

TERMS OF REFERENCE

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

REGIONAL

RG-T3328

Supporting climate and disaster risk assessment processes to foster resilient and sustainable development

<https://www.iadb.org/Document.cfm?id=EZSHARE-202119542-2>

1. Background and Justification

1.1. The Supporting Climate and Disaster Risk Assessment Processes to Foster Resilient and Sustainable Development technical cooperation has the objective of contributing with the ongoing work IDBG is leading in the region towards the improvement of existing methods and tools for climate change and disaster risk analysis and the identification of resilience opportunities in the identification, preparation and implementation phases of projects. The results and lessons learned from the execution of this TC will be instrumental in helping Bank's member countries make a transition towards a more effective upstream risk assessment and resilience process. In a highly dynamic global change context, this can make a difference for vulnerable countries to successfully achieve their sustainable development goals and adaptation commitments under their National Determined Contributions (NDCs).

Climate change and disaster risk and resilience opportunities are not generally integrated within classic design and construction practices beyond standard building codes and design parameters, and most of these do not include climate change considerations. Proper studies and considerations are not usually undertaken as part of operations themselves, both in preparation and implementation. To address this challenge, countries have identified the need for clear methodologies and resources to undertake risk and resiliency studies. To address this gap, the Bank has designed a methodology to conduct assessments to identify climate and disaster risks and resilience opportunities in relevant projects. This approach has been piloted in more than ten (10) Bank-financed projects in preparation and execution and is ready for broader application.

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, 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 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 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 **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:

- a. 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].
- b. 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.
- c. 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).
- d. 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)*] 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)*] 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 **quantitative** risk assessment (activity 4.2.1.)
- 5.6.** Report 6: results from the **quantitative** risk assessment including the operations and intervention measures (activity 4.2.2.)
- 5.7.** Report 7: disaster & climate risk management plan from the **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 Climate Change Division of the IDB (CSD/CCS) 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 Environmental and Social Safeguards Unit VPS/ESG and with the Environment, Rural Development and Disaster Risk Management Division (CSD/RND).

9. Supervision and Reporting

- 9.1. The Climate Change Division of the IDB (CSD/CCS) 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 Environmental and Social Safeguards Unit VPS/ESG and with the Environment, Rural Development and Disaster Risk Management Division (CSD/RND).

10. Schedule of Payments

- 10.1. 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.
- 10.2. The IDB Official Exchange Rate indicated in the RFP will be applied for necessary conversions of local currency payments.

Payment Schedule	
<i>Deliverable</i>	%
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

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

REGIONAL

RG-T3328

Supporting climate and disaster risk assessment processes to foster resilient and sustainable development

<https://www.iadb.org/Document.cfm?id=EZSHARE-202119542-2>

1. Background and Justification

1.1. The Supporting Climate and Disaster risk Assessment Processes to Foster Resilient and Sustainable Development technical cooperation has the objective of contributing with the ongoing work IDBG is leading in the region towards the improvement of existing methods and tools for climate change and disaster risk analysis and the identification of resilience opportunities in the identification, preparation and implementation phases of projects. The results and lessons learned from the execution of this TC will be instrumental in helping Bank's member countries make a transition towards a more effective upstream risk assessment and resilience process. In a highly dynamic global change context, this can make a difference for vulnerable countries to successfully achieve their sustainable development goals and adaptation commitments under their National Determined Contributions (NDCs).

Climate change and disaster risk and resilience opportunities are not generally integrated within classic design and construction practices beyond standard building codes and design parameters, and most of these do not include climate change considerations. Proper studies and considerations are not usually undertaken as part of operations themselves, both in preparation and implementation. To address this challenge, countries have identified the need for clear methodologies and resources to undertake risk and resiliency studies. To address this gap, the Bank has designed a methodology to conduct assessments to identify climate and disaster risks and resilience opportunities in relevant projects. This approach has been piloted in more than ten (10) Bank-financed projects in preparation and execution and is ready for broader application.

