# TERMS OF REFERENCE

***Disaster and Climate Change Risk Assessment – Project Level (Simple)***

REGIONAL
*RG-T3528*
*Rolling-Out of the Methodology to Enhance Resilience to Disaster and Climate Change Risk in IDB Projects (*LINK*)*

## 1. Background and Justification

**1.1.** The Rolling-Out of the Methodology to Enhance Resilience to Disaster and Climate Change Risk in IDB Projects technical cooperation has the objective of implementing the rolling-out of the Disaster and Climate Change Risk Assessment Methodology for IDB Projects in 2020. The development and now implementation (via a complete roll-out for IDB projects) of the Methodology aims to improve the technical capacity of clients to face these risks in the region. By setting a framework for the evaluation of disaster risk throughout the project cycle that is gradual and scalable, and by providing guidance on the methods and minimum requirements of a risk assessment, the IDB is providing its client countries, both through its application to individual projects and through its ability to be used as an example for adaptation in country or local levels, a tool of high additionality.

**1.2.** *(Provide a brief justification for the existence of this project/contract explaining why the project/contract is needed. This will help the consulting firms to better understand the overall direction and context of the project/contract and its goals. This justification should be clear and precise to identify quantifiable measure of success for the end of the project.)*

## 2. Objectives

**2.1.** The overall purpose of this consultancy is to develop a Disaster and Climate Risk Assessment (DRA) and an accompanying Disaster and Climate Risk Management Plan (DRMP) for the [*project name*] project, to meet with the IDBG's Disaster Risk Management Policy requirements as well as to provide resiliency and improve or enhance the project's sustainability.

## 3. Scope of Services

**3.1.** The DRA is expected to go beyond a generic literature review of all possible risks, it is expected to focus on the specific project-related issues that have been identified as relevant for this risk assessment, and which are specified next, and use accepted or standard methods to conduct a [*qualitative and/or quantitative*] analysis. The disaster and climate risks shall be evaluated for [*seismic, volcanic, landslide, tsunami, hurricane wind, storm surge, inland flooding, coastal flooding, sea level rise, drought and/or heatwave*] hazards in the study area of [*location*] and specifically for the following components or aspects of the operation: [*components/aspects*].

**3.2.** This analysis shall provide a [*qualitative and/or quantitative*] measure of the baseline risk conditions, as well as those of any proposed design or operation alternatives (that is, on a first instance for the existing conditions without the operation, and on a second instance for the newly generated conditions after the operation is in place), for (i) the operation itself and (ii) for the operation's surrounding area and communities.

It is important to highlight that in assessing the risk for the surrounding communities, special care should be taken to identify (i) the marginal risk and (ii) additional impacts for these as a result of the implementation of the operation. This shall be done keeping in mind the difference between risk and impacts, where risk refers to the end result of combining the magnitude of a consequence with its frequency of occurrence, whereas impacts refer to the individual and frequency-independent consequences. Hence, there may be cases where the implementation of an operation generates new or additional impacts on its surroundings that would not be possible without the project, but overall reduces the risk. In consequence, the marginal risk refers to identifying how the risk (including both recurrent-small and rare-large events) changes for the surroundings, with respect to the situation without the operation, making sure that the operation does not exacerbate the risk for its surroundings. In addition to this, the newly generated impacts shall also be identified and assessed.

**3.3.** Based on a careful analysis of these results, the consultancy should provide recommendations and design/management guidelines aimed at reducing or managing the disaster risk of both the operation and the surrounding area, as well as a management plan for the identified impacts on surrounding communities and population.

## 4. Key Activities

**4.1.** [Conduct a **qualitative** risk assessment.

**4.1.1.** Gather data.

Gather all valuable data regarding studies, documents and considerations that the project may already have, and document how and to what extent disaster and climate risk management measures have already been incorporated, as well as identify gaps.

**4.1.2.** Perform a complete qualitative risk assessment.

This can be done through a workshop where disaster and climate risk experts work with technical personnel from the design/construction firms and the operation's executing agency to discuss and gauge all possible risks, contributing factors, potential consequences and intervention measures. Other qualitative techniques include formally applying the Delphi method of consulting expert opinion or using risk matrices. It must be indicated if it is possible to characterize and estimate the order of magnitude of possible social, economic and environmental impacts that would not be possible without the existence of the project.

**4.1.3.** Build a Disaster and Climate Risk Management Plan.

Using the results from the previous activities, build a risk management plan for those features of the operation that are deemed to not condition the technical and/or economic viability of the project. On the other hand, if specific features of the operation are found to condition the project's viability, these must be assessed quantitatively.]

**4.2.** Conduct a **deterministic quantitative** risk assessment.

**4.2.1.** Conduct a **baseline** (current conditions, pre-interventions) [*input hazard(s)*] Risk Assessment for (a) the operation, and (b) the communities of [*names of communities*] located in the influence area.

[*Only for hydrometeorological hazards:* For each of these analyses, two configurations of the risk model should be considered, without considering climate change, and with climate change]. This activity is comprised of the following specific activities:

4.2.1.1. Hazard evaluation: evaluate the [*input hazard(s)*] hazard in terms of spatial extent, intensity and frequency of occurrence. For this, select one or more individual hazard scenarios, which may be reproductions of historical events or modeled design or worst-case scenarios. [*Input specific simplified method according to specific hazard*]. [*Only for hydrometeorological hazards:* Two hazard conditions should be considered, without considering climate change, and with climate change].

4.2.1.2. Exposure evaluation: assemble a geodatabase of all the physical assets (infrastructure and buildings) and social assets (population) that are part of (i) the operation itself, if something already exists and it comprises multiple assets that are spatially distributed, and (ii) the surrounding area of influence (nearby communities or settlements). These must be characterized through their physical conditions, their use sectors, and their economic value.

