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Guidelines for Resilience Systems Analysis

How to analyse risk and build a roadmap to resilience



THE DEVELOPMENT ASSISTANCE COMMITTEE:
ENABLING EFFECTIVE DEVELOPMENT

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FOREWORD

Resilience means that states can better withstand environmental, political, economic and social shocks and stresses. Bangladesh has become more resilient against floods as the government's ability to warn and evacuate people and control infectious diseases has improved. The recent peaceful democratic transitions in El Salvador, Malawi and Indonesia are signs of stronger societies. Angola, Ghana, Mozambique and others have set up natural resource stabilization funds and are less vulnerable to oil price shocks. Social capital, and the fact that host families support displaced families, have shown to help protect people from shocks and stresses in eastern Democratic Republic of Congo.

Resilience has been a key focus of the Organisation for Economic Co-operation and Development (OECD) since the financial crisis of 2008. The development and humanitarian communities also picked up on the concept, prompted by a ground-breaking 2011 review of the United Kingdom's humanitarian programme, and later as a better way to respond to major food emergencies in the Horn of Africa, and then in the Sahel.

However, great ideas and political commitments mean little unless they have a real impact in the real world. A major scoping study by the OECD showed that numerous obstacles were preventing the concept of resilience from translating into better development and humanitarian programming on the ground. The study found that field staff were cynical about the added value of resilience. Some even saw resilience as just a term to insert into proposals to help attract new funding. People also found it difficult to understand what resilience actually meant. Some narrowly interpreted resilience as 'better' food security and livelihoods planning, or just another way to look at disaster risk reduction. Such cynicism and confusion reinforced a feeling that resilience was just another 'buzzword' or 'fad', devoid of real meaning for programming.

To counter this, OECD Development Assistance Committee members, together with other members of the Experts Group on Resilience, asked for specific technical guidance – a simple "how to" guide – that would allow people in the field to analyse what is needed to boost the resilience of specific groups, specific systems, and specific programmes, to the risks people face every day. The results of this analysis are then used to design new programmes to boost resilience, or to modify ongoing plans and actions.

This guidance is the end result of that work.

The guidance is aimed at professionals who are grappling with what resilience actually means, and how to get key stakeholders to develop a shared vision of both the risks that exist in their particular context, and what to do about them; both now, and in the longer term. We have called the outcome of the analysis a roadmap to resilience because it is just that – a shared view of the way forward towards a more resilient future.

The OECD will continue to support the resilience roadmap process as it is rolled out in contexts prone to natural, climate, economic and/or geo-political shocks. Our members – major humanitarian and development assistance providers – will use this approach to re-think their programming through a risk lens. We will also support other organisations and states who seek to embed this approach into their programme design processes.

I will watch this process with interest. Time has come for action and to show that resilience systems planning can have a real positive impact, on the real lives of real people!



Erik Solheim

Chair, Development Assistance Committee

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The methodology and the guidelines have been overseen by an Advisory Board of Experts, who have provided invaluable comments and contributions throughout the process, including: Alexandra Vogl (Asian Development Bank), Amanda Aspden (Australian Government Department for Foreign Affairs and Trade), Barbara Abbentheren (Deutsche Gesellschaft für Internationale Zusammenarbeit – GIZ), Dominque Albert and Roger Bellers (European Union Directorate-General for Humanitarian Aid and Civil Protection - ECHO), Luca Russo (Food and Agriculture Organisation of the United Nations), Marcus Oxley (Global Network of Civil Society Organisations for Disaster Reduction), Choe Chang (International Federation of Red Cross and Red Crescent Societies), Kimio Takeya (Japan International Cooperation Agency), Nadia Benani (Swiss Agency for Development and Cooperation), Anita Shah (United Kingdom Department for International Development), Daniel Maxwell (Tufts University), Maxx Dilley and Jo Scheuer (United Nations Development Programme), Kirsten Gelsdorf, Hansjoerg Strohmeyer and Andy Thow (United Nations Office for the Coordination of Humanitarian Affairs), Marc Gordon and Gillian Holmes (United Nations Office for Disaster Risk Reduction), and Hemang Karelia and Asbjorn Wee (World Bank). Particular thanks to Anita Shah for her thorough reading of the final draft document.

The methodology was first applied in eastern Democratic of Congo, an exercise that provided valuable practical insights on the use of the *resilience systems analysis* tool. Special thanks go to Yannick Brand, Mia Jeong and Nona Zicherman of UNICEF, Democratic Republic of Congo, for hosting this process, and for their excellent insights on how to improve the design of the analysis workshop and related processes. Thanks also go to all those people working and living in eastern Democratic Republic of Congo, who participated so enthusiastically in that analysis process.

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GLOSSARY OF RESILIENCE RELATED TERMINOLOGY

Covariate shock	Widespread infrequent events – which can be positive or negative – such as violent conflict, volcanic eruptions or the sudden introduction of new technology, e.g. cell phones
Critical threshold	A point across which major change occurs in the system
Idiosyncratic shock	Significant events that specifically affect individuals and families, such as the death of the main breadwinner, or loss of income generating activity
Layers of society	Individuals or groups of people with common characteristics. Depending on the context, these might be households, communities, provincial groupings and authorities or national groupings (the health system, a profession, etc.)
Resilience	The ability of households, communities and nations to absorb and recover from shocks, whilst positively adapting and transforming their structures and means for living in the face of long-term stresses, change and uncertainty
Resilience boosting	To manage the impact of shocks and future issues of risk, change and uncertainty, by strengthening the capacity to absorb shocks, or adapting to reduce exposure to shocks, or transforming so that the shock no longer has an impact on the system
Risk	The combination of the probability of an event and its negative consequences
Risk heatmap	A graphical representation of the severity of a risk
Shock	A sudden event with an important and often negative impact on the vulnerability of a system and its parts. Shocks represent significant negative (or positive) impacts on people's means of living and on the functioning of a state
Stress	A long term trend, weakening the potential of a given system and deepening the vulnerability of its actors
System	A unit of society (e.g. individual, household, a group of people with common characteristics, community, nation), of ecology (e.g. a forest) or a physical entity (e.g. an urban infrastructure network).
Vulnerability	An expression of susceptibility to harm, and exposure to hazard

WHAT IS A RESILIENCE SYSTEM ANALYSIS?

Everybody is talking about resilience. The idea that people, institutions and states need the right tools, assets and skills to deal with an increasingly complex, interconnected and evolving risk landscape, while retaining the ability to seize opportunities to increase overall well-being, is widely accepted.

In reality, however, it has not been easy to translate this sound idea into good practice, mostly because people in the field don't yet have the right tools to systematically analyse resilience, and then integrate resilience aspects into their development and humanitarian programming.

This guidance aims to fix that problem.

In this document you will find a step by step approach to *resilience systems analysis*, a tool that helps field practitioners to:

- prepare for, and facilitate, a successful multi-stakeholder resilience analysis workshop
- design a roadmap to boost the resilience of communities and societies
- integrate the results of the analysis into their development and humanitarian programming

Why should we do a *resilience systems analysis*?

We now know a great deal about different risks in developing countries. There are numerous risk analysis tools, showing us where and when conflict is likely, which areas are exposed to natural disasters, modelling how economic shocks and pandemics might spread, or how climate change will affect different communities and regions.

However, we don't yet share a vision of what to do about those risks; how to boost the resilience of individuals, households, communities and states to the risks they face every day. Where should we invest time, skills and funds to empower at-risk people, helping them to better absorb shocks, or adapt so that they become less exposed to shocks, or transform so that shocks no longer occur?

A *resilience systems analysis* will provide key actors in the field with:

- a shared view of the risk landscape that people face
- an understanding of the broader system that people need for their all-round well-being
- an analysis of how the risk landscape affects the key components of the well-being system, which components are resilient, which are not, and why
- a shared understanding of power dynamics, and how the use or misuse of power helps or hinders people's access to the assets they need to cope with shocks; and
- based on all of that, a shared vision of what needs to be done to boost resilience in the system, and how to integrate these aspects into policies, strategies and development efforts at every layer of society.

What is the added value of *resilience systems analysis,* compared with risk management?

Resilience systems analysis builds on, rather than replaces, traditional risk management approaches, by:

- adding elements that address the complexity and inter-linkages of different risks. It takes into account, for example, how disasters can also trigger economic shocks, and how conflicts can also leave people more exposed to disaster
- going beyond the "known knowns", on which traditional risk management is based, to also account for uncertainty and change, by exploring how long-term trends (stressors) such as climate change,

governance and insecurity, economic marginalisation and volatility, environmental degradation, and demographic changes can change the nature and impact of shocks in the future

- merging risk forecasting with critical reflection on how the system has performed in the past
- focusing on the system, not the risk, aiming to strengthen the systems that people use to support their all-round well-being, no matter what risks they face, building on existing capacities
- understanding the importance of power relations in helping or hindering resilience
- taking into account both large scale (covariate) and small scale (idiosyncratic) shocks, given that frequent, low impact events, like illness, can also have a devastating impact on people's lives.

Who is involved in a *resilience systems analysis*?

The *resilience systems analysis* tool has been designed to be as light, fast and easy as possible. It does not require "resilience experts", but instead draws on expertise already available in different societies and their systems. In addition, it requires minimal additional investment since it builds on existing assessments and data.

Importantly, *resilience systems analysis* is also a flexible approach. Sharing data and expertise can allow different actors to develop a solid analysis and useful roadmap within a short time-frame. Alternatively, the methodology can also support a much more thorough process, depending on the end users' needs and objectives.

Finally, a *resilience systems analysis* also helps different types of key actors to centralise and exchange existing information, and to reach consensus on risks and the priorities for boosting resilience. It creates an enabling environment for shared planning and action, critical if we are to boost resilience across all aspects of the system.

How can we use the results of a *resilience systems analysis*?

Many donors are requiring their partners to base their programming on a theory of change, linked to a log-frame analysis: the *resilience systems analysis* facilitates both of these.

The outputs of a *resilience systems analysis* provide the platform for constructing a *theory of change,* often used in development programming to support overall analysis, strategy and critical thinking[1]. A *resilience systems analysis* provides information for the three key steps in constructing a theory of change:

- analysing the context
- exploring assumptions and hypotheses for changes in the future; and
- assessing evidence for future change.

The roadmap produced by the *resilience systems analysis* follows a theory of change logic. Using the theory of change can help partners design programmes that are targeted at building resilience, or, even better, to incorporate resilience boosting elements into existing programmes.

The *resilience systems analysis* also helps develop the *logframes* that are often used to document and monitor humanitarian and development programmes. It does this by:

- providing a concrete vision of the desired programme impact, and outcomes
- showing how *project outputs* can contribute to these outcomes and impact; and
- providing better and more coherent risk information for the *assumptions* component of the logframe.

In addition, as the *resilience systems analysis* is a shared process, it can also be used as the context analysis and prioritisation exercise for joint planning exercises such as United Nations Development Assistance

Frameworks (UNDAFs), Poverty Reduction Strategy Plans (PRSPs), joint programmes such as compacts in fragile contexts, and humanitarian Strategic Response Plans.

The process can also help design broad indicators of system resilience to guide and monitor more detailed programme and project planning.

What are the limits of *resilience systems analysis*?

The quality of a *resilience systems analysis* is only as good as:

- the diversity and expertise of both the facilitation team, and of the participants in the workshop
- the quality and availability of relevant data
- the quality of the underlying contextual or risk analysis

