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RESILIENCE INTEL

Climate-resilient planning: Reflections on testing a new toolkit

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Planning and implementing resilient basic service delivery systems on the ground can be challenging. This paper explores how the BRACED Knowledge Manager in collaboration with two BRACED Implementing Partners developed a toolkit to guide staff through this process.

KEY MESSAGES

- Basic service delivery is critical to community resilience to climate extremes and disasters. People's ability to *absorb, anticipate* and *adapt* is enabled through their access to basic services, such as health, water supply, sanitation and education.
- Tools already exist to increase the resilience of service delivery systems, but there has been no in-depth exploration of ways to apply systems thinking to basic service delivery.
- To address this gap, the BRACED programme has developed a toolkit that supports users to identify vulnerabilities along the service delivery chain and to reflect on the best ways to increase resilience from both a component and a systems perspective.

INTRODUCTION

Technological innovations, medical advancements and socioeconomic development mean we are more likely today than ever before to survive a disaster (ActionAid International, 2016). Nevertheless, an increasing surge in intensity and frequency of disasters over recent decades means we remain at considerable risk. Rapid global population growth in hazard-prone locations (e.g. coasts and floodplains) also means more of us are now at risk of suffering the adverse impacts of disasters. Since 1976, the average population affected each year has risen from around 60 million people (1976–1985) to over 170 million (2005–2014) (GFDRR, 2016). People are affected differently depending on the types of social and economic assets they have, the proximity of these to natural hazards[1] and the susceptibility of these assets to damage as a result of such natural hazards (GFDRR, 2016).

Social inequalities reinforce exposure and sensitivity to hazards. The poorest are often forced to settle in marginalised and disaster-prone areas, and it is the economically disadvantaged who inhabit the densely populated slums of urban sprawls in developing countries (ActionAid International, 2016). Meanwhile, on top of the human cost, rapid urbanisation and increasing socioeconomic activity, coupled with climate extremes and disasters, are putting at risk decades of development gains in infrastructure and service delivery. According to one report, total damage (averaged over a 10-year period) from disasters increased tenfold between 1976–1985 and 2005–2014, from $14 billion to more than $140 billion (GFDRR, 2016).

Basic services play a critical role in improving people's lives. For example, damage to infrastructure can lead to water scarcity, contamination and spread of disease; and poor transport connectivity can prevent relief efforts from reaching households or hamper recovery efforts. Additionally, lack of drainage or of solid waste disposal can turn heavy rainfall into a disastrous flood. Meanwhile, low incomes and lack of access to safe housing with good provision of water, sanitation, health care and education affect households' capacity to recover from a disaster (Baker, 2012). Delivery before, during and in the aftermath of an extreme event or a disaster is thus a key component of wider resilience approaches. That is, people's ability to *absorb*,[2] *anticipate*[3] and *adapt*[4] (Bahadur et al., 2015) is enhanced the more they have (or the quicker they regain) access to reliable and good quality basic services such as health, water supply, sanitation and education.

An increasing focus on disaster risk reduction and climate change adaptation means implementing agencies are now investing more in resilient service delivery. Some are rethinking the configuration of the entire delivery system and investing in a backup or decentralised solutions. Others are considering having a disaster management plan or investing in building elsewhere, reinforcing infrastructure and/or developing stockpiling arrangements. Those in specific sectors may also be referring to different strategies. For example, actors in water, sanitation and hygiene (WASH) may plan to use sanitation systems that use less water and so are less vulnerable during droughts. Those in health may wish to keep

contingency stocks of vital medicines and materials in case of damage to roads or transportation. And those in education may train students on how to reach school safely during rainy seasons or seasonal floods.

It is clear that resilience is understood at the highest levels and is being embedded in programmes' theories of change. However, experience with engagement with implementing agencies demonstrates that embedding resilience into programming is much more challenging and complex in practice. There are several obstacles.

First, the language and processes linked to climate change adaptation and resilience-enhancing strategies are complex, and there is usually a need to break them down substantially before applying them in practice. For implementing agencies with limited resources, this exercise may be time-consuming, and it may be necessary to contract experts if in-house capacity is limited.

Second, as basic service delivery systems are complex, simplistic applications of resilience principles may not actually reduce vulnerability. All service delivery systems require three elements in order to function: people (service provider staff, private sector contractors, entrepreneurs); hardware (infrastructure, equipment, heavy machinery); and consumables (fuel, chlorine, medicines) (ICRC, 2015). Designing a system that is fully resilient across all three elements requires different modes of thinking: of how the three system elements interlink in the delivery of a service; of how each element may be vulnerable to climate change and disasters; and of how this vulnerability affects both the element itself and the system as a whole. Although several tools and approaches have been developed to integrate resilience into service delivery systems (see Annex), this kind of systems' thinking (understanding a system by examining the linkages and interactions between the components that make up the entirety of that defined system) has not yet been applied.

To address this knowledge gap and contribute to mainstreaming resilience on the ground, the BRACED Knowledge Manager has developed a *Climate Resilient Planning Toolkit*. This encourages people to think critically about the inherent intricacies involved in designing and delivering service delivery systems in the context of climate change. Rather than prescribing solutions, it guides users through a thinking process and invites them to reflect on their own experience, and offers ideas.

The Toolkit was developed through a collaboration between the BRACED Knowledge Manager (led by ODI) and two BRACED Implementing Partners (IPs) (iDE, part of the Anukulan project in Nepal; and CRES, part of the Live with Water project in Senegal). Geared towards improving BRACED project design and implementation, two research questions framed its design. First, how are basic services vulnerable to extreme weather and disasters – and longer-term climate change impacts – and how can we identify such vulnerabilities without having to observe these systems failing? Second, how does improvement of access to different types of basic services strengthen community resilience over time?