4.2.1.3. Vulnerability evaluation: evaluate the vulnerability conditions of (i) the project itself (if something already exists) and (ii) nearby assets and population. Best professional judgement and expert opinion should be used to assign this characteristic to individual assets (for the case of the operation) and grouped assets (for multiple assets in surrounding communities).

4.2.1.4. Risk evaluation: evaluate the resulting risk from the combination of hazard, exposure and vulnerability, evaluated above. For this, use GIS tools to obtain the values of the hazard intensity ([*input intensity measures corresponding to each hazard(s)*]) for the location of each exposed asset, determine the corresponding affection/damage level expected for each asset under the specific hazard intensity, and finally associate an economic value to the computed damage levels to obtain risk. [*Only for hydrometeorological hazards:* this calculation shall be carried out twice, using the hazard conditions without considering climate change, and with climate change].

**4.2.2.** Conduct a [*input hazard(s)*] Deterministic Risk Assessment including the operation and alternatives.

Based on the results obtained from activity 4.2.1, introduce the proposed project, together with risk reduction/mitigation/intervention measures or design alternatives, and conduct a second [*input hazard(s)*] Deterministic Risk Assessment, using the same methods and conditions as in activity 4.2.1, now introducing these interventions. For this, modifications must be made to the hazard, exposure or vulnerability evaluations if appropriate, responding to the changes that introducing the operation and intervention measures may cause.

The results for each of the evaluations made shall be expressed through the estimated economic losses, and these should be compared among themselves, but more importantly, compared to the results from activity 4.2.1, analyzing the differences in losses between the baseline and the post-operation implementation conditions. Hazard and risk maps should also be developed for the studied scenarios, and these should be compared to the maps from activity 4.2.1.

**4.2.3.** Build a Disaster and Climate risk Management Plan.

Using the results from the previous activities, build a risk management plan that considers additional measures to further reduce the risk and to control the expected impacts.

## 5. Expected Outcome and Deliverables

**5.1.** Report 1: workplan and detailed study methodology
**5.2.** [Report 2: risk and data diagnosis from the **qualitative** risk assessment (activity 4.1.1.)
**5.3.** Report 3: results from the **qualitative** risk assessment (activity 4.1.2.)
**5.4.** Report 4: disaster & climate risk management plan from the **qualitative** risk assessment (activity 4.1.3.)]
**5.5.** Report 5: results from the baseline deterministic **quantitative** risk assessment (activity 4.2.1.)
**5.6.** Report 6: results from the deterministic **quantitative** risk assessment including the operations and intervention measures (activity 4.2.2.)
**5.7.** Report 7: disaster & climate risk management plan from the deterministic **quantitative** risk assessment (activity 4.2.3.)

*(Bank policy GN-2765-1 does not allow the procurement of goods and related services except when such goods and related services are necessary to achieve the objectives of the Bank-executed Operational Work and are included in the consulting services contract and represent less than ten percent (10%) of the consulting services contract value.) If it is determined that acquisition of goods is necessary by the consulting firm, please add a very detailed technical specification of the minimum requirement of said goods.)*

## 6. Project Schedule and Milestones

**6.1.** Report 1 must be presented within 10 calendar days after the signature of the contract.
**6.2.** Report 2 must be presented within 25 calendar days after the signature of the contract.
**6.3.** Report 3 must be presented within 40 calendar days after the signature of the contract.
**6.4.** Report 4 must be presented within 50 calendar days after the signature of the contract.
**6.5.** Report 5 must be presented within 80 calendar days after the signature of the contract.
**6.6.** Report 6 must be presented within 120 calendar days after the signature of the contract.
**6.7.** Report 7 must be presented within 130 calendar days after the signature of the contract.

## 7. Reporting Requirements

**7.1.** Products must be presented both in English and Spanish except for Report 1 that can be presented only in Spanish. All reports will be delivered as follows: i) the relevant electronic files in MS Word, Excel, or other application acceptable to the IDB (must include all annexes and appendices); ii) an electronic PDF file for each full report. These reports and electronic files should be delivered within the time limits mentioned above.
**7.2.** Provide verified working copies of all digital map files (.shp, .tiff, .grd, .gdb, .mxd, etc.), models, databases, and other files created during the consultancy.
**7.3.** Additionally, major findings of the consultancy must be summarized in a MS PowerPoint presentation both in English and Spanish.

## 8. Acceptance Criteria

**8.1.** The *[division]* Division of the IDB (*division acronym*) will have the technical responsibility of the execution of this contract as well as approval of products prepared by the consulting firm. This will be done in close coordination with the Climate Change Division (CSD/CCS), the Environmental and Social Safeguards Unit VPS/ESG and with the Environment, Rural Development and Disaster Risk Management Division (CSD/RND). In representation of the IDB, the technical coordination for this consultancy rests with *[xx], (position), [division] (email),* in close coordination with CCS, ESG and RND.

## 9. Other Requirements

**9.1.** *(Describe any special requirements, such as security requirements, any IT access restrictions/requirements or system downtime/maintenance if required.)*

## 10. Supervision and Reporting

**10.1.** The *[division]* Division of the IDB (*division acronym*) will have the technical responsibility of the execution of this contract as well as approval of products prepared by the consulting firm. This will be done in close coordination with the Climate Change Division (CSD/CCS), the Environmental and Social Safeguards Unit VPS/ESG and with the Environment, Rural Development and Disaster Risk Management Division (CSD/RND). In representation of the IDB, the technical coordination for this consultancy

rests with [xx], (position), *[division] (email),* in close coordination with CCS, ESG and RND.

