The main objective of a technical feasibility study is to determine whether a certain plan of action is feasible—that is, will it work? A technical feasibility assessment should be applied to all projects being considered in order to better understand if the project can be done “technically” and whether it can be done “here and now.” Moreover, the early stages of technical analysis will help identify areas of strengths and weakness in the proposed project so that your city managers know where to direct further thought, planning, resources or assistance. You should conduct a technical feasibility assessment both at the early concept stage, to identify potential weaknesses or gaps in the approach, and when the project proposal has been finalized and is ready for implementation.

IN THIS SET YOU WILL:

- Learn the steps involved in implementing a technical feasibility study;
- Complete a simplified technical feasibility assessment for one of your proposed resilience projects; and
- Discuss the strengths and weaknesses of your assessment and how you might use feasibility assessments in general in developing and implementing your resilience strategy.
Overview

Technical Feasibility is analysis or research into the practicality of a proposed plan or method, including whether it can be delivered with the available technology, techniques, skills and resources (human and financial). A technical feasibility assessment will therefore focus on ‘can it be done’. This means that technical feasibility assessments are not just for highly technical or ‘hard’ projects (e.g. infrastructure solutions), but are valuable for any project, including those based on softer approaches such as capacity building, community action, and policy development. A technical feasibility assessment should also address the practicality of the proposed project by addressing potential constraints such as available timeframe, risks to implementation, and governance (such as regulations).

Technical feasibility analyses do not evaluate ‘should it be done’, which may be better revealed through other approaches such as cost-benefit, vulnerability analysis, stakeholder consultations, environmental and social assessments, and multi-criteria analysis. Many of these other approaches are addressed in other Series 3 Guides.

In a technical feasibility assessment you will consider a number of questions, criteria, and factors related to successful implementation, including:

- **Technology and techniques:** Do the technology and techniques required to deliver this project exist locally or globally? Have they been used before? If a new technology or technique is needed, how confident are we in its success? How can we demonstrate or support this confidence? What local or external assistance might be required to introduce or support the use of the technology or techniques?

- **Technical capacity/skills:** Do the skills exist locally to design and implement the project? Have they been used before? If some or all of the skills don’t exist locally, which skills need to be sought out externally and where? Many of these skills will have been identified in Set 3.6: Capacity Assessment, but through this process you may identify additional, highly technical skills associated with a specific project that need to be assessed.

- **Human and financial resources:** What is the scope of human and financial (budget) resources required to implement this project? Will the human resources be accessible, and how might costs change during the life of the project (operational, maintenance, etc.)?
• **Constraints:** What are the constraints or risks to implementation? What is the timeframe [how long and is it realistic]? Are there any legal, political, or statutory reasons why this particular approach may not be permitted or slowed down during implementation?

Implementing a feasibility assessment basically consists of answering three simple questions about your proposed project:

1. Can it be done?
2. Can it be done here and now?
3. How can the proposed methodology be improved upon?

Systematically exploring each of these questions will help identify areas of strengths and weakness in the proposed project, so that managers know where to direct further thought, planning, resourcing or assistance. Suggested steps for breaking down and exploring each of these three main questions are provided below. These questions are designed so that the outcome of your technical feasibility assessment will be “the proposed project is technically robust and justified.” This is achieved by identifying key issues at the end of each step, and in Step 3 potentially rethinking, expanding, or narrowing the proposal, or identifying further work required to justify the project.

While the technical feasibility assessment is designed to strengthen proposed projects, it is also designed to reflect the questions that potential funders will ask when assessing the project for funding. By anticipating and exploring in advance the questions potential funders may pose, you will be able to present carefully conceived approaches and provide information about their selection and implementation; this often increases the odds that a project will be accepted and quickly approved. This is particularly important where questions or criteria are answered ‘no’, ‘not sure’ or ‘we think so.’

However, even if you answer is ‘yes’ to questions below, further information or justification may be required by an external reviewer in the future. Often projects can look good on paper, or during the planning stage, but fail during implementation because they have not adequately considered the questions outlined below. Potential project funders will want evidence that a wide range of technical aspects have been carefully reviewed by the project proponents.
Technical Feasibility Assessment Methodology

1 OVERVIEW: CAN THIS BE DONE?
The first step in the technical feasibility assessment process is to consider whether, in principle, the technology, techniques, resources (e.g. financial, technological, human), and skills exist for the project to be achieved. The following questions will help to evaluate this:

- **What is being proposed**: Give details on the project proposal and why this particular approach is preferred.
- **How will it be implemented**: Do the technology and techniques needed for implementation exist locally? Do they exist nationally? Globally? Have they been used before on a project of this type? Have they ever been used before for any project?
- **Technical capacity/skills required**: Where has this been done before? What skills and experience are required? Are there specific skills associated with this project that were considered in the Capacity Assessment conducted in Set 3.6?
- **Human and financial resources**: What are the identified costs and how might costs (technology, people, processes) change during the life of the project?
- **Constraints**: What are the potential implementation challenges? What is the timeframe proposed and is it realistic? What are the potential gaps or challenges with the proposed approach?

