



Future-proofing our neighbourhoods: Your how-to guide on hyper-local climate adaptation measures



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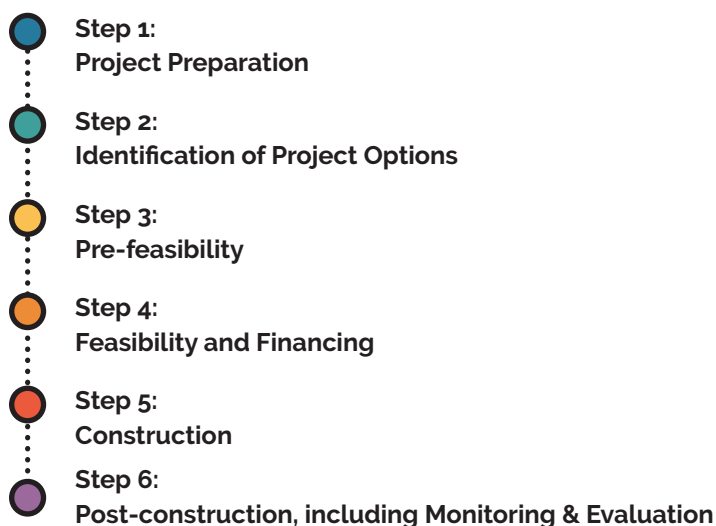
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Executive Summary

Often ignored, urban neighbourhoods lie at the core of climate action and their engagement plays a pivotal role in ensuring our societies become resilient to the impacts of climate change. In the end, local communities are the ones experiencing first-hand the consequences of global warming. They are often best placed to identify their own appropriate hyper-local adaptation measures.

While public policies and regulations at the national level are key enablers to mainstream climate action and climate resilience, it is of utmost importance to materialise those policies into plans and strategies at the city and neighbourhood level, as their sustainability relies on local communities that drive implementation and contribute significantly to the future maintenance of interventions.

The *CitiesAdapt* guide has been crafted as a practical, how-to guide to assist municipal officials in following a user-friendly approach that helps demystify community or neighbourhood adaptation interventions. The approach follows six steps:

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- **Step 1:**
Project Preparation
 - **Step 2:**
Identification of Project Options
 - **Step 3:**
Pre-feasibility
 - **Step 4:**
Feasibility and Financing
 - **Step 5:**
Construction
 - **Step 6:**
Post-construction, including Monitoring & Evaluation

The guide provides a mix of straightforward advice and relevant case studies, augmented by an accompanying set of tools and technical resources that cover topics like community engagement, project analysis, funding and financing, strategies for ongoing operations and maintenance as well as long-term monitoring and evaluation.

The key motivation for this guide is the need for a clear and actionable method that supports municipal officials to deliver adaptation at the hyper-local level. Based on our experience, the most successful approach incorporates relevant stakeholders in the process as early as possible to ensure a clear sense of ownership and an ongoing legacy. We particularly highlight the importance of engaging the community from the neighbourhood where the measure is implemented.

Welcome to the *CitiesAdapt* guide for municipal officials!

This guide helps you better navigate the unfamiliar waters of adaptation measures at the hyper-local level in practical terms. In our development of this guide, we have drawn from a long list of academic references and, more importantly, from the experiences of peer city officials and implementing organisations who have similarly used this approach to community engagement in the identification of problems, solutions, and ultimately, delivery.

How do I know whether this guide is for me?

This guide is perfectly matched for you if you meet the following criteria:




- You work in either the **planning**, the **climate change**, or the **community engagement** team of a city that wants to help its residents respond to climate change impacts more effectively, especially using **Nature-based Solutions (NbS)**. In the best-case scenario, your city has already anchored climate adaptation in its public policy, for instance, via a climate action plan aligned with international sustainability and climate goals.
- You have been charged with implementing (or contributing to the implementation of) **climate adaptation interventions** in your city. Ideally, these interventions are pilot projects your city looks forward to replicating.
- There is some degree of budget to cover your time as well as the time and experience of external experts who can help identify the right solutions to the problems defined in each community.
- You are willing and have the mandate – with the help of your peers in other departments – to approach funders and financiers who can help cover the costs of the delivery of projects.
- You are prepared to identify a **local champion in the community** who can help you ensure that both the climate adaptation problem and the solution meet the community's needs.
- You are looking forward to **engaging the community** so that they (if applicable) identify their climate change problems and the solutions that address their needs. You want to make sure that they feel full ownership of the solution and continue to ensure that the solution is well-maintained long after the initial work is completed.

How can this guide help me?

This guide draws from international best practices, tempered by experiences in cities just like yours. It intends to show a **step-by-step process**, with relevant cases that show actual engagements, to help you enjoy similar success. In each of the six steps, the guide outlines the starting point, the activities, the outcomes, and the tools that you might use to progress through the *CitiesAdapt* approach. The guide is peppered throughout with examples of how these steps were implemented by your peers.

*Make sure you look into our separate [Toolbox and Resource library](#), where you will find inspiration and additional materials to accompany you in the implementation of *CitiesAdapt*'s approach.*

Throughout this guide, you will see the following icons that signal which

- Tool icon: 
- Resource icon:  or
- Lightbulb icon: 

you can use or apply for that specific step.

*Also, stay tuned for our upcoming Case studies, which will cover the actual implementation of this model approach in both *CitiesAdapt*'s countries, Mexico and South Africa.*

More specifically, this guide is partially informed by the experiences of the CitiesAdapt pilot projects, implemented by the international development agency Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, funded by the International Climate Initiative (IKI) and commissioned by the German Federal Ministry for Economics and Climate Action (BMWK) and the German Federal Ministry for the Environment, Nature Conservation, Nuclear Safety, and Consumer Protection (BMUV). In its pilots, *CitiesAdapt* supported secondary cities in Mexico and South Africa in climate-resilient urban planning and the implementation and scaling-up of adaptation measures in selected disadvantaged neighbourhoods.