## 11. Schedule of Payments

**11.1.** Payment terms will be based on project milestones or deliverables. The Bank does not expect to make advance payments under consulting contracts unless a significant amount of travel is required. The Bank wishes to receive the most competitive cost proposal for the services described herein.

**11.2.** The IDB Official Exchange Rate indicated in the RFP will be applied for necessary conversions of local currency payments.

| **Payment Schedule** | |
|---|---|
| ***Deliverable*** | **%** |
| 1. At Bank's approval of Report 1 | 10% |
| 2. At Bank's approval of Report 2 | 10% |
| 3. At Bank's approval of Report 3 | 15% |
| 4. At Bank's approval of Report 4 | 10% |
| 5. At Bank's approval of Report 5 | 15% |
| 6. At Bank's approval of Report 6 | 20% |
| 7. At Bank's approval of Report 7 | 20% |
| **TOTAL** | 100% |

# TERMS OF REFERENCE

## *Disaster and Climate Change Risk Assessment – Project Level (Full)*

REGIONAL
*RG-T3528*
*Rolling-Out of the Methodology to Enhance Resilience to Disaster and Climate Change Risk in IDB projects (LINK)*

## 1. Background and Justification

**1.1.** The Rolling-Out of the Methodology to Enhance Resilience to Disaster and Climate Change Risk in IDB Projects technical cooperation has the objective of implementing the rolling-out of the Disaster and Climate Change Risk Assessment Methodology for IDB Projects in 2020. The development and now implementation (via a complete roll-out for IDB projects) of the Methodology aims to improve the technical capacity of clients to face these risks in the region. By setting a framework for the evaluation of disaster risk throughout the project cycle that is gradual and scalable, and by providing guidance on the methods and minimum requirements of a risk assessment, the IDB is providing its client countries, both through its application to individual projects and through its ability to be used as an example for adaptation in country or local levels, a tool of high additionality.

**1.1.** *(Provide a brief justification for the existence of this project/contract explaining why the project/contract is needed. This will help the consulting firms to better understand the overall direction and context of the project/contract and its goals. This justification should be clear and precise to identify quantifiable measure of success for the end of the project.)*

## 2. Objectives

**2.1.** The overall purpose of this consultancy is to develop a Disaster and Climate Risk Assessment (DRA) and an accompanying Disaster and Climate Risk Management Plan (DRMP) for the [*project name*] project, to meet with the IDBG's environmental and social safeguards requirements as well as to provide resiliency and improve or enhance the project's sustainability.

## 3. Scope of Services

**3.1.** The DRA is expected to go beyond a generic literature review of all possible risks, it is expected to focus on the specific project-related issues that have been identified as relevant for this risk assessment, and which are specified next, and use accepted or standard methods to conduct a [*qualitative and/or quantitative*] analysis. The disaster and climate risks shall be evaluated for [*seismic, volcanic, landslide, tsunami, hurricane wind, storm surge, inland flooding, coastal flooding, sea level rise, drought and/or heatwave*] hazards in the study area of [*location*] and specifically for the following components or aspects of the operation: [*components/aspects*].

**3.2.** This analysis shall provide a [*qualitative and/or quantitative*] measure of the baseline risk conditions, as well as those of any proposed design or operation alternatives (that is, on a first instance for the existing conditions without the operation, and on a second instance for the newly generated conditions after the operation is in place), for (i) the operation itself and (ii) for the operation's surrounding area and communities. To conduct these assessments, the consultancy will [*qualitatively and/or quantitatively*] evaluate the hazard conditions in terms of its spatial extent, intensity and frequency of occurrence (for the above mentioned hazards), the project's and surrounding communities' physical vulnerability to these hazards in terms of their expected behavior/response to being affected, and the expected levels of damage, losses and affection in population, ecosystems and infrastructure of the operation and surrounding communities.

It is important to highlight that in assessing the risk for the surrounding communities, special care should be taken to identify (i) the marginal risk and (ii) additional impacts for these as a result of the implementation of the operation. This shall be done keeping in mind the difference between risk and impacts, where risk refers to the end result of combining the magnitude of a consequence with its frequency of occurrence, whereas impacts refer to the individual and frequency-independent consequences. Hence, there may be cases where the implementation of an operation generates new or additional impacts on its surroundings that would not be possible without the project, but overall reduces the risk. In consequence, the marginal risk refers to identifying how the risk (including both recurrent-small and rare-large events) changes for the surroundings, with respect to the situation without the operation, making sure that the operation does not exacerbate the risk for its surroundings. In addition to this, the newly generated impacts shall also be identified and assessed.

**3.3.** Based on a careful analysis of these results, the consultancy should provide recommendations and design/management guidelines aimed at reducing or managing the disaster risk of both the operation and the surrounding area, as well as a management plan for the identified impacts on surrounding communities and population.

## 4. Key Activities

**4.1.** [Conduct a **qualitative** risk assessment.

**4.1.1.** Gather data.

Gather all valuable data regarding studies, documents and considerations that the project may already have, so as to document how and to what extent disaster and climate risk management measures have already been incorporated in the project designs and in general in the area of study, as well as to identify the gaps that exist.

**4.1.2.** Perform a complete qualitative risk assessment.

This can be done through a workshop where disaster and climate risk experts work with technical personnel from the design/construction firms and the operation's executing agency to discuss and gauge all possible risks, contributing factors, potential consequences and intervention measures. Other qualitative techniques include formally applying the Delphi method of consulting expert opinion or using risk

matrices. It must be indicated if it is possible to characterize and estimate the order of magnitude of possible social, economic and environmental impacts that would not be possible without the existence of the project.

