 = low impact on the asset
   0 = no impact on the asset

e) Ask the participants to decide on the degree of impact that each of the hazards has on each of the assets, note the number. Start the rating with hazard 1 following it vertically, then hazard 2, etc.

f) This will involve coming to consensus as a group. The note taker should note key points of discussion that lead to the scores assigned, and any disagreements on the scores.

3. Learning and discussion (10 minutes)

- Add the numbers vertically and horizontally
- Livelihood assets most susceptible to disturbance: Which livelihood assets have the highest horizontal sum and are thus most susceptible to shocks and stresses?
- Highest impact of hazard: Which hazard has the highest vertical sum and thus induces the highest impact on the identified livelihood assets?
- Considering the projected climate change, how might hazards and the susceptibility of livelihoods change in future?
- For which livelihood assets is it most important to implement the identified coping strategies? (compare results of exercise 1 of module 3)

4. Expected results

Livelihood assets most vulnerable to specific hazards are identified.

Hazard – Impacts - Adaptive Capacity

1. Objectives

- To identify the impacts of hazards on the group's life and livelihoods
- To identify the adaptation strategies currently used to address the hazards and impacts identified
- To identify the effectiveness and sustainability of adaptation strategies

80 minutes for drawing (60 minutes) and discussion (20 minutes)

2. How to Facilitate (60 minutes)

a) Prepare the exercise (refer to Figure 13): Provide sheets of paper (minimum size 50 cm x 100 cm) and coloured pencils to complete the table.

b) List the two or three main hazards identified in the previous exercises vertically (the number of hazards identified will depend on the time management so far).

c) Identify the most important impacts of the hazards noted above.

! Do not confuse impacts with hazards. Examples of natural hazards include droughts or storms, while their impacts can include crop damage and destroyed dwellings. Gender-specific impacts can be water sources running dry, thus producing an increase in house work and time spent gathering water for women as a result of droughts and scarce rainfalls (hazards)

d) Identification of existing adaptation strategies: How do you respond to the impacts?

! Make sure that men and women are given the opportunity to contribute their adaptation strategies: in the example mentioned above, a gender-specific adaptation strategy for water scarcity could be water-saving practices, e.g. rain-water harvesting. These responses are the current adaptation strategies.
Also, you need to make sure that people identify their actual adaptation strategies, rather than desirable response mechanisms they cannot really afford.

3. Discussion (20 minutes)

- How are these adaptive strategies working? How effective and sustainable are they?
- What obstacles could hinder the execution of those strategies?

4. Interpretation (feedback of project analysis team to participants)

- Take up the issue of effectiveness and sustainability. Are these short- or long-term adaptive strategies? Can the population cope alone with the impacts? On whom and how does the population rely for support to cope with the impacts? How efficient will the adaptive strategies be with the predicted climate change scenarios?
- Explain the results to the participants

5. Expected results

Impact on hazards on livelihoods and adaptation strategies are identified.

Hazard	Impacts	Coping Strategies
Drought	• Shortage of water • Shortage of food • Decreased health and nutrition • Increased criminality • Lack of respect • Loss of social values • Decreased income • Increased domestic violence and conflicts • Loss of fruit tree productivity	• Increase of sexual work • Criminality • Eating wild roots and fruits • Migration • Selling livestock • Selling household properties • Casual work for food • Drought-resistant grains • Conservation farming • Shift from crop to garden work • Mulching • Drying vegetables • Food / grain storage
HIV/AIDS	• Decrease of human productivity • Decreased income • Increasing number of orphans • Disruption of knowledge transfer • Increased school drop outs • Impact on development	• Awareness raising • Prioritising orphans in government & NGO assistant programs • HIV/AIDS support groups • Positive living

Figure 19: Hazards – Impacts – Coping Strategies elaborated in a workshop with female farmers in Zimbabwe

Step 3: Participatory Selection of Adaptation Strategies

In a third step, strategies on how to strengthen the adaptive capacity of the community, thus to increase resilience, is developed in a participatory manner (refer to Adaptation Strategies). The focus lies on adaptation strategies. However, sometimes adaptation and mitigation strategies cannot be completely separated (e.g. reforestation can be an adaptation as well as a mitigation strategy).

Adaptation Strategies

1. Objectives

- To discuss barriers or obstacles to the implementation of desired adaptation strategies
- To identify alternative adaptation strategies to minimize the impact of shocks and stresses on livelihood assets and strategies and to strengthen adaptation capacities

60-120 minutes for discussion (30 minutes), group work (20-60 minutes) and discussion (10-30 minutes)

2. Discussion (30 minutes)

- Discuss any barriers or obstacles to the implementation of desired adaptation strategies? What are the reasons for not implementing some of the adaptive strategies?
- In the discussion, and in the analysis of its outcome, it may be useful to distinguish between different types of barriers: economic (e.g. access to resources such as land and security of tenure), technical (e.g. knowledge, tools, information), socio-cultural (e.g. traditions, bans), physical (e.g. resources, environment, infrastructures), political (e.g. participation, decision-making, policies) and institutional (e.g. organisations, research).

3. How to Facilitate (60 minutes)

a) Separate the participants into 3-5 groups with not more than 6 participants per group. Hand out 3 or 4 cards to each group to complete the exercise. The total number of distributed cards should not exceed 20.
b) Task for each group: each group discusses and agrees on 3 or 4 adaptation strategies (the number will depend on the number of distributed cards). The strategies aim to reduce the hazard impacts, reduce their sensitivity and strengthen their adaptive capacities. The strategies should be financially and technically feasible as the organization is responsible for their implementation. The strategies should also be effective and sustainable in the local context.
c) Each group presents its results in the plenum.

4.**Learning and discussion of results**

a) Discussion on the following questions:
   - Are the strategies groupable? Have the different groups devised similar strategies that can be placed under one heading?

- Are the strategies feasible? Are some of the strategies technically or financially out of reach?
- Are the strategies also effective and sustainable in the local context?
- Is the organisation capable of helping the participants to implement some of the strategies?

b) Prioritization of strategies: Which strategies need to be implemented most urgently? Rank them by giving each participant 2-3 votes (for example with coloured stickers). The participants place their stickers or make a mark with a coloured pen next to the chosen strategies. To assure freedom of opinion it might be necessary to keep the vote secret. Rank the strategies accordingly to the votes received.