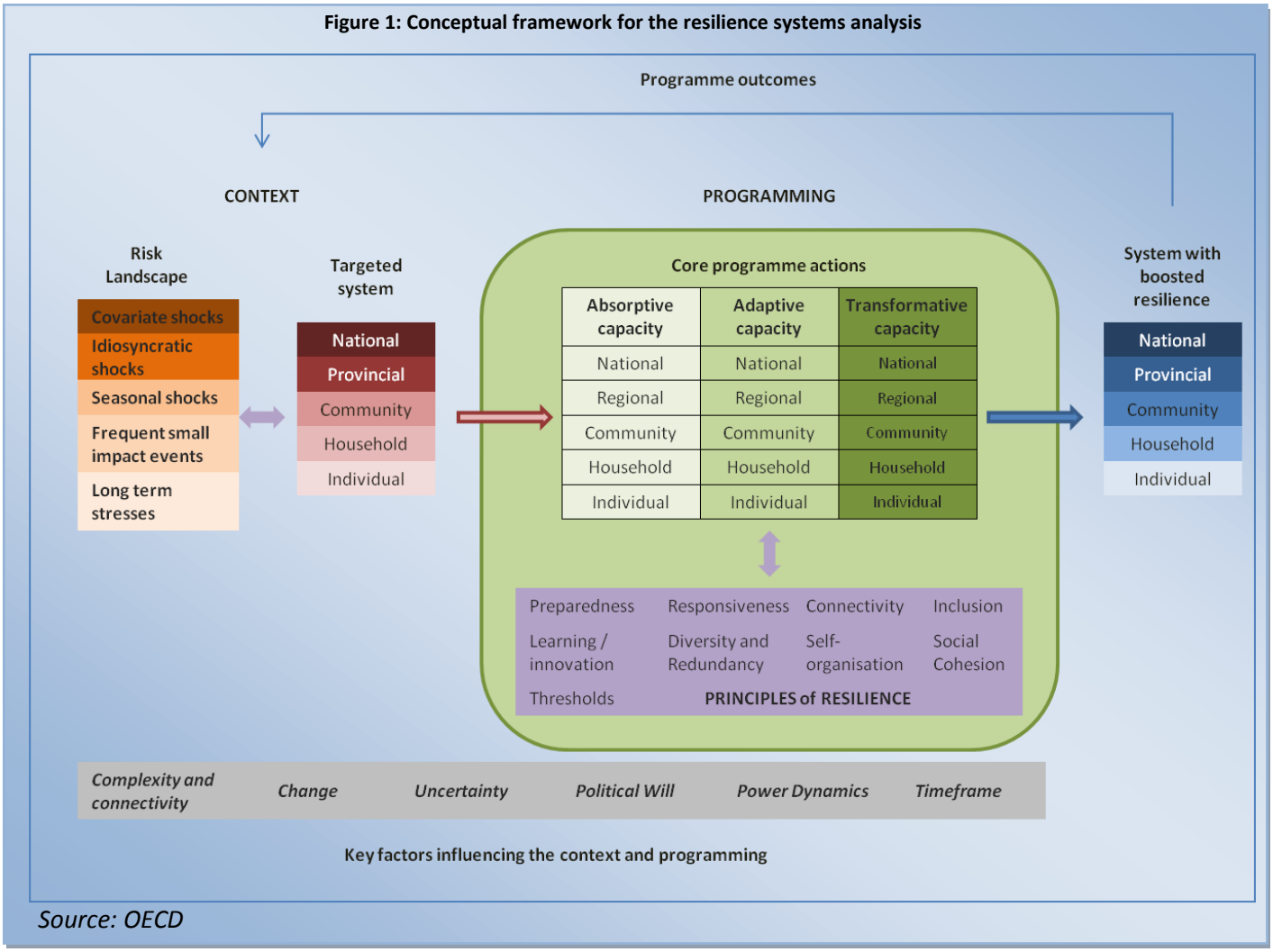
In addition, the main purpose of *resilience systems analysis* is to provide valuable inputs into policies, strategies and programmes, rather than to support detailed project design. Given the broad scope of the risk landscape that is examined, a *resilience systems analysis* can only develop an aggregate vision of strengths and weaknesses across the system.

RESILIENCE SYSTEM ANALYSIS: THE CONCEPTUAL FRAMEWORK

In order to integrate resilience into programming, it is critical to understand the key concepts underpinning *resilience systems analysis*. The analysis process, summarised in Figure 1:

- starts with an understanding of the risk landscape in a particular context
- looks at how those risks will affect society's systems
- gathers information about how those systems are set up to cope with those risks, and whether this makes them resilient
- determines what needs to be done to boost resilience; to help the different parts of the system to either absorb those shocks, adapt so that they are less exposed to those shocks, or transform so that the shock will no longer affect them
- the result is a resilient system, which will then change the overall context and risk landscape

Figure 1: Conceptual framework for the resilience systems analysis



Source: OECD

Boosting resilience is an iterative process: resilience programming targets specific societal systems and the risk landscape affecting them. The outcomes of programming will, in turn, affect the context.

Boosting resilience involves:

- actively understanding the risk landscape and how it impacts on systems – how society functions in each context
- determining at which layer of society those risks are best managed
- applying a set of resilience principles to strengthen the system's capacity to absorb shocks or adapt and transform so that they are less exposed to shocks.

The following questions explore selective aspects of this conceptual framework.

What is a Risk? What is a Shock?

A risk is the probability of a negative event and its negative consequences. A shock occurs when this risk becomes reality. For example, a country may be at risk of earthquakes because it lies on a fault line. When an earthquake actually hits, this is called a shock.

Resilience systems analysis considers different types of risks, shocks and stresses:

1. infrequent events with an impact on almost everyone in the target group, such as violent conflict, volcanic eruptions or currency devaluations - ***covariate shocks***
2. significant events that specifically affect individuals and families, such as the death of the main breadwinner or the loss of income-generating activity - ***idiosyncratic shocks***
3. ***seasonal shocks***, such as annual flooding linked to the rainy season, food market price changes, or **recurring shocks** such as frequent displacement or endemic cholera in particular communities
4. long term trends, weakening the potential of a system and deepening the vulnerability of its actors, like increased pollution, deforestation, exchange rate fluctuations and electoral cycles - ***stresses***.

Resilience systems analysis considers that:

- Specific shocks that affect families, and the cumulative impacts of seasonality and frequent low impact events, are as important to analyse as headline-grabbing, major shocks. These idiosyncratic shocks create recurring high costs for parts of society, and can, in some situations, be more of a threat for households than covariate shocks[2].
- It is critical to understand the cause and effect of stresses and shocks in the past, if we are to properly understand and prioritise future risks.
- The risk landscape brings both risks and opportunities: both should be considered when looking at how shocks and stresses affect systems and people.

What is a System?

Resilience systems analysis uses a systems approach. This is because the impact of a future shock – the risk – is dependent on how society's systems are set up to respond to shocks and change.

A system could be many things, including a unit of society (for example an individual or household, a community, or a state), of the natural environment (for example a forest) or a physical entity (for example an urban infrastructure network)[3].

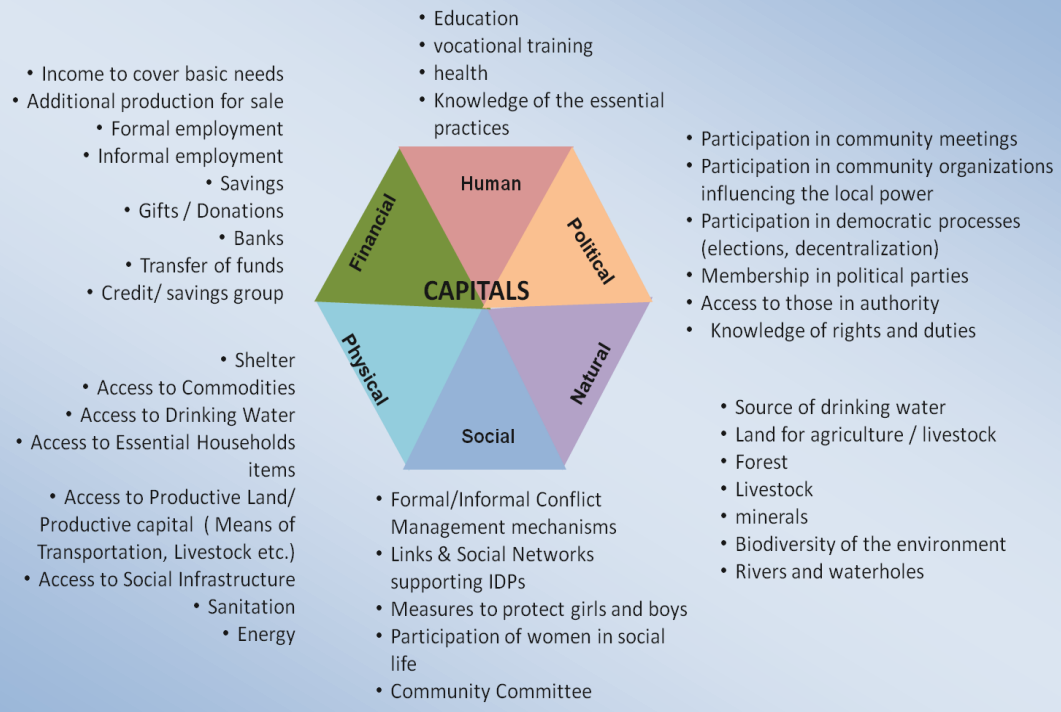
The system used as an example in these guidelines comes from the Sustainable Livelihoods Approach.

> *A livelihood comprises the capabilities, assets and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base (DFID, 1999)*

The Sustainable Livelihoods system is a good basis for analysing the resilience of individuals, households, and communities. Other systems can also be analysed using the *resilience systems analysis* methodology, for example, an infrastructure network, or a hospital system or the different aspects of national institutions. In these cases, the examples in these guidelines will need to be adapted.

Under the Sustainable Livelihoods Approach, the well-being of a community depends on a system with six different categories of assets or "capitals" – financial, human, natural, physical, political, and social capital. The assets that make up each of these categories of capital will differ from context to context. Figure 2 shows examples of the assets that make up the different categories of capital in eastern Democratic Republic of Congo.

Figure 2: Examples of key livelihoods assets for household and communities in eastern Democratic Republic of Congo



Source: OECD and UNICEF (2014)

What is Resilience?

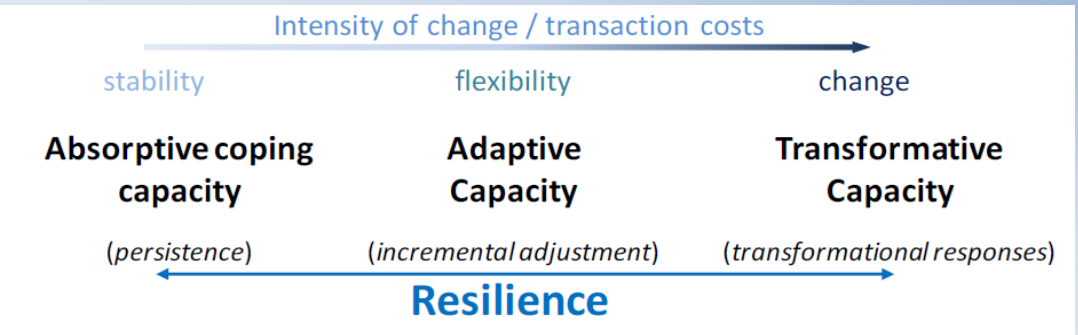
Resilience is the ability of households, communities and nations to absorb and recover from shocks, whilst positively adapting and transforming their structures and means for living in the face of long-term stresses, change and uncertainty (Mitchell, 2013).

Resilience can be boosted by strengthening three different types of capacities:

- **Absorptive capacity:** The ability of a system to prepare for, mitigate or prevent negative impacts, using predetermined coping responses in order to preserve and restore essential basic structures and functions. This includes coping mechanisms used during periods of shock. Examples of absorptive capacity include early harvest, taking children out of school, and delaying debt repayments.
- **Adaptive capacity:** The ability of a system to adjust, modify or change its characteristics and actions to moderate potential future damage and to take advantage of opportunities, so that it can continue to function without major qualitative changes in function or structural identity**.** Examples of adaptive capacity include diversification of livelihoods, involvement of the private sector in delivering basic services, and introducing drought resistant seed.

- **Transformative capacity:** The ability to create a fundamentally new system so that the shock will no longer have any impact. This can be necessary when ecological, economic or social structures make the existing system untenable. Examples of transformative capacity include the introduction of conflict resolution mechanisms, urban planning measures, and actions to stamp out corruption.

Figure 3: The relationship between absorptive, adaptive and transformative capacities for strengthening resilience



Source: Béné et al (2012)

Often, these three capacities are used at the same time. For example, a coastal community in Bangladesh may use its absorptive capacity to build barriers that will protect their resources against annual flooding; use adaptive skills to alter how they cultivate crops and collect drinking water in new ways that guard against the increasing salinity of groundwater associated with climate change, and transform the way they manage natural resources by changing basic attitudes about the role and partnership of different community groups, and the role of women.

Table 1 provides some examples of the three types of capacities, for different categories of capital within the livelihood system.