**4.1.3.** Build a Disaster and Climate risk Management Plan.
Using the results from the previous activities, build a risk management plan for those features of the operation that are deemed to not condition the technical and/or economic viability of the project. On the other hand, if specific features of the operation are found to condition the project's viability, these must be assessed quantitatively.]

**4.2.** Conduct a [*fully- or pseudo-*] **probabilistic quantitative** risk assessment (see section 9.1 for details on the methodology to conduct this assessment).

**4.2.1.** Conduct a **baseline** (current conditions, pre-interventions) Probabilistic [*input hazard(s)*] Risk Assessment for (a) the operation, and (b) the communities of [*names of communities*] located in the influence area.

[*Only for hydrometeorological hazards:* For each of these analyses, two configurations of the risk model should be considered, without considering climate change, and with climate change]. This activity is comprised of the following specific activities:

4.2.1.1. Hazard evaluation: probabilistically evaluate the [*input hazard(s)*] hazard in terms of spatial extent, intensity and probability of occurrence. [*Only for hydrometeorological hazards:* Two hazard conditions should be considered, without considering climate change, and with climate change].

4.2.1.2. Exposure evaluation: assemble an updated geodatabase of all the physical assets (infrastructure and buildings) and social assets (population) that are part of (i) the operation itself, if something already exists and it comprises multiple assets that are spatially distributed, and (ii) the surrounding area of influence (nearby communities or settlements).

4.2.1.3. Vulnerability evaluation: probabilistically evaluate the vulnerability conditions of (i) the project itself (if something already exists) and (ii) nearby assets and population.

4.2.1.4. Risk evaluation: probabilistically evaluate the resulting risk from the combination of hazard, exposure and vulnerability, evaluated above. [*Only for hydrometeorological hazards:* this calculation shall be carried out twice, using the hazard model without considering climate change, and with climate change].

**4.2.2.** Conduct a Probabilistic [*input hazard(s)*] Risk Assessment including the operation and proposed alternatives.
Based on the results obtained from activity 4.2.1, introduce the proposed project, together with risk reduction/mitigation/intervention measures or design alternatives,

and conduct a second Probabilistic [*input hazard(s)*] Risk Assessment, using the same methods and conditions as in activity 4.2.1, now introducing these interventions. This activity is comprised of the following specific activities:

4.2.2.1. Propose risk reduction measures: based on the risk evaluations from activity 4.2 provide structural (physical construction or engineering techniques or technology) and/or nonstructural (policies, laws, training or education) designs guidelines and strategies to reduce and manage the [*input hazard(s)*] risk of the area and increase its adaptive capacity.

4.2.2.2. Run a second Probabilistic [*input hazard(s)*] Risk Assessment: for this, modifications must be made to the hazard, exposure or vulnerability evaluations if appropriate, responding to the changes that introducing the operation and intervention measures may cause.

The results of this new evaluation made shall be expressed through the estimated economic losses, and these should be compared among themselves, but more importantly, compared to the results from activity 4.2.1, analyzing the differences in losses between the baseline and the post-operation implementation conditions. Hazard and risk maps should also be developed, and these should be compared to the maps from activity 4.2.1.

**4.2.3.** Build a Disaster and Climate risk Management Plan.
Using the results from the previous activities, build a risk management plan that considers additional measures to further reduce the risk and to control the expected impacts.

## 5. Expected Outcome and Deliverables

**5.1.** Report 1: workplan and detailed study methodology
**5.2.** [Report 2: risk and data diagnosis and results from the **qualitative** risk assessment (activity 4.1.1. and 4.1.2.)
**5.3.** Report 3: disaster & climate risk management plan from the **qualitative** risk assessment (activity 4.1.3.)]
**5.4.** Report 4: results from the **baseline probabilistic quantitative** hazard assessment (activity 4.2.1.1.)
**5.5.** Report 5: results from the **baseline probabilistic quantitative** exposure, vulnerability and risk assessment (activities 4.2.1.2 – 4.2.1.4.)
**5.6.** Report 6: operation design and risk reduction and intervention measures (activity 4.2.2.1.)
**5.7.** Report 7: results from the **probabilistic quantitative** risk assessment including the operation and intervention measures (activity 4.2.2.2.)
**5.8.** Report 8: disaster & climate risk management plan from the **probabilistic quantitative** risk assessment (activity 4.2.3.)

*(Bank policy GN-2765-1 does not allow the procurement of goods and related services except when such goods and related services are necessary to achieve the objectives of*

*the Bank-executed Operational Work and are included in the consulting services contract and represent less than ten percent (10%) of the consulting services contract value.) If it is determined that acquisition of goods is necessary by the consulting firm, please add a very detailed technical specification of the minimum requirement of said goods.)*

## 6. Project Schedule and Milestones

**6.1.** Report 1 must be presented within 10 calendar days after the signature of the contract.
**6.2.** Report 2 must be presented within 40 calendar days after the signature of the contract.
**6.3.** Report 3 must be presented within 50 calendar days after the signature of the contract.
**6.4.** Report 4 must be presented within [80/120: pseudo- or fully-probabilistic] calendar days after the signature of the contract.
**6.5.** Report 5 must be presented within [130/180: pseudo- or fully-probabilistic] calendar days after the signature of the contract.
**6.6.** Report 6 must be presented within [140/190: pseudo- or fully-probabilistic] calendar days after the signature of the contract.
**6.7.** Report 7 must be presented within [200/250: pseudo- or fully-probabilistic] calendar days after the signature of the contract.
**6.8.** Report 8 must be presented within [210/260: pseudo- or fully-probabilistic] calendar days after the signature of the contract.