WHAT IS THE CLIMATE RESILIENT PLANNING TOOLKIT?

The BRACED Climate Resilient Planning Toolkit is a diagnostic tool designed to help plan, develop and deliver health, education, water and sanitation hardware interventions to be more resilient to climate extremes and disasters. It provides guidance for systematically integrating climate change and disaster risks into intervention planning and implementation and provides a generic framework that assists users in:

- Determining the level of need and priority for designing and/or delivering a more resilient intervention;
- Taking stock of which hazards affect the livelihoods of those living in the project area, and the intervention itself;
- Assessing the service components (hardware, consumables and people) there are in the project; how vulnerable they are to a range of climate extremes and disasters; and how to prioritise them in terms of the consequences should they fail, be damaged or become unavailable;
- Thinking through and developing measures to mitigate risks to service delivery;
- Putting together a participatory plan that helps integrate resilient measures into the service delivery project.

How does it work?

The Toolkit guides users through a combination of steps, tasks and worksheets that help in reflecting on how to improve the resilience of the service delivery project/intervention at hand (Figure 1: Climate Resilient Planning Tool).

It does not prescribe solutions, but rather acts as a 'thinking process'. It raises a number of questions that help unpack a user's own experience, getting them to come up themselves with solutions as to what resilient measures are appropriate to their context. The Toolkit **is not a rigid process**. Users are invited to 'pick and mix' the various steps, tasks and worksheets, without losing key information. This approach recognises that organisations have different internal working processes and allows for greater flexibility when using this instrument.

As a first step, **Task 1 – Assess resilience: Should resilience be a high, medium or low priority in my intervention?** invites users to reflect on how important resilience may be for the project in consideration. To help users establish the level of prioritisation and whether the Toolkit will be useful for them, it offers a simple scoring system, using a set of questions around the likelihood of hazards affecting users' intervention and how the intervention contributes to improving communities' copying and recovery ability.

Once the user has determined their level of focus on resilience, the tool begins to explore why it should be a priority for the intervention. In **Task 2 – Identify hazards: What hazards might affect the area of my intervention?** users have the chance to identify hazards that could affect their service delivery project. **Task 2 – Identify service components: What components are involved in my intervention, and how critical are they to continuing service?** then asks users to think through their service delivery project components

(hardware, software, consumables) and reflect on which are crucial to maintain service delivery during or in the aftermath of a crisis. This provides a better sense as to what resources they have at their disposal, how replaceable they are and what would happen to the service delivery system if they failed for any reason. To better visualise and map how natural hazards may affect the components of the service delivery system, users can engage with **Optional Exercise 1 – Mapping systems configuration and vulnerabilities hotspots.** This presents a more interactive and participatory way of identifying where the system may be most vulnerable to the direct impact of hazards; and where and how they may want to prioritise resilience measures, considering existing resources.

The following step, **Task 3 – Diagnose impact on intervention: How are service components vulnerable to hazards, and how can I reduce that vulnerability?** helps users reflect on how hazards affect key service components; how damages to these affect the levels of availability, access and safety of the system and who is affected most; and how it may be possible to reduce the impact of these hazards through mitigation measures. To help prioritise mitigation measures in the context of limited resources, the Toolkit includes **Optional Exercise 2 – Prioritisation matrix**. This worksheet offers guidance on how to prioritise those service components that are key to the service delivery system and more likely to see adverse impacts from a hazard.

The final step of the Toolkit, **Task 4 – Developing an action plan: What concrete and realistic measures can I implement?** guides users through a planning table designed to help them think about next steps, considering the level of organisational resources available. Users identify the concrete and specific steps they can take to strengthen the resilience of the service delivery system. This to-do list is based on mitigation measures previously identified, and enables users to think through what needs to be done, how to plan for it, who is responsible and when activities need to be undertaken.

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Figure 1: Climate Resilient Planning Toolkit

Step 1 – Assessment	Step 2 – Inventory	Step 3 – Diagnosis	Step 4 – Diagnosis
Users assess if resilience in a specific service delivery project should be treated as high, medium or low priority	Users identify how the different components of basic service delivery systems may be vulnerable to a range of climate extremes and disasters	Users think through measures that can be taken to mitigate risks to service delivery	Users establish a plan to follow up on integration of resilience in the service delivery project
Assess resilience Should resilience be a high medium or low priority in my intervention? • **Worksheet 1** Guidelines • **Worksheet 1** Assessment	**Identify hazards** What hazard might affect the area of my intervention? • **Worksheet 2** Guidelines • **Worksheet 2** Inventory of hazards • Identify Service Components: What components are involved in my intervention, and how critical are they to continuing service? • **Worksheet 3** Guidelines • **Worksheet 3** Inventory of service components • **Optional Exercise 1** Mapping systems configuration and vulnerabilities hotspots	**Diagnose impact on intervention** How are service components vulnerable to hazards, and how can I reduce that vulnerability? • **Worksheet 4** Guidelines • **Examples of Mitigation Measures** • **Worksheet 4** Impact pathways • **Optional Exercise 2** Prioritisation matrix	**Developing an action plan** What concrete and realistic measures can I implement? • **Worksheet 5** Guidelines • **Worksheet 5** Action plan

To assist users through the process, **the Climate Resilient Planning Toolkit is divided into three booklets:**

- **Booklet 1 – Guidelines** explains how the tool works and provides insights on how to fill in the worksheets.
- **Booklet 2 – Worked examples** illustrates how implementing organisations in different settings (rural/urban) have used the Toolkit.
- **Booklet 3 – Worksheets** provides worksheets ready be filled in straightaway, through printing or filling in a PDF form.

