3.7.0

SERIES 3
Building Resilience

QUANTITATIVE COST-BENEFIT ANALYSIS

CLIMATE RESILIENCE FRAMEWORK
ISET-INTERNATIONAL

Contents of Set

This training set is designed for teams that need to implement a quantitative cost-benefit analysis to evaluate the cost-benefit of a proposed or implemented disaster risk reduction, climate adaptation, or climate resilience project. These materials discuss how to adapt a standard cost-benefit analysis to address situations where disaster frequency, magnitude, or intensity is changing due to climate change; and provide you the information you will need to develop a Terms Of Reference to hire the right the right team.

IN THIS SET YOU WILL:

- ✓ Learn the steps associated with implementing a quantitative cost-benefit analysis in a resilience and adaptation planning context; and
- ✓ Leave this training with materials that you can use to develop a Terms Of Reference for hiring the right team for the job.

TRAINING.I-S-E-T.ORG

Overview

A quantitative cost-benefit analysis undertaken for climate change or disaster risk-related projects differs from a conventional cost-benefit analysis by integrating future climate risks and future damages associated with climate events. In the case of adaptation and resilience planning, a quantitative cost-benefit analysis may include, but is not limited to:

- Using downscaled climate model results for a specific location to assess potential future changes in climate risk;
- Estimating damage costs that could occur as a result of potential disasters, such as damage to houses that could occur in future flood events;
- Assessing direct and indirect costs related to proposed or implemented adaptation or resilience solution; and
- Conducting a sensitivity analysis of the cost-benefit analysis results.

TYPICAL TEAM MAKEUP

The first step in implementing a quantitative CBA is to assemble a team to conduct the work. To address disaster risk reduction (DRR) and/or climate adaptation, your team will need to include an economist, a climate scientist, and potentially, a hazard specialist. These team members will provide key expertise and ensure the analysis is rigorous.

Economist: A quantitative CBA requires an economist with experience in completing the following:

- Has conducted and understands the steps involved in implementing a quantitative cost-benefit analysis;
- Understands how to read and develop depth damage curves;
- Can use valuation techniques to determine market and potential non-market values; and
- Familiarity with sourcing and identifying many types of data.

Climate Scientist: ISET has developed a cost-benefit approach that integrates climate change projections into the future cost-benefit assessment. However, this approach requires that both the city planning team and the CBA economist work with a climate scientist to identify the point at which climate events become an issue for the proposed or implemented resilience project.

- For city flooding, this could be a specific rainfall intensity, such as rains of more than 30 mm/hour for more than 3 hours.

- For energy production, this could be peak temperatures of over 40C, because generation efficiency drops at high temperatures.
- For typhoon-related damages and disasters this could be related to storm surge or wind speed.

However, your climate scientist will need specific information and input from you in order to contribute effectively. You will need to communicate what climate events are a problem and work with the climate scientist to describe those in ways that can be addressed with the information available from global climate models (e.g. in terms of temperature, precipitation intensity, or wind speed thresholds). Once you and your climate scientist have identified these climate thresholds, your climate scientist can gather the data needed to assess how the intensity and frequency of these events may change at specific times in the future.

Hazard Specialist: A hazard specialist will probably be required for your CBA analysis, to work with the economist, climate change scientist, and city planning team. The hazard specialist can:

- Help identify climate thresholds that are a problem;
- Help translate those into climate parameters the climate change scientist can work with; and
- Help the economist determine how to value current and potential future impacts.

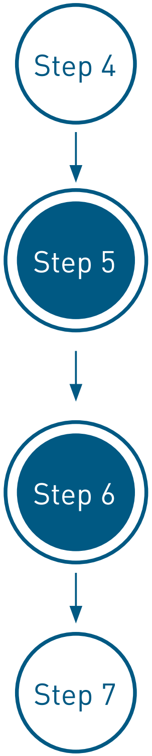
If you can hire a hazard specialist with detailed local community knowledge, they can help guide the economist in understanding community values, and based on those values, assign monetary values to non-monetary costs and benefits associated with the resilience strategies.