## 7. Reporting Requirements

**7.1.** Products must be presented both in English and Spanish except for Report 1 that can be presented only in Spanish. All reports will be delivered as follows: i) the relevant electronic files in MS Word, Excel, or other application acceptable to the IDB (must include all annexes and appendices); ii) an electronic PDF file for each full report. These reports and electronic files should be delivered within the time limits mentioned above.
**7.2.** Provide verified working copies of all digital map files (.shp, .tiff, .grd, .gdb, .mxd, etc.), models, databases, and other files created during the consultancy.
**7.3.** Additionally, major findings of the consultancy must be summarized in a MS PowerPoint presentation both in English and Spanish.

## 8. Acceptance Criteria

**8.1.** The *[division]* Division of the IDB (*division acronym*) will have the technical responsibility of the execution of this contract as well as approval of products prepared by the consulting firm. This will be done in close coordination with the Climate Change Division (CSD/CCS), the Environmental and Social Safeguards Unit VPS/ESG and with the Environment, Rural Development and Disaster Risk Management Division (CSD/RND). In representation of the IDB, the technical coordination for this consultancy rests with *[name], (position), [division] (email),* in close coordination with CCS, ESG and RND.

## 9. Other Requirements

**9.1.** The consulting firm should follow the methodology detailed next to conduct activity 4.2.

Probabilistic [*hazard(s)*] Risk Assessment methodology: a *[pseudo- or fully-]* probabilistic risk assessment seeks to estimate the losses (economic or human) that in average can be expected to occur with a certain temporal recurrence in a determined set of assets or population that is exposed to one or more natural hazards. A study of this nature consists of four modules – hazard module, exposure module, vulnerability module and risk module – each of which is explained next.

**Hazard module:** the hazard module of a *[pseudo- or fully-]* probabilistic risk assessment consists of a [set of integrated hazard results each one with an associated return period // set of stochastic events which as a whole represent the entire universe of possibilities of [*hazard(s)*] in the study area*: pseudo- or fully-probabilistic respectively*]. Each of these [integrated hazard scenarios // individual hazard events*: pseudo- or fully-probabilistic respectively*] must contain the spatial distribution of the intensity measure selected for analysis – [*hazard intensities*] in this case –, and an associated [return period // frequency of occurrence, so that a probability distribution can be built for the selected intensity measure*: pseudo- or fully-probabilistic respectively*].

[*Input specific probabilistic modeling method according to specific hazard*]. [*Only for hydrometeorological hazards:* Climate change must be included, using future climatic projections drawn from similar conditions as the Intergovernmental Panel on Climate Change (IPCC) scenarios. Regional climate model projections should be used (if possible), applying downscaling techniques when necessary. The resulting projections should directly be used to alter or modify the historic analysis and subsequent process of generating stochastic events. To do this it is recommended to use weather generator models such as the *non-parametric K-Nearest Neighbor*[1] (Simonovic and Peck, 2009), *SDSM*[2] (Wilby and Dawson, s.f.) or similar.]

**Exposure module:** the exposure module of a probabilistic risk assessment consists of a geo-referenced database containing all of the physical assets, as well as population, that may be affected by a natural hazard. The hazard module (explained above) will affect what is contained in this module. This module must properly characterize the assets, storing attributes such as their physical conditions, construction types and materials, number of stories, use sector, economic value, and any others that may be needed to connect to the vulnerability module.

**Vulnerability module:** the vulnerability module of a probabilistic risk assessment consists of a set of probabilistic vulnerability curves which depict the expected behavior of an asset under a determined hazard. These relate hazard intensity with a level of

[1] https://ir.lib.uwo.ca/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1027&context=wrrr
[2] http://www.lboro.ac.uk/departments/sspgs/social-impact/climate-adaptation/

damage, typically expressed through a percentage of the asset's value that is lost. To create these functions for individual assets that are required to be studied in detail, adequate and structure-specific engineering models must be built; [*input specific modeling method according to specific hazard*]. On the other hand, for the surrounding communities, which may be comprised by numerous assets, the exposure database shall be classified into general structural typologies (groupings), and existent vulnerability functions may be used.

**Risk module:** the risk module of a *[pseudo- or fully-]* probabilistic risk assessment combines the hazard, exposure and vulnerability modules and computes losses in a probabilistic manner. The objective of a PRA lies in obtaining the complete universe of possible losses and their probability or frequency of occurrence. The sequence of the risk calculation is as follows: [for each integrated hazard scenario the expected loss is computed for each exposed asset, the contribution from all assets is computed and the corresponding losses for different return periods are obtained / for each hazard event, the probability distribution of the loss is computed for each exposed asset, then the probability that the loss for this scenario exceeds a certain value is computed, then this is multiplied by the annual frequency of occurrence of the scenario, and finally the contribution of all scenarios is computed*: pseudo- or fully-probabilistic respectively*].

[Risk results are usually depicted in terms of the Annual Average Loss (AAL) computed from the resulting losses and their corresponding return periods // Risk results are usually depicted in what is called the loss exceedance curve (LEC) which contains all the necessary information on losses. From the LEC, a couple of metrics can be derived, which are usually used to express risk: the Average Annual Loss (AAL), Probable Maximum Loss (PML) and probabilities of exceeding certain losses in specific timeframes*: pseudo- or fully-probabilistic respectively*. ] Risk maps can be created, illustrating the geographic distribution of the AAL, both in absolute (economic losses) and relative (as a percent of the exposed assets' value) terms, to visually identify areas at higher or lower risk.