1.2. *(Provide a brief justification for the existence of this project/contract explaining why the project/contract is needed.)*

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 quantitative risk 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 quantitative** hazard assessment (activity 4.2.1.1.)
- 5.5. Report 5: results from the **baseline 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 **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 **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 110 calendar days after the signature of the contract.
- 6.5. Report 5 must be presented within 150 calendar days after the signature of the contract.
- 6.6. Report 6 must be presented within 170 calendar days after the signature of the contract.
- 6.7. Report 7 must be presented within 220 calendar days after the signature of the contract.
- 6.8. Report 8 must be presented within 240 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 Climate Change Division of the IDB (CSD/CCS) 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 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 the Team Leader.

9. Supervision and Reporting

9.1. The Climate Change Division of the IDB (CSD/CCS) 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 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 the Team Leader.

10. Schedule of Payments

10.1. 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.

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

Payment Schedule	
<i>Deliverable</i>	%
1. At Bank's approval of Report 1	5%
2. At Bank's approval of Report 2	10%
3. At Bank's approval of Report 3	10%
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%
8. At Bank's approval of Report 8	10%
TOTAL	100%

HRD Terms of Reference

Consultants

Job Title: Consultancy for the inspection and assessment of potential disaster and climate risks in projects financed by the Bank

Background:

The *Supporting Climate and Disaster Risk Assessment Processes to Foster Resilient and Sustainable Development* technical cooperation has the objective of contributing with the ongoing work IDBG is leading in the region towards the improvement of existing methods and tools for climate change and disaster risk analysis and the identification of resilience opportunities in the identification, preparation and implementation phases of projects. The results and lessons learned from the execution of this TC will be instrumental in helping Bank's member countries make a transition towards a more effective upstream risk assessment and resilience process. In a highly dynamic global change context, this can make a difference for vulnerable countries to successfully achieve their sustainable development goals and adaptation commitments under their National Determined Contributions (NDCs).

This consultancy will evaluate disaster and climate risk related aspects in the following operation: *(name and project number, justification)*

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 aspects to the Bank's sectors, operations and clients.

What you'll do: 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.)*

Deliverables: 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.)*

Payment timeline:

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

Skills you'll need: 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.

Opportunity Summary:

- **Type of contract and modality:** Products and External Services Contractual (PEC).
- **Length of contract:** 2 months
- **Location:** (*specific locations(s)*)
- **Responsible person:** The Climate Change Division of the IDB (CSD/CCS) 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 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 the Team Leader.
- **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.

Our culture: 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.

About us: 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.

Payment and Conditions: 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.

Visa and Work Permit: 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

Consanguinity: 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 contractuels, will not be eligible to provide services for the Bank.

Diversity: 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

Design and Implementation of Core Curriculum to Build the Capacity of Internal and External Stakeholders in Climate Change and Disaster Risk Assessment at the Project Level

REGIONAL

RG-T3328

Supporting climate and disaster risk assessment processes to foster resilient and sustainable development

<https://www.iadb.org/Document.cfm?id=EZSHARE-202119542-2>

1. Background and Justification

1.1. The Technical Cooperation for “Supporting Climate and Disaster Risk Assessment Processes to Foster Resilient and Sustainable Development”- (RG-T3328) has the objective of contributing with the ongoing work IDBG is leading in the region towards the improvement of existing methods and tools for climate change and disaster risk analysis and the identification of resilience opportunities in the identification, preparation and implementation phases of projects. The results and lessons learned from the execution of this TC will be instrumental in helping Bank’s member countries make a transition towards a more effective upstream risk assessment and resilience process. In a highly dynamic global change context, this can make a difference for vulnerable countries to successfully achieve their sustainable development goals and adaptation commitments under their National Determined Contributions (NDCs).

1.2. Climate change and disaster risk and resilience opportunities are not generally integrated within classic design and construction practices beyond standard building codes and design parameters, and most of these do not include climate change considerations. Proper studies and considerations are not usually undertaken as part of operations themselves, both in preparation and implementation. To address this challenge, countries have identified the need for clear methodologies and resources to undertake risk and resiliency studies. To address this gap, the Bank has designed a methodology to conduct assessments to identify climate and disaster risks and resilience opportunities in relevant projects. This approach has been piloted in more than ten (10) Bank-financed projects in preparation and execution and is ready for broader application.