5.**Expected results**

Alternative adaptation strategies are identified.

Adaptation Strategies	
1) Resilient livelihoods (agriculture & pastoralism)	**2) Water supply**

• ToT for alternative livelihoods
• Creating awareness on effect of overstocking
• Training of ToTs
• Training of communities by ToTs → agricultural management
• ToT for:
  • Short term crops
  • Drought resistant crops
• Sensitise commercial farming:
  • Short term crops
  • Drought resistant crops
	• Drip irrigation
	• Provision of more water sources:
	  • Sinking of boreholes
	  • Construction of dams
	• Construction of water reservoir

3) Alternative energy / energy efficiency	**4) Reforestation / tree nursery**
• Using alternative sources of fuel • Provision of other fuel sources / alternatives for firewood • Promote energy efficient stoves → minimize use of firewood	• Facilitation of tree nursery • Facilitation of tree nursery establishment • ToT for tree species for reforestation • Technical and financial support for establishment of tree nurseries

Figure 20: Identification of adaptation strategies in a workshop with farmers and pastoralists in Kenya

The analysis on predominant disturbances in the project area as well as the identification of adaptive capacities of PooC shall serve as a basis for further project planning. The key question, which the project team should ask is the following: how can the adaptive capacities of the community be strengthened in order to keep adverse effects of shocks and stresses at a minimum?

On the basis of the conducted analysis and in line with the HEKS-EPER strategic objectives project specific objectives and corresponding indicators and activities as well as monitoring and evaluation measures are defined and integrated into the project document. For a set of

generic indicators regarding disaster risk reduction and resilience building we refer to Annex VI. If reasonable the HEKS-EPER key indicator regarding resilience building should be integrated into the project indicator framework (refer to key indicators).

In the case that, besides the above described assessments, other assessments regarding development of rural communities, conflict transformation or humanitarian aid need to be conducted, assessment instruments from the other fields can be combined with the assessment steps suggested here.

4.3. Monitoring and Evaluation

Monitoring and Evaluation of the implementation of risk reduction, resilience building measures needs to be conducted according to the HEKS-EPER M+E framework described in the HEKS-EPER PCM manual. It is important to monitor the development of the overall risk situation and if the risk reduction/resilience building measures are implemented according to plan. Implications of any disaster event on the project performance and/or any changes in the sensitivity to disturbances need to be constantly assessed and project activities, targets and objectives modified accordingly if necessary.

The programm and project evaluation should give an insight into the achivements and shortcomings of the implemented measures as well as the adequacy of the initial assessment. The evaluation results will serve as a basis for the planning of the new project/programm phase and insights should be shared within the project country/region, and if sensible also with other HEKS-EPER focus countries and the organisation as a whole.

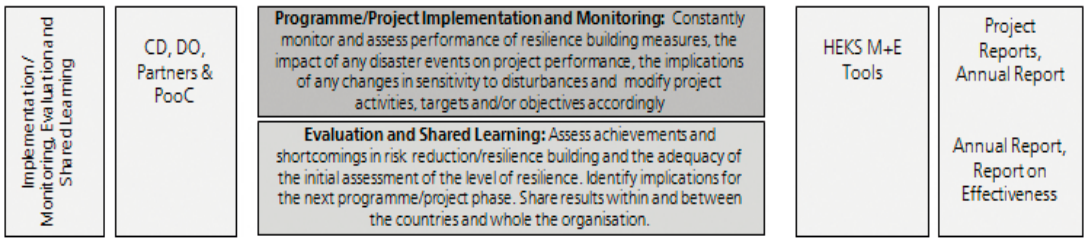

Figure 21: Monitoring and Evaluation and Shared Learning

ANNEXES

Annex I: List of Abbreviations

BfA	Brot für Alle
CBO	Community based Organisation
CCA/ACC	Climate Change Adaptation/Adaptation to Climate Change
CD	Country Director
DFID	Department for International Development
DO	Desk Officer
DRR	Disaster Risk Reduction
FAO	Food and Agriculture Organization of the United Nations
FFS	Farmer Field School
HEKS-EPER	Swiss Church Aid (Hilfswerk der Evangelischen Kirchen Schweiz – Entraide Protestante Suisse)
HFA	Hyogo Framework for Action
HoD	Head of Department
HQ	Headquarters
HRBA	Human Rights Based Approach
ID	International Division
IDNDR	International Decade on Natural Disaster Risk Reduction
IPCC	Intergovernmental Panel on Climate Change
IISD	International Institute for Sustainable Development
IUCN	International Union for Conservation of Nature
LAREC	Local Agriculture Research and Extension Center
MDG	Millennium Development Goals
MGNREGA	Mahatma Gandhi National Rural Employment Guarantee Scheme
M+E	Monitoring and Evaluation
NGO	Non-Governmental Organisation
ODI	Overseas Development Institute
PACDR	Participatory Tool on Climate and Disaster Risks
PCM	Project Cycle Management
PooC	People of our Concern
PRA	Participatory Rural Appraisal
REGLAP	Regional Learning and Advocacy Programme
SDC	Swiss Development Cooperation
SLA	Sustainable Livelihood Approach
SLM	Sustainable Land Management
SOFDEC	Society for Community Development in Cambodia
SREX	Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation
TA	Thematic Advisor
TANGO	Technical Assistance to NGOs
UN	United Nations
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNISDR	United Nations International Strategy for Disaster Reduction
USGDRA	Gender and Disaster Resilience Alliance
WOCAT	World Overview of Conservation Approaches and Technologies

Annex II: List of Figures and Tables

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Annex III: Basic Terminology of Risk Reduction and Resilience Building

Adaptation: In human systems, the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities. In natural systems, the process of adjustment to actual climate and its effects; human intervention may facilitate adjustment to expected climate (IPCC 2012).