Based on our experience, we know that one of the most common struggles of cities, especially small and medium-sized cities, is gaining access to finance for the delivery and potentially scaling up of climate adaptation interventions. For this reason, we designed a companion piece to this guide, **Access to Finance for Adaptation Measures at the Hyper-local Level Guide (Resource 2)**, to provide you with relevant background information.

Let's begin!

Understanding the steps in the CitiesAdapt approach

To guide you in the design and implementation of neighbourhood adaptation measures, we designed the CitiesAdapt approach. This approach comprises **six straightforward steps** from the preparation to the post-construction of **climate adaptation measures**. The departing points, activities and outcomes of each one of these six steps are explained in detail in the next chapters.

For the time being, here is a summary of the steps:



Step 1: Project Preparation

- > Select a location (e.g. neighbourhood or community) where the project will occur.
- > Guarantee support and commitment from the community and relevant stakeholders.
- > Together with the community, identify the biggest climate vulnerabilities in the neighbourhood and conduct baseline assessments to better understand the existing problem.

Step 2: Identification of Project Options

- > In collaboration with the community and through a participatory approach, identify options of possible adaptation measures to the problem(s) you identified.
- > Prioritise options based on several different criteria, e.g. impact, cost, benefits to vulnerable groups, and externalities.

Step 3: Pre-feasibility

- > Procure a specialised provider to conduct a detailed evaluation of the prioritised options, considering costs, benefits and probabilities of success.
- > Select one option with the community to perform a full feasibility assessment.

Step 4: Feasibility and Financing

- > With help from a specialised provider, conduct a full feasibility study of the top option that includes: 1) full architectural/engineering drawings, 2) a full financial analysis of both the up-front costs and ongoing costs for maintenance and operation, and 3) suggestions for next steps for implementation.
- > Negotiate and secure the necessary funding to begin with the implementation of the suggested measure.
- > Procure contractors for construction.

Step 5: Construction

- > Supervise the construction and keep the community informed on the progress.
- > Confirm the community's role in the ongoing operations and maintenance plans as identified in the feasibility study.

Step 6: Post-construction, including Monitoring & Evaluation

- > Implement a long-term maintenance plan in collaboration with the community.
- > Establish a long-term monitoring and evaluation plan and commit to reviewing the intervention's impact.

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Step 1: Project Preparation



- > Select a community where the measure will be implemented, and work with them to introduce concepts of adaptation and climate change.
- > Help each community to name their biggest climate vulnerabilities through workshops with a mix of small groups of community leaders and larger groups of concerned citizens, ideally identifying community champions to support the process.
- > After identifying the challenges, consult internally with peer city officials on the proposed interventions.
- > Triangulate the inputs received from the community and city officials, and conduct a baseline assessment to better capture the quantitative nature of the existing problem.

Starting Point

City leadership has recognised the need to be more responsive to the impacts of climate change, and you, as the city's climate adaptation lead, have been asked to identify interventions. You conduct a series of workshops with communities – both their leadership and the more general population – to explain climate change and how the city wants to help local communities address these problems.

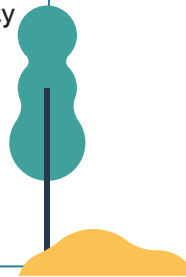
Activities

Map potential communities to engage. Some of the criteria you can use to assess the neighbourhoods and select one are the following:

- **Intensity and recurrence of extreme weather events**, such as floods, droughts, heat islands, or loss of flora or biodiversity.
- **Socioeconomic and demographic traits of the residents that make them more susceptible or vulnerable to climate change.** For example, does the area have a considerable number of children, elders, or people with disabilities? Is the neighbourhood particularly inhabited by low-income households?
- **Adaptability or departing point of the neighbourhood.** Consider whether the area already has features that boost its resilience or not. These features can be both physical (i.e. green corridors or parks that help lower the temperature) but also social (for instance, if there is already a neighbourhood committee or any other type of decision-making structures within the community).



The impacts of climate change affect people living in poverty and vulnerable groups such as Indigenous peoples, people with disabilities, and elderly individuals disproportionately. Besides considering the climate vulnerability of the neighbourhood, make sure you select a community that can particularly benefit from the intervention due to the social and economic vulnerabilities of its inhabitants.



It is extremely important that you use data to assess the vulnerability of the communities. This helps you not only justify your selection but also establish the foundations for the evaluation of the measure.

If high temperatures are an issue in your city, make sure you check out *CitiesAdapt's Remote Sensing Tool (Tool 1)*! By helping you identify heat islands and track environmental changes and trends over time, this tool can be useful in selecting where to implement the adaptation measure.

Ask colleagues about any potential community leaders to approach for endorsement and to enhance your ability to convene the general population. Note that selecting a neighbourhood with identified leaders and/or existing decision-making organs should make communication with the community considerably easier.



Schedule a first meeting with community leaders to inform them on the city's intention to implement climate adaptation measures in their neighbourhoods, making sure you share your plans to engage the broader community. If needed, use the presentation from [Tool 2](#) to sensitize them on climate change and the need for adaptation at the community level.

If applicable, incorporate the comments and suggestions from community leaders into the presentation.