What does the Toolkit do differently

The Toolkit's distinctive feature lies in the way it helps users to visualise the entire basic service delivery system and assess how hazards affect its different components. The Toolkit also helps users consider where vulnerabilities may exist along the service delivery chain and reflect on the best ways to increase resilience from both a component and a systems perspective.

Target audience

The Toolkit is aimed at implementing agency staff likely to have limited expertise in resilience or climate change (e.g. technical and field staff).

It also seeks to engage managers and project staff so as to contribute to the mainstreaming of resilience thinking, from broad intervention planning at country/headquarters level right down to micro-scale planning and implementation.

TOOLKIT DESIGN PROCESS

The final Toolkit emerged through an iterative process of design, testing and revision that sought feedback from researchers, practitioners and communities. The initial stages explored the different resilience and service delivery conceptual frameworks that could provide the kinds of information and guidance expected to be useful. This then led to developing a mind map that helped defining the core structure of the Toolkit (see Figure 2a: Toolkit initial mind mapping exercise), followed by a concept design and workflow model (e.g. Figure 2b) to check feasibility.

This approach struck a balance between the Toolkit's twin objectives – simplicity in use and the ability to produce meaningful guidance. This stage also saw a reduction in the tool's scope and ambition; initially conceived as a generic instrument for all basic service interventions, it soon came to focus solely on 'hard' interventions. This was largely because there were incompatibilities in the means of assessing the different types of components and the vulnerabilities in 'hard' and 'soft' interventions.

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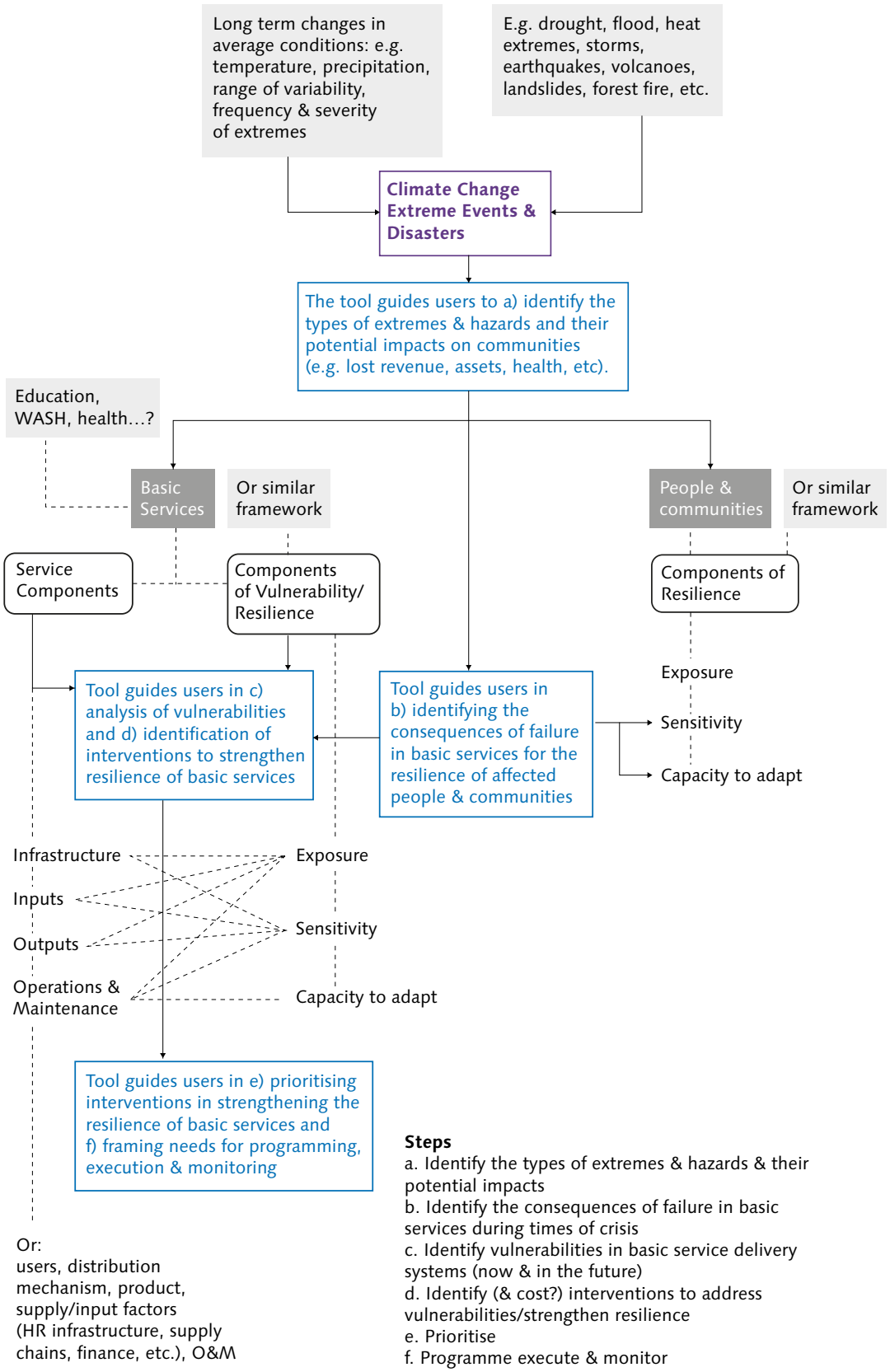
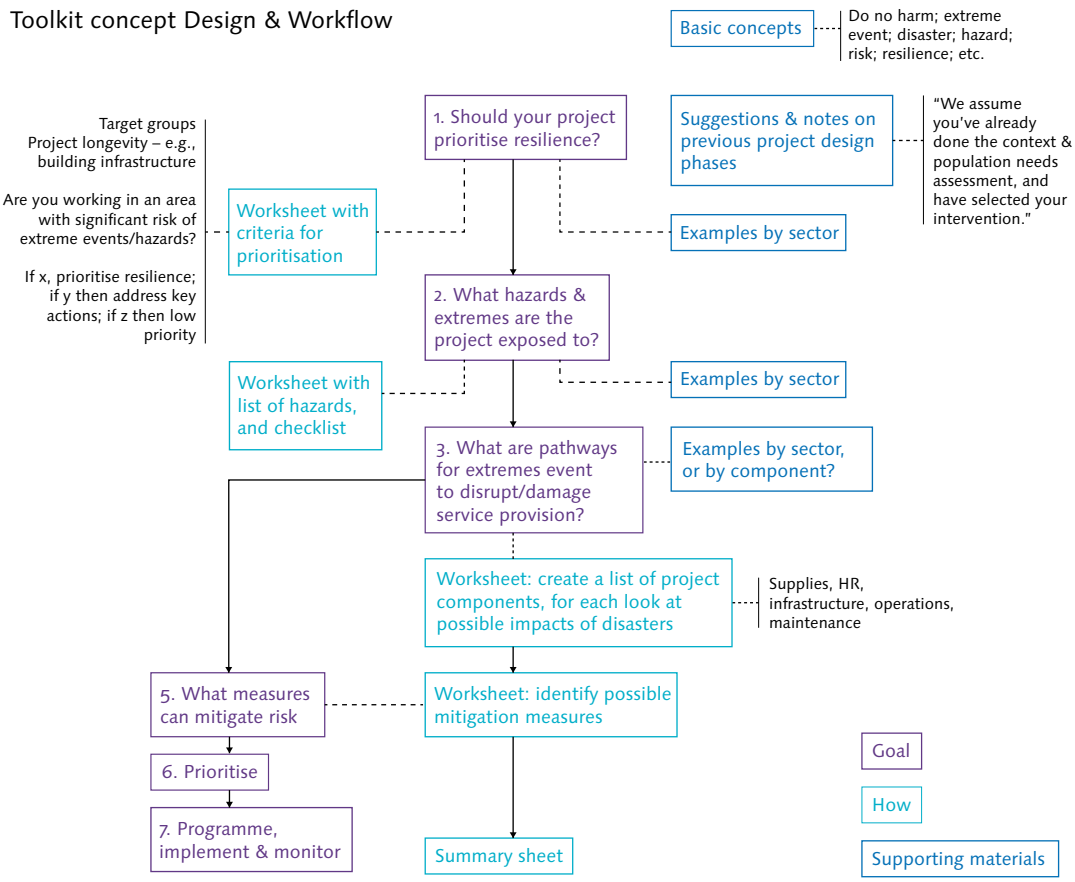
Figure 2a: Toolkit initial mind mapping exercise