Adaptive Capacity determines the nature and extent of access to and use of resources in order to deal with disturbance. Adaptive capacity both affects and is affected by the larger context and is comprised of three basic, but interrelated elements livelihood assets; transforming structures and processes; and livelihood strategies.

Livelihood Assets are tangible and intangible assets that allow individuals and households to meet their basic needs. Livelihood security depends on a sustainable combination of six assets/capitals: financial; physical; political; human; social; and natural. Certain assets are interdependent on others. Asset levels and quality can be improved and/or repaired. Landscapes can be restored, soils improved, new skills and abilities can be learned, and new markets can be developed or accessed. Livelihood assets can and should be grown and improved.

Structures and processes are embodied in the formal and informal institutions that enable or inhibit the resilience of individuals, households and communities. Examples include national, regional, and local governments; civil society; religious institutions; trade associations; resource networks; shared customs and norms; informal/traditional governance structures; policies and laws.

Livelihood strategies represent the distinct or combined strategies that individuals and households pursue to make a living and cope with shocks. It is critical to note that different livelihood strategies have various risks associated with potential shocks and that certain coping strategies may have negative and permanent consequences with respect to resilience.

Adaptive capacities allow actors to anticipate, plan, react to, and learn from shocks or stresses (DFID 2011/TANGO International 2012).

Climate: Climate in a narrow sense is usually defined as the average weather, or more rigorously, as the statistical description in terms of the mean and variability of relevant quantities over a period of time ranging from months to thousands or millions of years. The classical period for averaging these variables is 30 years, as defined by the World Meteorological Organization. The relevant quantities are most often surface variables such as temperature, precipitation, and wind. Climate in a wider sense is the state, including a statistical description, of the climate system. In various chapters in this report different averaging periods, such as a period of 20 years, are also used (IPCC 2012).

Climate change: A change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forces, or to persistent anthropogenic changes in the composition of the atmosphere or in land use (IPCC 2012).

Climate extreme (extreme weather or climate event): The occurrence of a value of a weather or climate variable above (or below) a threshold value near the upper (or lower) ends of the range of observed values of the variable. For simplicity, both extreme weather events and extreme climate events are referred to collectively as 'climate extremes' (IPCC 2012).

Climate scenario: A plausible and often simplified representation of the future climate, based on an internally consistent set of climatological relationships that has been constructed for explicit use in investigating the potential consequences of anthropogenic climate change, often serving as input to impact models. Climate projections often serve as the raw material for constructing climate scenarios, but climate scenarios usually require additional information such as about the observed current climate (IPCC 2012).

Climate system: The climate system is the highly complex system consisting of five major components: the atmosphere, the oceans, the cryosphere, the land surface, the biosphere, and the interactions between them. The climate system evolves in time under the influence of its own internal dynamics and because of external forcing factors such as volcanic eruptions, solar variations, and anthropogenic forcing factors such as the changing composition of the atmosphere and land use change (IPCC 2012).

Climate variability: Climate variability refers to variations in the mean state and other statistics (such as standard deviations, the occurrence of extremes, etc.) of the climate at all spatial and temporal scales beyond that of individual weather events. Variability may be due to natural internal processes within the climate system (internal variability), or to variations in natural or anthropogenic external forcing (external variability) (IPCC 2012).

Disaster: Serious disruption of the functioning of a community or a society causing widespread human, material, economic or environmental losses which exceed the ability of the affected community or society to cope using its own resources. It results from the combination of hazards, conditions of vulnerability and insufficient capacity or measures to reduce the potential negative consequences (UN ISDR 2009). Natural disasters can be categorized in two types: (1) slow-onset disasters, that take a long time to produce emergency conditions, for instance natural disasters such as drought, and (2) rapid-onset disasters for which there is little or no warning like earthquakes, hurricanes or floods.

Disaster Risk Management: The systematic process of using administrative decisions, organisation, operational skills and capacities to implement policies, strategies and coping capacities of the society and communities to lessen the impacts of natural hazards and related environmental and technological disasters. This comprises all forms of activities, including structural and non-structural measures to avoid (prevention) or to limit (mitigation and preparedness) adverse effects of hazards (UNISDR 2009).

Disaster Risk Reduction: The concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters, including through reduced exposure to hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events (UNISDR 2009).

Disturbance: Disturbances usually take two forms:

- **Shocks** come in the form of rapid onset or slow onset shocks, that impact on the vulnerability of the system and its components. There are many different types of disaster-related shocks that can strike at different levels. These include disease outbreaks, weather-related and geophysical events including floods, high winds, landslides, droughts or earthquakes. There can also be conflict-related shocks such as outbreaks of fighting or violence, or shocks related to economic volatility.
- **Stresses** are long-term trends that undermine the potential of a given system or process and increase the vulnerability of actors within it. These can include natural

resource degradation, loss of agricultural production, urbanisation, demographic changes, climate change, political instability and economic decline (DFID 2011/TANGO International 2012).

Early warning system: The set of capacities needed to generate and disseminate timely and meaningful warning information to enable individuals, communities and organizations threatened by a hazard to prepare and to act appropriately and in sufficient time to reduce the possibility of harm or loss (UNISDR 2009).

Environmental degradation: Process induced by human behaviour and activities that damages natural resources base or adversely alters natural processes or ecosystems (e.g. land degradation, deforestation, desertification, loss of biodiversity, land, water and air pollution, ozone depletion) (UNISRD 2009).

Exposure determines the presence of people, livelihoods, environmental services and resources, infrastructure, or economic, social, or cultural assets in places that could be adversely affected. To determine the level of exposure an assessment of the magnitude, frequency and duration of shocks or the degree of stress in a given place is needed (DFID 2011/ TANGO International 2012).

Global warming: Increase in the earth's mean temperature due to the so-called enhanced greenhouse effect.