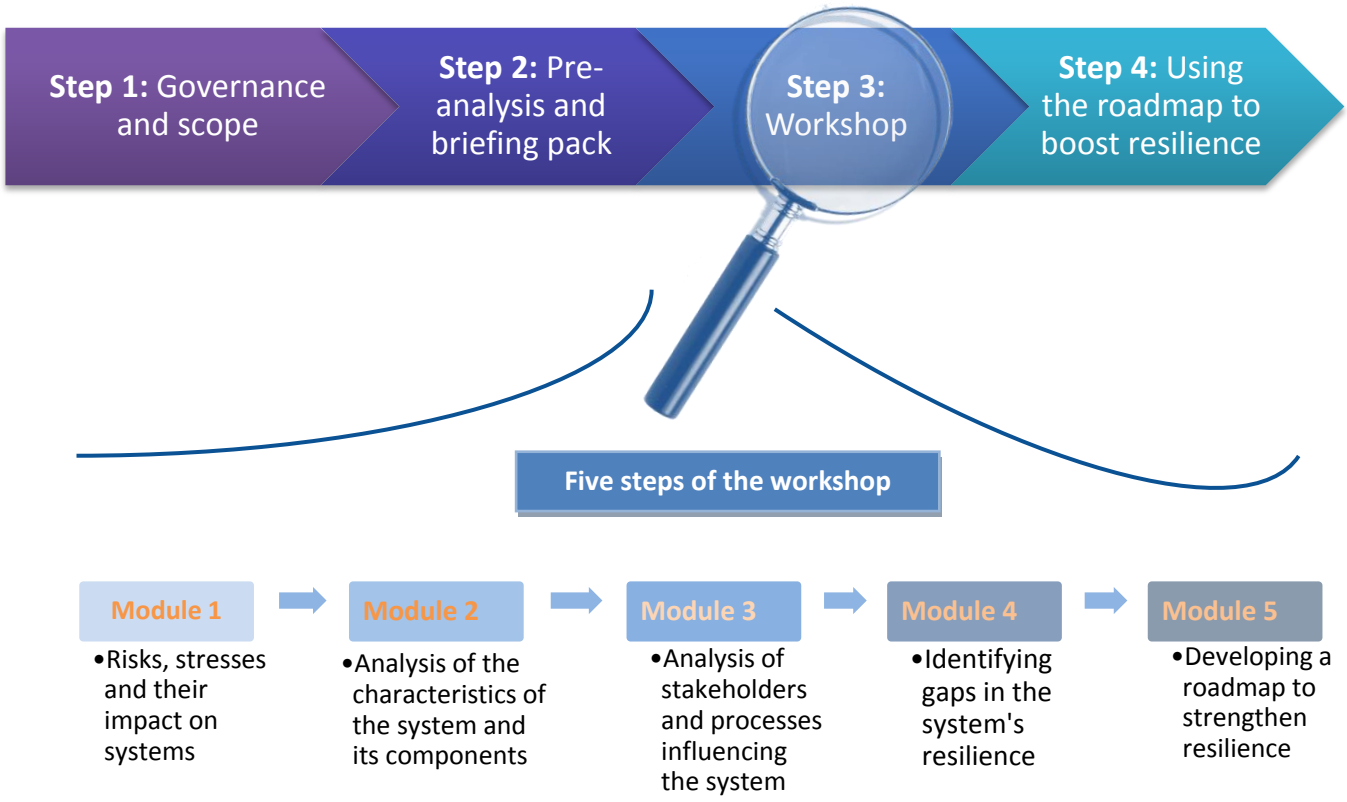
Table 1: Examples of actions that could strengthen the capacities of livelihoods systems (in different contexts)

	Absorptive capacity	Adaptive capacity	Transformative capacity
Financial Capital	Support access to markets to increase the sale of agricultural/livestock products Setting up and linking savings groups, pooling of community goods, mutual solidarity banks	Better access to micro-credit and revolving funds, to encourage risk taking for new incoming generating activities Introduction of e-banking mechanisms	Open a formal insurance market Social protection systems. Simplify and explain the tax law to limit corruption
Human Capital	Integration of displaced children into new schools in host communities Use of traditional medicine Social support groups to help families pay for health care	Increase understanding of the rights of the child (including education) Establish formal health insurance schemes	Provide free education Decentralise the healthcare system
Natural Capital	Sale or slaughter of livestock Moving to a more secure area Vaccination Reforestation Setting and securing national park boundaries	Diversification of livestock holdings Animal vaccination Support to the REDD+ process	Reform of Land tenure Law: assuring proper planning and synergies with different land users
Physical Capital	Strengthen committees in charge of infrastructure maintenance Ensure community participation in planning processes for community infrastructure	Introduce new technologies: efficient combustion fireplaces, recycling and improved management of waste, alternative energy sources Promote civic education in schools, including a component on energy, environmental protection and climate change	Advocate for greater decentralisation of national budgets and systems
Political Capital	Better transparency and accountability in community decision-making Support and strengthen local initiatives for community meetings, and for land conflict resolution	Support community organizations to participate in local power structures, including greater inclusion of women and different ethnic groups Educate voters, strengthen democratic culture, and increase dialogue between political parties	Advocate to improve election transparency Educate citizens about democratic principles Advocate for the respect and the reform of land-related legislation
Social Capital	Use of mediation and peace committees Community networks for the protection of children, youth patrols to prevent theft and rape	Training of peace committees and other groups Promotion of shared community spaces and natural resources Strengthen the role of women in community governance	Support the restoration of formal justice systems and promote trust in these mechanisms Reinforce women in leadership positions Remove the stigmatisation of those suffering from rape and other critical protection incidents

RESILIENCE SYSTEM ANALYSIS: A FOUR-STEP PROCESS

There are four main steps to a *resilience system analysis*.

Figure 4: Resilience System Analysis: Four Main Steps



How long does a resilience systems analysis take?

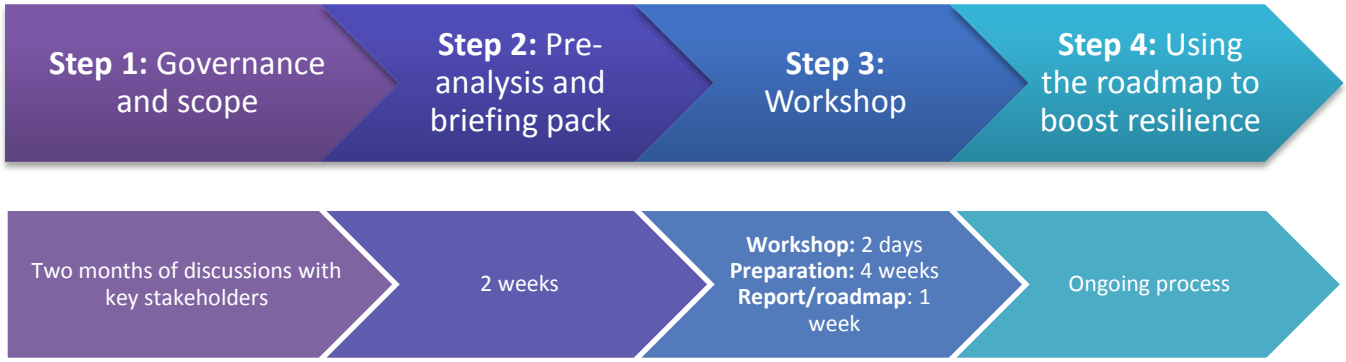
The process is designed to be as light, fast and easy as possible.

For most people, this will mean providing access to their data and information during the preparation phase, actively participating in a two day workshop, and using the results to inform their current and future policies and programmes.

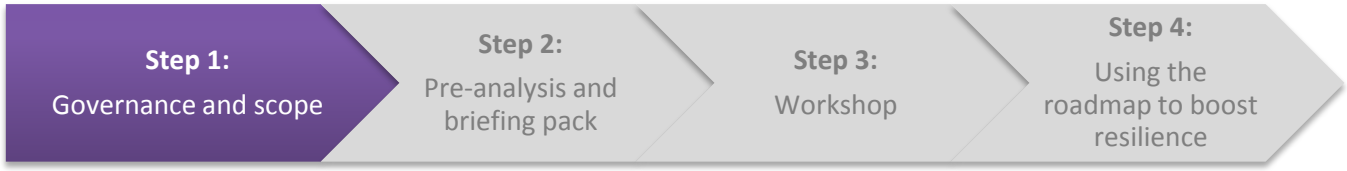
However, there is more work involved for the team who is leading and facilitating the analysis.

The timeline in Figure 5 gives an example of the time that was needed for each stage of the *resilience systems analysis* undertaken in eastern Democratic Republic of Congo. Steps one and two, and the preparation for step three, can be performed in parallel.

Figure 5: Example of a timeline for Resilience System Analysis



STEP 1 – GOVERNANCE AND SCOPE

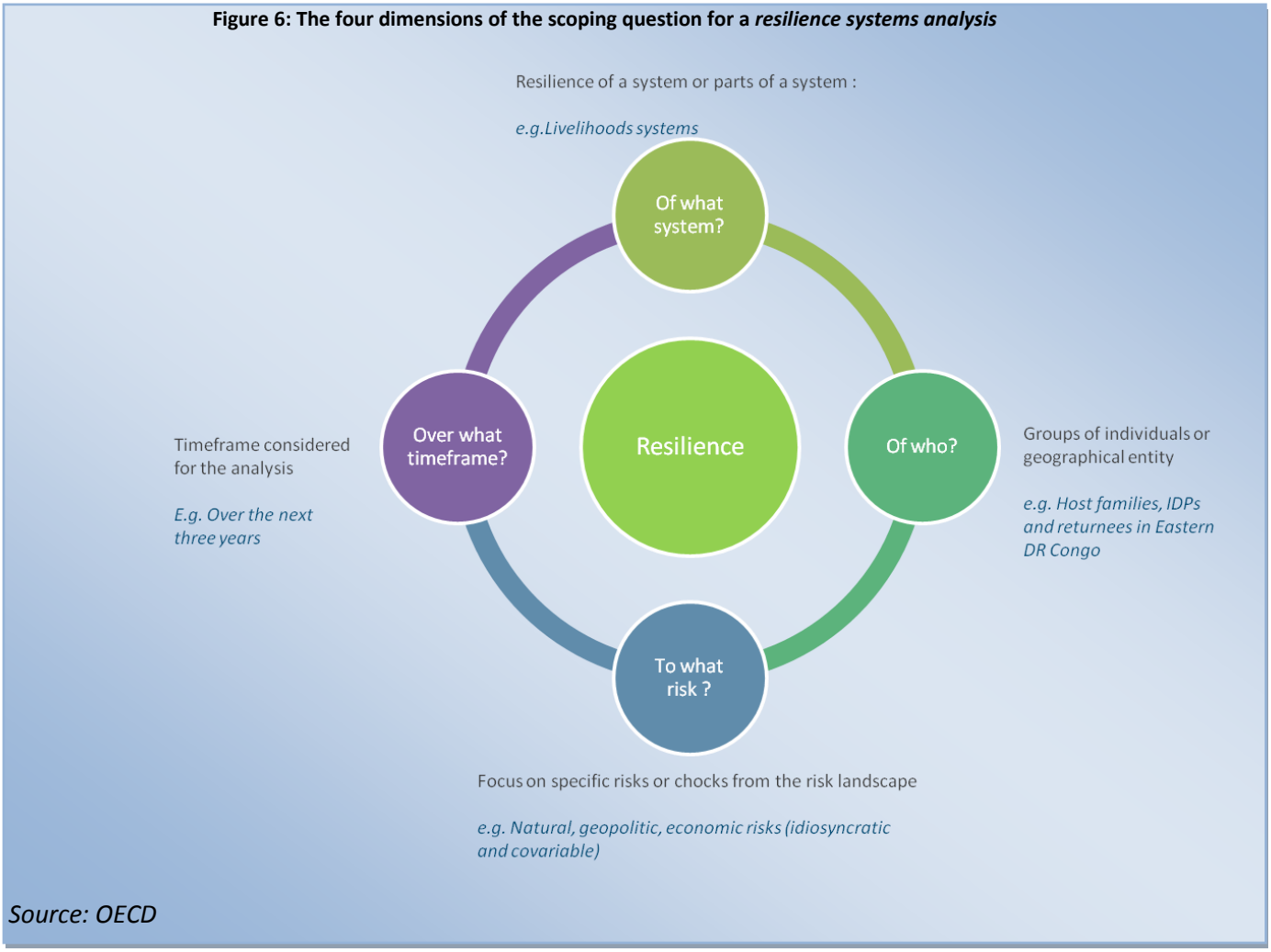


Good governance of the *resilience systems analysis* process is critical. This step ensures that the right stakeholders are involved in the analysis; helps set the stage for consensus around the main issues; and allows a diverse group of people to develop a shared vision of risks, resilience, and priorities for the future. This consensus and shared vision ensures that the resilience roadmap will be used to develop better policies and programmes.

How do we define the scope of the *resilience systems analysis*?

There are four dimensions to setting the scope for the *resilience systems analysis,* as shown in Figure 6.

Figure 6: The four dimensions of the scoping question for a *resilience systems analysis*



Source: OECD

It is important to get the scope of the analysis right. The scope should be narrow enough to ensure that it is realistic, and it should also closely correlate to the scope of the participants' policies and programmes, so that the resulting roadmap can be applied without any further changes.

To set the scope for the analysis we need to answer this question: what are we looking to do? Boost the resilience:

Of what system? The livelihoods system, with its six different categories of capital, is used for this analysis.

Of who? This depends on the target layer of society. Are we looking to boost the resilience of individuals, communities, specific groups, or of a state and its institutions?

To what risk? We recommend taking a multi-hazard approach, and thus including geo-political, economic and natural and environmental risks, and including both covariate (wide-ranging) and idiosyncratic (specific to individuals) shocks. However, the analysis can also focus on a narrower set of risks.

Over what timeframe? The timeframe should normally correspond to the programming cycle. If programmes are being planned out three years, then the analysis should also be for three years. Remember that the longer the timeframe, the more likely it is that shocks will occur, but the more uncertain we will be about how the system can cope with those shocks, and thus what we should do to support these capacities.

What is critical for a successful *resilience systems analysis*?

The success of the *resilience systems analysis* depends on three main factors:

- the rigour of the analysis
- access to multi-sectoral expertise and people who are knowledgeable about risks
- the quality and scope of the resilience roadmap
- ownership and use of the results to inform better policies and programming.

Getting this right means thinking very carefully about the governance of the process.

Here are some of aspects that are critical for success:

Timing: Timing is critical to motivating key people to participate in, and use, a *resilience systems analysis*. Messages about resilience will probably be easier to pass during (or just after) a crisis, and in the run-up to national and local elections. An analysis is more likely to be used if it is timed to coincide with key points in donor and partner country planning and budgeting cycles – in the run-up to the annual state budget, for example, or at the initial phases of country strategy development cycles, as input to individual agency planning processes, and/or linked to the humanitarian planning cycle.

Political support: The support of respected leaders will help ensure that the right people are motivated to participate in the analysis process, and that the results of the analysis are translated into policies and programmes. Building this political support may require significant investment at the beginning of the process, built on a clear understanding of the interests of the key decision-makers.