QUANTITATIVE PROCESS REVIEW

Once you have assembled your CBA team, the team will identify the key steps they plan to include in the quantitative cost-benefit analysis. You should be aware of key elements of a CBA related to adaptation/resilience planning and address any missing areas in the proposed scope of work. Figure 3.7.1 illustrates the steps involved in determining the costs and benefits associated with different disaster risk reduction strategies. This framework can be applied within the context of resilience and adaptation planning.

FIGURE 3.7.1: QUANTITATIVE PROCESS REVIEW

This process is similar to a typical cost-benefit analysis with the addition of a few key elements, primarily in Steps 5 and 6.



Step 4 Data Collection, the CBA team gathers the data needed to support the CBA analysis. It is helpful to categorize this data by hazard, exposure, fragility and impacts (explained in more detail below).

Step 5 Hazard and Vulnerability, the CBA team builds future hazard and vulnerability scenarios and uses the collected data to assess the damages or impacts that could occur under those scenarios. This entire step is unique to DRR/climate change resilience CBA, and entails making a number of assumptions about future systems, institutional constraints, and economic and governance conditions. The planning team should either be involved in this process, or at least require that these assumptions are clearly documented.

Step 6 Risk Analysis takes the future scenarios and builds loss-frequency curves for each scenario. Loss-frequency curves illustrate the recurrence interval of an event (on the x-axis) vs. the damage costs of that event (on the y-axis). So, for example, a loss-frequency curve will show the expected cost of annual flood events, 1-in-5 year flood events, 1-in-10 year events, etc. Separate loss-frequency curves are usually developed for the business-as-usual scenario (i.e. with no interventions or risk reduction strategies) and for each risk reduction strategy. By comparing damage costs between two curves, the reduction in damages achieved by the risk reduction strategies are readily apparent. This step differs from a traditional CBA, where benefits are calculated as the overall financial or social benefits of implementing the project. In this DRR/climate resilience approach, benefits are the reduction in damages — the losses that would have occurred, but because of implementation of a resilience strategy are avoided.

Step 7 Determining the Net Benefits the costs of implementing each of the strategies are compared against the avoided losses (benefits) associated with that strategy. The result is the economic efficiency of each strategy.

THESE FOUR STEPS AND THE ANALYSIS ARE DISCUSSED IN FURTHER DETAIL BELOW.

Step 4: Data Collection

Conducting a quantitative cost-benefit analysis is a data intensive process. It is suggested that the team organize the needed data into specific data categories (see below) that correspond with the analysis. An example data checklist is included in this training set to help with identifying and categorizing data. Data categories include:

Hazard Data: Hazard data are data used by the climate scientist and hazard specialist. These data include information on previous floods, flood depths, wind speeds, historical rainfall data, etc., and are used to develop future climate scenarios. These data can be found through:

- Scientific publications and official statistics
- Geological, metrological, and water authorities
- Disaster management authorities
- Statistical agencies
- Private firms
- For Climate Change Data: national or regional climate data centers, international climate data organizations such as the Hadley Center, UK, the National Center for Atmospheric Research (NCAR), USA, the National Oceanic and Atmospheric Administration (NOAA), USA, the Tindall Center, UK, and the World Meteorological Organization (WMO).

Exposure Data: Determining exposure levels is critical to understanding future vulnerability to events. Exposure data can be thought of as an inventory of current assets that exist in the city, village, district, etc. For example, this is the number of houses in the district, number of commercial buildings, etc. Exposure data is most often found in:

- Scientific publications and official statistics
- Census information

Depending on the availability and coverage of existing assets data, household or district level surveying may be required to establish the baseline data needed for this element of the analysis.