Research Question
How are basic services in fragile states vulnerable to extreme weather and disasters – as well as longer-term climate change impacts – and how can such vulnerabilities be identified *ex ante*?



Source: Guy Jobbins.

Figure 2b: Early toolkit workflow model



Source: Guy Jobbins.

After the core structure of the Toolkit was developed, several rounds of testing were conducted with other development programmes as well as BRACED IPs. The aim was to ensure its applicability across multiple sectors (e.g. education, WASH and health), environments (urban/rural contexts, fragile and/or conflict-affected areas), organisations (e.g. think tanks and implementing agencies) and users (e.g. advisory staff, field officers, managers and policy-makers). In total, nine testing sessions were held in three different countries (the UK, Senegal and Nepal). Feedback was collected from a pool of over 75 people representing organisations working in the provision of different services (water, sanitation, education, health). Staff came from different levels, from implementing agencies (e.g. central office, field team) to local partner organisations, beneficiaries, policy-making institutions and donor agencies. Participants held varied degrees of climate change adaptation knowledge.

To help refine the Toolkit, the framework looked at three categories: **users, fit** and **content**. First, it was important to determine who in implementing agencies was likely to **use** this Toolkit: who would get the best use from it and what would their needs be? Second, how could the Toolkit **fit** into internal processes of project design and operational management? This was not just about how it could aid a specific team and more about how it could improve an implementing agency's ability to design projects that are more resilient. To this end, the authors looked at how different organisations operate, to uncover who

holds decision-making power over coping activities, how data is collected and where projects would be implemented. This stage also involved understanding how to use the tool at different stages of the project cycle; what processes needed to be followed; and how to feed back emerging information from the toolkit internally to make improvements. Finally, it was critical to get the **content** right. This involved assessing whether or not the thinking behind the tool was relevant and if it resonated with the reality on the ground. The authors explored whether the tool was asking the right questions, and whether it was too basic or was using concepts too difficult to grapple with.

Field-testing in Dakar and multiple rural locations in Nepal provided critical feedback in terms of refining the tool's audience (**users**), applicability (**fit**) and thinking process (**content**). It confirmed that it was mostly field staff in collaboration with local partners who would benefit from this exercise, especially technical staff directly involved in designing, maintaining and/or operating basic service delivery systems. IP feedback also highlighted that the tool could be used in a participatory way, by getting field staff to engage more closely with users/beneficiaries/ the recipient community in filling out some of the worksheets.

Collaborating closely with BRACED IPs also revealed the level of applicability of the tool. Under **fit**, for example, the Anukulan project in Nepal confirmed that the Toolkit could support internal project design/operational management processes in two ways: 1) as part of iDE's internal project cycle structures linked to multiple use water systems (MUS) and rural collection centre programmes; and 2) as part of the development of national local adaptation plans (discussed below).