Money: In many contexts, the hint of potential new funding can provide a powerful incentive for changing attitudes about risks and resilience, and motivating people to engage with a *resilience systems analysis* process. Building resilience actually comes from working smarter and more coherently, rather than a raft of new projects and new money. However, some seed funding will be necessary, especially to ensure that the *resilience systems analysis* is properly resourced; donors should communicate their willingness to provide these funds.

Clarity about the process: Everyone involved in the analysis must be clear about what they are doing, and why, and they must understand what the words they are using mean. A clear scoping question will help key people understand, and focus on, what they are analysing. Individual discussions with key actors prior to the analysis can be a good investment, by ensuring that the process is clear. Terms like *resilience* need to be clarified early in the workshop process.

Approach to transparency and accountability:

The following principles should be followed:

- Make the results easy to understand

- Record methods used, and levels of uncertainty
- Justify choices about including or excluding certain risks
- Identify sources of data
- Agree a protocol for using expert opinion to avoid bias and conflict of interest
- Clarify limitations on the accuracy or completeness of the data
- Consider independent evaluation of results

Where possible, it would be good to provide open access to risk data and models. However there are also other things to consider, such as the cost of providing data, privacy, confidentiality and security. Partial access to data, for example providing access to data on natural disaster hazards, but not to data on other risks, may be one intermediate option.

How can we get the right stakeholders on board?

Ensuring that the right people are involved in the analysis is critical to its success. Here's why:

Creating opportunities for building on existing relationships: Different donors, different parts of government and different operational actors work in different ways, and address developmental challenges at different layers of society. Bringing people together for a shared *resilience systems analysis* will help exploit relationships among actors, increase access to potential development solutions, and uncover new ways of working together. The analysis can also promote shared learning; understanding what works, and what doesn't, in a particular context.

A shared risk landscape and coherent plan: Analysing risks together will allow different actors to share information (and thus increase access to new information) about risks, trends, and programming intentions. A shared analysis will also increase ownership and buy-in for building resilience, and lead to more objective discussions about how to strengthen resilience. A common picture of the risk landscape could also lead to greater synergies between different development, climate change and humanitarian actors, perhaps leading to joint programmes. Finally, a shared and more complete analysis of the risk landscape will decrease the potential for unintended consequences.

Leveraging new funding mechanisms: A coherent, shared understanding of the risk landscape, and what needs to be done about it, will open up opportunities for donors to seek additional funds from their head offices. The analysis could also help raise the profile of high risk countries on the international stage – potentially attracting new donors.

How can we ensure that people continue their support throughout the process?

Three main sets of actors should be involved in a *resilience systems analysis* – experts in risks, experts in systems, and key decision-makers. Table 2 shows some examples of the types of people who can fill these different categories – although who exactly to invite to the *resilience systems analysis* will differ from context to context.

Some of the key stakeholders may be reluctant – at first – to commit to a shared *resilience systems analysis*. Therefore, it is important to send the right messages, targeting the interests, and concerns, of the different target groups.

Humanitarian actors will be more likely to participate in shared risk analyses if they understand that these discussions will not adversely impact on humanitarian principles, nor require humanitarians to engage in future joint programming. For humanitarians, the benefits of *resilience systems analysis* include the potential to prioritise programming that addresses the root causes of crises, and to reduce dependency on humanitarian funds for crisis mitigation efforts.

Development and climate change actors, including scientists and academics, will be more likely to come together if the benefits of sharing information are made clear, including the possibility to ensure that issues important for them, for example the environment, are taken into account in future programming.

Table 2: Categories of actors who should be involved in a *resilience systems analysis*

Experts in Risk	•Natural and climate risk: scientists and academics from local universities, environmental advocates •Geo-political risk: local or international think-tanks, security/military analysts, and political scientists •Economic risk: central bank, economists, market traders, agriculture price analysts
Experts in Systems	•Human: education specialists, teachers, hygiene promotion actors •Financial: commercial banks/credit institutions, mobile phone company, chamber of commerce, traditional lending systems, social safety net actors, insurance industry •Natural: park rangers, agriculture and forestry agencies, extractive industries •Physical: water/electricity company, basic servicesproviders, transport/infrastructure actors, engineers •Political: lawyers, electoral commission staff, lobbysts, parliamentarians, military •Social: religious leaders, community leaders, women's groups, protection actors, conflict prevention actors, media
Key Decision-makers	•Local authorities, sectoral ministries, Ministry of Finance, parliamentarians, community leaders •Senior donor officials •Senior programming staff - heads of UN agencies, development banks, major NGOs, Red Cross/Red Crescent movement, other operational actors

Local communities and civil society actors will be more likely to participate in shared analyses if they know that the results will be acted on by local and national authorities, and by donors.

Donors and the private sector will be interested in joining these processes if doing so is presented as information-sharing, rather than binding them to joint actions.

Government actors, parliamentarians and Ministries of Finance can be persuaded to join resilience analyses if they see that the process will give them greater clarity, and influence, over the range of international operations in-country.

Risk analysts: Risk analysts are motivated by the idea that their analyses will actually be used in programming. For example, in a context dominated by geo-political risk, scientists working on seismic or flood risk, and economists concerned about exchange rate shocks, will be interested in joining a shared analysis if it means that post-conflict actors will also include responses to "their" risks in new programming.

Local private sector: Typically, private sector actors have little access to the international aid community. The analysis can therefore be highlighted as a networking opportunity. There is also the possibility for new public-private partnerships, and for stubborn issues affecting the business climate, to be stressed to policymakers.

Who should take the lead in organising a resilience system analysis?

Choosing who should lead the *resilience systems analysis* is important – but it will also vary from context to context. Whoever is chosen must have sufficient political authority to ensure that the resulting roadmap is effectively translated into policy and programming to build resilience.

For community and household resilience systems analyses, the lead should be a person who is perceived to represent the range of interests of the community. In exceptional circumstances, the leadership role could also be played by a prominent actor in the international community.

Technical expertise will also be required in two areas: risk analysis, and workshop facilitation.

In the analysis in eastern Democratic Republic of Congo, the initial data analysis took two people three weeks to complete – collecting the data, analyzing it, and presenting the results in the briefing pack (see Step 2).

We found that it was important to have a neutral third party undertake the initial analysis – in this case the OECD – so that there were no accusations of bias or conflict of interest in the results.

We also found that it was critical to have professional facilitation for the workshop, to ensure that the process ran smoothly, that participants were kept interested and engaged over the two days, and to enable the production of a professional report documenting the process and the roadmap.

Investing in these two areas – risk analysis and workshop facilitation – was a critical success factor.

STEP 2 – PRE-ANALYSIS AND BRIEFING PACK



It is important that participants arrive at the workshop well prepared, with a common understanding of key concepts, and a shared initial analysis of the risk landscape. This will allow the workshop to focus on structured discussions, sharing of ideas, and the development of the resilience roadmap. The best way to do this is to develop a briefing pack, based on a preliminary analysis of data and reports from a wide range of trusted sources.

The analysis for the briefing pack is not scientific research, but rather a process to capture and synthesise existing data and information in a way that participants will easily understand, whether or not they are experts in risks or livelihoods systems. The aim is to produce an executive summary, to help participants to reflect on what is known about risk and resilience, and thus ensure more informed discussions as they build the resilience roadmap.

Ideally, the briefing pack is prepared by a neutral third party, to avoid accusations of bias in the analysis and synthesis process. The third party should have an understanding of the context, to ensure that the briefing pack products are a "good enough" description of the risk landscape and its impact on the livelihood systems of the target groups.

Figure 7: The briefing pack for the analysis in eastern Democratic Republic of Congo

The briefing pack for the April 2014 *resilience systems analysis* in eastern Democratic Republic of Congo (seen here) included information on the main concepts linked with risk and resilience, and outlined how systems had been defined in line with the Sustainable Livelihoods Approach.

The briefing pack also included a preliminary analysis of specific information and analysis relevant to the DRC context. This information was based on a review of data and documents provided by many different stakeholders. Sharing this information was very useful to help facilitate discussions and exercises during the workshop itself.

The briefing pack was sent to participants one week before the workshop.

The full briefing pack (in French) can be accessed at:

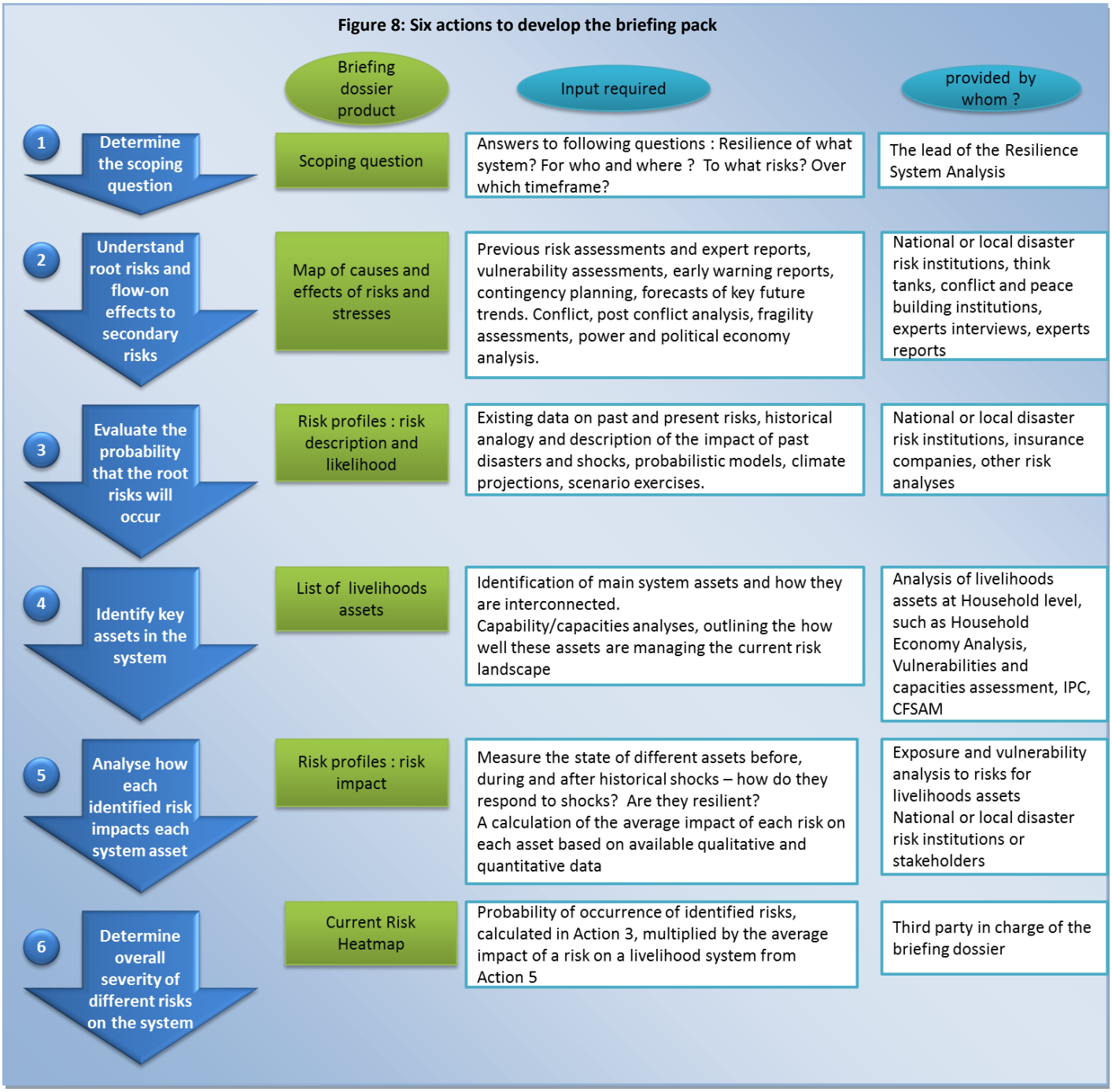
www.oecd.org/fr/cad/gouvernance-developpement/Briefing%20Dossier.pdf



How do we build the briefing pack?

Figure 8 summarizes the six actions that help develop the various products required for the briefing pack. For each action, we highlight the types of input required and the potential sources of this data and information.

Figure 8: Six actions to develop the briefing pack



Action 1: Determine the scoping question

The scope of the *resilience systems analysis* needs to be documented at the start of the briefing pack. The scoping question was determined in Step 1 of the analysis, through consultations with key stakeholders. It must be realistic, i.e. not overly broad, and relevant, i.e. linked to future policy and programming processes.

Action 2: Understand root risks and flow on effects to secondary risks

This helps highlight the cause and effect relationship between primary and secondary risks in the current context. To do this, the analyst, supported by the lead agency, will need to review all major authoritative reports on the context, triangulating where possible with quality primary and secondary data sources. It helps if the analyst has a good understanding of the context, as this will help them validate the information being processed.

Using an analytical approach similar to problem tree analysis, the analyst will then develop a one-page overview of the relationships between primary and secondary risks, and related stresses, in this specific context. One example is shown in Figure 9. It is important to differentiate covariate and idiosyncratic risks and stresses, as well as colour-code them according to the categories of risk that are being assessed in this analysis, using different colours for natural/environmental, geo-political and economic risks.