2. Objectives

2.1. The objective of this consultancy/service is to support CCS and the Community of Practice of Resilience in the design of the first phase of a basic competency curriculum that equips operational specialists internally, as well as client counterparts and external stakeholders in academia and local disaster risk centers, with the knowledge and skills required to provide an optimal support to

the identification and management of climate change and disaster risks in projects. The goal is to have a “train the trainers” approach.

3. Scope of Services

3.1. Services required involve the design and delivery of a first phase of a basic curriculum for disaster and climate change risk and related behaviors.

4. Key Activities

4.1. Key activities will include:

4.1.1. Kick-off meeting with core team to set up a plan and specific milestones.

4.1.2. Review of existing knowledge products:

4.1.2.1. The full methodology for the application of Disaster and Climate Change Risk

4.1.2.2. The high -level document prepared and the methodology

4.1.2.3. The Policy OP-704- Disaster Risk Management and its respective Guidelines

4.1.2.4. MOOC and SPOC being developed by IDB

4.1.3. Interviews with subject matter experts and operational staff of CCS, ESG, and RND and relevant sectors, as well as with client counterpart and external stakeholders, to gather training needs and potential modalities for delivery of trainings.

4.1.4. Interviews with project team leaders of INE and CSD sectors.

4.1.5. Work with Subject Matter Experts in the design of the materials and training events and a basic curriculum for future use.

4.1.6. Design and deliver training activities and online options

5. Expected Outcome and Deliverables

5.1. Main outcomes will be the design of a core curriculum for Community of Practice of Resilience on key competencies, the design and delivery of 4 targeted training events with related materials and online capabilities.

6. Project Schedule and Milestones

6.1. Phase I is expected to be completed by June 2019, with a tentative training delivery date of October 2019.

7. Reporting Requirements

7.1. Status reports will be required every two weeks. Curriculum and related materials should be ready two weeks before the delivery of the training.

8. Acceptance Criteria

8.1. Deliverables should be reviewed by the Community of Practice of Resilience committee and approved before printing and distribution.

9. Supervision and Reporting

- 9.1. The Climate Change Division of the IDB (CSD/CCS) will have the technical responsibility of the execution of this contract. This will be done in close coordination with the Environmental and Social Safeguards Unit VPS/ESG and with the Environment, Rural Development and Disaster Risk Management Division (CSD/RND). All reports should be submitted to the project coordinator.

10. Schedule of Payments

- 10.1. A payment equivalent to 30% of the total contract will be paid upon signature of the contract. An additional 30% will be paid upon delivery of design and materials for the first training event and the remainder will be paid after the delivery and evaluation of the first training.
- 10.2. The IDB Official Exchange Rate indicated in the RFP will be applied for necessary conversions of local currency payments.

For Single Source Selection, indicate the payment schedule as follows, for other methods of selection the Consulting Firm should use Price Form 2 included in the RFP.

Payment Schedule	
<i>Deliverable</i>	%
1. <i>Signature</i>	30%
2. <i>Training design and materials</i>	30%
3. <i>Training delivery and evaluation</i>	40%
TOTAL	100%

TERMS OF REFERENCE

Production and implementation of climate risk management tools in financial markets for Central Banks and Financial Supervisors

REGIONAL

RG-T3328

Supporting climate and disaster risk assessment processes to foster resilient and sustainable development