Greenhouse effect: Greenhouse gases effectively absorb thermal infrared radiation, emitted by the earth's surface, by the atmosphere itself due to the same gases, and by clouds. Atmospheric radiation is emitted to all sides, including downward to the earth's surface. Thus, greenhouse gases trap heat within the surface-troposphere system. This is called the greenhouse effect. Thermal infrared radiation in the troposphere is strongly coupled to the temperature of the atmosphere at the altitude at which it is emitted. In the troposphere, the temperature generally decreases with height. Effectively, infrared radiation emitted to space originates from an altitude with a temperature of, on average, -19°C, in balance with the net incoming solar radiation, whereas the earth's surface is kept at a much higher temperature of, on average, 14°C. An increase in the concentration of greenhouse gases leads to an increased infrared opacity of the atmosphere and therefore to an effective radiation into space from a higher altitude at a lower temperature. This causes a radiative forcing that leads to an enhancement of the greenhouse effect, the so-called enhanced greenhouse effect (IPCC 2012).

Greenhouse gas: Greenhouse gases are those gaseous constituents of the atmosphere, both natural and anthropogenic, which absorb and emit radiation at specific wavelengths within the spectrum of thermal infrared radiation emitted by the earth's surface, by the atmosphere itself, and by clouds. This property causes the greenhouse effect. Water vapor (H_2O), carbon dioxide (CO_2), nitrous oxide (N_2O), methane (CH_4), and ozone (O_3) are the primary greenhouse gases in the earth's atmosphere. Moreover, there are a number of entirely human-made greenhouse gases in the atmosphere, such as the halocarbons and other chlorine- and bromine- containing substances, dealt with under the Montreal Protocol. Besides CO_2, N_2O, and CH_4, the Kyoto Protocol deals with the greenhouse gases sulfur hexafluoride (SF_6), hydrofluorocarbons (HFCs), and perfluorocarbons (PFCs) (IPCC 2012).

Hazard: A dangerous phenomenon, substance, physical event, human activity or condition that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage (UNISDR 2009).

Impact: Consequences of a climate change or environmental induced hazard or any other natural disaster on natural and human systems.

Maladaptation/ (Increased risks): A business-as-usual development which by overlooking climate change impacts, inadvertently increases exposure and/or vulnerability to climate change. Maladaptation could also include actions undertaken to adapt to climate impacts that do not succeed in reducing vulnerability but increase it instead (OECD 2009).

Mitigation (DRR): The lessening or limitation of the adverse impacts of hazards and related disasters (structural and non-structural measures) (UNISDR 2009)

Mitigation (Climate change): A human intervention to reduce the sources or enhance the sinks of greenhouse gases (IPCC 2012).

Preparedness: The knowledge and capacities developed by governments, professional response and recovery organisations, communities and individuals to effectively anticipate, respond to, and recover from, the impacts of likely, imminent or current hazard events or conditions (UNISDR 2009).

Prevention: The outright avoidance of adverse impacts of hazards and related disasters (UNISDR 2009).

Recovery: The restoration and improvement (where appropriate) of facilities, livelihoods and living conditions of disaster-affected communities, including efforts to reduce disaster risk factors (UNISDR 2009).

Residual risk: The risk that remains in unmanaged form, even when effective disaster risk reduction measures are in place, and for which emergency response and recovery capacities must be maintained (UNISDR 2009).

Resilience: The ability of a system, community or society exposed to hazards to resist, absorb, accommodate to and recover from the effects of a hazard in a timely and efficient manner, including through the preservation and restoration of its essential basic structures and functions (UNISDR 2009).

Resilience: Disaster Resilience is the ability of countries, communities, and households to manage change, by maintaining or transforming living standards in the face of shocks and stresses – such as earthquakes, drought or violent conflict – without compromising their long-term prospects (DFID 2011). *HEKS-EPER uses the definition of DFID for resilience.*

Response: The provision of emergency services and public assistance during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected (UNISDR 2009).

Risk: The combination of the probability of an event and its negative consequences (UN ISDR 2009).

Risk Transfer: The process of formally or informally shifting the financial consequences of particular risks from one party to another whereby a household, community, enterprise or state authority will obtain resources from the other party after a disaster occurs, in exchange for ongoing or compensatory social or financial benefits provided to that other party (UNISDR 2009).

Sensitivity is the cumulative outcome of exposure and adaptive capacity and determines the degree to which a system will be affected by, or respond to a given shock or stress. This

can vary considerably for different actors within a system. Greater sensitivity implies a lower degree of resilience whereas lower sensitivity implies greater resilience (DFID 2011/TANGO International 2012).

Structural and non-structural measures Structural measures: Any physical construction to reduce or avoid possible impacts of hazards, or application of engineering techniques to achieve hazard-resistance and resilience in structures or systems; Non-structural measures: Any measure not involving physical construction that uses knowledge, practice or agreement to reduce risks and impacts, in particular through policies and laws, public awareness raising, training and education (UNISDR 2009).

Vulnerability The characteristics and circumstances of a community, system or asset that make it susceptible to the damaging effects of a hazard. The vulnerability is lower when there are positive factors, which increase the ability of people to cope with hazards (coping capacity or adaptive capacity) (SDC 2008).

Annex IV: References

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Further References regarding Risk Reduction and Resilience Building

Will be elaborated at a later stage

Annex V: Additional Information on HEKS-EPER Sphere of Action

Examples of Technologies, Practices and Approaches in the field of environmental / natural resource management

Building Resilient Livelihoods

Agriculture

- Crop diversification
- Appropriate crop selection (drought/saline/flood tolerant)
- Intercropping
- Crop breeding
- Conservation agriculture
- Adjustment of cropping calendars
- Seed systems
- Terracing
- Post-harvest management (storage, food drying, food processing)
- Livelihoods diversification
- Crop insurance
- Integrated pest management
- Urban gardening

Livestock

- Proofing of storage facilities
- Livestock shelters
- Strategic animal fodder reserves
- Fodder conservation
- Resilient animal breeding
- Vaccination to reduce or prevent the spread of animal disease
- Grazing and pasture resource management
- Strengthening pest management systems to cope with threats
- Biosecurity in animal production systems
- Agro-silvopastoral systems

Fisheries

- Implementation of the Code of Conduct for responsible fisheries
- Fisheries, aquaculture, vessel and infrastructure insurance
- Safety in the design, construction and equipment for fishing vessels
- Aquaculture biosecurity measures to reduce or prevent the spread of fish disease

