Resilience Interventions

In this **tool**[1] the proposed interventions are first assessed for their contributions to resilience using a set of resilience indicators. The higher scoring interventions are then assessed for feasibility and impact. The exercises mentioned in this tool can be undertaken jointly by the Core Team and the Stakeholder Group. Lower scoring interventions can also be assessed for feasibility and impact if the city or government department feels that these are important from their development perspective.

EXERCISE 1: Prioritising Resilience Interventions

Earlier in the toolkit we used several criteria to assess the resilience of systems and of actors. In this Tool, these criteria have been combined for the following exercise aimed at testing the resilience of interventions based on the characteristics mentioned below:

Redundancy: A resilient system can function and achieve results through multiple paths or nodes when one fails and when performance is critical. In contrast, a "single best solution" is not resilient because if this single option fails, the system collapses. Back-up systems, or decentralised nodes for service delivery in a linked network, are preferable.

Example: *Hospitals and emergency communications facilities have shared or linked backup electrical generators*

Flexibility and diversity: Essential systems should be able to work under a variety of conditions; they should not be rigid or designed only for one specific situation. Any system will fail if overloaded beyond its capacity, but it should be designed to fail under stress in a *safe* and *predictable* way, rather than suddenly and catastrophically. Flexibility and diversity criteria do not apply solely to a system's technological attributes but also its social attributes: for instance, if systems require widespread social acceptance and compliance but they are designed from the outset in ways that favour a certain group (e.g. men above women) or create obstacles to a certain social group's compliance, then they sacrifice considerable flexibility and diversity.

Example: *Dikes are designed so that if their capacity is exceeded, they fail in predictable ways, channelling flooding away from populated areas; climate and weather information services (communications) and related Early Warning Systems for extreme weather events are designed and delivered in multiple formats – e.g. audiovisual as well as textual – so that they do not rely solely on the literate members of the household or those owning/controlling mobile phones to receive and react to them.*

Re-organisation and responsiveness: Under extreme conditions, systems should be able to respond and change to meet unexpected shocks. This requires flexible organisations and access to different kinds of resources (information, skills, equipment, knowledge and experience). It also means a high level of coordination and flexible organisational structures capable of adjusting to new conditions. Furthermore, it is widely recognised that local and indigenous knowledge is often highly relevant to and supportive of climate resilience and adaptation (IPCC, 2019).

[1] Based on the ICLEI CapaCITIES project tool number 4, with additional guidance on gender and social inclusion from CDKN.

However, such knowledge is often untapped and under-appreciated, thus ignoring a rich, important source of insight and innovation potential. Such knowledge may be undocumented, experience-based and dispersed among social and ethnic groups, women and men, including migrants to the city or territory. Providing adequate voice and means of influence to diverse people with local and indigenous knowledge enriches decision-making, implementation and course correction, thus helping to create more responsive systems.

Example: *Houses in flood-prone areas are designed with flat roofs as emergency refuges for family members and possessions above flood water level*

Access to documentation and learning: Resilient systems have mechanisms to document, learn from and build on experience, so that past mistakes are not repeated and lessons from other cities can be integrated into planning. This requires procedures for monitoring and evaluating performance under stress, and requires multiple sources of knowledge and documentation (strengthening "corporate memory").

Example: *Different government agencies share a common monitoring and reporting system to track groundwater quality and extraction in the face of more frequent drought or sea level rise; local governments develop systems for 'impact reporting' from different types of climate hazard – where impact reporting is here defined as the negative and positive effects (and cascades of effects) of climate hazards on different social systems and groups according to their differential exposure and vulnerability to the hazard - cooperating with diverse civil society organisations, research institutions and NGOs where appropriate to identify how society's most disadvantaged people are affected and how risks may be mitigated.*

Energy saving and greenhouse gas (GHG) emission mitigation potential: Resilient systems have potential to reduce energy consumption and mitigate GHG emissions, which may be integrated into their regular planning. This requires procedures for periodic monitoring and evaluation of performance, which requires multiple sources of knowledge and documentation but also, adherence to common GHG accounting methodologies to allow comparability across different technologies and development interventions.

Example: *Providing access to local water sources through rainwater harvesting/ ground water recharge may not only build the resilience of the community (where such sources are adequate) but also reduce the dependence on transporting water from significant distances away. This, in turn, leads to reduced power demand for pumping water and mitigation of GHG emissions. Periodic monitoring of energy saving should be maintained and documented by local government.*

Step 1
List the resilience interventions scoped already through the options assessment process.[2]

[2] A separate tool provides further guidance on how to do this, if required (if desired, refer to the relevant guidance in the ICLEI-ACCCRN process toolkit for local governments: http://e-lib.iclei.org/iclei-acccrn-process-building-urban-climate-change-resilience-a-toolkit-for-local-governments/).

Step 2
Evaluate them on the basis of the above resilience indicators.

Step 3
Complete Table 1 by determining the overall resilience score for each intervention on the basis of the number of resilience indicators that the intervention is perceived to fulfil.

For example, if an intervention meets the criteria of redundancy, and enhances the urban system's capacity to learn but does not help the system in being responsive and is not flexible or robust or contribute to GHG emission thereby meeting 2 out of the 5 characteristics of resilience – then the overall resilience of the intervention will be 2/5 – 'Average' (see Table 1 below).