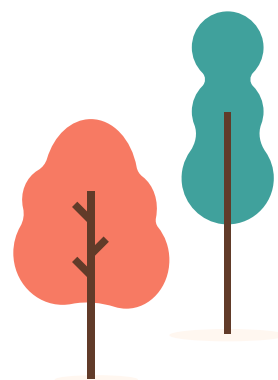
After receiving the approval of the community leaders, schedule and host a session with the broader community to inform them on the city's intention and plans. If needed, use again **Tool 2** to introduce them to climate change and the benefits of urban adaptation projects. Make sure you mention how you wish them to be engaged in the process and what this implies. Let them give you feedback and suggestions.



Schedule sessions at a time of day when you can ensure the highest participation from diverse voices. Whenever possible, incorporate the session into a larger community event where you can anticipate good attendance. Invite your champions to have an active role in the meeting with the community, for instance, by letting them do the opening or co-present with you.



Ensure that you have sufficient senior representation from the city to ensure that community members understand the city's commitment.



Prepare notes from the session and validate the identified problem with community leaders/champions.

Internally, confirm that the problem is not being addressed already through another intervention. If the problem is already being addressed, be clear with the community on how it is being addressed and when they can expect improvements to its remedy.

Circulate notes as broadly as possible in the community, either suggesting the next steps or how the problem will be remedied.



To ensure community engagement, rely on a mix of media. Most people will read a short WhatsApp message which can be forwarded on to as many people as possible; the WhatsApp message can point people to a link with more information for those who are curious to explore further.

Ask the community to help quantitatively capture the nature of the existing problem. If, for example, flooding leads to standing water in certain locations, ask the community to measure the depth of the standing water and the length of time it takes for the water to be redirected.

Document the results of the interactions with the community and the problem identification.

Outcome

You have identified a problem through effective community engagement. The community you have worked with feels heard by the city, and there are clear steps to help achieve a remedy.

CASE STUDY

Community engagement in uMhlatuze, South Africa

Engaging the community is not always a straightforward process, but it is definitely worth it! In doing so, it is essential to observe the **communication protocols** and to consider the multiple authorities and their different levels of hierarchy. These vary from country to country, so make sure you are well aware of the context in which you are working.

A great example illustrates this in the implementation of the project *CitiesAdapt* in uMhlatuze, South Africa. There are multiple **layers of engagement** in South African society – municipal leaders, traditional authority, and ward councillors. The selected neighbourhood, Esikhaleni, consists of both municipal and traditional authority-owned land.

In order to gain the support from the different stakeholders, the GIZ *CitiesAdapt* team worked closely with municipal leaders to preliminarily identify communities. Subsequently, the programme engaged with the traditional leaders responsible for particular areas as well as with the community leaders with oversight over specific wards and districts. In this process, observing protocols for communication such as language, manners, and accepted behaviours has been of utmost importance.

We strongly encourage you to ensure appropriate engagement aligned with expectations of key stakeholders in the process of identifying and implementing interventions.

CASE STUDY

Finding new ways to engage the community in Mérida, Mexico, and uMhlatuze, South Africa

From tactical urbanism to student competitions and clean-up campaigns, there are numerous ways of **raising awareness** on climate change and climate resilience in the community. In the *CitiesAdapt* programme, we have leveraged all these options and strongly recommend you find creative ways appropriate to your context to sensitise and engage the community in which you are working.

For instance, as part of the *CitiesAdapt* and *Sembrando Ciudades* programmes in Mexico, we established a partnership with COMEX, one of the largest paint manufacturer and distributor in the country, to recover public spaces through socio-artistic interventions. The partnership comprises painting four to five murals addressing topics like urban resilience, climate change, Nature-based Solutions, and integrated risk management.

Also, by having a good working relationship with the municipality of uMhlatuze and private sector partners, in *CitiesAdapt* South Africa we have leveraged environmental campaigns to raise awareness on climate change, and resilience in the neighbourhood of Esikhaleni. One of the key outcomes of participating in these events was the opportunity of **engaging the youth**. In one of the campaigns, we presented the *CitiesAdapt* programme to different primary schools in the area and later engaged their students in an art competition that was a part of the selection process for the implementation site.

Like these examples, we invite you to think out of the box in how you engage and sensitise your community! Use existing platforms and establish partnerships with like-minded stakeholders.

CASE STUDY

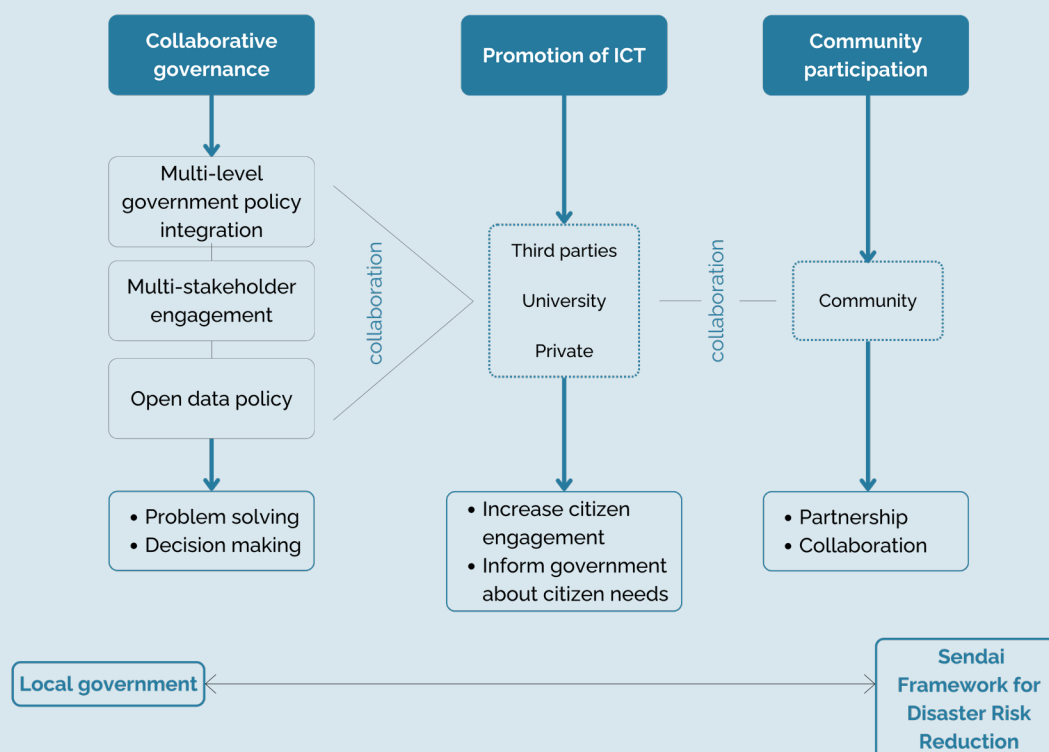
Climate data for building Kampung Iklim (Climate Village), Balikpapan, Indonesia