Fragility Data: Fragility data is information related to the percentage of current assets exposed to future events. For example, flood and storm risk maps allow the team to identify potential areas of future risk and determine future exposure potential. This can be used to determine the fragility of certain geographic areas of types of assets. Fragility information is generated using:

- Flood and storm risk maps
- Topographical maps that show locational vulnerabilities
- GIS analysis

Damages/Impacts Data: This is data about damages that occurred due to past events. For example, the lives lost, livestock losses, assets lost and infrastructure damages caused by a past flooding event. Past damage event data is used in Step 5 to project into the future and determine future event damages. Past event damage/impact information may be found in:

- Post-disaster publications
- Disaster management authorities
- Statistical agencies
- Private firms, such as insurance agencies

Once all available, relevant data is collected, the team moves into the next phase, the hazard and vulnerability analyses.

STEP 5: HAZARD AND VULNERABILITY ANALYSES

Series 2 of these training materials introduced vulnerability assessments. The vulnerability and hazard analyses used in a quantitative CBA can build off this previous work, but in general are more focused and quantitative in nature.

First, the CBA team will use the data gathered in Step 4 to develop informed assumptions about both future climate event frequency and future damages due to those events. They then conduct two separate analyses: first, a hazard analysis and second, a vulnerability analysis. For the vulnerability analysis, the team has the option to choose either an exposure and fragility approach or an historical impacts approach. The selected vulnerability approach will likely depend on the CBA team, their existing capacities and toolsets, and the available data.

Hazard Analysis: Future climate hazard data is obtained from climate change models. The models identify the probability of occurrence of various climate events. If you know at what point a climate event becomes a hazard, climate scientists can tell you how the frequency and intensity of that event may change in the future. However, to do this the climate scientist will need both a fairly long record of historical weather data (e.g. 20 or more years of daily temperature and rainfall data) and past hazard events data (ideally hourly data; could include temperature, precipitation, river flow, wind speed and/or sea level data depending on the hazard being analyzed) to develop scenarios for the future. If this data is not available, you may not be able to do this type of analysis; a participatory cost-benefit analysis may be far more successful if the required data is lacking (see Set 3.6).

Vulnerability Analysis: Within the cost-benefit analysis framework, vulnerability is associated with damages and losses that occur during future events. Determining future vulnerability is not an easy task and depends on the data available. ISET International utilizes two types of approaches to identify vulnerability of future assets. Your CBA team should select one of these for your analysis.

1. Exposure & Fragility Analysis Approach. Exposure and fragility can be used to determine future damages by identifying current stocks of assets, determining the fragility of those assets, and making assumptions that relate to future exposure and future fragility of those assets.
    - Exposure. Exposure is whether or not a system experiences impacts from a particular climate event. For a CBA, assessing exposure involves taking an inventory of current assets, etc. that would or could be impacted by climate events if they occurred.
    - Fragility. Fragility relates to the damages incurred in areas that are exposed. For a CBA, fragility is expressed as a percentage of exposed assets. For example, the percentage of assets that would incur damages during a flood where floodwaters reach a depth of 1 meter.
2. Impacts Based Approach. An impact-based approach differs from the exposure and fragility approach by collecting information on past events and identifying the damages that occurred during those historical events. This information is used to define a set of points along a curve related to the intensity of historical events. The curve is then used to determine future event damages associated with future event intensities. It is important to note that this process needs to take into consideration future changes in exposure and vulnerability.

The impact-based approach takes a more historical look at events, while the exposure and fragility approach looks at current assets and current fragility. Both approaches use a set of assumptions to project into the future, but the assumptions are a bit different for each one. And, the data needed for the two approaches can differ substantially.

For example, in an area lacking good data on the damages incurred during past hazards, the exposure and fragility approach is likely to be far more successful. When hiring your team, discuss with them how they might approach the hazard and vulnerability analyses portion of the quantitative CBA and make sure there is data to support their analysis and that you are comfortable with and understand their planned approach.