2 ASSESSMENT: CAN IT BE DONE HERE AND NOW?
After evaluating whether the project is feasible `in principle`, proponents must closely review the feasibility of the project in their local context and with local constraints. The following questions will help to evaluate this:

- **Existing studies**: What studies have been carried out so far to support this solution and proposed method? What further studies may be required either to ensure feasibility or meet statutory requirements?
- **Technical capacity/skills**: Are the required skills and experience available locally or is external assistance needed? If the skills are available, do the individuals, departments or organizations with those skills understand your resilience planning efforts and are they willing to work with you? Are there external organizations or consultancies that might meet these needs? The matrix you build in Set 3.6 will be of use here.
- **Financial resources**: What is the expected budget and timeframe, and are these realistic? Are implementation and measurable results expected
within the funder’s time horizons?

• **Constraints**: What institutional support or approval is required? (Government sign-off, standards or codes, etc.) When and how can this be achieved? Are statutory approvals or environmental impact assessments required before implementation?

• **Integration**: What else is happening in the city that might help or hinder the implementation of this project? (e.g. another competing project, political attention is elsewhere).

### 3 REVIEW: HOW CAN IT BE IMPROVED?

The final stage of the technical feasibility seeks to address any gaps or specific challenges that steps 1 and 2 might have identified. If you have been conducting the assessment for a project that does not have an identified funding source up until now, you will want to review whether your proposal will meet donor criteria. The more refined and specific your project has become, the more likely you are to address specific gaps.

• What areas of the project have been identified as challenging? What areas require further thought, planning, resourcing or technical assistance?

• Can these project `challenges` be addressed locally or is external assistance needed? Are further studies required to resolve challenges? Should a narrower scope be considered? Should alternative or additional skills, capacities or techniques be considered?

• Would `expert review` be helpful in any aspect of the proposal?

• Is the project the best it can be [for the time, resources and budget?] How can it be improved?

#### To Think About

Technical feasibility assessments consider only whether a project can be done – not whether it is the best approach or better than doing nothing. Alongside the feasibility assessment, you should consider utilizing prioritization methods such as Cost-Benefit Analysis and Multi-Criteria Analysis. In applying these tools, you should account for gender and social vulnerability, the risks of maladaptation, and potential negative impacts on other city systems. It is important to remember that technical aspects a project are only one component and should be used in conjunction with tools and approaches to analyze other aspects of the project. Other methods that may be useful in assessing feasibility and comparing alternate approaches include:

• **Capacity Assessments** – Capacity assessments provide insight on who has the capacity to contribute to proposed approaches, where gaps exist, and where
additional or external support may be required. Capacity Assessments can feed in to the technical feasibility process, or be guided by the questions raised in the technical feasibility process [see Set 3.6: Capacity Assessment].

- **Cost-Benefit Analysis (CBA)**—CBA is designed to answer the question of ‘should it be done?’ i.e. how does the cost of what is being proposed relate to the benefits? [see Set 3.8: Introduction to Cost-Benefit Analysis]). A Participatory CBA [see Set 3.9: Participatory CBA] should be conducted alongside any technical feasibility assessment, and a Quantitative CBA [see Set 3.10: Quantitative CBA] will probably be required for any infrastructure project.

- **Multi-Criteria Analysis (MCA)**—MCA looks at alternative approaches to addressing the identified problem. Technical feasibility and CBA should both be considered when comparing alternatives in this way. [see Set 3.13: Multi-Criteria Analysis]

- **Vulnerability Assessments (VA)**—VAs help to identify who is particularly vulnerable and why, so that resilience strategies can be targeted toward these groups, and projects can be reviewed to ensure that interventions do not harm these groups [see Series 2: Assessing Vulnerability].

Applying technical feasibility assessments early and often can assist project proponents to enhance project strengths and identify potential weaknesses as the project evolves. Conducting an assessment only after the project has been fully planned may lead to significant wasted effort.

The strength of a technical feasibility assessment relies to some extent on who is undertaking the assessment; for instance; how much they know about the community, location, and/or organization that the proposal is addressing; how realistic they are about the potential for success; and whether they have any conflict of interests that might make them predisposed for or against the proposal (i.e. economic or political stakes in the project).

**ABOUT THE AUTHOR**

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