Communities across Indonesia are facing a wide range of increasingly frequent and severe climate hazards, including flooding and landslides, as well as broader challenges including the impacts of COVID-19. To address these issues, the Indonesian Government has focused on building **community-level resilience** through the creation of 'Climate Villages' or Kampung Iklim (ProKlim). The focus of the project is to enhance local communities' understanding of the specific threats facing them and support them in developing appropriate adaptation measures in response.

In **Balikpapan City**, comprised of many smaller urban villages and neighbourhoods and facing significant flood risk, 15 ProKlim villages were set up to help disseminate knowledge and drive locally led adaptation action. Measures included:

- Empowerment of the community in decision making through participatory processes;
- Provision of climate data, toolkits, and best practices;
- Involvement of universities and private sector in the process;
- Collaborative problem solving and decision-making.

The model, as illustrated by Ariyaningsih & Shaw (2023), is the following:



The programme focuses on providing data to enable communities to understand their challenges, share local knowledge and ideas from across the stakeholder groups, work effectively with local governments, and decide upon the most effective measures.

Before moving to the next step, please use this **checklist** to ensure necessary preparations have already been completed.

REQUIRED	DESCRIPTION	YES/NO?
SELECTION OF NEIGHBOURHOODS AND POTENTIAL SITES	<p>Have you identified the neighbourhoods with the highest adaptation needs? Did you identify potential locations for implementing adaptation measures? To what extent have you relied on a comprehensive status quo review?</p> <p><i>These areas could already have been identified in the town or city's environmental plans and strategies or could be known areas of high risk. Ideally, they also align with the expectations of the community members themselves as a way to further increase the level of local ownership, ensuring that the measures are viewed as a bottom-up approach that nonetheless reflect top-down expectations from the municipality.</i></p>	
POLITICAL & MUNICIPAL SUPPORT	<p>Do you have the necessary internal support from the city and relevant departments of the municipality to proceed with developing these measures?</p> <p>Are the town or city's political leadership in support of developing such projects? Does this align with the town or city's broader sustainability strategy?</p>	
COMMITTED CHAMPION(S)	<p>Are there committed 'champions' within the local government and/or community who help lead the design and implementation of the programme?</p> <p><i>The champion ensures that the process is not unnecessarily delayed and works to find solutions to potential obstacles to the development of the project ahead.</i></p>	



Step 2: Identification of Project Options



- > Based on the challenges identified by the community, prepare a short list of potential technical solutions, ranging from capital-intensive (expensive) options to lower-cost, community-driven choices.
- > Invite community feedback on the proposed solutions and, where possible, encourage the community to suggest their own unique approaches, helping them to rank the ones most likely to address the root cause of the climate adaptation problem.

Starting Point

You have worked with the community's leadership to identify the most pressing climate problem. With their input, you have spoken with colleagues across the city to confirm that a) the problem is not being addressed through other planned interventions and b) resolving the problem would not create adverse downstream impacts. The city is prepared to help move through identifying options and completing pre-feasibility and full feasibility studies that enable the project to be delivered.



Make sure that the adaptation measure you are considering doesn't have issues (or downstream impacts) for other communities. For example, if your project diverts water away from one community with habitual flooding but results in a build-up of excess water elsewhere, you have only relocated the problem rather than solved it!

Activities



Review the problem you identified and documented in the previous step. Try to identify and describe potential solutions to this problem. We created [Tool 3](#) to help you articulate the options.



When thinking about how to tackle the problem in the chosen community, we strongly recommend you consider Nature-based Solutions. By using natural systems or processes and preserving ecosystems, we can reduce the impact of climate change and, at the same time, bring about numerous co-benefits for biodiversity, human well-being, and communities. We recommend you check [Resource 1](#) out to get some inspiration as to which Nature-based Solutions can be used to increase climate resilience.



Schedule a session with the **community leadership** to present each potential intervention, seeking their input on their preferred solutions. Do not forget to encourage them to come up with their own solutions and participate actively in the design process!



Depending on the context of your intervention, you might want to engage additional stakeholders and invite them to share their inputs – to help you map relevant stakeholders, we created [Tool 4](#).

For instance, inviting owners of businesses located in the community can bring you new insights into the problems and potential solutions; they could even support the intervention financially! However, be aware of possible clashes or conflicts between stakeholders – for example, some communities might resist to cooperate with private stakeholders. Consult the community leadership in advance and ask which stakeholders they feel comfortable cooperating with. Be prepared to find compromises!



In the iterative consultation process, we recommend you talk to the community leadership before you convene a session with the broader community to make sure that you have their support. Community members often look to their leaders for their impressions on proposed interventions and, if there is not full visibility on these measures before a full community session, you might find unexpected opposition that could thwart your approach.

Adapt your proposed options to incorporate the feedback from the community leadership.