Table 1: Prioritising Resilience Interventions

Potential Climate Resilience Interventions	Resilience Indicators				
	Redundancy (yes/no)	**Flexibility and diversity (yes/no)**	**Responsiveness/ re-organisation (yes/no)**	**Access to Information (yes/no)**	**Energy saving and GHG emission mitigation potential (yes/no)**
e.g. Roof top water harvesting to be made mandatory to deal with water stress due to anticipated increasing temperatures and decreasing precipitation	*Yes* *Supports a higher degree of self-sufficiency at the household level*	*Yes* *System allows for water to be channelized towards recharging groundwater as well*	*Yes* *In case of shutdown of the city's water supply system, households have stored rainwater for use*	*No* *City helplines exist, but responsibility lies with individual staff or households*	*Yes* *Reduction in electricity consumption and GHG emission mitigation potential due to reduced pumping requirement*

EXERCISE 2 : Feasibility and impact

As well as building resilience, interventions should be checked for their feasibility and expected impact.

Feasibility can be assessed using the following criteria:

- Technical – the government has the necessary technical expertise to implement the project, or can access the required skills; note that there may be some financial costs attached to accessing technical skills / training staff or subsidizing broader training and skill-building in businesses or the community which can form part of the cost-benefit calculation (see below). Where such investments are made, it is vital to ensure they are inclusive and especially do not discriminate against women and girls or other disadvantaged groups further.
- Political – the intervention will be seen as acceptable to government leaders and the community and is consistent with the government's values and vision
- Social – in practical terms, the intervention will be socially acceptable including among the diverse groups of people whose adoption is needed to make it a success and it has the potential for 'social marketing' (if required) to back implementation. Social acceptability may be tested through focus group research and/or through discussions by broadly representative stakeholder committees (see separate tool).
- Cost-benefit – the cost is within the capacity of the city or government department or they will be able to access required funds, and the anticipated benefits will justify the cost.
- Responsibility - An assessment of whether this action falls within the role of the city or government department, or which other agencies may need to be involved.

Impact can be assessed using:

- Timeframe – most actions should be able to be completed within a short or medium timeframe.
- Overall impact - the proposed intervention will have a significant and measurable impact on the targeted climate risk and GHG emission reduction potential. The assessment of impact must include both the potential for ***adverse consequences*** for defined groups of people as well as an assessment of which ***positive benefits*** accrue to which social groups and whether the benefits are distributed fairly. Here, gender impact assessments based on separate appraisal of women's and men's interests and benefit-sharing within the target population is essential. Impact assessments should also spell out any underlying assumptions about which behaviours or technical performance aspects will deliver benefits of adverse consequences, so that these assumptions can be revisited later as part of monitoring and evaluation and impact assessment. Where assumptions about behaviour change or effectiveness of an intervention are later found to be in error, this can help with adaptive management and course correction. Where adverse consequences for certain social groups are flagged at impact assessment stage, then this may be grounds for rejecting the proposals, if the affected group is already significantly disadvantaged and any harms cannot be avoided. Or, there may be a case for establishing specific, costed measures to avoid harm to the affected group and establish benefit. These risk mitigation and/or compensatory measures should be judged as adequate and be accepted by city or government leaders and the representative stakeholder committee and their financial costs should be accounted for in the cost-benefit analysis.

- The impact stage should include a 'filter' as to whether the project can be designed to advance women's and girls' empowerment (Sustainable Development Goal 5:

- Does the proposed project change women's and girls' access to resources (referring not only to material resources such as property or finance but also time, knowledge and information).

- How does the project change women's and men's access to resources? Where? Why? Will the project's impact potentially disadvantage women in any way and if so, how can the project be designed to ensure it 'levels up' the benefits for better, egalitarian outcomes for everyone?

- Who will control and decide what? Are women in any way disadvantaged in decision-making and control? If so, how can the project rectify this?

- As well as applying to women and girls as a disadvantaged group, these can also be applied to more specific target groups, such as teenage girls, or ethnic minority women etc. Any proposed intervention relating to indigenous peoples should be subject to the acquisition of Free, Prior and Informed Consent.

Step 1
Using Table 2, list the resilience interventions that have been assessed to have either a ***High*** or ***Medium*** score in Exercise 1. Low scoring ones can be included as per discretion of the city or government department.

Step *2*
Now, evaluate the interventions in terms of their feasibility and impact.

Table 2: Feasibility and Impact

	Feasibility			
Potential Climate Resilience Interventions	**Technically (high/medium/low)**	**Politically (high/medium /low)**	**Socially (high/medium/low)**	**(hig In mit gro ad**
e.g. Roof top water harvesting to be made mandatory to deal with water stress due to anticipated increasing temperatures and decreasing precipitation	*High (technology is easily available)*	*Medium (would require a change in building by-laws and building codes)*	*High (already socially recognised by many, and conducive to further social marketing; reduces women's and girls' drudgery by bringing water harvesting closer to home for those without piped water supply)*	*High (not opti with resu (no com miti stak adve*

Step 3

Use these ratings to develop a final list of recommended interventions. The method for arriving at a recommended list may vary according to the city's way of making decisions. Some options:

1. Apply scores to the Feasibility and Impact ratings and use total scores to prioritise. Keep in mind that this might be over-simplistic as there may be very good reason to choose an intervention which does not score as highly as some others.
2. Conduct discussions with the Climate Core Team and/or the Stakeholder Group to validate the ratings and search for any other reasons which may help with the shortlisting
3. Provide a longer list to city or government department decision makers and allow their normal budget prioritisation system to make a final selection.