<https://www.iadb.org/Document.cfm?id=EZSHARE-202119542-2>

1. Background and Justification

- 1.1 The effects of climate change and disasters triggered by natural hazards pose a significant threat to sustainable development in the Latin America and Caribbean (LAC) region. As noted by the Bank's Technical Note What is Sustainable Infrastructure, the region is one of the most vulnerable to the impacts of a changing climate. In 2017 it experienced severe losses from natural events, including floods in Peru that cost US\$3.1 billion and floods in Colombia that resulted in 329 fatalities (MunichRE NatCatService, 2017). Vergara et al. (2013) estimate that climate change will cause damages costing US\$100 billion a year across the region by 2050. The impacts of climate change or physical climate risk are growing concerns, reducing the predictability of future infrastructure needs as well as increasing the vulnerability of assets and the volatility of their financial valuations (Reyer et al., 2017).
- 1.2 Financial regulators and supervisors have also acknowledged the threat posed by climate-related risks for the stability of financial markets, both via *physical risk* and *transition risks*. In the case of the former, by decreasing economic productivity and damaging assets (buildings, fields, plants), climate-related extreme events (hurricanes, droughts) have significant impacts on the performance of financial institutions and the solidity of their balance sheet as loan defaults amongst borrowers increase, return on investments decrease and compensation requests to insurers grow (Klomp, 2014; NCFA-GIZ, 2017). For the latter, transition risks, a misalignment of the financial institutions positions on the national and international commitments towards climate change mitigation (reduction of carbon emissions especially) exposes investors to losses due to new policies, technological changes and innovation that aim to incentivize economic activities more aligned with climate targets (BoE, 2017).
- 1.3 As a result of such growing evidence, in 2015 the Financial Stability Board created a Task-Force for Climate-related Financial Disclosures (TCFD) to help financial markets identify, assess, manage and disclose climate risks. TCFD recommendations, released and endorsed by the G20 in 2017 have received the support of more than 500 institutions (corporates, banks, governments and regulators) for their implementation (TCFD, 2017). More recently, in December 2017, 12 central banks (including the Central Bank of Mexico) have established a new Network for the Greening of the Financial System (NGFS) and the management of climate related risks. As the recommendations from the work of the TCFD take hold and the new Network produces its first results, central banks and financial regulators in the region are assessing their role, tools and challenges (especially on data and instruments availability) to identify and understand climate risks for their countries and estimate their potential impacts for the resiliency of their countries' financial markets.

2. Objectives

2.1. This activity will support central banks and financial supervisors (of banking, investment and insurance markets) in the region in developing tools, protocols and analytical instruments to identify climate risks and estimate the resiliency of the financial system (or of a part of it) to climate-related shocks, including extreme events and/or sharp policy/technological transitions. The consultancy will focus on the production of pragmatic and practical methods to capture climate relevant data and translate them into financial metrics that could be used by financial analysts and risk managers in financial institutions, regulating and supervising entities, for example integrating climate variables in supervisors' stress testing exercises.

3. Scope of Services

3.1. The consultancy will support regulators and supervisors in LAC towards the creation of innovative methods to identify and manage climate risks that are relevant for LAC financial markets, including their disclosure to markets and regulators – as well as developing pragmatical tools to perform such risk management functions in the regular monitoring and supervising activities of the partner institutions.

4. Key Activities

The consultancy will support *two* central banks/regulators/supervisors in the:

- 4.1. Production of climate related data sets (geospatial and time series data) to be integrated into financial analysis;
- 4.2. Development of analytical methods to translate climate-related data into financial risks;
- 4.3. Implementation of a pilot exercise to identify the key climate risks for a specific jurisdiction, assess the exposure of the financial system to such risks, and produce exposure metrics for each financial institution.
- 4.4. Preparation of a delivery workshop for discussion of the main results and the presentation of practical tools to be integrated in the ongoing monitoring and supervisory activities of the partner institutions of the project.

5. Expected Outcome and Deliverables and Milestones

- 5.1. **An inception report** consisting of work plan, desk review on existing practices for regulators and supervisors, and other relevant existing literature review. The report must be submitted for Bank approval **30 working days from contract signature** and will be the basis of discussion in a Scoping Workshop with the project counterparty.
- 5.2. **An interim report** containing comprehensive description of the data (climate related and financial) to be used in the statistical/econometrical exercise, as well as early indication of the appropriate modelling and regression techniques to be proposed and implemented to the regulator/supervisor. The final report must be submitted for Bank approval **120 days from contract signature**.
- 5.3. **A final report** including the results of the analysis on the financial system exposure, simplified fact sheets on the analysis results for each regulated entity, and a **brief policy paper** version of the study findings.
- 5.4. **A final dissemination workshop** will be conducted by the consultant in collaboration with IDB, **within 180 days of contract signature**

Every report must be submitted to the Bank in an electronic file (Word and PDF File preferably) as well as hard copies (Including one copy for the CCD and for the Development Bank of Jamaica). The reports should include cover, main document, and all annexes. Zip files will not be accepted as final reports, due to Records Management Section regulations.