Schedule a session with the **broader community** – do not forget to invite the community leadership (and other “approved” stakeholders), though! The objectives of the session would be:

- To present your findings and ideas so far, mentioning you already have gathered inputs from the community leadership;
- To encourage them to come up with new potential solutions, or to make suggestions on how the existing ideas can be adjusted;
- To rank the preferred options of the community, based on different criteria.



Try to ensure that you have diverse voices in the room, especially groups that are vulnerable and usually underrepresented in decision-making processes, such as women. This helps you not only to establish a trusted relationship with the whole community but to tailor your intervention in a way that maximises its positive externalities.



CASE STUDY

Role of gender in climate adaptation in Mérida, Mexico

Climate adaptation measures represent an opportunity to bring about numerous positive externalities, especially if being developed in a participatory manner.

In the preparation phase of *CitiesAdapt* Mexico and after having selected the implementing neighbourhood, a face-to-face participatory workshop was held with the community of Plan de Ayala Sur in Mérida. In a context of high gender inequality and gender-based violence, **women** were identified as **key stakeholders** in the processes of improving and overseeing public spaces in the neighbourhood. For this reason, women were intentionally targeted as participants of this workshop: More than 90 per cent of the participants were women.

The overall objective of the session was to **sensitise the community** on the impacts of climate change and explore potential adaptation measures. One of the unique attributes of the workshop was a targeted session on intersectional relation of gender and climate change. The main activity involved encouraging small group discussions to exchange thoughts on the current gender position (‘where are we’) and gender condition (‘how are we’) in relation to climate change adaptation measures.

Including the inputs of women on how the potential measure can be gender-responsive and, in general, involving women in the co-creation process can help increase **community ownership** of the project and ensure proper operation, maintenance, and sustainability in the long term.



Mapping exercise of community engagement in the neighbourhood of Plan de Ayala Sur in Mérida, Mexico, in October 2022. © CitiesAdapt

To rank the options that you have drafted with the community, we recommend you conduct a **multi-criteria analysis (MCA)**, as presented below.

For each adaptation intervention option, there is a range of different factors and issues, such as cost and impact on different community groups, that need to be carefully considered and compared. A multi-criteria analysis (MCA) can help in this process, allowing different options to be considered side by side.

MCA is a structured, systematic way to make sense of this information in order to help make a decision. It does this by breaking down the complex issues into smaller, simpler issues that can be more easily analysed. The main steps involved are:

1. Define criteria to measure options against e.g. impact upon vulnerable groups, risk reduction, or damage reduction.
2. Establish a standard scoring system that can be used to assess the options against each criterion, e.g. 0-5.
3. If needed, you can also 'weight' different criteria, to reflect their relative importance e.g. a particularly important criterion may be worth 30-40 per cent of the final score, while a less important one may only be worth 10 per cent.
4. Assess each option against the criteria, score them and compare.



An example of an MCA scorecard is provided below. You can also download [Tool 5](#).

OPTION	COST-BENEFIT	IMPACT ON VULNERABLE GROUPS	RISK REDUCTION	DAMAGE REDUCTION	ALIGNMENT WITH WIDER TOWN/CITY STRATEGY	FINAL SCORE
RIVER FLOOD DEFENCES		0	1	1	2	4
IMPROVED DRAINAGE SYSTEMS		1	0.5	1.5	2	5
FLOODWATER PUMPING SYSTEMS		1	0.5	0	1	2.5

Based on the results of the MCA, select a small set of final solutions (no more than 3). Make sure the stakeholders, especially the community and the municipality, are comfortable with these prioritised options.

Outcome

You have identified a small set of solutions through effective community engagement and can start the process of a more comprehensive pre-feasibility study.



You might not find a solution that appeals to all members of the community. Think about whether you need to appeal to the entirety of the community or whether, instead, you can find a solution that meets the needs of the majority of the community as a pilot, with a suggestion of considering other solutions in the future.



CASE STUDY

Engaging the youth in the Yucatán Peninsula

Together with the Municipality of Mérida, *CitiesAdapt* Mexico launched a student challenge for universities in the Yucatán Peninsula to come up with innovative ideas for nature-based climate adaptation solutions for Plan de Ayala Sur, the community chosen for the intervention. Specifically, the solutions were set to increase climate resilience of the neighbourhood's medical unit and the public spaces nearby.

The proposals were submitted by **multidisciplinary student groups** and assessed based on various criteria, such as innovation, efficacy in increasing climate resilience in the neighbourhood, integration of Nature-based Solutions, feasibility, and social co-benefits.

The proposals brought numerous creative ideas to *CitiesAdapt's* intervention. They ranged from the creation of green areas with local flora and rainwater capturing systems to the incorporation of vegetation on roofs and walls, as well as rain gardens and bike lanes.

Same as *CitiesAdapt*, your city can benefit greatly from **engaging academic institutions and young people!** Their participation does not only bring innovative elements to the intervention but also creates awareness on the importance of using nature to adapt to the effects of climate change and inspire future generations!

You can find the terms of the competition in our **Toolbox (Tool 6)**, in case you want to replicate it yourself.



Group session on community engagement to discuss possible climate change adaptation measures in Plan de Ayala Sur, Mérida, Mexico. October 2022. © CitiesAdapt





Step 3: Pre-feasibility



- > Using your available budget for climate adaptation, procure a firm to conduct pre-feasibility studies on the short-listed options, looking at the impact and anticipated cost of each of the proposed solutions (both for the initial delivery of the solution and for ongoing maintenance).
- > Present the results of the pre-feasibility studies to the community for their input and validation, with an aim of selecting the most impactful solution by the end of the process.
- > Confirm with your colleagues in the city that the approved solution is not problematic for other planned city interventions and does not have any negative down-stream impact.