Natural Resource Management

Water

- Rainwater harvesting, conservation and storage to improve capture and utilization of rainfall
- Water reserves to buffer droughts
- Efficient irrigation such as drip and furrow irrigation that use less water and reduce water loss
- Management of fragile catchment areas
- Capture of floods or recharge of groundwater for use in dry season

Land

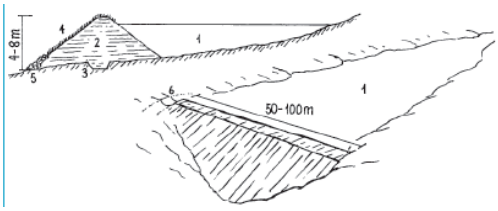
- Restoration of degraded lands
- Land use and territorial planning
- Sustainable wetland management
- Land and soil management
- Field or network drainage to minimize flood impact
- Appropriate energy sources and technologies to reduce pressure on land
- Secure natural resources tenure rights

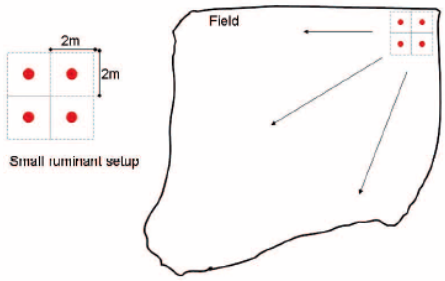
Forests

- Integrated Fire Management
- Forest pests prevention
- Agro-forestry
- Afforestation/reforestation
- Preventive silviculture
- Prescribed burning
- Fire breaks
- Improved cook stoves and alternatives to wood energy to reduce deforestation

Figure 22: Examples of Technologies, Practices and Approaches (FAO 2013)

SLM best practices from Sub-Saharan Africa

SLM Group and Definition	Example	
Integrated Soil Fertility Management benefits from positive interaction and complementarities of a combined use of organic and inorganic plant nutrients in crop production.	**Precision Conservation Agriculture** is a combined technology that encompasses four basic principles: 1) Minimum tillage – use of small planting basins which enhance the capture of water from the first rains and allow efficient application of limited nutrient resources with limited labour input; 2) The precision application of small doses of nitrogen-based fertilizer (from organic and / or inorganic sources) to achieve higher nutrient efficiency; 3) Combination of improved fertility with improved seed for higher productivity; 4) Use of available residues to create a mulch cover that reduces evaporation losses and weed growth.	
Conservation Agriculture combines minimum soil disturbance (no-till), permanent soil cover, and crop rotation, and is very suitable for large- as well as small-scale farming.	**Small-scale conservation tillage** involves the use of ox-drawn ploughs, modified to rip the soil. An adaptation to the ordinary plough beam makes adjustment to different depths possible and turns it into a ripper. Ripping is performed in one pass, to a depth of 10 cm, after harvest. Deep ripping (subsoiling) with the same implement is done, when necessary, to break a plough pan and reaches depths of up to 30 cm.	
Rainwater Harvesting is the collection and concentration of rainfall to make it available for agricultural or domestic uses in dry areas where moisture deficit is the primary limiting factor.	**Small earth dams** are water harvesting storage structures, constructed across narrow sections of valleys, to impound runoff generated from upstream catchment areas. Construction of the dam wall begins with excavation of a core trench along the length of the dam wall which is filled with clay and compacted to form a central core ('key') that anchors the wall and prevents or minimises seepage. The upstream and downstream embankments are built using soil with a 20-30% clay content.	 
Smallholder Irrigation Management aims to achieve higher water use efficiency through more efficient water collection and abstraction, water storage, distribution and water application.	The **low pressure pipe distribution system** called **'Californian'** has proven to be a very efficient irrigation system for smallholder farmer groups in Africa. The principle of the Californian system is to convey water to the crops through fixed underground rigid PVC pipes (40–75 mm diameter). The pipe network is buried at 0.50 m depth to avoid deterioration by UV radiation and agricultural practices. Risers with hydrants are fixed to those rigid pipes at regular distance (18-36 m). To each riser a 14 m long flexible hose is attached which can be dragged around to irrigate the individual plots and crops.	

Cross-slope Barriers are measures on sloping lands in the form of earth or soil bunds, stone lines, or vegetative strips, etc. for reducing runoff velocity and soil erosion.	**Aloe vera** is a drought tolerant, fleshy plant which is planted in the form of live barriers to recuperate degraded slopes. The plants are closely planted along the contour to build an efficient barrier for retention of eroded sediments and surface runoff. The hedgerows stabilise the soil, and increase soil humidity by improving infiltration and soil structure. Soil is accumulating behind the Aloe strips and slope angle is considerably reduced over time.	
Agroforestry integrates the use of woody perennials with agricultural crops and / or animals for a variety of benefits and services including better use of soil and water resources, multiple fuel, fodder and food products, habitat for associated species.	While **Grevillea robusta** (the 'silky oak', an Australian native) was originally introduced from India to East Africa as a shade tree for tea and coffee estates, it is now more commonly used in small-scale farming areas, especially in association with annual crops (maize / beans). There are three major forms of grevillea agroforestry systems: (1) planting along farm boundaries; (2) scattered grevillea trees on cropland - resembling open forests with multi-storey layers; (3) 'alley cropping' on terraces. Boundary planting is the most common form and is described in this case study.	
Integrated Crop-Livestock Management optimises the uses of crop and livestock resources through interaction and the creation of synergies.	**Night corralling** of cattle, sheep and goats on cropland during the dry season (November-April) replenishes soil fertility of agricultural land depleted by continuous cropping. This technology is mainly applied in semi-arid and subhumid areas on sandy / loamy plains with low soil organic matter content, low soil pH, and with slopes below 5%. Adequate spacing of animals helps to homogenously distribute the manure on the field (see photo): in cattle this is ensured through tying the animals to poles, in sheep and goats a movable fence serving as night enclosure helps to save labour.	
Pastoralism and Rangeland Management Grazing on natural or semi-natural grassland, grassland with trees and / or open woodlands. Animal owners may have a permanent residence while livestock is moved to distant grazing areas, according to the availability of resources.	The **'couloirs de passage'** are formally defined passageways which channel the movements of livestock herds in the agropastoral zones of Niger, by linking pastures, water points and coralling areas, be it within village areas (internal couloirs) or on open land (external couloirs). The main goal of the couloirs is the prevention of conflict between agriculturalists and pastoralists regarding the use of limited land and water resources. These conflicts are often provoked by cattle entering cropping areas.	
Sustainable planted Forest Management The purpose of planted forests can be either commercial or for environmental / protective use or for rehabilitation of degraded areas. The sustainability of new planted forests depends on what they replace, e.g. the replacement of a natural forest will hardly be sustainable.	**Stabilisation of mobile sand dunes** is achieved through a combination of mechanical measures including palisades, and biological measures such as live fences and sowing of grass. These measures seek to stop sand encroachment and stabilise sand dunes on-site, in order to protect villages, cultivated land, roads, waterways and other infrastructure.	