STEP 6: RISK ANALYSIS

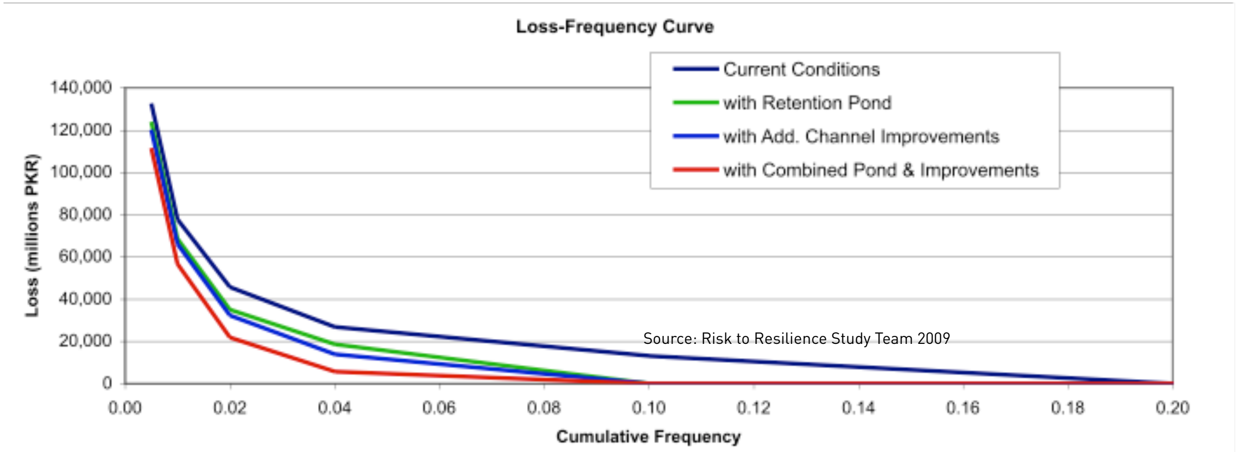
Identification of potential resilience/adaptation strategies was reviewed in Sets 3.2 and 3.3. As part of evaluating and prioritizing those potential strategies, you will want to assess their benefits. As stated earlier, the benefits in a climate change or DRR CBA are the avoided losses. Avoided losses are those losses (direct and indirect) that would be incurred under a business-as-usual scenario but would not be incurred if the risk reduction strategy were to be implemented. To determine those avoided losses (benefits) it is beneficial to develop loss frequency curves (Figure 3.7.2 below).

A loss frequency curve is created by plotting the recurrence frequency of an event (e.g. a 1-in-10 year flood event) with the damages sustained during that event. By plotting multiple events at multiple frequencies, you create a curve that can be used to determine the projected losses for events that haven't occurred. The loss frequency curves use the hazard and vulnerability analyses from Step 5 to determine potential events and potential losses.

Figure 3.7.2 illustrates a set of loss-frequency curves for a flood project evaluated by JICA. The y-axis shows estimated losses (in millions of Pakistani Rupees) and the x-axis shows the cumulative frequency of flooding. Cumulative frequency is the percentage chance that an event will happen in a given year; for example, 20% translates to a 1-in-5-year event.

In Figure 3.7.2, baseline conditions are shown in dark blue, and loss-frequency if various resilience strategies are implemented are shown in green, light blue and red. As can be seen, losses are lower when resilience strategies are implemented. When both retention pond and channel improvements are made (red line), there are no losses at the higher frequency events. Losses are only incurred at frequencies of 0.1 and lower (1-in-10-year events or rarer). Under current conditions, there are losses at frequencies of 0.2 (1-in-5-year events), and higher cost losses at all frequencies.

FIGURE 3.7.2: JICA OPTIONS FOR THE LAI RIVER



Source: Risk to Resilience Study Team 2009

Loss frequency curves allow us to evaluate the relative benefits of alternatives against each other and against the business-as-usual scenario. We analyze the overall costs and benefits of the risk reduction strategy in Step 4. This is where we will look at the lifetime of the project and assess the benefits and costs that are expected to accrue each year.

STEP 7: DETERMINE NET BENEFITS

To determine net benefits, you subtract the total benefits (avoided losses) identified in Step 6 from the total costs of implementation. The costs are usually the cost of implementing the project (capital costs) as well as ongoing operations and maintenance. Projects (such as the retention pond in Figure 3.7.2) may not be completed within the first year of implementation, so benefits may not start accruing immediately.