Starting Point

You have now successfully found a small set of community-endorsed solutions to a community-identified problem. The next task is to figure out the best way to practically implement these solutions. This is why you need to identify an external resource that can conduct a cost-benefit analysis. You need to spend some money on this analysis but, luckily, you have a budget to use for this work.

Activities

Review your overall budget for the cost-benefit analysis and make sure that you have sufficient funds to procure an external expert for the anticipated work.



Review **Tool 7** – with recommendations on what the procurement Terms of Reference should include and adapt it to reflect the problem, the anticipated small set of solutions, and the anticipated outputs of the analysis.

Ensure that your pre-feasibility study includes the following considerations:

Technical analysis

Each option should be examined from a **technical perspective**, which can be based on existing research, literature, and case studies about the specific option. Case studies can be especially useful, helping to illustrate how the proposed option has been applied in different locations and how effective it has been, as well as potentially any challenges and issues that may have arisen in practice.

Financial Analysis

The costs and benefits of each option should be assessed through either a cost-benefit analysis (CBA) or cost-effective analysis (CEA) to determine which would make the most sense financially, within the boundaries of the available or anticipated budget.

A **cost-benefit analysis** can allow options to be compared in terms of a cost-benefit ratio (CBR), showing which options provide the maximum amount of benefits for the costs involved. This does require all costs and benefits to be measured in quantifiable, monetary terms, which may be challenging. It may also result in more expensive options being promoted due to the higher level of benefits they provide, which may not always be necessary or affordable for achieving the goal of building the resilience of local communities.

A **cost-effectiveness analysis** (CEA), alternatively, focuses on identifying the least expensive option for achieving a particular objective, helping to identify the most efficient option. It requires all the costs of different options to be measured in quantifiable monetary terms, with the assumption that each option achieves the same benefit. The drawback is that in reality not all options may be equally effective and co-benefits or indirect costs are ignored.

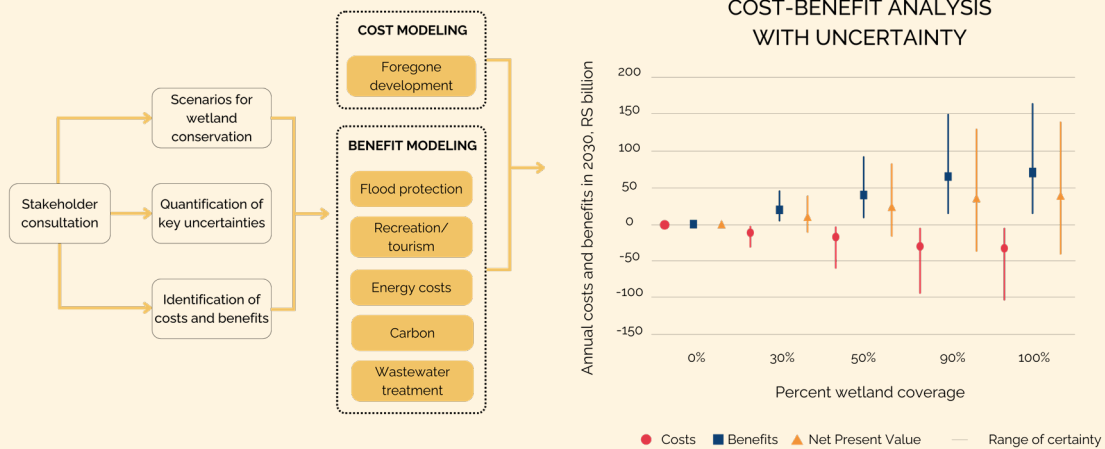
As such, it may be necessary to conduct both a CBA and CEA analysis, alongside the results of the MCA conducted in the previous step, to gain a comprehensive understanding of the best option from both a technical and financial perspective.

Follow your internal procurement process to hire an appropriate subject matter expert to complete the pre-feasibility study.

CASE STUDY

Cost-benefit analysis of Nature-based Solutions in Colombo, Sri Lanka

Local authorities in the city of Colombo, Sri Lanka, have been looking at the question of how to address the increasing frequency of flooding affecting different communities while minimising introducing measures (such as concrete flood defences) that might also affect the liveability of the city itself. The city quickly recognised the important role the wetlands play in managing flooding and undertook a cost-benefit analysis (CBA) of potential options to understand their financial feasibility.





Overview of the analytical approach for economic assessment, as shown in World Bank (2023).

The analytical approach taken involved quantifying the economic costs and benefits of conserving the wetlands, involving workshops with governments and civil society. The analysis included comparing different scenarios of future urban development and changing climate/hydrological conditions in the area. For each scenario of wetland conservation, the cost, benefit and net present value (NPV) is represented as a point with a range of uncertainty.

The results of the study showed that all options for investing in wetland conservation (even where there was high uncertainty of the results) would provide significant benefits that justified investment. These results were then used to convince decision-makers to proceed with the investment in a \$150,000 conservation project and modify its design to maximise benefits.

Review the results of the pre-feasibility study and share them with relevant internal departments.

 **Don't assume that all your municipal colleagues are aware of the proposed measure. Prepare an internal one-page memo to highlight your work and explain the approach for all involved parties.**



Present the results of the pre-feasibility study to community leaders and champions.

Consider feedback from these consultations and adapt the presentation of results as needed.

Schedule a session, as in the above steps, with broader community members. The objective of this session is to select the most appropriate option based on the results of the pre-feasibility study and the community's feedback.

Present the results of the pre-feasibility study to identify the most appropriate intervention.

Outcome

With the community's help, you have identified the most appropriate intervention. You can now proceed to the full feasibility study.