This graphical representation will help workshop participants understand how different stresses make the system more exposed to certain risks, and how one risk may then lead to another. Understanding weaknesses and risks in the context, and how they affect each other, allows policy makers and operational programmers to target the most critical weaknesses of the system, and therefore also block or limit any possible secondary effects.

For example, the risk of displacement in eastern Democratic Republic of Congo is not a root risk, but actually a consequence of other risks, including the risk of conflict or of volcanic eruption. Some risks are also heightened by the presence of stresses: the risk of price volatility in eastern Democratic Republic of Congo is compounded by the dual stresses of a high dependency on exports, and an unfavourable business environment.

Based on the results of this analysis, the analyst, together with the hosting organisation, will then identify a list of the (up to) 15 major root risks, which will be analysed further.

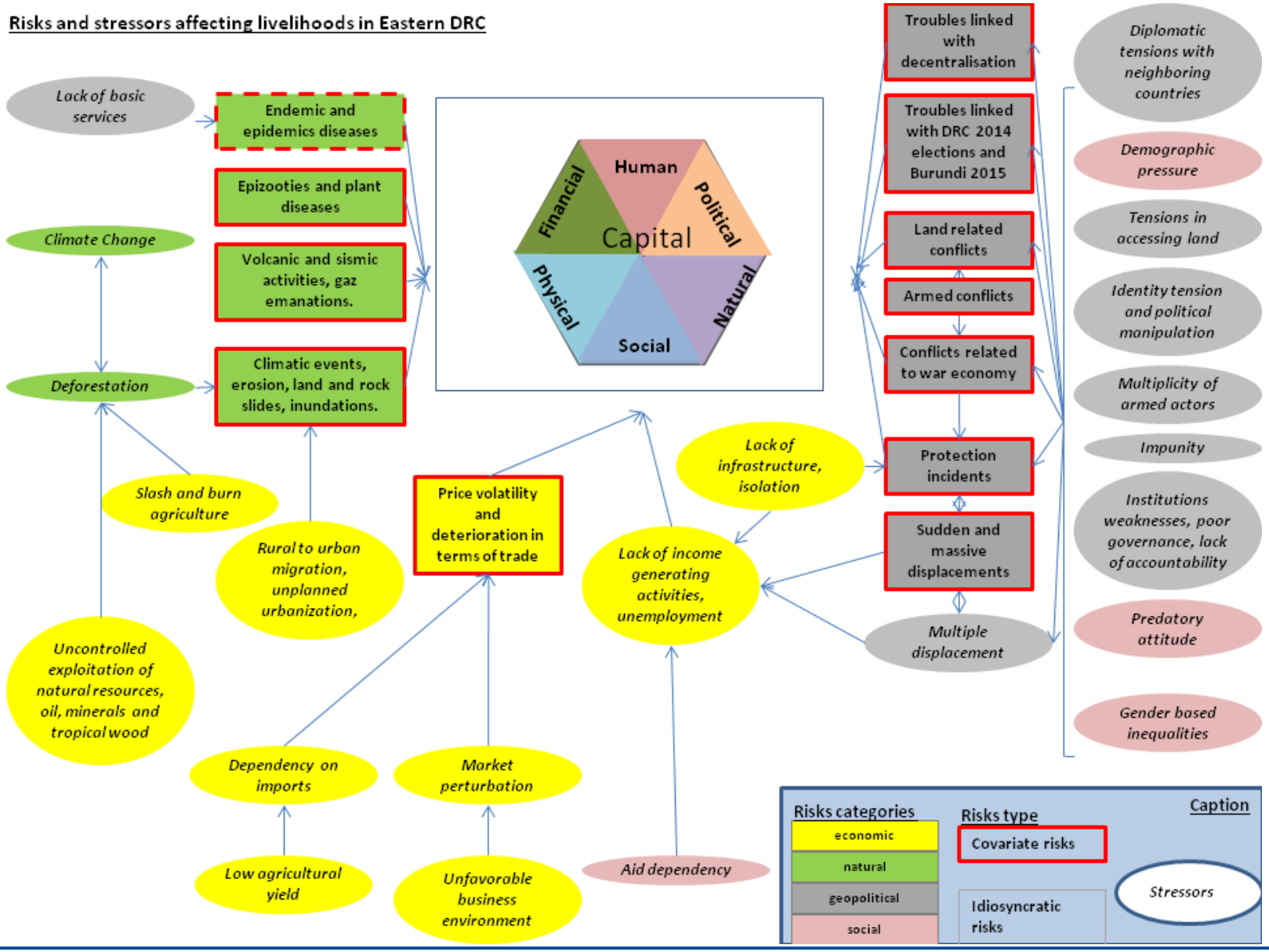
Table 3 highlights the ten risks selected for the *resilience systems analysis* in eastern Democratic Republic of Congo.

Table 3: List of the ten risks analysed for the briefing pack in Eastern Democratic Republic of Congo

	Covariate risks	Idiosyncratic risks
Natural	Climate hazard (erosion, landslides, rock slides, floods) Volcanic, seismic events and gas eruptions	Epizooties and plant diseases Endemic diseases and epidemics*
Geopolitical	Troubles linked with the 2014 Democratic Republic Of Congo elections and the 2015 Burundi elections Land-related conflict Conflict related to war-time economy	Protection incidents
Economic	Price volatility and exchange rate fluctuation	Loss of income generating activities

** Note that in certain circumstances, endemic diseases and epidemics could be classified as covariate risks*

Figure 9: The map of causes and effects of risks and stresses for eastern Democratic Republic of Congo



Action 3: Evaluate the probability that the root risks will occur

The next step is to analyse secondary data or interview experts in relation to each of the root risks identified in Action 2. This will allow the analyst to complete the first half of the risk profiles (example in Figure 10). The following information is required to fill out the risk profile:

- Type of risk (idiosyncratic or covariate)
- Hazard type (natural, geopolitical, economic, etc.)
- Related stresses (long term trends, aggravating factors)
- Risk description (summary of what is known about the characteristics of this risk)
- Past shocks and scenarios (examples of historical occurrences of the shock, and their impacts)
- Possible impacts (description of possible impact on different system components derived from past impacts and scenario exercises)
- Main sources of information (reference to the documents reviewed)

To evaluate the probability that each root risk will occur, the analyst can refer, for example, to existing contingency plans, national risk assessments, expert analyses and/or statistics from insurance companies.

The data will often be incomplete, especially as far as geo-political risks are concerned. In these cases, the analyst will need to subjectively assess the probability, based on research undertaken. It is important that these assessments are verified by a control group of experts, before the briefing pack is distributed.

The scale for the probability should be simple so that the workshop participants can understand it easily, even if this means that the scale may be slightly arbitrary.

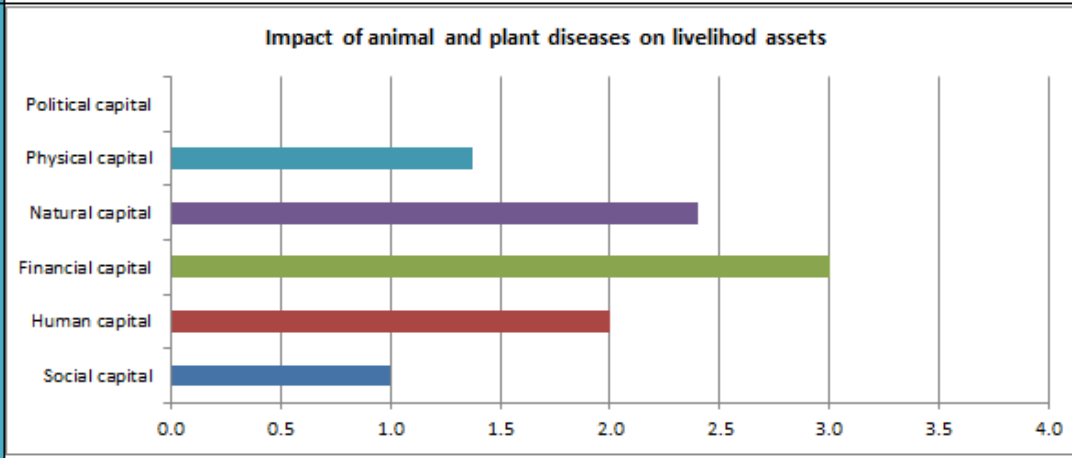
Table 4 shows some example tables.

Table 4 : Example scales for probability of occurrence

Scale	Likelihood of occurrence	Probability of occurrence per year
4	Frequent or very likely	>33%
3	Moderate or likely	10%-33%
2	Occasional	3%-10%
1	Unlikely	1%-3%
0	Not applicable	

Scale	Meaning	Probability in %
4	Very likely	Almost sure that this risk will create a shock within a year
3	Likely	Between 10% and 100% probability in one year
2	Possible	Between 1% and 10% probability in one year
1	Unlikely	Less than 1% probability in one year
0	Not applicable	

Figure 10: Example of a risk profile in eastern Democratic Republic of Congo

Risk	Epizooties and Plant Diseases
Type of risk	Idiosyncratic risk
Risk category	Natural risk
Related stresses	Weakness of institutions, limited early warning systems, limited monitoring systems, lack of resources, lack of technical capacity, insufficient number of veterinarians, only one laboratory for the whole country, no domestic prodution of key vaccines.
Risk description	**Epizooties:** sudden onset diseases affecting a large number of animals in a localised region: Cattle, small ruminants and poultry are at risk of a number of diseases, but the network of epidemiological surveillance and control of communicable diseases is unfortunately not able to identify or face a possible major epizootic crisis. **Plant diseases:** Cassava, a staple food, is affected by cassava mosaic, now endemic, affecting 70% of the crops and decreasing the yield of 30 to 100% of the expected production based on the degree of infestation, disease and striated cassava. Banana bacterial wilt (Wilt) affects nearly 90% of the banana plantations in eastern provinces and seriously affects household income
Past shocks or scenarios	Despite efforts to control the disease for ten years, bacterial wilt continues to have a significant effect on crops in North and South Kivu. November 2013: Death of 20,000 goats in the villages of Kikamba, Matili, Nyalukungu and Penekusu. February 2014: Thousands of goats are decimated by an epidemic for several months in southern Shabunda in the province of South Kivu July 2013: African swine fever kills two thousand five hundred seventy-nine pigs in the district of Haut-Uele (Eastern Province)
Source documents	"Plan d'action pour la gestion des risques de catastrophe en RDC 2011-2013", FAO 2011 www.fao.org/emergencies/fao-in-action/stories/stories-detail/en/c/224859/ www.ipsnews.net/2012/08/plant-diseases-threaten-food-security-in-kivu-dr-congo/
Possible impact	Loss of livestock, possibility of transmission of certain diseases (zoonoses) from animals to humans. Crop loss, decreased production, increases in price of replacement imports and negative impact on food security. Decrease in income of households dependant on livestock or cassava and bananas. Risk of transboundary spread.
Likelihood of occurrence	**2.5**
Graphical representation of the impact of this risk: impact on livelihood assets	
Average impact on the livelihoods system	**1.6**
Risk severity (likelihood of occurrence * average impact on the system)	**4.1**

Action 4: Identify the key components of the system

The aim of this step is to determine the key components of the system that the *resilience systems analysis* is looking at. To demonstrate this we will use the sustainable livelihoods approach, which analyses the system in terms of impacts on different types of "capital" (Figure 2).

The analyst's job is to list the assets that make up each of these six types of capital in the current context. Classification is not an exact science, as some assets can be classified in different ways. For example, a cow can be considered as natural capital (for its milk), as physical capital (to plow the fields) or as social capital (for dowry).

The following table provides examples of assets for each group of capital. This could serve as a starting point; the analyst will then add or remove the assets depending on the context.

Capital	Asset
Financial	Additional production for sale Banking facilities Credit/ savings group Formal employment Gifts / Donations Income to cover basic needs Informal employment Savings Transfer of funds
Human	Competencies, knowledge, habits Education Health Vocational skills
Natural	Biodiversity of the environment Forest Land for agriculture / livestock Livestock Minerals Rivers and waterholes Source of drinking water
Physical	Commodities Drinking Water Energy Essential Household items Means of Transportation, Livestock Productive Land/Productive capital Sanitation Shelter Social Infrastructure
Political	Access to those in authority Knowledge of rights and duties Membership in political parties Participation in community meetings Participation in community organizations influencing local power structures Participation in democratic processes (elections, decentralization)
Social	Community committees Formal/informal conflict management mechanisms Informal social interaction Measures to protect girls and boys Membership in formal community groups Mutual support Participation of women in community life

Action 5: Analyse how each identified risk impacts each component of the system

Here the analyst determines how each of the risks identified in Action 2 will impact on each of the system components identified in Action 4. In this way, we get an overall picture of:

- how individual risks will likely affect different parts of the system; and
- where the system is most exposed to risks, and where it is not.

In an ideal world, the analyst would refer to quantitative data measuring the state of a system component both before and after a shock, to determine the magnitude of the impact of different shocks. However, data is more likely to be available for some assets – for example assets in the physical capital group – than for others. Indeed, it may be difficult to find data on how social and political assets have reacted to different shocks in the past. In this case, the analyst will need to refer to secondary data, reports and perhaps even expert interviews, to determine the likely impacts.

To document the analysis, the analyst would prepare a table showing the list of assets from Action 4, the assessed impact of each risk on each asset, and a justification of the assessment.