6. **Supervision and Reporting**

- 6.1. The selected Consultant will develop all deliverables in collaboration with, and under the supervision of, the IDB Climate Change Division (CSD/CCS).
- 6.2. Deliverables should be in an electronic format, in English when not specified otherwise. The report's executive summary would need to be translated into Spanish at the expense of the Consultant.

7. **Schedule of Payments**

- 7.1. 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.
- 7.2. The IDB Official Exchange Rate indicated in the RFP will be applied for necessary conversions of local currency payments.

Payment Schedule	
<i>Deliverable</i>	%
1. <i>Work Plan</i>	20%
2. <i>Data sets and statistical model</i>	40%
3. <i>Final Report and delivery workshop</i>	40%
TOTAL	100%

Términos de Referencia

Análisis Robusto como herramienta efectiva de la Resiliencia a los desastres y el cambio climático en los procesos de toma de decisión

REGIONAL

RG-T3328

Apoyo a los procesos de evaluación de riesgo climático y de desastres para fomentar la resiliencia y el desarrollo sostenible (<https://www.iadb.org/Document.cfm?id=EZSHARE-202119542-2>)

NOTA: *Dado que el método de Análisis Robusto es normalmente ajustado a cada caso específico, es muy difícil tener TORs genéricos. En este sentido, y tomando en consideración que en esta fase no se han identificado proyectos aun, no hay TORs específicos para cada piloto. Sin embargo y a manera de ejemplo se anexan los siguientes TORs que se utilizaron para llevar a cabo un estudio en Mendoza en las cuencas de los ríos Mendoza y Tunuyán a fin de ilustrar la versatilidad del método y los resultados esperados.*

1. Introducción

- 1.1.** Los administradores del agua en las cuencas de los ríos Mendoza y Tunuyán están lidiando con los desafíos de mantener y mejorar el servicio de agua, a la vez que se preparan para tensiones crecientes provocadas por demandas en aumento, suministros nuevos limitados y un clima cambiante (Mussetta y Barrientos, 2015). Esta situación es sin embargo un reflejo de lo que muchos administradores del agua enfrentan a nivel mundial (Milly et al., 2008). Estas dos cuencas son áridas y el agua escasa, sin embargo, están experimentando un crecimiento en la urbanización, el desarrollo de energía y el riego para sus viñedos de importancia económica, así como otros productos básicos tales como papas. Estas tendencias plantean dos interrogantes fundamentales tanto en la cuenca de Mendoza como en la de Tunuyán: (1) ¿Cuándo excederá cada cuenca su capacidad de respuesta a la demanda bajo tendencias climáticas futuras inciertas y el modelo de gestión actual del recurso; (2) ¿Qué inversiones en gestión del agua y que tipo de cambios en las políticas pueden efectivamente aumentar la sostenibilidad de las cuencas?
- 1.2.** Para cumplir con las demandas históricas de agua, se han desarrollado redes complejas de suministro de agua y de irrigación para capturar el deshielo glaciar y nieve derretida y transportar estos suministros de agua superficial a centros de demanda urbana y agrícola. Estos sistemas son antiguos y están compuestos de canales de tierra al aire libre que tienen altas tasas de pérdida (tanto de infiltración como de evaporación). El uso agrícola final, el riego, se basa en técnicas que aún no se han modernizado por completo, y muchos agricultores aún usan métodos ineficientes de riego por zanja o inundación. Cada vez más, se bombea agua desde los acuíferos subterráneos para complementar los suministros de superficie. Sin embargo, en los últimos años, los niveles de agua subterránea han estado disminuyendo, lo que ha conducido a un aumento en los requerimientos

de energía para bombeo y ha generado considerables preocupaciones sobre la sostenibilidad final de este uso.