CASE STUDY

Pre-feasibility study of *CitiesAdapt Mexico*

Integrating the inputs from the community of Plan de Ayala Sur and including some of the concepts of sustainable urban planning from the student proposals described in the previous step, *CitiesAdapt Mexico* commissioned the elaboration of a pre-feasibility assessment of the community intervention.

The objective of this pre-feasibility study was to assess the **different intervention options** and integrate them into a proposal that improves climate resilience in the selected space for the intervention and brings about extra benefits to the community.

The proposed measure is underpinned by five lines of action:

- Create public spaces that are accessible, safe, and comfortable temperature-wise.
- Reduce heat islands.
- Improve soil permeability and reduce vulnerability to floods.
- Use native flora, considering the proximity of the neighbourhood to an ecological reserve.
- Promote sustainable mobility.

A special workshop is conducted with the community to share the results of the pre-feasibility study and ask for their feedback.



3D illustrations of possible interventions for climate adaptation, part of the pre-feasibility study conducted for CitiesAdapt in Plan de Ayala Sur, Mérida, Mexico. 2024. © CitiesAdapt



Step 4: Feasibility and Financing



- > Complete a full feasibility study of the selected solution, which will include 1) full architectural/engineering drawings, 2) full financial analysis of both the up-front costs and ongoing costs for maintenance and operation, and 3) suggestions for next steps for implementation.
- > Present the results of the feasibility study to the community for their input and validation. Conduct preliminary discussions on ongoing operations and maintenance.
- > As needed, approach funders and financiers for support in the delivery of the proposed intervention.
- > Negotiate and secure necessary funding to begin with the implementation of the suggested measure.
- > Confirm support from peers across the municipality and, as necessary, collect required permits.
- > As needed, procure external contractors for necessary roles in construction.

Starting Point

The community has reviewed all potential interventions as solutions to the problem and – based on the opinions of subject matter experts and other external viewpoints – has collectively endorsed a solution. Now your task is more straightforward, and you engage an expert advisor to conduct a **full feasibility study**, including full architectural/engineering drawings, a full financial analysis of both the up-front costs and ongoing costs for maintenance and operation, and suggestions for next steps for implementation.

Activities



Review **Tool 8** with recommendations on what the procurement Terms of Reference should include and adapt it to reflect the project as well as the procurement process for your city.

In general, a full feasibility study should include the following components:

- Full **financial analysis**, including upfront costs and ongoing costs for maintenance and operation;
- Full **architectural and engineering drawings**, also known as “Detailed design” or “Executive project”, which includes:
 - > Detailed technical drawings (blueprints, elevations, constructive details, structural design, hydraulics, mechanical, electrical and other necessary installations when relevant, etc.) according to local norms and safety standards;
 - > Definition of materials to be used by the project (e.g., flooring, paint), taking into account technical norms, the needs of the project and quality standards;
 - > Detailed cost and bill of quantities;
 - > Detailed construction schedule and management plan;
- Next steps in implementation.



The full feasibility study is an instrument that helps you both secure finance (if not secured yet), as well as obtain the necessary permits and guide the construction. Make sure that the full feasibility study is conducted in the detail needed, not only to ensure that the measure is complying with local administrative norms, but also to prevent re-works, to anticipate unexpected problems and reduce risks of construction completion, possible delays, and extra costs.



Follow your internal procurement process to hire an appropriate subject matter expert to complete the feasibility study.

Review the results of the feasibility study.

Present the results of the feasibility study to community leaders and champions.

Consider feedback from these consultations and adapt the presentation of results as needed.

Schedule a session, as in the above steps, with broader community members.

Present the results of the feasibility study to validate the intervention, specifically reviewing both the anticipated outcomes of the intervention and the role of the community for ongoing participation to ensure tracking of results and maintenance as required.

Incorporate community feedback and share the selected intervention with the community.

Initiate conversations with your colleagues in the finance department as well as potential funders and

financiers based on the amount of money required and the potential for revenue generation from the proposed intervention.



While there may be several different financing options for the project, the following options are likely to be the most feasible for smaller measures like the one described in this guide:

- Municipal budgets*,
- Grants and concessional loans from domestic public sources,
- Investment and loans from private banks and investors,
- Corporate sponsorship of projects,
- Grants from development agencies and philanthropies,
- Crowdsourcing from local communities.

* The availability of funds through municipal budgets may make sense for most smaller projects, where there is a clear public benefit for doing so. Where funds available may be too limited to cover the full cost of the project, they can be used to help subsidise the cost, with the remaining amount of funding raised from alternative sources.



When trying to show the benefit of the climate measure, it is useful to think in terms of the avoided costs or losses, i.e. the amount of damage, costs, and lives lost avoided by having the adaptation measures in place over different periods. Think for instance how much money the municipality has spent in the last couple of years in paving certain streets after a flood and calculate how much they would save if the floods were less occurring.



For many hyper-local projects, locally owned small businesses often are the main funders. Try to make sure to engage them in this process, especially once the intervention is selected, as much as possible.



Review the Access to Finance for Adaptation Measures at the Hyper-local Level Guide ([Resource 2](#)) for advice and guidance as needed. It contains helpful information and resources to ensure you can access the funding required to deliver the selected intervention.



Outcome

The planning phase is complete, and the project is now ready for construction. The community is likely to be watching very carefully, especially given their involvement in the measure's design.



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2024

School's competition submission of Exhaphozini Primary School in eSikhaleini, City of uMhlatuze, South Africa. July, 2024.
© CitiesAdapt



Step 5: Construction



- > Begin with the construction of the proposed intervention.
- > Supervise the construction to ensure technical soundness and plan for ongoing maintenance.
- > Regularly bring community leaders to observe the progress on the intervention's construction.
- > Confirm community roles as part of the ongoing operations and maintenance plans as identified in feasibility study.