The example below shows an excerpt of the analysis of the likely impact of epizooties (animal diseases) and plant diseases on the different system assets in eastern Democratic Republic of Congo. For the social assets, "community committees" might not be affected but "trust in institutions" might be slightly affected if the state institution is not able to control the animal or plant disease.

Example of Analysis for the risk "Epizooties and Plant Disease" on two assets in eastern Democratic Republic of Congo

Capital	Detailed list of Asset	Estimated impact of the specific risk on the specific asset	Justification
Social	Community Committee	0	
Social	Trust in institutions	2	Institution unable to provide warnings or introduce control measures
…	…		

Table 5 shows an example of a scale that could be used to document the impact.

Table 5: Example of a scale to assess impact

	Scale of Impact	
0	Not applicable	The shock does not affect this system component
1	Negligible	The shock only minimally affects this system component
2	Limited	The shock affects this system component in a limited and temporary manner
3	Substantial	The shock substantially affects this system component into the medium to long term
4	Critical	The shock profoundly and permanently affects this system component

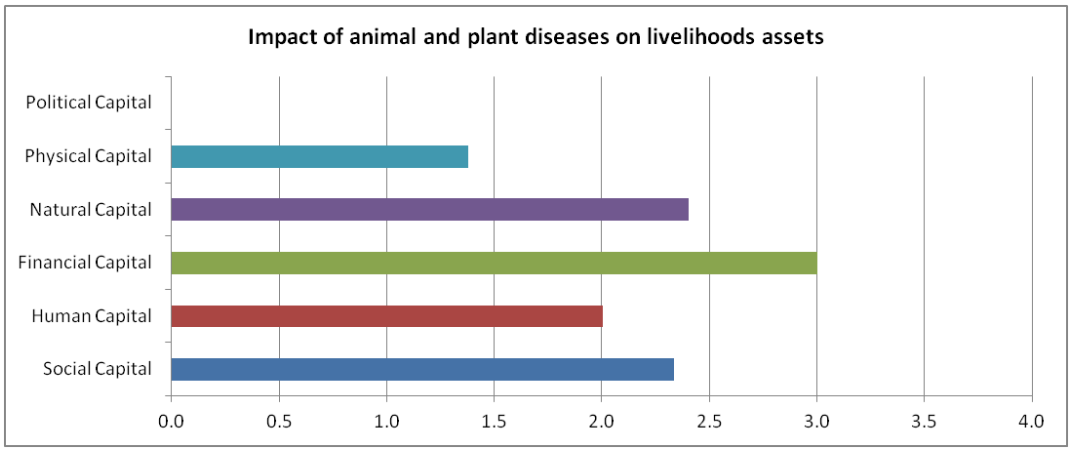
After having filled out the table, the analyst will calculate:

- the average impact of the risk on each group of assets (each capital) in the system – for example the average impact of plant and animal diseases on social capital assets. This is done by taking a mathematical average of all the impact scores for that group of assets.
- in some settings, the average may not give a realistic score of the severity of the impact. This may happen when one key asset (one aspect of social capital) is assessed as severely impacted by a particular shock, but the other assets (other aspects of social capital) are not impacted at all. In this

case, the analyst may choose to take an average of only those assets that are affected by the particular shock, by excluding all the assets that have scored zero. In this case, the analyst can state that the score is an average of the impact on all assets affected by that shock.

- the average impact of that risk on the system as a whole. This is calculated as the average impact on each of the six capitals.

This analysis results in the following graph:



This graph, and the calculation of overall impact of this risk on the system, is then integrated into the risk profile (Figure 10).

Action 6: Determine overall severity of different risks on the system

Severity is calculated by multiplying the probability of occurrence of a risk, calculated in Action 3, with the overall impact of the risk on the system, calculated in Action 5.

The severity value can be entered in the final line of the risk profile.

This information then lets the analyst create the risk heatmap. The heatmap plots the probability of a risk occurring on one axis, and the impact of the risk on the system, on the other axis.

An example is shown in Figure 11.

Other risk maps could also be developed if there is sufficient data, using a geographic information system (GIS). For example, a physical map of the analysis area, showing layers of risk, can help people visualise and analyse risks, and also help them to understand relationships between different types of risks.

What if we don't have all the right data?

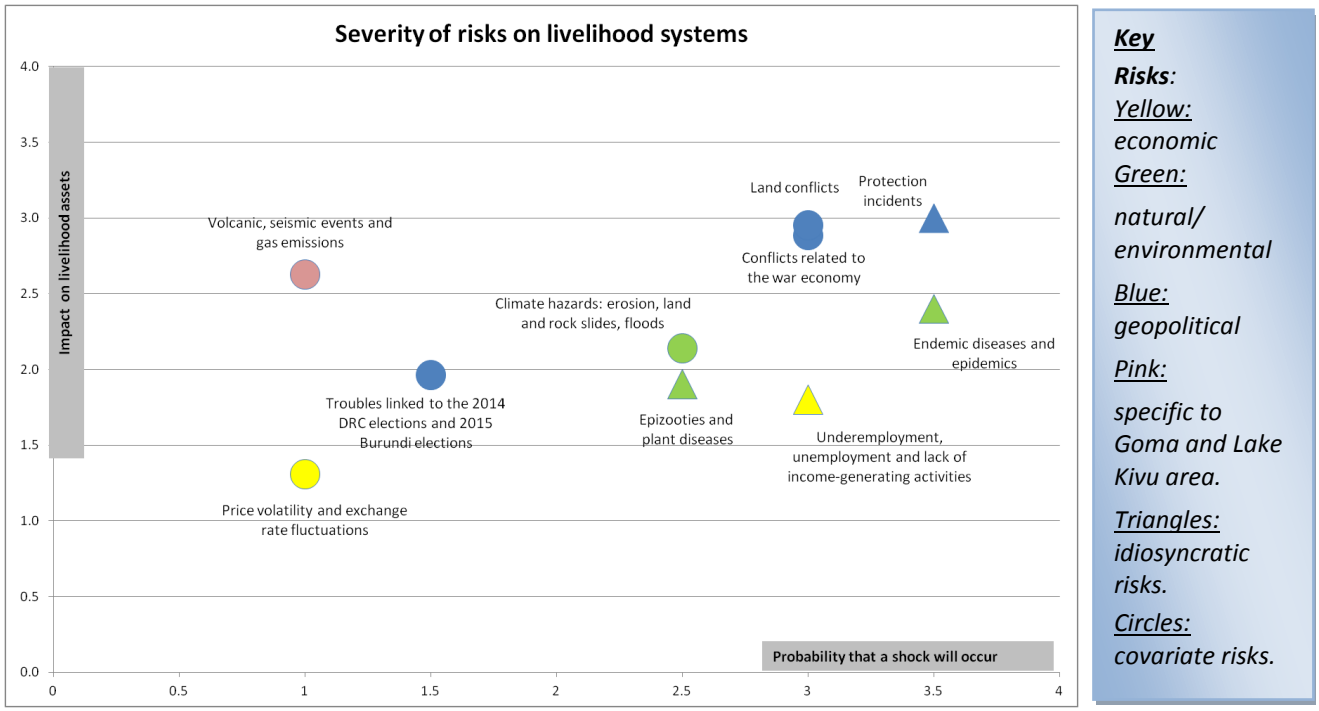
The role of the lead agency organising the workshop is critical for the data collection process. The lead agency can:

- provide a list of relevant databases and facilitate access to information
- prepare a desk review of key information and reports
- circulate a message to key stakeholders to ask them to share key documents and datasets that could be useful for the briefing pack.

In an ideal situation, the briefing pack should be compiled from existing risk analyses and reports. However, in many countries data and analyses might be out-of-date, patchy or not available. In this case the briefing pack will need to be developed using a more qualitative approach.

For example, the analysis of the severity of the impact of different risks in the eastern Democratic Republic of Congo was derived from qualitative interpretations of different data and reports. In this case, the triangulation (cross-checking) of different products before circulating the briefing pack and during the workshop was key to ensuring the credibility of the analysis.

Figure 11: Risk heat map for eastern Democratic Republic of Congo



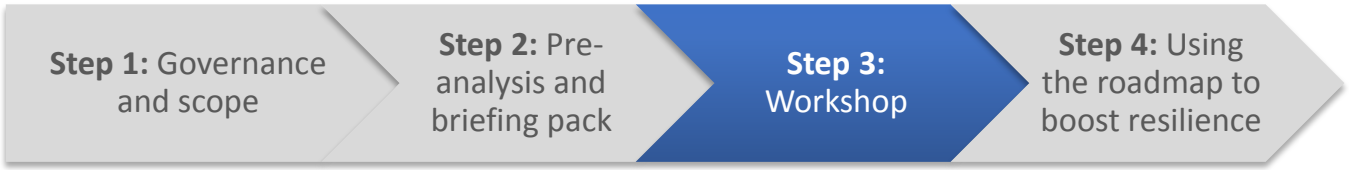
It is important to mention areas where there the analyst has found no, or insufficient, data, as this can help trigger reflection about how to overcome these data gaps in the future. For example, participants may prioritise research to provide in-depth scientific risk assessments about those hazards that have been assessed as high risk, but where there is currently limited information.

Who should receive a copy of the briefing pack?

The briefing pack should be sent to workshop participants at least one week before the start of the workshop. It should be accompanied with a message explaining its purpose, and encouraging participants to read the contents before the workshop starts.

The message that accompanies the briefing pack should acknowledge all the stakeholders who contributed to the briefing pack, including those who have provided access to databases, secondary data and expert reports. It should also clarify that the analysis in the briefing pack is a preliminary analysis, it is not a scientific publication, and its primary purpose is to serve as an initial foundation for discussions during the workshop.

STEP 3 – THE WORKSHOP



Why a Workshop?

The *resilience systems analysis* is a participatory, multi-stakeholder process.

Although the preliminary analysis of risk data can be done by a neutral third party and summarized in a briefing pack, the analysis itself, and the prioritization of actions to boost resilience for any particular context, can only be done by those key stakeholders who will actually implement the roadmap to resilience.

The workshop structure, and the design of participatory exercises, are intended to guide discussions and activities to reach this objective. The workshop takes 2 days.

The workshop will help:

- Reach a common understanding about risk and resilience in the current context, including:
    - the principles of risk and resilience
    - how a society's systems are structured
    - how risks impact different parts of the system; and
    - where the system is resilient, and where it is weak.
- Demonstrate the relevance of risk and resilience to the work of participants
- Set the tone for consensus-building, enabling participants to design a roadmap to boost resilience.

Who should be invited to the workshop?

Experience has shown that a *resilience systems analysis* workshop is very popular, and that many people will want to participate. However, for the best results, both for a rigorous analysis, and for the resulting roadmap to actually drive better programming, it is important to involve only the right people.

In Step 1, we discussed the three main sets of actors that should be involved in a *resilience systems analysis* – experts in risks, experts in systems, and key decision-makers. To ensure that these people actually attend the workshop, the organisers should market the workshop as an exclusive event, addressed to specific invitees only. Risk and systems specialists are more likely to want to attend an event where they will have access to real decision-makers. Decision-makers are more likely to attend if they know they will have access to real experts, as well as new and interesting information.

Limiting the total participants to about 40 people is helpful, to ensure genuine participation and productive debate.

In most cases, this will mean that only one person from each organization should attend, and that others who would like to participate will have to be turned away. This message can be softened by ensuring that all data and information – including from people who must be turned away from the workshop – is included in the initial risk mapping process, and by sharing the results of the workshop with these wider groups, both in the form of a written report, and, where possible, through a general presentation soon after the workshop has taken place.

How is the two-day workshop structured?

The workshop spans two days and is organised into five modules. The structure is shown in Figure 12 and Figure 13. By the end of the workshop, participants will be able to:

- Describe concepts linked to resilience such as risks, shocks, stresses, vulnerabilities and capacities
- Share a vision of current and future risks and their impact on the system
- Develop a roadmap to boost the system's resilience.