Sustainable Forest Management in drylands encompasses administrative, legal, technical, economic, social and environmental aspects of the conservation and use of dryland forests.	Assisted natural regeneration starts with enclosing 3 ha of degraded land with a solid fence. Along the fence a dense living hedge of thorny trees is planted. A strip of 10 m along the hedge is dedicated to agriculture. This area is equivalent to approximately 10% of the protected area. The rest is dedicated to natural regeneration of the local forest.	
Sustainable Rainforest Management encompasses administrative, legal, technical, economic, social and environmental aspects of the conservation and use of rainforests.	The 1994, Cameroon forestry law introduced the concept of **community forests**, which gives communities the right to access forest resources in or around their villages, for an area up to 5,000 ha, over a period of up to 25 years. Villagers are allowed to manage, conserve and exploit the products of their community forests in a participatory manner. A manual of procedures guides the process of creating and managing a community forests. Basic stages include: (1) Inform the community of their rights, obligations and procedures; (2) Select / create a suitable, legal community entity to manage the forest; (3) Mark the boundaries and agree forest use zones; (4) Inventorise the forest resources, such as timber species and NTFP; (5) Hold consultation meetings to agree on forest use, zones and plans; (6) Complete application file by the community and send to government; (7) Draw up a management plan for a 5-year period, including the distribution of revenues in the community; (8) Obtain the necessary felling permit for timber; (9) Exploit forest and implement activities according to the management plan; (10) Carry out annual review of logging exploits by ministry; (11) Monitor revision of, and approve, the management plan (5-yearly).	
Trends and new opportunities SLM measures which have not yet widely spread and / or provide additional sources of income for land users, such as ecotourism, payments for ecosystem services, organic agriculture, etc	**Push and pull integrated pest and soil fertility management.** In many parts of Sub-Saharan Africa stemborer pests, striga weeds and poor soil fertility are the main constraints to efficient production of cereals. In combination they often lead to complete crop failure. The 'Push-Pull' technology efficiently controls the pests and progressively improves soil fertility. It involves intercropping maize with a repellent plant, such as desmodium ('push'); an attractant trap plant, such as napier grass (Pennisetum purpureum) is planted as a border crop around this intercrop ('pull').	
SLM Approaches A SLM approach defines the ways and means used to promote and implement a SLM technology - be it project / programme initiated, an indigenous system, a local initiative / innovation - and to support it in achieving more sustainable land management.	A **Farmer Field School (FFS)** is a community-based practically-oriented field study programme. It is usually a time-bound activity (generally one agricultural production cycle), involving a group (commonly 20-30) of farmers, facilitated by agricultural advisors or – increasingly – by other farmers. The FFS provides an opportunity for farmers to learn together, using practical, hands-on methods of discovery-based and participatory learning. The methods emphasise observation, discussion, analysis, collective decision-making, presentation and taking appropriate action. Discussion and analysis are important ways to combine local indigenous knowledge with new concepts and bring both into decision-making. The aim is to develop participants' decision-making and problem solving capacity among farmers. The process builds self-confidence (particularly for women), encourages group control of the process, and builds management and leadership skills. Although FFS are time-bound, many groups formalise their relations and continue study or action projects, including FFS on other subjects, after the FFS learning cycle is completed.	

Table 2: SLM best practices from Sub-Saharan Africa (Liniger et al. 2011)

Annex VI: Core characteristics of disaster-resilient communities and generic indicators of the Swiss NGO DRR Platform (DRAFT)

Reference (full list of Characteristics / John Twigg)	Thematic Area 1: Governance	Potential generic Indicator
• 1.5 & 1.6	• Committed, effective and accountable community leadership of DRR planning and implementation, as an ongoing and participatory process. (1)	No of communities (% of project area) where local government DRR policies, strategies and implementation plans have been developed through participatory processes, are up-dated periodically and put into practice. (Outcome)
• 7.4	• Capacity of community to challenge and lobby authorities at higher administrative level and external agencies on DRR plans, priorities and actions that may have an impact upon local risks. (2)	No of community representatives (male and female) who know their rights and are actively participating in discussion and decision making at higher administrative level with a potential impact on local risks. (Outcome) Alternatives: b) No of contributions of communities to discussions and …or c) Social audit/ consultation mechanism in place and made use of d) % responsiveness of budget versus top down allocations/decision. e) % increase of budget allocated for DRR at local level
• 3.1 & 4.1 & 7.2 (from Area 4)	• Evidence that disaster risk reduction is given priority over short term economical gains during planning and budgeting at local level and is integrated into (local) government development and land use planning. (3)	% of community and other local-level actors (female and male) in sustainable development and DRR engage in joint planning with community and local-level emergency teams and structures. (Outcome) Alternatives: b) No of development plans and land use planning that have integrated DRR; % of annual budget set aside for DRR measures) c) Positive trend for public spending for DRR prevention d) Trend of private sector compensation and contributions to strengthen resilience e) % of households (f/m) situated in highly disaster prone areas (red zone on risk map) that were able to relocate their houses to safer areas with the support by the local government
• 6.7/ TA 5	• Ability of community to organize self-help and mutual support focusing on most vulnerable (elderly, disabled, young children and their mothers) before and during response and recovery. (4)	No of women and men of most vulnerable groups that participate actively in volunteer groups and recovery planning and implementation. (Outcome) Alternatives: b) Local community female and male representatives recognize importance of social solidarity and the right of most vulnerable groups to appropriate assistance after disaster, protection from violence and participation in recovery planning/volunteer groups c) access of most vulnerable women and men to response and recovery is ensured) d) Number of contingency and DRM plans use a diversity (gender) sensitive language and/or have special chapters about specific risks of people with special needs.