For the project 'Live with Water', the Toolkit could be used alongside the risk assessment and/or technical feasibility study that assists the team in determining site locations for new infrastructure.

Finally, by engaging directly with potential users, it became clear that, although the Toolkit was getting people to think in the right way, IPs would not necessarily follow the thought process in a linear way. Instead, they would use specific worksheets according to what might be missing from their own internal processes (e.g. Mapping, Impact Pathways). IPs also suggested a need to include facilitating guides and worked examples of how users could fill in the worksheets.

This iterative process ensured the Toolkit reflected user needs, and also attests to the ability of organisations working at different ends of the development spectrum (from research to practical action) to collaborate in a way that maximises the best each has to offer. For IPs, this meant having access to the Knowledge Manager's expertise. On the other hand, for the Knowledge Manager it meant acquiring a better understanding of how IPs operationalise these terms and the kind of internal planning and management processes they have to go through. Overall, this co-production process helped bridge two conceptually different worlds.

Activities of this nature necessarily come with challenges. For IPs, for example, it was not always clear how to use the Toolkit, and more often than not staff said wording was overly complex and theoretical. This led to a rethinking of the Toolkit's content, with language simplified and ideas represented more visually.

Although trade-offs had to be made, this process contributed to the development

of a diagnostic Toolkit that is generic enough for it 1) to be used by diverse implementing agencies delivering different basic services; and 2) to deconstruct complex terms around climate change adaptation, and embed resilience more organically into interventions to improve basic service delivery systems.

HOW THE TOOLKIT SUPPORTS RESILIENCE PLANNING IN SERVICE DELIVERY PROJECTS

In theory

Resilience planning is multifaceted by nature, and usually operationalised using complicated concepts. For example, for a field officer, it might not always be clear what concepts like absorb, anticipate and adapt mean. After the Toolkit was tested, this was acknowledged as a key obstacle preventing its uptake. As a response, terminology associated with resilience and concepts like 'adaptation', 'anticipation' and 'absorption' were deconstructed and simplified so as to resonate with terms that project, technical and field staff were already using. By doing this, it was possible to get Toolkit users to think through concepts of resilience and adaptation in a more intuitive way.

Testing of the Toolkit also involved working closely with IPs to understand what project management processes they already had in place and how the Toolkit could better complement these – rather than duplicating efforts or overburdening staff. With this in mind, the Toolkit was refined to a point where its different worksheets could be used at any stage of the project management cycle (see **Figure 3: Example of how the tool has been designed to work across the project management cycle**). By offering a flexible 'pick and mix' approach, without compromising the thought process, the Toolkit helps strengthen resilience planning where organisations themselves have identified gaps.

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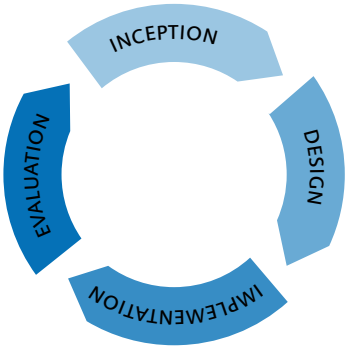
Figure 3: Example of how the tool has been designed to work across the project management cycle

When to use the Toolkit?

You can use this Toolkit at any stage of the project management cycle.



Inception & design:

Using this tool in early stages of project planning gives the best chance of avoiding problems and building resilience into services. Early planning helps reduce the impact of disasters through preparation and minimising risk to people and equipment. Some hazards can be avoided entirely by building infrastructure out of harm's way.

Who to involve? Agency colleagues, local communities, experts and stakeholders from public services may all have valuable information to share. These modules can also be used for participatory planning, which brings different perspectives on social needs and technical characteristics to project design.

What information can we use? Assessments of hazards of needs may be available from other organisations. Information on extreme events and disasters, and future projections of climate change, are increasingly available online. However, this information can be difficult to interpret, and hazards such as floods can be very localised. Communities often know a lot about hazards in their area; they can be a good source of information, or can produce new knowledge and understanding if given space to do so.

Implementation:

Some of these modules and worksheets can help improve a project after implementation has already begun. If services are already up and running, but are damaged by a disaster, this Toolkit can identify options for strengthening the infrastructure, improving supply chains or protecting human resources.

Who to involve? The project team, community members and other stakeholders who can help identify vulnerabilities in existing services.

What information can we use? A field visit to assess the system and inspect any damages, project documents, log files of technical staff and information from the project team and local stakeholders.

Evaluation:

The 'Impact Pathways' Worksheet can help with evaluating projects. This worksheet helps clarify how well the service delivery system copes with hazards. This can be a constructive learning exercise, where the team considers what can be improved, and what measures might be adopted in future interventions.

Who to involve? The project team, communities and other stakeholders.

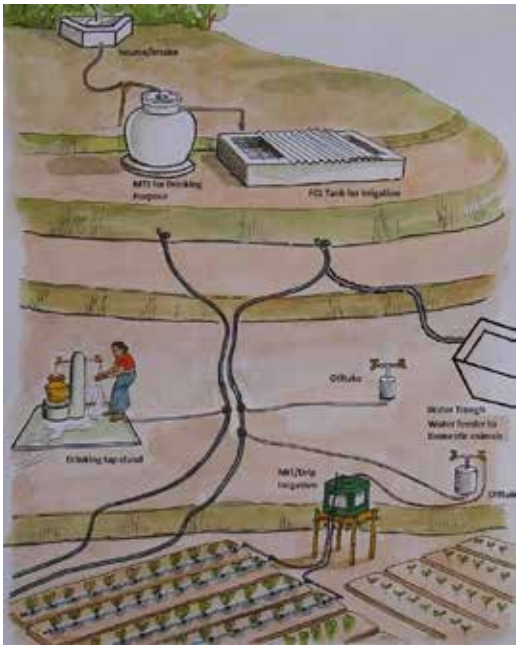
What information can we use? Project documentation but, above all, ask for people's opinions.