Table 3.7.1 shows the expected benefits and costs of the retention pond strategy included in Figure 3.7.2. You can see that in the first year significant costs are incurred (construction of the pond) but no benefits are realized. Benefits start to accrue in year two, and costs from year two

TABLE 3.7.1: COSTS AND BENEFITS TABLE

Year	Calendar Year	Costs	Benefits	Net Benefits: Benefits-Costs	Discounted Costs	Discounted Benefits	Discounted Net Benefits
1	2005	84	0	-84	84	0	-84
2	2006	1	72	71	1	64	63
3	2007	1	73	72	1	58	57
4…	2008	1	74	73	1	53	52
27	2031	1	104	103	0	5	5
28	2032	1	106	105	0	5	5
29	2033	1	108	107	0	5	4
30	2034	1	109	108	0	4	4
31	2035	1	111	110	0	4	4
	SUM	**114**	**2703**	**2589**	**92**	**650**	**558**

Source: Mechler 2005

on are much smaller, reflecting on-going maintenance only. The table also employs the use of discounting (see side box for further explanation) to bring all future costs and benefits to today's values. These adjusted costs and benefits are listed in the "Discounted costs/benefits" columns. This type of cost-benefit table should be completed for each alternative to allow ranking among projects.

To rank projects relative to one another, the costs and benefits table needs to be condensed into terms that will allow the team to compare alternatives. This is done by calculating net present value (NPV), benefit cost ratios (BCR) and internal rates of return (IRR).

Net Present Value (NPV): takes the net benefit (benefit minus costs) each year and discounts these to their present day value. If the result is greater than zero, this indicates that the benefits outweigh the costs. The higher the value, the greater the financial argument for initiating the project. A project will just have one Net Present Value number. In general, if a project has a negative Net Present Value it should not be adopted.

Benefit-Cost Ratio (BCR): indicates how much benefit will accrue for every $1 of cost. A ratio greater than 1 indicates that the project is worth investing in from a financial perspective, anything less than one indicates a negative return. Projects can also be ranked by BCR.

Internal Rate of Return (IRR): the rate of growth participating parties require to make the investment. It is often used when determining economic efficiency, and is expressed as a percentage.

If we take the Lai River Case from Figure 3.7.2, we saw that three strategies were investigated: the use of a retention pond, the construction of additional channel improvements, and the combination of both the alternatives. The loss-frequency curve indicates that both alternatives reduce damages, and the combination of alternatives reduces damages more than either alone. However, Figure 3.7.2 does not indicate the implementation costs. To ranks the alternatives, we need additional information. We need to look at the NPVs and BCRs to determine which strategy to adopt. Figure 3.7.3 provides the associated net present value and benefit cost ratio each of the alternatives alone and the two combined, along with additional options not shown in Figure 3.7.2.

DISCOUNT RATE

To interpret CBA results you must pay attention to the discount rates that are used to put all income (benefit) and cost streams in the project life as a single number in the present. The discount rate allows us to compare benefits (or costs) in the future with benefits (or costs) in the present. The discount rate is basically the return one might expect if the same money was invested in an alternative project or put in a bank. For example, if we put money in a bank with an interest rate of say 10% per annum, a $100 investment will become $110 in the next year. So if we have choice of getting a benefit of $100 this year it is better than receiving $100 in the next year because we have the ability to generate 10% income from it in the meantime. Therefore, we can say that if we were to get a benefit of $110 in the next year it would be worth $100 in the present, if we applied a discount rate of 10% per annum to it.

However, there are many ways to calculate discount rates and many donors and/or countries use different discount rates to accept results of Cost-Benefit Analysis. In our previous example, we use a bank interest rate as the discount rate. However, it may be more appropriate to use a social discount rate because disaster risk reduction is not necessarily a commercial investment and it creates public benefits. Social discount rates represent the returns (in percentage per annum) to other similar interventions in say public health or education, and represent the current value of income streams vs. foregoing public good related investment.