	Thematic Area 2: Risk Assessment	
• 1.1 & 1.2 & 2.1 & 2.2	• Participatory hazard/risk, vulnerability and capacity assessments carried out and updated, which provide a comprehensive picture of all major hazards/risks, vulnerabilities and capacities in the community, are comparable with neighbouring communities and plug in national/regional assessments. (5)	No of communities that carry out and periodically update comprehensive diversity sensitive risk assessments, including VCA method, ,coordinate with neighboring communities and manage to feed their findings in national/regional assessments (Outcome) Alternative: a) % of area covered in one country by comprehensive and updated risk assessments (Outcome).
• 3.2	• Community uses indigenous knowledge and local perceptions of risk, as well as other scientific, data-based assessment methods, considering potential changes in climate patterns. (6)	% of community disaster and development plans considering potential changes in climate patterns that include both ancestral knowledge of women and men and cross-checking through scientific methods (Output)
	Thematic Area 3: Knowledge and Education	
• 1.4	• Possession of appropriate technical and organizational knowledge and skills for risk reduction and disaster response for small scale and high frequency events at local level (e.g. indigenous technical knowledge, coping mechanisms and livelihood strategies). (7)	% of women and men in a community who are able to describe and apply in a test exercise at least x relevant risk reduction and disaster response measures for small scale/ high frequency events at local level (Output)
• 3.1	• DRR knowledge is being passed on formally through local schools and informally via oral tradition from one generation to the next. (8)	% of girls and boys at the age of x that are able to represent (eg. through drawings/songs) at least x relevant elements of risk reduction, including indigenous technical knowledge and coping mechanisms(Output) Alternative: b) DRR formally included in school curricula
	Thematic Area 4: Risk Management and Vulnerability Reduction	
• 3.3 & 3.4	• Livelihood diversification at household and community level, including on-farm and off-farm in rural areas, with few people engaged in unsafe livelihood practices or hazard vulnerable activities. (9)	% Increase of women and men in rural area engaged in multiple occupation/ with diversified income portfolio, keeping away from unsafe livelihood practices or hazard vulnerable activities (Output)
• 1.2 & 3.5	• Adoption of hazard-resistant agricultural practices and sustainable environmental management (e.g. soil and water conservation, flexible cropping patterns, hazard-tolerant crops, forest management). (10)	(Oxfam, 1.2) Level of adoption of sustainable environmental management practices that reduce hazard risk by women and men. (Output) Alternatives: b) No of soil and water management measures/ community c) % of women and men in the community who introduced cultivation of hazard-tolerant crops

• 5.3 & 5.4 & 5.5	• Existence of and access to community savings and credit schemes, and/or a community disaster fund to implement preparatory, responsive or recovery activity. (11)	Amount of money available at community level (savings and credit schemes, and/or a community disaster fund) to implement preparatory, responsive or recovery activity after disaster to start livelihood (Output)
• 6.4	• Structural mitigation measures in place (e.g. water-harvesting tanks, embankments, flood diversion channels) and maintained (12)	In at least x high-risk zones per community the existing risk is reduced through structural mitigation measures, built, managed and maintained with the participation of women and men at local level.(Output)
6.11	• Resilient and accessible critical facilities (e.g. health centres, hospitals, police and fire stations, back-up systems etc). (13)	Critical public facilities and infrastructure (e.g. health centres, hospitals, police and fire stations, back-up systems etc)are located in safe areas, constructed according to hazard-resistant standards and/or protected through retrofitting or additional structural measures and accessible for % of women and men in the case of a disaster. (Output)
	Thematic Area 5: Disaster Preparedness and Response	
• 2.1 & 2.3 & 2.5 & 2.7	• Community capable of accessing, interpreting and understanding Early Warning signals and indicators and knows actions to be taken when warnings are issued. (14)	% of women and men at community level, who receive EW signals and are able to take appropriate action when warnings are issued. (Output)
• 3.2, 3.3 & 3.7 & 3.9	• Community and family level contingency plans for all major risks developed through participatory process, supported by the community, co-ordinated with official emergency plans at higher-level) and updated and tested regularly. (15)	% of communities and households (women and men, elderly and youth) with contingency plans for all major risks (Output)
• 5.1 & 6.4	• Community has the capacity to provide effective and timely emergency response services, including training and deployment of volunteers with appropriate skills (e.g. search and rescue, first aid, managing emergency shelters, fire-fighting). (16)	% of community committees showing skills in carrying out effective emergency response tasks according to minimum standards in coordinated manner (Output)
• 2.3 & 2.4 (from Area 4)	• Food and water supply secure in times of crisis (e.g. through community managed stocks of grain and other staple foods; protected or stored water supplies). (17)	Community warehouse contains x quantity of food (equivalent to x calories) and x liter of water to cover the needs of female and male, elderly and youth in community during x days in times of crisis (Output)

Annex VII: Reporting Tables for Chapter 4 "Integrating Resilience into HEKS-EPER Project Cycle Management" (with examples of completed tables)