In practice

For the Anukulan project (led by iDE), the Toolkit helped in uncovering the climate and disaster risks associated with MUS and integrating these into the design to improve system resilience and services.

MUS interventions use a participatory approach that involves planning, finance and management of integrated water services that meet the domestic (e.g. drinking, cooking, washing, bathing) and productive (e.g. irrigating fields, livestock) water needs of users. The approach is widely used and recognised internationally. In Nepal, though, iDE has pioneered the purpose-built MUS 'by design' to provide sufficient water for domestic and productive needs. This includes new infrastructure development and rehabilitation. A typical MUS design includes an intake, a reservoir tank, different water outlets and micro-irrigation technologies (see Figure 4: Example of a multiple use water system). The system begins with source protection at the intake of the spring, and water is conveyed by gravity through high-density polyethylene pipes to water collection tanks near the target village. This design considers landscape constraints, water demand and user preference and emphasises effectiveness and low cost (Raj Kumar and Colavito, 2015). iDE has developed over 350 MUS serving over 75,000 rural people in the country.

Figure 4: Example of a multiple use water system



To guide the development and implementation of MUS systems, iDE has also developed its own guidelines (iDE, 2016): a manual that streamlines the process of MUS design, construction, operation and evaluation and ensures coherence across the organisation. These guidelines are also used when MUS interventions are identified as part of Nepal's Local Adaptation Plans for Action (LAPA) process.[5] The guidelines cover different stages under a participatory and collaborative platform that helps create the necessary enabling environment between state actors (e.g. District Agriculture Development Office, District Development Committee, Village Development Committee) and non-state agents at the local level (e.g. international and national non-governmental organisations and community-based organisations).

Box 1: Setting up a multiple use water system – key steps

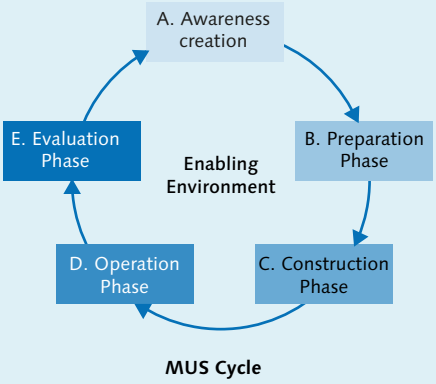
Stage 1: Awareness creation among potential beneficiaries to understand what a MUS is and how it differs from existing systems, how it may benefit the community, the role of different stakeholders, service levels and the importance of MUS in the context of climate change.

Stage 2: Preparation phase, which includes preconstruction activities (e.g. setting up user committees, developing an action plan, pre-feasibility study of the system, engineering survey, design and cost estimation).

Stage 3: Construction phase, which involves collection of local materials, purchase of external materials and MUS construction.

Stage 4: Operation phase, at which stage the community develops operational guidelines including provision of repair and maintenance funds.

Stage 5: Evaluation phase, whereby the MUS community/user committee monitors the water system's operation and functionality as per the operational guidelines developed in Stage 4.



Source: iDE (2016).

How has the tool helped iDE improve MUS resilience?

The Toolkit provides iDE Nepal with a framework for the team to systematically incorporate resilient planning into MUS interventions and to streamline this approach across different regional teams. Improvement has emerged at different levels:

- **Better data collection:** Although the MUS guidelines required staff to collect some climate- and disaster-related information, the level of in-depth analysis, participatory discussion and knowledge systematisation on climate change impact on existing and new MUS systems did not match what is suggested in the Toolkit. For example, as part of the MUS Stage 2 pre-feasibility exercise, the iDE field team was required to travel to the project location and assess the potential for climate change impact on the intervention. However, this assessment relied on direct observation and stakeholder engagement and yielded little information on the topic. **Worksheet 2 – Inventory of hazards was found to be particularly useful in addressing this shortcoming.**
- **Better understanding of broader stakeholder needs:** Participatory planning is key to iDE's work. Within the MUS context, however, it was being applied mainly to inform the design of infrastructure. By conducting the **Optional Exercise 1 – Mapping systems configuration and vulnerabilities hotspots** exercise, the team was able to obtain a clearer understanding of: 1) how hazards affect different parts of the system differently; 2) of how different stakeholders (e.g. vulnerable groups, communities living in upstream and downstream areas, etc.) are at risk in the face of those hazards; and 3) how stakeholders would be affected by impacts on the system.
- **Closer collaboration across the organisation:** So they can fill in the tool accurately, users are encouraged to seek information from multiple sources (both internal and external). At an organisational level, iDE's experience revealed that information needed had to be sourced from different levels of staff. To minimise disruption, the central team set up a workshop where different teams came together, brainstorming and inputting into the different Toolkit's Tasks and Worksheets.
- **Improved MUS design:** Thanks to the reflective nature of **Worksheet 4 – Impact pathways**, the iDE team was able to identify climate/disaster risks that previous analysis had often missed out. For example, after using the Toolkit, the team realised that some Solar MUS systems were at high risk of being compromised by severe lightning and storms. To ensure the technology's resilience, the design then incorporated a lightning arrestor.

Box 2: Experience in Senegal – Live with Water (Dakar)

In Senegal, the Toolkit was tested with project staff, national and local authorities and community representatives of the BRACED Live with Water project. Overall, it proved to have the potential to serve as a participatory tool that could support community-based and multi-stakeholder planning and evaluation processes. It also helped initiate a dialogue about how the project had managed to build the resilience of the community and where solutions could be improved.