The discount rate can strongly influence the outcome of a CBA. A large or very small discount rate can tilt the balance between costs and benefits by putting different values on future costs and benefits. One way to overcome this is to preform sensitivity analysis on discount rate. In a sensitivity analysis, your CBA analyst will calculate results using a range of different discount rates. You can then clearly see how the discount rate affects results.

TABLE 3.7.3
Lai River Case Final Results

Strategy/Intervention	Net Present Value of Investment (PKR mill.)	Benefit-Cost Ratio
Expressway/channel	24,800	1.88
JICA options (both)	3,593	9.25
Retention Pond	2,234	8.55
River Improvement (additional channel improvements)	1,359	25
Early Warning	412	0.96
Relocation	15,321	1.34

Source: Adapted From Risk to Resilience Study Team 2009

Figure 3.7.3 indicates that the expressway and relocation strategies for flood control (not included in Figure 3.7.2) have very high net present values. The rule of thumb for net present values is to consider any project that has a positive net present value, and to rank projects from largest to smallest NPV.

If we were to use NPV alone to select projects, the expressway/channel would be the top priority project. However, most communities are resource (money) constrained and want to ensure that they are getting as much benefit as possible out of their money. The benefit-cost ratio indicates the projects that yield the greatest benefit for their cost. Projects with benefit-cost ratios greater than one are generally retained for further consideration, and the higher the benefit-cost ratio, the greater the benefit accrued for the money spent. Figure 3.7.3 indicates that both the expressway/channel and relocation alternatives have benefit-cost ratios greater than one, but their benefit-cost ratios are relatively low in comparison to the other strategies. In the case of the Lai River, the river improvement strategy yields the highest benefits per dollar spent (BCR=25). However, because in this case river improvements can be done relatively cheaply and only in specific areas, the net present value of the river improvement strategy is actually quite low (i.e., the overall cost is low, the relative reduction in damages for the cost is high, but the total reduction in damages is only moderate). In this type of situation, decision-makers need to weigh overall goals of strategy implementation along with the NPV or BCR of individual strategies in prioritizing and ranking strategies for implementation.

In summary, it is critical to assemble the right team when conducting a climate change cost-benefit analysis. If well implemented, the quantitative process can significantly contribute to understanding the overall benefits of certain adaptation or risk resilience strategies. In general though, quantitative cost-benefit analysis, both traditional and for DRR/climate change, is expensive, time consuming, and data intensive. A participatory CBA should be conducted prior to a quantitative CBA, and quantitative CBA should only be used if there is clear demand for the specific output it will produce. If it is clear a quantitative CBA is required, the CBA team should be carefully selected, should have prior expertise with traditional CBA approaches, and should be excited about the opportunity to incorporate future risk into their analysis.

TO THINK ABOUT

Cost-benefit analysis is most useful while comparing options. It will be more effective to comparatively assess two or more risk reduction options than to analyze just one preferred option.

Before starting a quantitative CBA assessment, clarify the objectives with the project stakeholders—why are you doing this CBA, what information do you need to get from the analysis, and how will you use that information? **At a very early stage of the analysis, it is critical to achieve consensus among the interested and involved parties on the scope of the CBA to be undertaken** (Mechler 2005).

Once objectives have been clarified, identify the information and data needed to address those objectives. If the required data isn't available, consider using a participatory cost-benefit analysis approach instead.

Distributional benefits—who will benefit, how they will benefit, who will not benefit, who will be harmed, and how they will be harmed—are not addressed by cost-benefit analysis. **If you are going to use a cost-benefit analysis in evaluating a project, it is important to also evaluate the social and environmental impacts of the project.**

When controversial projects (such a hydroelectric dam) appear, **CBA cannot be used to effectively resolve value-based arguments.**

CBA should be used with other decision-making tools to ensure that a broad range of opinions is represented.