**9.2.** The consulting firm must have experience in disaster risk assessments, [*only for hydrometeorological hazards:* climate modelling, climate change vulnerability assessments], [*hazard*] modelling, and statistical analysis. Having a local team member is a plus. At least one member of the team should have proved know-how of the intervention area. The consultant team can be composed by any number of specialists as soon as they combine at least the following experience:

- Project leader: At least 15 years of demonstrated professional experience in leading multidisciplinary groups in disaster risk assessments, [*only for hydrometeorological hazards:* climate risks and climate change]. Master's degree in project management, engineering, administration, economy, finance, or related field.
- Disaster risk specialist: At least 10 years of demonstrated professional experience in conducting disaster risk analysis, [*only for hydrometeorological hazards:* specifically

working with climate-related risks and climate change]. Proven experience in developing [*hazard*] models and conducting probabilistic [*hazard*] risk analysis. Proven knowledge of using probabilistic disaster risk methodologies and modelling platforms such as CAPRA, HAZUS or similar. Professional degree (preferably Master's) in civil or environmental engineering, geography, or similar.

- [*Only for hydrometeorological hazards:* Climate Modeler: University professional with master's degree in Civil or Environmental Engineering, Atmospheric or Climate Science, or related field.]
- [*Hazard*] Modeler: Professional with master's degree in engineering or similar, and at least 5 years of demonstrated [*hazard*] modelling. [*Input hazard-specific requirements*].
- Local specialist: University professional with at least 10 years of proven working experience in the intervention area.

## 10. Supervision and Reporting

**10.1.** The *[division]* Division of the IDB (*division acronym*) will have the technical responsibility of the execution of this contract as well as approval of products prepared by the consulting firm. This will be done in close coordination with the Climate Change Division (CSD/CCS), the Environmental and Social Safeguards Unit VPS/ESG and with the Environment, Rural Development and Disaster Risk Management Division (CSD/RND). In representation of the IDB, the technical coordination for this consultancy rests with [xx], (position), *[division] (email),* in close coordination with CCS, ESG and RND.

## 11. Schedule of Payments

**11.1** Payment terms will be based on project milestones or deliverables. The Bank does not expect to make advance payments under consulting contracts unless a significant amount of travel is required. The Bank wishes to receive the most competitive cost proposal for the services described herein.

**11.2** The IDB Official Exchange Rate indicated in the RFP will be applied for necessary conversions of local currency payments.

| **Payment Schedule** | |
|---|---|
| ***Deliverable*** | **%** |
| 8. At Bank's approval of Report 1 | 5% |
| 9. At Bank's approval of Report 2 | 10% |
| 10. At Bank's approval of Report 3 | 10% |
| 11. At Bank's approval of Report 4 | 10% |
| 12. At Bank's approval of Report 5 | 15% |
| 13. At Bank's approval of Report 6 | 20% |
| 14. At Bank's approval of Report 7 | 20% |
| 15. At Bank's approval of Report 8 | 10% |
| **TOTAL** | 100% |

# TERMS OF REFERENCE

***Consultancy for the inspection and assessment of potential disaster and climate change risks post-event in projects financed by the Bank***

REGIONAL
*RG-T3528*
*Rolling-Out of the Methodology to Enhance Resilience to Disaster and Climate Change Risk in IDB projects (LINK)*

## 1. Background and Justification

**1.1.** The Rolling-Out of the Methodology to Enhance Resilience to Disaster and Climate Change Risk in IDB Projects technical cooperation has the objective of implementing the rolling-out of the Disaster and Climate Change Risk Assessment Methodology for IDB Projects in 2020. The development and now implementation (via a complete roll-out for IDB projects) of the Methodology aims to improve the technical capacity of clients to face these risks in the region. By setting a framework for the evaluation of disaster risk throughout the project cycle that is gradual and scalable, and by providing guidance on the methods and minimum requirements of a risk assessment, the IDB is providing its client countries, both through its application to individual projects and through its ability to be used as an example for adaptation in country or local levels, a tool of high additionality.

**1.1.** This consultancy will evaluate disaster and climate risk related aspects in the following operation: (*name and project number*). (*Provide a brief justification for the existence of this project/contract explaining why the project/contract is needed. This will help the consulting firms to better understand the overall direction and context of the project/contract and its goals. This justification should be clear and precise to identify quantifiable measure of success for the end of the project.)*

## 2. The team

**2.1.** The *[division]* division is part of the *[sector]* and provides *[type of services provided, or work conducted by the division]*.

## 3. What you'll do

**3.1.** The consultant will conduct a site visit to the *(project number)* project in *(country and municipality)* and perform the following activities:

- Site visit to *(country and municipality and specific locations).*
- Perform a qualitative assessment of the current disaster and climate risk for the project.
- Propose a set of short-term recommendations to manage pressing issues.
- Propose a set of medium/long-term recommendations to manage remaining risks (*only for the case where TOR are needed:* including detailed Terms of Reference for further studies if these are found to be needed.)

## 4. Deliverables

**4.1.** The consultant will deliver the following:

- Product 1: Memory aid report including the results of the diagnosis performed and of the meetings and/or interviews conducted during the site visit.
- Product 2: Report summarizing the findings and short-term recommendations.
- Product 3:Report summarizing the medium and long-term recommendations (*only for the case where TOR are needed:* including detailed Terms of Reference for further studies.)

## 5. Payment timeline

- 25% after dellivery and approval of Product 1
- 35% after dellivery and approval of Product 2
- 40% after dellivery and approval of Product 3

## 6. Skills you'll need

**6.1.** The consultant must have the following skills:

- **Education:** Master's degree in civil or environmental engineering, environmental sciences or related fields. *(specific specialties such as hydraulic engineering, geotechnical engineering, structural engineering, etc.)*.
- **Experience:** At least 5 years of experience in *(specific studies)* studies.
- **Languages:** Spanish required, English desired.
- **Core and Technical Competencies:** *(specific competencies)* and disaster and climate risk assessment methodologies.