Starting Point

You have completed all the steps leading up to the construction and delivery of the proposed solution. You have engaged with the community throughout the process, seeking their support in the identification of the problem, prospective solutions, and technical inputs from subject matter experts. You have also successfully secured all funding required to deliver the project as proposed.

Activities

Identify – based on the feasibility study and in consultation with colleagues at the City's Department of Public Works – the contractors required to deliver the proposed intervention.



Follow your internal procurement process to hire contractors as needed. Once you procured the contractor, create a **delivery plan** – you can use **Tool 9** as a template.

Invite the community for a public session to hear the contractor's approach to deliver the proposed intervention.

Sign the contract with the contractor using funds secured in the feasibility and financing step.

Supervise construction to ensure technical soundness and plan for ongoing maintenance.

Regularly bring community leaders to see progress on the construction of intervention.

Before project completion, meet with the contractor to identify the ongoing role of the community in the maintenance of intervention as delivered.

Confirm community roles as part of ongoing operations and maintenance plans as identified in the feasibility study.

Outcome

You have successfully helped the community to see the delivery of an intervention that meets their needs. The next and final step is to ensure that the project achieves its intended purpose.



Step 6: Post-construction



- > Working with community champions, approve the project as completed to the community's satisfaction.
- > Agree with the community leaders on a long-term maintenance plan.
- > Confirm the city's budget for long-term financing of the intervention's ongoing maintenance.
- > Prepare a brief note to help your peers better understand the process for long-term monitoring, evaluation, and learning from the intervention.
- > Commit to an annual review of the intervention's impact.

Starting Point

The contractor has completed the proposed intervention in line with the contracted specifications. The community sees that the contractor is preparing to leave, and everything looks complete.

Activities



Working with community champions, approving the project as completed to the community's satisfaction, hosting a celebratory session to mark the **end of the construction** phase of the project and with the community's sign-off that everything is satisfactory – you can use **Tool 10** to plan the session. During the session, publicly agree with the community leaders on their role in ongoing project maintenance.



A public session is an ideal opportunity to engage community leader for their commitment to ensuring that the project reaches its goals. Hold community leaders to account, looking for individuals – particularly community champions – to commit to specific activities.

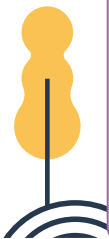


Internally, confirm that there is sufficient city budget to cover costs associated with maintenance to complement community leadership commitments.

Prepare a brief note to help peers to better understand the process for **long-term monitoring, evaluation and learning from the intervention**.



The form of M&E relies heavily on the type of measure introduced. Get some inspiration and ideas on what would be adequate for your intervention in **Resource 3**. For those projects that have quantifiable and scientifically measurable outputs, data can be somewhat objectively captured and reported on an annual basis. However, for those that are more qualitative, there is a need for more regular community engagement to assess community satisfaction. In both instances, though, it is very helpful to conduct these evaluations both for the intervention as planned as well as for the potential for replication in other communities that want to solve the same sorts of problems.



Six months after the completion of the intervention, meet with the community to commit to an annual review of the impact of the intervention.

Glossary

Adaptation: Adaptation refers to the adjustment of natural and human systems in response to current or future climate stimuli or their effects in order to mitigate adverse effects or exploit beneficial opportunities (IPCC, 2001).

Adaptation measure: This is an intervention aimed at limiting or reversing potential damage or taking advantage of opportunities created by climate variability and change. For consistency's sake, this guide uses the word 'measure' to define any actions that might be undertaken as some may ultimately align with behaviour change at the community level rather than a physical, tangible project; as a broader catch-all word, the term 'measure' is intended to encompass projects. In the earlier steps of the CitiesAdapt approach, we refer to the potential adaptation measures as "options", before they have been officially selected.

Champion(s): In the context of this guide, champions are defined as either community leaders or municipal officials who personally take ownership of ensuring the successful delivery of the programme, from inception through post-construction operations and maintenance. They play an essential role in the success of the measures implemented.

Climate change (CC): As per the definition from the UNFCCC, climate change refers specifically to any impact on the environment as a result of human activity (in contrast to naturally occurring phenomena).

Climate hazard/impact: The occurrence of a climate-related event that might affect local communities and their neighbourhood, e.g. flooding, heatwaves, and water shortages. As the climate continues to change, these hazards/impacts become increasingly common and increase in severity, causing more significant harm than they currently do.

Financing: In this guide, financing refers to money made available to pay for a particular measure. This could be in the form of debt finance (such as loans which need to be repaid), equity (where the provider of finance has a share of ownership of the project), grants from donors, public funding from national or local government, or crowdsourced funds where local communities help fund the project.

Nature-based Solutions (NbS): Nature-based Solutions address societal challenges through actions to protect, sustainably manage, and restore natural and modified ecosystems, benefiting people and nature at the same time. They target major challenges like climate change, disaster risk reduction, food and water security, biodiversity loss, and human health, and are critical to sustainable development. Many effective adaptation projects work with Nature-based Solutions to tackle particular threats, such as restoring mangroves in coastal areas to reduce flooding or introducing trees and waterways in towns to provide cooling effects during heat waves. These solutions can often be cheaper and more efficient than those relying on traditional 'grey' infrastructure solutions such as concrete flood defences.

Participatory processes: A participatory process is a sequence of participatory activities (such as surveys, workshops, and meetings) aimed at engaging different stakeholders to work together towards identifying appropriate measures and ultimately achieving collective decisions.

Resilience: Resilience refers to how well these systems can cope and respond to the impacts of climate change if they do occur. By adapting to these changes, communities can build resilience to current and future climate impacts.

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