Figure 12: The five steps of the *Resilience Systems Analysis* Workshop

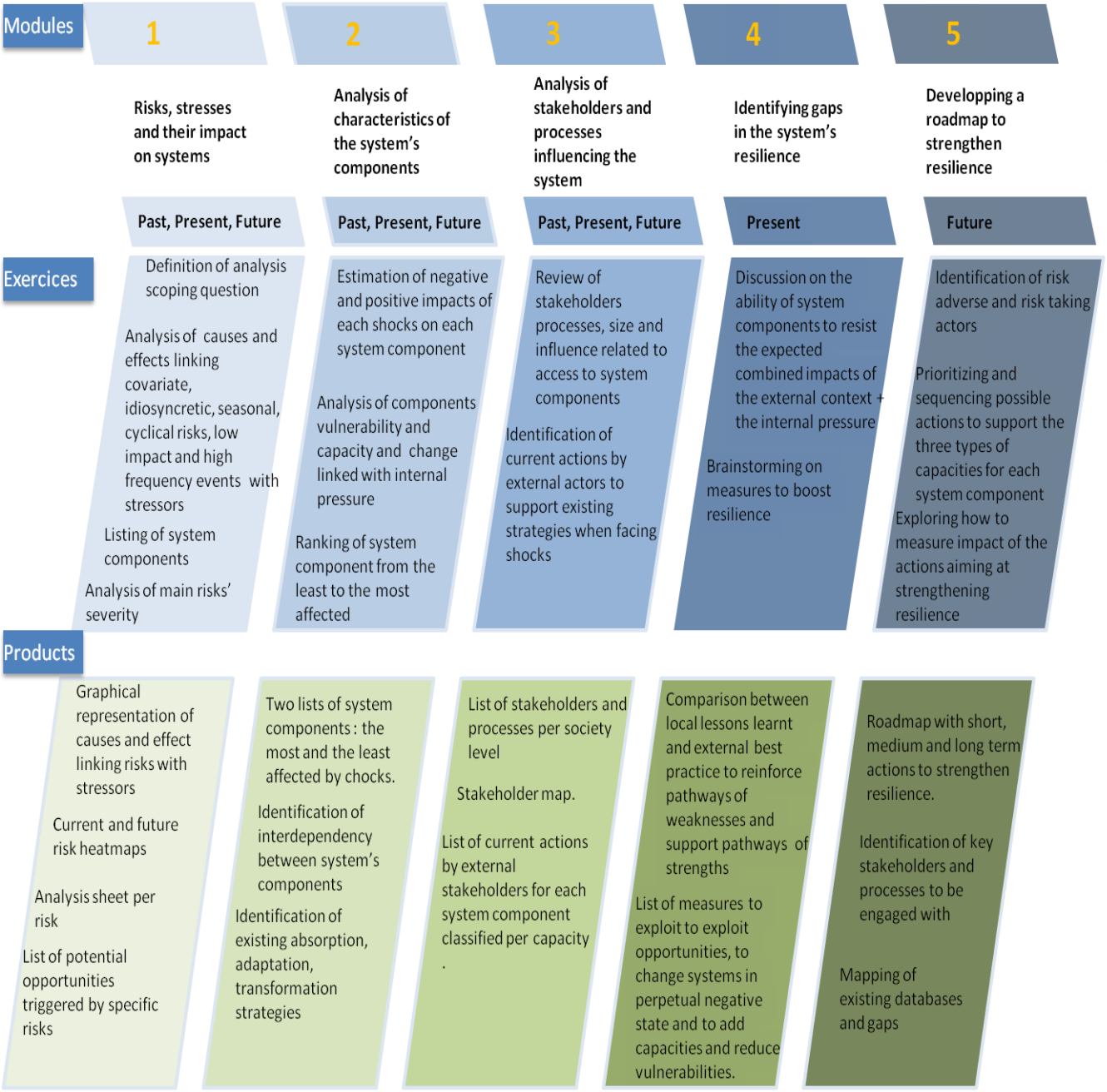


Figure 13: Overview of the workshop structure

	Module	Module Aim	By the end of the module participants will be able to :
Day 1	**Introduction** **What is resilience?**	Provide an overview of definitions and concepts related to resilience	• Define key words including: idiosyncratic and covariate shocks, risk and stresses. • Describe the added value of resilience compared for risk management. • Explain the three types of capacities which contribute to strengthening resilience.
	Module 1 : **Risks, stresses and their impact on systems**	Share a vision of the risks affecting the system under analysis, including the covariate, idiosyncratic and low-impact recurring shocks, as well as stresses and their roles	• Identify the key events and stresses that have impacted on, and will impact on, the system • Describe the cause and effect relationships between these shocks and stresses • Plot the likelihood and probable impact of shocks on the system • Prioritise the most severe risks, both now and within the agreed timeframe
	Module 2 **Analysis of system parts**	Explain how different risks affect the various parts of the system, and understand where the system is resilient and where it is weak	• Explain why some parts of the system are less affected, and some more affected, by potential shocks • List how priority system components are absorbing shocks, or adapting to make them less exposed to shocks (their current capacities for resilience)
	Module 3 **Power analysis of stakeholders and processes influencing the system**	Analyse how stakeholders and processes influence the level, quality and access to different parts of the system	• Identify key stakeholders influencing the system • List the processes through which they are influencing different parts of the system, in term of level, quality and access • Map stakeholders' current and future influence on the system
Day 2	**Module 4** **Identifying gaps in the system's resilience**	Share a vision of the priority gaps in system resilience, both now and in the future	• For each part of the system, document current policies and programmes that help boost the capacity of the system to absorb shocks, or adapt or transform to become less exposed to the shock • Analyse what we know so far; the risk landscape and how this affects the system, power dynamics, and policies and programmes that support different parts of the system • Determine the priority gaps in resilience
	Module 5 **Constructing a roadmap to boost resilience**	Construct a roadmap to boost resilience in the short, medium and long term	• Decide on measures to fill the priority resilience gaps and boost system resilience • Identify which stakeholders to engage • Prioritize and sequence actions to build resilience • Brainstorm on a results measurement framework

The detailed Facilitator's Guide, published alongside this guidance, is designed to support the organisation of the workshop.

It includes:

- Detailed section plans
- PowerPoint slides you can adapt to your own context and workshop
- Facilitator's preparation and facilitation notes to accompany each slide
- Logistical and administrative arrangements, and a list of handouts

Who should write the workshop report?

The host organisation and facilitation team are in charge of capturing the information from the group work exercises in the workshop. The main facilitator can lead the write-up of the report, a process that generally takes around one week.

The structure of the workshop report can be based on the report prepared after the *resilience systems analysis* in eastern Democratic Republic of Congo. You can download the original version in French, or an English translation, from:

www.oecd.org/dac/governance-development/aresilienceroadmapforeasterndemocraticrepublicofthecongo.htm

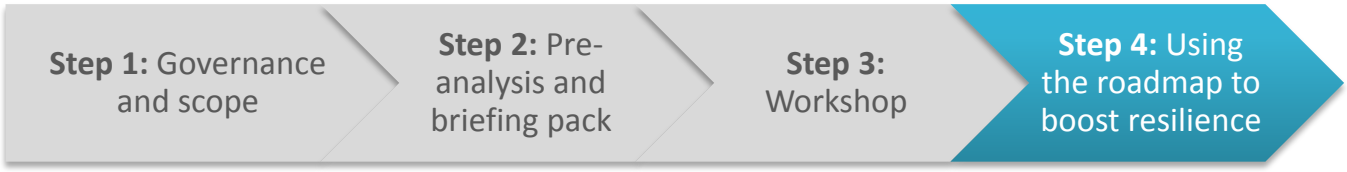
Who should get a copy of the workshop report?

The workshop report should be sent to different stakeholders, for different purposes:

Who	Purpose
All workshop participants	To recognise the commitment and contributions of participants, and to demonstrate the value of their ideas and discussions. To encourage participants to continue their collaboration, and to use the results of the analysis to inform policymaking, planning and programme implementation
Contributors to the Briefing Pack	To acknowledge their contributions and show how the data they provided has been used, and to encourage further collaboration, for example to establish measurement indicators
In-country experts in risk, systems and resilience	To show how their speciality areas have been taken into consideration and to encourage shared planning exercises in the future
Key decision-makers	To advocate for their support to this holistic vision, as a basis for future programming
Donors	To use the shared understanding of the current and future risk landscape, and the roadmap, as tools to orientate funding decisions, and leverage new sources of funds
Resilience experts worldwide	To share the latest lessons from *resilience systems analysis*, to strengthen material on lessons learned from various contexts.

Additional communications could accompany the release of the report, such as blog posts and social media, an executive summary for high level decision-makers, a ready made presentation for advocacy purposes and other communications tools and efforts, as appropriate.

STEP 4 – USING THE ROADMAP TO BOOST RESILIENCE



The *resilience systems analysis* gathers together the main stakeholders across different layers of society, from different sectors, and with different programming and risk management expertise; this helps to break down silos. The resulting roadmap to resilience shows what policy and programming changes are needed to boost resilience in a particular context, prioritised in terms of i) urgent actions, ii) medium-term actions and iii) actions that can be started much later.

In most contexts, individual organisations and actors will choose which of the actions on the roadmap to implement, based on their specific mandates, expertise, programming timeframes, and resources. Different actors can "do" certain things, through policy change and programming, other actors can use their power to "influence" change, and in other areas, a shared advocacy strategy could be useful. All of the actions prioritised by the roadmap should be picked up by at least one actor.

In other settings, the workshop outputs can serve as a platform for a more detailed collective planning and division of labour. For example, they could be useful to provide the overall analysis that guides *New Deal*[4] compacts, Humanitarian Strategic Response Plans, Poverty Reduction Strategy Plans, and United Nations Development Assistance Frameworks.

Below is a guide to how the various products developed during the *resilience systems analysis* can be used by different stakeholders:

Country-based senior management of aid organisations:

The major synthesis products, including the risk heat map, power map and the roadmap for boosting resilience can be used to inform country strategies, as inputs to programme planning exercises (as a theory of change), to inform the review of progress on existing programming, and as a basis for evaluation frameworks. For donors, synthesis outputs can also inform funding allocations, ensuring that risk and resilience aspects are properly integrated into the partner's planning.

Field technical experts:

The outputs that summarise the strengths and weaknesses in the system, particularly how different actions contribute to boosting the capacities of resilience, can inform technical policy and best practice, both in the context that has been analysed, and also to inform good practice in other, similar, settings. Discussions in the workshop also allow for a cross-fertilisation of expertise and ideas between technical experts working on diverse subjects and themes. This process can provide technical experts with a more holistic analysis of the context, on which to build better policies and programmes.

Field project management staff:

The detailed sheets on how risks, and the various capacities for resilience, affect the livelihoods system, and the final roadmap for boosting resilience, provide a solid platform for informing a theory of change. They can also be used as the basis of programme/project log frame analyses, in that they clearly show how inputs and activities can produce long-term impacts.

Headquarters staff:

Major synthesis products, including the risk heat map, power map, and the roadmap for boosting resilience, can be used to:

- inform country policies and provide information used to analyse strategy, programme or project demands; and
- export best practices to other country teams, and to inform global technical policy.

Using individual products from the workshop

The workshop structure and methodology also enables participants to produce different resilience analysis products.

Table 6 highlights examples of these outputs, and provides suggestions about how each of them can be used to boost resilience.

Table 6 : Outputs from resilience systems analysis, and their uses

Resilience systems analysis output	Summary of output	Use
Risk profiles	Detailed information on the characteristics of each major risk and potential impact on livelihood assets	Helps decide which risks to prioritise for programming, and to better understand the characteristics of those risks, and where and how they impact on the system.
Impact of risks on system components (part of the risk profile)	Allocates the combined impact of major shocks on a series of key livelihood assets, and ranks these from most to least impacted	Can help prioritise programming towards the most risk-prone parts of the system, and help sequencing of programming from reinforcing most risk-prone to least risk-prone assets. The ranking helps actors understand what parts of livelihood systems are more prone (weakness in the system) and less prone (strengths in the system) to the impact of shocks. This gives an indication of how future shocks are likely to impact on the system, even where the nature and timing of these shocks is uncertain.
Shock and stress map	Provides an overall picture of the risk landscape, including cause and effect linkages between long-term stresses, and covariate and idiosyncratic shocks.	Helps with strategic decision making, ensuring that policies and programmes target the root causes of risks, as well as the main stresses (those that increase the severity of the risk)
Risk heat map	Compares the relative risk of different events	Helps to prioritise which risks to address with policies and programmes, by focusing on the highest likelihood, highest impact shocks
Risk landscape per vulnerable group	Demonstrates how different vulnerable groups are impacted by the risk landscape	Used to ensure that solutions for managing risk and boosting resilience address the specific risks for each vulnerable group
Livelihood capital sheets: risk, weaknesses, strengths	Explains why each system asset is more or less prone to shocks and how that asset is resilient (or not) to those potential shocks.	Helps target weaknesses in the system, and shows how to reinforce and exploit lessons from strengths in the system. Used to map and explain why parts of the livelihood system are relatively weak or strong.
Power map	Maps the main stakeholders influencing livelihoods, showing their relative power (strong to weak), influence (positive or negative), and the layers of society they operate at.	Used to ensure that programming also targets the key actors that control access to household livelihood assets, and that actions are taken to empower people to make optimal decisions about how they use their assets.
Roadmap for the short-, medium- and long-term	Prioritises and sequences the different actions that should be be taken to reinforce the absorptive, adaptive and transformative capacities of people and their livelihoods systems.	Used as an overall vision for what policy and programming changes are needed to boost resilience in a particular context. Prioritises these into urgent actions, medium term actions, and actions that can be started much later. Individual organisations can choose which of the actions on the roadmap to implement, based on their specific mandates, expertise, timeframes and resources
Databases per capital, per layer	Provides an initial overview of what databases exist and at what layer(s) of society they target**.**	Used to gain an initial understanding of how existing data and information could be used to track the levels and quality of assets; a key dimension to measurement of the impact of policies and programmes to boost resilience.

STEP 5 - MEASURING RESILIENCE

The results of the *resilience systems analysis* can help monitor and measure resilience in a particular context.