Applied to Live with Water's urban gardening component, the Toolkit helped participants of community testing sessions come up with the following suggestions for improvement:

- Additional securitisation of urban gardening spaces was recommended, using fences to avoid goats eating plants and vegetables. Fences should be built to ensure the visibility of the urban gardening spaces, so as to prevent them becoming a waste deposit and to ensure the community can keep an eye on children.
- To increase the profitability of the urban gardening system, community representatives suggested creating more urban gardening spaces, increasing the diversity of the plants and offering peer-to-peer and expert workshops on urban gardening.
- To improve the maintenance of the urban gardening component, participants will revise the administrative system. The *mairie* and the community suggested establishing a controlling committee.

Source: Live with Water (2016).

How will resilient planning be consolidated in the long term?

Through internal project planning processes: iDE plans to integrate this Toolkit into the existing MUS Guidelines, thus ensuring it is used systematically across the organisation. It also plans to use it to help in rehabilitating schemes where MUS have already been built and affected by disaster, as well as in MUS built in high disaster-risk areas. This will involve training local partners and those responsible for managing the systems on how to use the Toolkit.

By supporting ongoing national efforts to improve climate resilience at the local level: The LAPA process forms part of Nepal's national climate-resilient planning framework. It is recognised in the country's National Adaptation Programme of Action Framework (2010) and is embedded in the National Climate Change Policy (2011). LAPAs facilitate the integration of climate adaptation activities into local and national development planning processes through a bottom-up approach. Part of the seven-step process includes conducting a vulnerability assessment that leads to the identification of different adaption strategies. iDE's experience in rural Nepal demonstrates that these usually comprise hardware interventions, such as the construction of small-scale water supply systems, sanitation and agricultural collection centres. Although Environmental Impact Assessments (EIAs) are a compulsory step in putting in place these interventions, existing government guidelines were drafted with large-scale infrastructure projects in mind, making it quite challenging for small local organisations to engage with this process. Conversations with government staff and iDE revealed that this Toolkit could represent an

alternative to these EIAs, while acting as a checklist for the LAPA process itself as it supports the identification of local adaptive measures.

WHAT ARE THE BENEFITS AND LIMITATIONS OF THE TOOLKIT?

In addition to improving user awareness and knowledge of climate change risks and encouraging the design of more climate-resilient systems, the Toolkit was found to provide additional benefits, including:

Promotes cross-team collaboration and multidisciplinary thinking: Climate-resilient programming requires not only in-depth knowledge of the issue at hand but also to reflect the implementing agency's organisational capacity to deliver the programme, in terms of available financial and human resources. By involving different levels of staff, across a varied range of departments, the Toolkit harnesses expertise and knowledge from multidisciplinary teams. Moreover, by encouraging central and field staff to work together and integrate each other's concerns, it also promotes cross-collaboration.

Encourages in-depth analysis: For example, the Worksheet 2 (Inventory of hazards) proved useful in facilitating structured dialogues on the complex consequences of hazards at different levels (i.e. lives, livelihoods, infrastructure), allowing stakeholders to increase their understanding of the complex problems by sector and actor.

Is versatile: The same worksheets can be used at different stages of the project planning cycle. For example, for 'Live with Water', it was particularly useful for envisioning and evaluating how single project components have built resilience to flooding (e.g. the benefits of new rainwater drainage in the context of increasingly severe rains).

Is cost-effective and practical: When compared with other assessment tools and processes (e.g. EIAs), the Toolkit represents a more affordable alternative, as it seeks to utilise existing organisational human resources and capture local knowledge, thus minimising the need to hire external consultants. It is also freely downloadable and contains predesigned worksheets and a set of guidelines illustrated by real-life examples, which means users can quickly grasp how to apply it to their own context.

Is clear: While some level of climate resilience understanding and knowledge may be needed, users from different backgrounds found the Toolkit's language and explanations clear. This is because it has been designed in a way that unpacks the complexity of climate change adaptation and uses language commonly used by local development organisations, which staff and partners can easily relate to.

Is easy to use: Though some level of instruction may be needed, the Toolkit has been developed in a way that minimises the need for extensive training. This has been achieved by including explanatory text that guides and orients users through the process. Experience

with iDE revealed that local staff and community partner organisations required only one demonstration session of two hours to grasp how to apply the tool in the field. Moreover, users highlighted that the Toolkit was the right length and that the end result provided them with the necessary information to make more informed decisions.

Experience has revealed some limitations, largely derived from necessary trade-offs between high-level conceptual thinking and practicalities linked to implementation. For example:

It is a generic Toolkit: This is an instrument designed to resonate with concepts and terminology of different sectors and environments. It does not provide a comprehensive guide to integrating resilience in all basic services (e.g. it focuses only on WASH, education and health). Additionally, it was found to be most useful if integrated as part of small rural infrastructure interventions, rather than in urban settings where components are part of – and interconnected with – wider systems.

Its applicability may be geographically limited: Testing revealed that it may be easier to apply the Toolkit to a specific, quite small, geographical unit or a localised/community-level intervention.

Some level of knowledge is required: The Toolkit assumes the user has some expertise in the project area (i.e. on WASH, education or health) as well as in climate change adaption. Although the Toolkit developers attempted to incorporate key concepts linked to resilience and disaster risk reduction, the user may need to seek further knowledge in order to progress through its different stages. Nonetheless, it is likely to be possible to overcome this gap given the participatory nature of this exercise, which combines different sources of knowledge.

Some exercises can be complex: While testing the tool it became clear that some worksheets were easier to complete than others. To ensure that knowledge is not lost, all complex exercises were made optional, minimising disruption to working through the tool.