- 1.3. En la región de Mendoza, la gestión del agua es sofisticada y compleja, sin embargo, no está muy centralizada. La gestión del agua para el sector agrícola es administrada por la agencia *Irrigación*, mientras que los suministros municipales son provistos por una red subterránea diferente administrada por Aguas Mendocinas (AySaM). Otras agencias controlan la producción de energía y los usuarios locales de agua juegan un papel importante. Este enfoque proporciona oportunidades para que las partes interesadas participen activamente en la gestión del agua, pero también pone de relieve los intereses a menudo contradictorios y de corto plazo.
- 1.4. La disponibilidad de datos y las capacidades analíticas son altas en Argentina, y existen grandes oportunidades para aprovechar las herramientas existentes para evaluar los problemas de sostenibilidad. Por ejemplo, *Irrigación*, en colaboración con el *Stockholm Environment Institute*, desarrolló dos modelos de gestión del agua (WEAP) para las cuencas de Mendoza y Tunuyán. Estos modelos podrían proporcionar una base sólida para un sistema de modelado integrado y acoplado que capte las tendencias futuras en factores climáticos, demográficos, energéticos y económicos en las dos cuencas, lo que podría respaldar un análisis sólido de las vulnerabilidades futuras y las opciones de adaptación. A continuación, se presenta una discusión de las oportunidades de modelado.
- 1.5. Si bien las actividades e inversiones de planificación recientes han identificado un conjunto de inversiones de gestión futuras para la Cuenca de Mendoza, aún no se ha realizado una mirada sistemática en ambas cuencas y el nexo agua-energía para determinar cuáles son de mayor prioridad para construir resiliencia en la provincia de Mendoza. La identificación de un conjunto efectivo de inversiones para ayudar a Mendoza a enfrentar estos desafíos crecientes se ve empañada por un grupo de variables con incertidumbre alta que no puede ser caracterizada estadísticamente y cuyo comportamiento no es del todo entendido (por ejemplo, cambio climático, procesos de escorrentía superficial de nieve y deshielo glaciar, dinámica socioeconómica ...) y / o responden a muchas fuerzas interrelacionadas y complejas (por ejemplo, cambios demográficos y tecnológicos) (Lempert et al., 2003). Estos desafíos se agravan aún más cuando hay diferentes metas y objetivos que deben ser satisfechos al nivel de cuenca. Bajo tales condiciones de profunda incertidumbre, los planificadores de recursos hídricos recurren cada vez más a métodos de toma de decisiones bajo incertidumbre profunda (Hallegatte et al., 2012; Lempert et al., 2006) para respaldar los análisis de vulnerabilidad y opciones de respuesta (Kalra et al., 2014) y para apoyar la toma de decisiones complejas en contextos de planificación polémica (Groves et al., 2014).

1.6. Método Robusto de Toma de Decisiones: El método Robusto de Toma de Decisiones (*Robust Decision Making* ó RDM) se basa en tres pilares clave: análisis exploratorio, análisis de vulnerabilidad y adaptaciones, y deliberaciones participativas de las partes interesadas (Groves y Lempert, 2007; Lempert et al., 2003, 2006). El análisis exploratorio usa modelos no para predecir el futuro, sino para trazar los posibles resultados de cientos a millones de combinaciones de opciones y futuros inciertos. El análisis de vulnerabilidad y adaptación identifica las condiciones en las que determinadas decisiones o estrategias no funcionarán bien y luego prueba alternativas para encontrar aquellas que son más sólidas. Las deliberaciones participativas de las partes interesadas utilizan el producto del análisis exploratorio con herramientas interactivas de apoyo a la toma de decisiones para destacar los intercambios clave entre las opciones sólidas en una amplia gama de objetivos para apoyar la toma de decisiones.

2. Objetivo:

2.1 Apoyar la planificación del recurso hídrico en Mendoza utilizando el marco *RDM*.

2.1.1. En este proyecto, la firma consultora a través del BID ayudará a los planificadores de agua de la provincia de Mendoza a enfrentar los desafíos que representan la escasez de agua y poblaciones en crecimiento bajo un escenario de cambio climático, aplicando para esto el método RDM, que busca: (1) evaluar las vulnerabilidades al cambio climático de las cuencas del sistema de agua Mendoza y Tunuyán y otros factores inciertos a largo plazo que generan estrés adicional, e (2) identificar inversiones de Nexus a corto plazo (sectores de agua, energía y agricultura) que demuestren ser robustas en la amplia gama de futuros plausibles.