## 7. Opportunity Summary

**7.1. Type of contract and modality:** Products and External Services Cotractual (PEC), Lump Sum.

**7.2. Length of contract:** 2 months

**7.3. Location:** *(specific locations(s))*

**7.4. Responsible person:** The *[division]* Division of the IDB (*division acronym*) will have the technical responsibility of the execution of this contract as well as approval of products prepared by the consulting firm. This will be done in close coordination with the Climate Change Division (CSD/CCS), the Environmental and Social Safeguards Unit VPS/ESG and with the Environment, Rural Development and Disaster Risk Management Division (CSD/RND). In representation of the IDB, the technical coordination for this consultancy rests with [xx], (position), *[division] (email),* in close coordination with CCS, ESG and RND.

**7.5. Requirements:** You must be a citizen of one of the IDB's 48 member countries and have no family members currently working at the IDB Group.

**8. Our culture**

**8.1.** Working with us you will be surrounded by a diverse group of people who have years of experience in all types of development fields, including transportation, health, gender and diversity, communications and much more.

**9. About us**

**9.1.** At the Inter-American Development Bank, we're devoted to improving lives. Since 1959, we've been a leading source of long-term financing for economic, social, and institutional development in Latin America and the Caribbean. We do more than lending though. We partner with our 48-member countries to provide Latin America and the Caribbean with cutting-edge research about relevant development issues, policy advice to inform their decisions, and technical assistance to improve on the planning and execution of projects. For this, we need people who not only have the right skills, but also are passionate about improving lives.

**10. Payment and Conditions**

**10.1.** Compensation will be determined in accordance with Bank's policies and procedures. The Bank, pursuant to applicable policies, may contribute toward travel and moving expenses. In addition, candidates must be citizens of an IDB member country.

**11. Visa and Work Permit**

**11.1.** The Bank, pursuant to applicable policies, may submit a visa request to the applicable immigration authorities; however, the granting of the visa is at the discretion of the immigration authorities. Notwithstanding, it is the responsibility of the candidate to obtain the necessary visa or work permits required by the authorities of the country(ies) in which the services will be rendered to the Bank. If a candidate cannot obtain a visa or work permit to render services to the Bank the contractual offer will be rescinded

**12. Consanguinity**

**12.1.** Pursuant to applicable Bank policy, candidates with relatives (including the fourth degree of consanguinity and the second degree of affinity, including spouse) working for the IDB, IDB Invest, or MIF as staff members or Complementary Workforce contractuals, will not be eligible to provide services for the Bank.

**13. Diversity**

**13.1.** The Bank is committed to diversity and inclusion and to providing equal opportunities to all candidates. We embrace diversity based on gender, age, education, national origin, ethnic origin, race, disability, sexual orientation, and religion. We encourage women, Afro-descendants and persons of indigenous origins to apply.

# TERMS OF REFERENCE

## *Disaster and Climate Change Risk contractual support*

REGIONAL
*RG-T3528*
*Rolling-Out of the Methodology to Enhance Resilience to Disaster and Climate Change Risk in IDB projects*
*(LINK)*

**Background:** Established in 1959, the Inter-American Development Bank ("IDB" or "Bank") is the main source of financing for economic, social and institutional development in Latin America and the Caribbean. It provides loans, grants, guarantees, policy advice and technical assistance to the public and private sectors of its borrowing countries.

To adequately respond to the challenges raised by climate change in the region, the Bank has created the new Climate Change and Sustainability Department (CSD), which will be leading, through the Climate Change Division (CCS), this agenda in response to member countries' needs and requirements. Along these lines, the objective of the IDB's Climate Change Division is to (i) strengthen the Bank's knowledge base; (ii) strengthen institutions and private and public sector capacity; (iii) develop instruments to mainstream climate change mitigation/adaptation and increase resilience of Bank-funded activities; (iv) identify and develop lending and technical assistance for climate action in key sectors; and (v) scale up investments, address financial gaps and leverage private sector investments. CSD/CCS carries out such activities with the support of specialized IDB staff, trust fund appointees, secondees, and other contractuals.

In addition to CSD, the Bank has a Safeguards Unit (ESG), which is responsible for the compliance of environmental and social safeguard policies of the Bank. In particular and in reference to climate change impacts, ESG runs a screening tool aimed at identifying high risk projects which may require additional environmental, social or disaster risk assessments. This is done in line with policies OP-703 and OP-704 and the Directive B.3 on Screening and Classification. Although current projects' screening process is being carried out following standardized methodologies for identifying clear environmental, social and disaster risks, the identification of climate risk and resilience opportunities are not analyzed in too much detail. Therefore, there is a need to revise existing screening[3] process to be able to early identify both high climate risk projects and resilience opportunities.

This goes in line with commitments made by the Bank during COP21 in Paris last year, namely increasing financing of climate change up to 30% to 2020 and improve climate screening process for relevant sectors to be able to identify resilience opportunities. These commitments have been endorsed by the Governors of the Inter-American Development Bank and Inter-American Investment Corporation during Governors Annual Meetings in April 2016.

**The team:** The Climate Change division is part of the Climate Change and Sustainable Development Sector (CSD) and provides technical support in climate change and sustainability

[3] The Bank incorporated disaster risk (including hazards stemming from climatic variations) within the project cycle as part of the Disaster Risk Management (DRM) Policy (OP-704) in 2007. 4 The DRM Policy guidelines (GN-2354-11) define a procedure to assess project disaster risk that includes: (i) project screening and classification, integrated in the safeguards system; and (ii) a Disaster Risk Assessment (DRA) if the project is classified as moderate or high risk. These procedures include considerations of climate change considerations. The Bank is enhancing the methodology to incorporate climate change risk in these procedures and methodologies, in order to screen relevant projects for climate change and disaster risk.

aspects to the Bank's sectors, operations and clients. The Environmental and Social Safeguards Unit (ESG or the Unit) is responsible for the assessment and management of environmental and social impacts and risks in Bank operations; the Unit also develops and disseminates knowledge to enhance the management of impacts and risks in such a way as to benefit clients and stakeholders and to foster sustainable development in the region.