EXAMPLE DATA FRAMEWORK CHECKLIST

1: HAZARD/METEOROLOGICAL DATA				
Type of data	Do we need this data? Yes/No	Who has the data?	What type of format is the data in?	Additional Notes (i.e. data must be purchased, doesn't exist.)
Flood Depths and Duration				
River Flow or Stage				
Wind Speed				
Rainfall				
Temperature				
Drought Durations				

1: This is data that will be collected and used by the climate scientist. Any data relating to past events would be very beneficial.

2: FRAGILITY				
Flood & Storm Risk Maps				
Topographical Maps				

2: Information related to the fragility of the city to future events, such as areas in flood plains that are planned for development.

3: DAMAGES/IMPACTS				
Overview of events and year of occurrence				
Total deaths and injuries associated with each event				
Total residential damages (assets lost, working days lost, school days lost)				
Total Business & industry damages (total business disruption costs, total business assets lost)				
Total Public damages (roads, water system, public buildings)				

3: Damage data related to past events.

4: EXPOSURE: VALUATION OF POTENTIALLY EXPOSED ASSETS				
Type of data	Do we need this data? Yes/No	Who has the data?	What type of format is the data in?	Additional Notes (i.e. data must be purchased, doesn't exist.)
Exposure: Valuation of Potentially Exposed Assets				
Residential (current value of typical household assets. This might mean livestock, tv, radio, others).				
Commercial property (current value of assets related to current businesses and industries –formal and informal.)				
Public Assets (current inventory of public assets. This is usually expressed in a monetary term for value of the assets. For example, the cost to build, maintenance, staffing, upgrade, etc.):				
Roads				
Water and sewage				
School Buildings				
Health units, outlets, centers etc.				
Electrical Utilities and Distribution Network				
Livestock and poultry				
Vegetation, farmland and crops				
Transport (rickshaw, pickup, trucks, donkey carts, etc.)				

4: Exposure of assets and indoor moveables in district, city, state, etc.

ABOUT THE AUTHOR

FAWAD KHAN, Senior Economist, ISET-Pakistan.

Mr. Fawad Khan, senior economist based in Islamabad, has been collaborating with ISET-International on a number of projects since 2006. Mr. Fawad Khan has extensive experience working on the economics of major policy and implementation projects from his period as a staff member with the World Bank. Along with partners at IIASA he has also played a lead role in the methodology design and implementation of ISET-International's prior research on the costs and benefits of climate related disaster risk reduction interventions for the Risk to Resilience project. Formalities to establish ISET-Pakistan as an independent, sister organization to ISET, are ongoing. ISET's office in Islamabad can be found on the very preliminary website, still under construction: www.isetpk.org

CONTRIBUTING AUTHOR

KATE HAWLEY, Research Associate.

Ms. Hawley received her Master's in Sustainable International Development from Brandeis University. During her time at Brandeis, she worked with the Asian Development Bank (ADB) supporting Nepal's five-year climate change strategy as well as undergoing research on the costs and benefits of community climate change adaptation strategies in Nepal. Her project experience spans a number of national and international agencies including the National Park Service, US Department of Energy, and Energy Trust of Oregon. Her background is in business and economics and she received her bachelor's degree from Cornell University.

References

Mechler , R. (2005). *Cost-benefit Analysis of Natural Disaster Risk Management in Developing Countries.* Retrieved from: http://www.mekonginfo.org/assets/midocs/0003131-environment-cost-benefit-analysis-of-natural-disaster-risk-management-in-developing-countries-manual.pdf.

Risk to Resilience Study Team. (2009). *Catalyzing Climate and Disaster Resilience: Processes for Identifying Tangible and Economically Robust Strategies.* Kathmandu, Nepal: Institute for Social and Environmental Transition & Institute for Social and Environmental Transition-Nepal.

This document is an output from a project funded by the UK Department for International Development (DFID) and the Netherlands Directorate-General for International Cooperation (DGIS) for the benefit of developing countries. However, the views expressed and information contained in it are not necessarily those of or endorsed by DFID, DGIS or the entities managing the delivery of the Climate and Development Knowledge Network*, which can accept no responsibility or liability for such views, completeness or accuracy of the information or for any reliance placed on them.