Different types of indicators can be used to deepen our understanding of system resilience, and thereby help refine and modify plans, policies and programmes to boost resilience. These indicators can be categorized as:

- System resilience indicators (outcome indicators) look at the resilience of the main components of the system over time, including how the overall well-being of people and the system is affected when shocks actually occur, for example how political capital is affected by an actual earthquake, or how social capital is affected by new or escalating conflict. These indicators should be complemented by negative resilience indicators.
- Negative resilience indicators look at whether people are using strategies to boost resilience that may have negative impacts on other areas of the system, for example turning to crime to deal with unemployment; or negative impacts on certain vulnerable people, for example by reducing the number of meals eaten a day, or taking children out of school
- Process indicators ensure that the resilience roadmap is being used in policy making and programming
- Output indicators show the results of implementing different parts of the resilience roadmap
- Proxy impact indicators help show the results of resilience programming. These must be used with caution, but can be necessary when other more nuanced measures (such as system resilience indicators) are difficult to create, or difficult to communicate to a specific target audience.

System resilience indicators

During the workshop we collected two important sets of information that will help us monitor system resilience and well-being:

- A list of the key system components
- A matrix showing all the indicators and datasets that currently exist in this particular context

The first step towards developing the basket of indicators that will help us monitor system resilience is to map out a table that matches the list of key system components, with the indicators that are currently being used to monitor those components (Figure 14).

Figure 14: Example of table to determine the indicators to measure system resilience

Capital	Asset	Indicator	Source
Human	*Formal Education*	*Proportion of girls, and boys, attending school*	*UNICEF*
		~~*Proportion of classes with less than 55 students*~~	*UNICEF*
	Vocational Education	*No indicator*	
	Physical and mental health	*Mortality rate per 10,000 people per day*	
		~~*# of confirmed cholera cases per week*~~	
		~~*# of new disease cases per 1000 people per month*~~	
		% of births that were facilitated by a midwife	
	Health of babies and children	*Mortality rate per 10,000 children under 5 per day*	
		~~*Incidences of diarrhea in children under 5 every 2 weeks*~~	
		% of children under 1 vaccinated for childhood diseases	
		% of children who are underweight	
Physical	*Etc….*		

Note that, in some contexts, there may be many different indicators linked to some system components. For other components, perhaps no indicators are being collected at the moment.

Typically, in a country in crisis, you will find many indicators to measure physical capital (indicators that look at water, shelter etc.) and human capital (health, education, etc.) but fewer indicators that show the state of social, political, natural and financial capital. However, this will vary from context to context.

Next, you will need to look at the table and ask:

Are there system components that are really critical for overall resilience, that we are not currently measuring, i.e. they do not currently have an indicator? Often, there are no indicators measuring the state of the key political assets, for example. In these cases you might decide to develop and collect a new indicator.

The third step is to decide which indicators will make up the baskets that measure each of the types of capital underpinning local systems (human, social, physical, etc.). In Figure 14, the indicators that the participants have chosen not to use for the human capital basket have been ~~barred out~~.

Finally, you will need to ensure that the scale is comparable across all the indicators. This will help you add the score from, for example, the proportion of girls and boys attending school, to the mortality rate per 10,000 people per day.

A scale like this could be used for each indicator, or it could be adapted to your context. An example of a scale for % of children who are underweight is shown in Figure 15.

Figure 15: Example scale for % of children who are underweight

Score	Meaning	Relating to this indictor
0	No impact on this system component *(in this case health of babies and children)*	MUAC over 135mm
1	Minimal impact	MUAC between 125mm and 135mm
2	Significant impact, effects are limited and temporary	MUAC between 115mm and 125mm without oedema
3	Significant impact, effects will be felt into the medium or long-term, and/or irreversible	MUAC between 115mm and 125mm with oedema
4	Major impact, the system component has been profoundly and permanently affected	MUAC less than 115mm

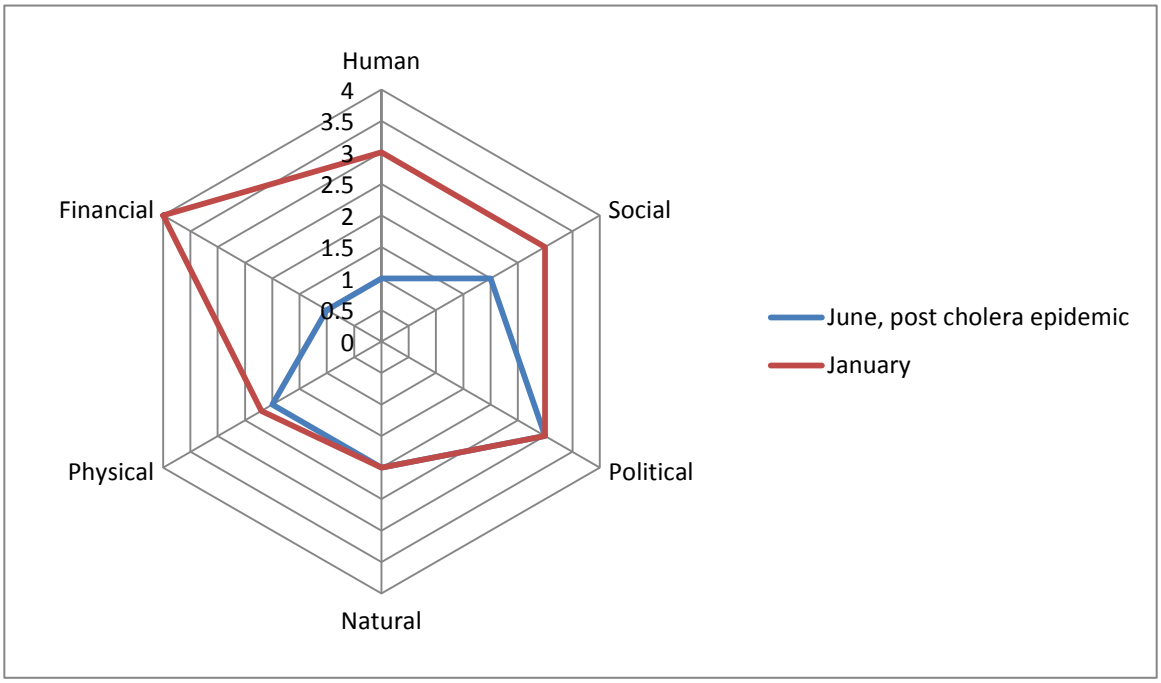
Finally, you need to set up a spreadsheet to calculate the basket score for each capital, as shown in Figure 16.

Figure 16: Example of table to determine the indicators to measure system resilience

Capital	Asset	Indicator	Score based on scale
Human	*Formal Education*	*Proportion of girls, and boys, attending school*	2
		~~*Proportion of classes with less than 55 students*~~	
	Vocational Education	*New indicator required*	3
	Physical and mental health	*Mortality rate per 10,000 people per day*	3
		~~*# of confirmed cholera cases per week*~~	
		~~*# of new disease cases per 1000 people per month*~~	
		% of births that were facilitated by a midwife	2
	Health of babies and children	*Mortality rate per 10,000 children under 5 per day*	3
		~~*Incidences of diarrhea in children under 5 every 2 weeks*~~	
		% of children under 1 vaccinated for childhood diseases	1
		% of children who are underweight	2
		AVERAGE (BASKET) SCORE FOR HUMAN CAPITAL	**2.29**

The well-being of different parts of the system (the different capitals) can then be shown graphically, helping to analyse trends over time, or to look at the impact of various shocks on the system, as in Figure 17.

Figure 17: Example of system resilience pre- and post- cholera epidemic



Looking at the chart in Figure 17, we see that the cholera epidemic has not affected natural or political capital, and has affected physical capital only slightly. However, human, social and financial capitals have been badly affected by this shock – obviously key assets in those parts of the system are not at all resilient. This information will help target further analysis, and help modify existing policymaking and programming, and be very useful for future *resilient systems analyses*.

Negative resilience indicators

Monitoring negative coping strategies is also important for understanding resilience better. It is important that the strategies that people or assets use to absorb shocks, or adapt or transform so that they are less exposed to shocks, do not – intentionally or unintentionally – have a negative impact on other areas of the system or on certain vulnerable groups.

One way to monitor the severity of negative coping strategies is to use a method developed by FAO and available here: www.fao.org/crisisandhunger/root/pdf/cop_strat.pdf

Using this method, you would monitor the severity of negative coping strategies for different groups (households or communities, or state institutions, for example).

An example is shown in Figure 18. The negative absorption capacities are those that were listed during the *resilience systems analysis* in eastern Democratic Republic of Congo. The rates of occurrence (in this case, just examples) are based on discussions with community members after a shock. The severity rating is based on perceptions – how severe is this behaviour, how much does it impact negatively on other components of the system, or on vulnerable groups? To determine severity, a scale such as that shown in Figure 15 may be useful. In general, a behaviour that was only likely to have temporary, minor effects would have a lower score, and one that has permanent, severe effects should have a higher score.

Figure 18: Example of severity analysis of negative resilience

	RATE OF OCCURRENCE						SEVERITY	RATE x SEVERITY
In the past 30 days, how often have community members had to:	All the time/every day	Pretty often/ 3-6x a week	Once in a while/ 1-2x a week	Hardly at all <1x week	Never	Raw Score	Severity rating	Relative score
Relative frequency score	*7*	*4.5*	*1.5*	*0.5*	*0*			
Shifting to traditional medicine	7					7	2	14
Taking out new loans			1.5			1.5	3	4.5
Selling productive assets		4.5				4.5	2	9
Sending children out to work			1.5			1.5	2	3
Enrolling in armed groups			1.5			1.5	4	6
Prostitution				0.5		0.5	2	1
Sale of household assets			1.5			1.5	2	3
Reduction in daily food rations				0.5		0.5	2	1
Crime			1.5			1.5	3	4.5
Deforestation		4.5				4.5	3	13.5
Illegal use of land				0.5		0.5	1	1
Early harvest		4.5				4.5	3	13.5
						TOTAL FOR THIS COMMUNITY		**74**

The aim of this analysis is to monitor trends in negative resilience. If the level of negative resilience actions increases, actors may want to change the targeting and prioritization of their actions to boost resilience, and adapt their policies and programmes.

The analysis can also help to develop new actions to deter certain critical negative resilience behaviours – helping those at risk to adopt better strategies to deal with shocks.

Process indicators

Process indicators can be useful to ensure that the results of the *resilience systems analysis* – the specific actions on the resilience roadmap – have been translated into policy and programming. Some suggested indicators include:

- # (and budget size/share) of development (and related) programmes that integrate actions from the resilience roadmap
- # (or %) of actions from the resilience roadmap that have been integrated into policy, or are being implemented through programming, (perhaps breaking this down into short-term, medium-term and long-term priorities)
- # of Government ministries/authorities and development/humanitarian organisations that are involved in implementing actions from the resilience roadmap

Output indicators

Output indicators measure the quantity, quality, and timeliness of the products — products, goods or services — that are the result of an activity, project, or programme. These measures will be required to determine whether the individual actions on the resilience roadmap have been completed.

The output indicators will need to be tailored to the particular activities on your resilience roadmap. For example, using two actions from the eastern Democratic Republic of Congo roadmap:

Roadmap Action: Build additional communal buildings to prevent schools from being used by internally displaced people, and during disasters

Example output indicator: # of buildings constructed in host villages, occupancy rate of these buildings by internally displaced people and others post-disaster

Or:

Roadmap Action: Raise awareness about rights and duties

Example output indicator: % of men and women who understand their rights and duties

Proxy impact indicators

It is not possible, after the *resilience systems analysis,* to develop one 'magic' impact indicator that will show the definitive status of resilience at any one point in time. This is because resilience spans the entire programming cycle, at multiple layers of society, involving multiple sectors, and in relation to multiple types of shocks. In addition, it is often very difficult to measure resilience if no shock has occurred. Finally, impact indicators often focus only on losses – how many people died, or what level of economic losses occurred because of a shock. They don't tell you anything about the people who survived, or were resilient to, the shock, and what happened to their overall well-being.

However, proxy impact indicators may be required in certain cases, for example when one measure is needed for communication or advocacy purposes. It is important, however, that the limits of reducing resilience to one 'magic' indicator are well understood.

Some examples of measures that could be used as proxy indicators:

- # of dead per # exposed to the shock
- # of dead in specified public infrastructure
- % reduction in household and economic losses (perhaps as a % of GDP) due to shocks
- % of target population that slip back into poverty
- $ spent on humanitarian relief
- $ of development investments that were affected by a shock (or are exposed to a shock)
- % of exposed population that feel 'safer' or 'able to deal with a shock' (perception data/survey) disaggregated by gender and age, and perhaps by type of shock

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NOTES

1 For a detailed review of the Theory of Change concept, see Vogel (2012).

2 For further discussion on this topic, see for example World Bank (2013) and Barrett and Costas (2013). In addition the 2009 Global Assessment Report on Disaster Risk Reduction documented that between 30-90% of economic losses for different sectors of critical infrastructure due to frequent, low-intensity events (UNISDR, 2009). Similarly, the Global Network for Disaster Reduction documented that 'recurrent small-scale *"everyday"* disasters are the most common risk profile facing poor vulnerable people, impacting on their housing, household assets and livelihoods as well as damaging and disrupting local infrastructure and public services' (GNDR, 2013).

3 OECD (2013). *Risk and resilience: from good idea to good practice*. Organisation for Economic Cooperation and Development, Paris, France; World Bank (2013) *World Development Report 2014: Risk and Opportunity—Managing Risk for Development.* Washington, DC: World Bank.

4 For more on the New Deal for Engagement in Fragile States, see www.newdeal4peace.org