A) Reporting Table General Risk Screening, Hazard Matrix

Table 3: Reporting Table General Risk Screening, Hazard Matrix

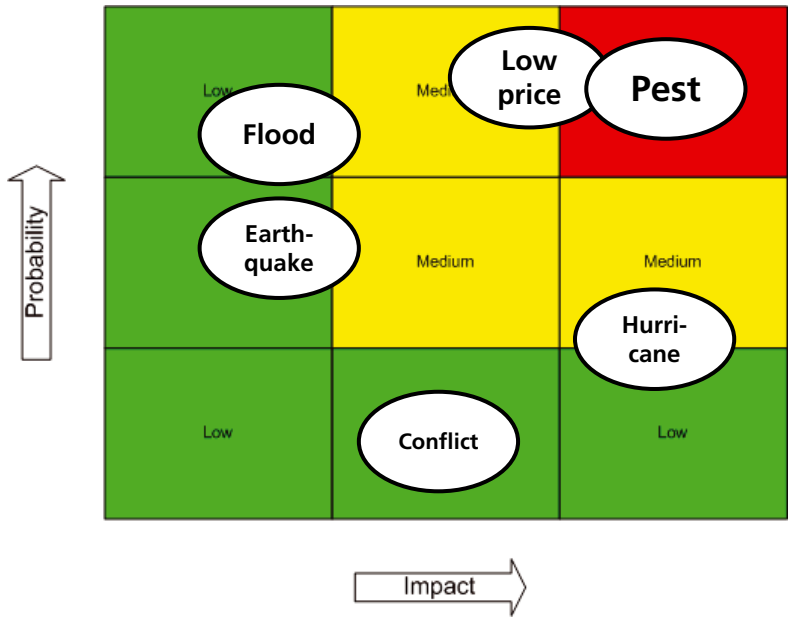


Table 4: Example of a completed Table General Risk Screening, Hazard Matrix

B) Reporting Table Seasonal Calendar

Events	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec

Table 5: Reporting Table Seasonal Calendar

Events	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Long rains			X		X							
Short rains										X	X	X
Farm cultivation		X						X	X			
Planting & weeding			X	X						X	X	
Harvesting	X						X					
Livestock & chicken keeping	X	X	X	X	X	X	X	X	X	X	X	X
Collecting firewood	X	X	X	X	X	X	X	X	X	X	X	X
Fetching water	X	X	X	X	X	X	X	X	X	X	X	X
Cooking	X	X	X	X	X	X	X	X	X	X	X	X
Mary-go-rounds	X	X	X	X	X	X	X	X	X	X	X	X
Bricks making					X	X	X	X	X	X		
Vegetable selling	X	X	X	X	X	X	X	X	X	X	X	X
Sweet potatoes selling						X	X	X	X	X		
Pease selling				X					X	X	X	
Water selling							X	X	X			
Initiation for boys								X				
Wedding				X				X	X			
Foot-and-mouth disease	X											
Newcastle poultry disease							X					
Malaria		X	X								X	X
Amoeba/typhoid/brucella					X	X	X	X	X	X		
Diarrhoea/vomiting						X	X	X	X			
	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec

Table 6: Example of a completed Table Seasonal Calendar

C) Reporting Table Sensitivity Matrix

Livelihoods		Hazard			Sum
Natural					
Financial					
Human					
Social					
Physical					
TOTAL					
Ranking					

Table 7: Reporting Table Sensitivity Matrix

Livelihoods Drought		Hazard			Sum
		Changing rainfall patterns	Human diseases		
Natural	Livestock	3	3	2	**8**
	Land for agriculture	3	3	2	**8**
	Pasture	3	2	0	**5**
	Water	3	2	3	**8**
Financial	Marketing of livestock	3	1	2	**6**
	Marketing of agriculture	3	3	2	**8**
	Jobs / employment	2	0	3	**5**
	Loans	3	2	1	**6**
	Shops	2	0	2	**4**
Human	Health	3	3	3	**9**
	Security	3	0	3	**6**
Social	Pastoral families	3	2	3	**8**
	Farmers families	2	2	3	**7**
	Church	2	0	3	**5**
	Community based organisation	3	0	3	**6**
Physical	Schools	0	0	0	**0**
	Hospitals	0	0	0	**0**
	Roads	2	0	0	**2**
	Cattle dip	0	0	0	**0**
TOTAL		**43**	**23**	**35**	
Ranking		**1.**	**3.**	**2.**	

Table 8: Example of a completed Table Sensitivity Matrix

D) Reporting Table Hazard – Impacts – Adaptive Capacity

Hazard	Impacts	Coping Strategies

Table 9: Reporting Table Hazard – Impacts – Adaptive Capacity

Hazard	Impacts	Coping Strategies
Drought	• Shortage of water • Shortage of food • Decreased health and nutrition • Increased criminality • Lack of respect • Loss of social values • Decreased income • Increased domestic violence and conflicts • Loss of fruit tree productivity	• Increase of sexual work • Criminality • Eating wild roots and fruits • Migration • Selling livestock • Selling household properties • Casual work for food • Drought-resistant grains • Conservation farming • Shift from crop to garden work • Mulching • Drying vegetables • Food / grain storage
HIV/AIDS	• Decrease of human productivity • Decreased income • Increasing number of orphans • Disruption of knowledge transfer • Increased school drop outs • Impact on development	• Awareness raising • Prioritising orphans in government & NGO assistant programs • HIV/AIDS support groups • Positive living

Table 10: Example of a completed Table Hazard – Impacts – Adaptive Capacity

E) Reporting Table Adaptation Strategies

Adaptation Strategies	
1) Adaptation Strategy 1	**2) Adaptation Strategy 2**
3) Adaptation Strategy 3	**4) Adaptation Strategy 4**

Table 11: Reporting Table Adaptation Strategies

Adaptation Strategies	
1) Resilient livelihoods (agriculture & pastoralism)	**2) Water supply**

• ToT for alternative livelihoods
• Creating awareness on effect of overstocking
• Training of ToTs
• Training of communities by ToTs
→ agricultural management
• ToT for:
  • Short term crops
  • Drought resistant crops
• Sensitise commercial farming:
  • Short term crops
  • Drought resistant crops
	• Drip irrigation
	• Provision of more water sources:
	  • Sinking of boreholes
	  • Construction of dams
	• Construction of water reservoir

3) Alternative energy / energy efficiency	**4) Reforestation / tree nursery**
• Using alternative sources of fuel • Provision of other fuel sources / alternatives for firewood • Promote energy efficient stoves → minimize use of firewood	• Facilitation of tree nursery • Facilitation of tree nursery establishment • ToT for tree species for reforestation • Technical and financial support for establishment of tree nurseries

Table 12: Example of a completed Table Adaptation Strategies