**What you'll do:** The objective of this consultancy is to help project teams, under the guidance of ESG and CCS, to identify and address disaster and climate risks in the eligibility and quality review stages of the project cycle.

All activities will be coordinated with the Climate and Disaster Risk Management Community of Practice that includes at minimum representation from CCS, ESG, and RND. The group could, if needed, revise and discuss products developed through this consultancy. The main activities foreseen under this consultancy are listed, but are not limited, to the ones below:

*Under VPS/ESG supervision:*

- Climate and Disaster Risk Safeguard Screening
    - Support ESG and CCS in the adequate implementation of the disaster and climate change risk screening methodology for projects[4].
    - Support capacity building activities associated with the implementation of the screening process within ESG, and other divisions in the Climate Change and Sustainable Development Sector and Infrastructure Sector.
    - Provide support to ESG Specialists, Project Team Leaders and project teams to ensure an adequate implementation of the screening tool: for the accurate application of sector indices and the GIS support tool.
    - Provide guidance and support to any questions regarding the Safeguard toolkit on Disaster Risk aspects.
- Disaster Risk Management through the Project Cycle
    - Provide support during the project preparation (incl. ESS, ESMR, and supervision) related to Disaster Risk Management on high and medium risk projects, especially related to exacerbation of risk to human life, property and the environment, based on the disaster and climate change risk screening report for each relevant sector to: (i) Inform decisions as to require disaster risk and climate change expertise to most effectively support the specific project; (ii) Identify the critical studies required for project preparation (risk assessment studies, opportunity analyses); and (iii) Identify mechanisms to deliver the studies and ensure implementation of the results. (iv) Participate on missions during project preparation to identify critical issues related to Disaster Risk Management in medium and high-risk projects.
- Support the development and/or review the adequacy of Terms of reference for Disaster Risk Assessment (DRA) and Disaster Risk Management Plans (DRMP) related to risks to environment and communities for high and medium risk projects.
- Support the quality assurance and review the Disaster Risk Assessments (DRA) or equivalent and Disaster Risk Management Plan (DRMP) prepared for high-risk and medium projects[5].
- Support the development of knowledge and training for ESG specialists related to Disaster Risk Management.

[4] This methodology is currently being prepared by a Consulting firm and includes the development, application, and continuous improvement of the disaster and climate change risk screening tool.
[5] This includes the revision of past DRAs and propose improvements in the methodology.

*Under CSD/CCS supervision:*

- Work with the climate and disaster risk management working group to help project teams identify how to assess risks to project viability, and work with project teams to ensure that feasibility and design studies take into account appropriate risk-management and resilience opportunities as needed.
- Work with project teams to supervise elaboration of project DRAs, and to best incorporate results from the DRA process into key project documents including Economic Studies, Indicators, Construction designs, etc.
- Develop indicators to assess the effectiveness of the DRM approach during project implementation.
- Support CCS and RND with the dialogue with SPD to strengthen incentives to include climate risk in relevant project cycle documents including the DEM.
- Support the establishment of a monitoring, evaluation, and learning process where the approach disaster and climate risk screening can be peer-reviewed.
- Provide technical support to the CCS division on disaster risk management and climate change.

*Under supervision from both divisions:*

- Contribute to improve the Methodology to assess Disaster Risk Management in the project cycle, in a joint effort with ESG, CCS, RND.
- Contribute to implement the methodology for Disaster Risk Management in projects from CSD and INE sectors.
- Support the development of online training course on Disaster Risk Management designed for executing agencies.

**Skills you'll need:**

- **Education:** Master's degree or equivalent in Civil and Environmental Engineering, Disaster Risk Management, Climate Change Adaptation, Risk Modeling, or related fields.
- **Experience:** A minimum of five years of relevant professional experience in experience with climate adaptation, resilience and disaster risk management; experience in managing data systems; experience in multi-hazard risk assessments; experience in engineering and infrastructure projects; and relevant work experience with projects in multilateral or bilateral cooperation institutions. Advanced level in data management; experience understanding risk modelling.
- **Languages:** Fluent in English and Spanish. Knowledge of Portuguese or French is a plus.
- **Core and Technical Competencies:** a) Planning and Organizational Skills: Demonstrated organizational capability and ability to carry out multiple and detailed tasks, and demonstrated capacity to operate with minimal supervision; b) Teamwork: Ability to take initiative and lead others, share knowledge and information, express disagreements tactfully and ability to lead interdisciplinary and multicultural team; c) Communication: ability to present concise, clear and precise analysis and recommendations. The post requires the ability to communicate effectively with multiple stakeholders.

**Opportunity Summary:**

- **Type of contract:** Contractual
- **Length of contract:** X years
- **Starting date:** XX, 2020
- **Location:** Headquarters in Washington D.C.

- **Responsible Person:** The *[division]* Division of the IDB (*division acronym*) will have the technical responsibility of the execution of this contract as well as approval of products prepared by the consulting firm. This will be done in close coordination with the Climate Change Division (CSD/CCS), the Environmental and Social Safeguards Unit VPS/ESG and with the Environment, Rural Development and Disaster Risk Management Division (CSD/RND). In representation of the IDB, the technical coordination for this consultancy rests with [xx], (position), *[division] (email),* in close coordination with CCS, ESG and RND.
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