CONCLUSION

Climate change has challenged and changed the way implementing agencies design, plan and deliver their interventions. Developing projects that are resilient to natural hazards and disasters is especially important for basic service delivery, as these interventions reinforce people's capacity to respond to disruptive events and resume their livelihoods more quickly. As this paper has discussed, this is not always easy, and translating resilience concepts to actions on the ground is usually a complex exercise. By combining the expertise of different organisations working in development, this Toolkit can help embed resilience thinking and climate risk management into an organisation's day-to-day operations. Despite some limitations, it has proven useful especially in the context of small infrastructure projects where climate and disaster risks are rarely fully integrated into planning. To further consolidate its knowledge and approach, however, we invite potential new users to incorporate the Toolkit as part of a broader package of project based adaptation strategies.

REFERENCES

ActionAid International (2016) *Resilience building: A guide to flood, cyclone, earthquake, drought and safe schools programming*. Johannesburg: ActionAid International.

Bahadur, A.V., Peters, K., Wilkinson, E., Pichon, F., Gray, K. and Tanner, T. (2015) *The 3As: Tracking resilience across BRACED.* BRACED Knowledge Manager Working Paper. London: ODI.

Baker, J. (2012) *Climate change, disaster risk, and the urban poor: Cities building resilience for a changing world*. Urban Development. Washington, DC: World Bank.

GFDRR (Global Facility for Disaster Reduction and Recovery) (2016) *The making of a riskier future: How our decisions are shaping future disaster risk*. Washington, DC: GFDRR, World Bank.

ICRC (International Committee of the Red Cross) (2015) *Urban services during protracted armed conflict: a call for a better approach to assisting affected people*. Geneva: ICRC.

iDE (International Development Enterprises) (2016) 'iDE guidelines for planning, design, construction and operation of multiple use water systems (MUS)'. Field-Level Implementation Guidelines. Kathmandu: iDE.

Live with Water (2016) 'ODI tool – lessons learnt'. Results from tool testing with Live with Water project staff and partners. Dakar: Live with Water.

Raj Kumar, G.C. and Colavito, L. (2015) 'Benefits of multiple-use water systems (MUS) with micro irrigation for the smallholder farmers in the rural hills of Nepal'. Sixth International Seminar on Small Scale Irrigation Systems: Challenges to Sustainable Livelihood', Kathmandu, 15–16 February.

ANNEX: BASIC SERVICE DELIVERY SYSTEMS – TOOLS THAT HELP INCREASE SYSTEMS' RESILIENCE

	Sub-sector	Name of tool	Author(s)/date
Water	WASH	WASH climate resilient development strategic framework	GWP/UNICEF (2014)
	WASH	WASH climate resilient development technical brief – Integrating climate resilience into national WASH strategies and plans	GWP/UNICEF (2014)
	WASH	Rapid climate adaptation assessment for water and sanitation providers	Heath et al. (2012)
	WASH	Adaptation of WASH services delivery to climate change and other sources of risk and uncertainty	IRC (2011)
	WASH	Visions 2030: The resilience of water supply and sanitation in the face of climate change	Howard and Bartram/WHO (2010)
	WRM-WASH	WASH climate resilient development technical brief – Local participatory water supply and climate change risk assessment: Modified water safety plans	GWP/UNICEF (2014)
	Sanitation	A planning framework for improving city-wide sanitation services	IWA/Eawag (2014)
		Community-led urban environmental sanitation planning: CLUES, complete guidelines for decision-makers with 30 tools	UN-Habitat/ Eawag (2014)
Education		Resilience building: A guide to flood, cyclone, earthquake, drought and safe schools programming	ActionAid (2016)
		RES-360° tool kit: Resilience in education systems:	World Bank (2013)
		Comprehensive school safety: A toolkit for development and humanitarian actors in the education sector	Save the Children (2012)
		Integrating conflict and disaster risk reduction into education sector planning	UNESCO (2011)
Health		Protecting health from climate change: Vulnerability and adaptation assessment	WHO (2013)
		Mainstreaming gender in health adaptation to climate change programmes	WHO (2012)

Note: This is not an extensive list of existing tools per sector but provides examples of key instruments referenced in the literature.

NOTES

1. An event that may cause loss of life, injury or other health impacts, and/or damage and loss to property, infrastructure, livelihoods, service provision and environmental resources. Hazards may include climate extremes and other events such as wildfires, earthquakes and pest outbreaks.
2. Ability to cope with shocks when they happen, for example people using microcredit to replace damaged goods; social protection schemes; farmers growing drought-tolerant crops; drainage works that divert flood waters; having earthquake-resistant homes.
3. Ability to anticipate what might happen next, for example early warning systems that track upstream river levels; sharing information on flood evacuation routes; preparing community disaster management plans.
4. Ability to adapt to multiple, long-term and future risks, and also to learn and adjust after a disaster, for example changing a drainage system to cope with heavier rainfall and floods; adopting new crops and farming techniques that conserve water.
5. The LAPA in Nepal aims to integrate climate change resilience into local-to-national development planning processes and outcomes. This is done by developing local adaptation plans that reflect location- or region-specific climate change hazards and impacts; supporting adaptation options that are available locally and are accessible to the most vulnerable communities and households; and integrating local adaptation priorities into village, municipality, district and sectoral planning processes in accordance with the Local Self Governance Act; among others.

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The BRACED Knowledge Manager generates evidence and learning on resilience and adaptation in partnership with the BRACED projects and the wider resilience community. It gathers robust evidence of what works to strengthen resilience to climate extremes and disasters, and initiates and supports processes to ensure that evidence is put into use in policy and programmes. The Knowledge Manager also fosters partnerships to amplify the impact of new evidence and learning, in order to significantly improve levels of resilience in poor and vulnerable countries and communities around the world.

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