2.1.2. Este trabajo será la base de una sólida estrategia de gestión del agua a largo plazo. Estos métodos están diseñados para no solo tener en cuenta las incertidumbres asociadas con las necesidades y suministros de agua actuales y futuros, sino también las incertidumbres asociadas con los datos disponibles y el modelado. Estos métodos también podrían ser útiles para los planificadores, ya que se enfrentan a objetivos múltiples y posiblemente en competencia. (usos múltiples con fuentes de agua comunes para todos y en una creciente situación de escasez).

2.1.3. Este estudio generará varios resultados de valor inmediato para los planificadores de agua locales:

- **Modelo integrado de gestión del agua** que simula el desempeño del sistema de gestión del agua y de los sectores industriales, agrícolas, energéticos y de generación en las dos cuencas en una amplia gama de futuros plausibles- *este modelo puede ayudar a probar nuevas ideas y opciones en una amplia gama de condiciones y objetivos futuros.*
- **Análisis de vulnerabilidades** e indicadores clave a corto y largo plazo- *estos resultados pueden proporcionar información sobre las necesidades de inversión y gestión actuales y futuras, así como identificar las brechas en los modelos y los datos.*

- **Hoja de ruta para la adaptación** para orientar las inversiones a corto y largo plazo para los principales Sectores Nexus en la provincia de Mendoza que podría constituir la base de posibles Planes Maestros con Inversiones para cada cuenca. *Esta hoja de ruta, presentada en un formato interactivo (ver siguiente ítem), podría ayudar a los planificadores a comunicarse con las partes interesadas sobre cómo un plan de adaptación preparará a Mendoza para una amplia gama de futuros plausibles.*
- **Herramienta de apoyo a la toma de decisiones** que muestra los resultados de la simulación, las vulnerabilidades clave y las compensaciones entre las adaptaciones- *la herramienta, accesible en Internet, respaldaría los talleres y otras deliberaciones sobre las muchas decisiones de manejo del recurso hídrico bajo consideración tanto de corto como de largo plazo.*

3. **Tareas del Proyecto**

3.1 Este proyecto será llevado a cabo en estrecha colaboración con oficiales del BID y personal de *Irrigación* en Mendoza y será dividido en nueve (9) tareas.

3.1.1 Reunión de lanzamiento en Mendoza: El proyecto comenzó con dos días de reuniones en Mendoza, organizado por *Irrigación* en mayo de 2018. En esta reunión, el equipo se reunió con planificadores de *Irrigación* y otros y revisó colectivamente los principales retos relacionados con el agua en las cuencas de Mendoza y Tunuyán. Se discutió el amplio alcance del estudio y se concluyó que el estudio debería considerar los problemas en ambas cuencas, con un enfoque específico en los desafíos y soluciones a través de la cuenca. También se concluyó que actores adicionales de Mendoza tales como la empresa de energía y agua como otros actores locales interesados deberían participar en un próximo taller de elaboración del estudio.

3.1.2 Desarrollo de un modelo inicial de gestión integrada del agua en dos cuencas: Si bien las cuencas de Mendoza y Tunuyán son hidrológicamente distintas, éstas responden conjuntamente a cambios hidrológicos más amplios, cambios demográficos y actividades económicas que se extienden o cruzan la frontera. Por esta razón, se requiere un modelo acoplado para caracterizar tanto los riesgos como las oportunidades para la gestión del agua. En esta segunda tarea, el equipo del proyecto utilizará los dos modelos existentes de WEAP y desarrollará un sistema parcialmente acoplado que puede evaluar muchos futuros plausibles utilizando para esto, infraestructura de computo en paralelo a través de la nube. Esto proporciona los medios para realizar muchos experimentos computacionales en poco tiempo. El sistema parcialmente acoplado permitirá que las fuerzas motrices exógenas afecten las condiciones de gestión del agua en las dos cuencas de forma sincrónica.

- 3.1.3 Reunión de formulación de decisiones en Mendoza:** Luego, el equipo del proyecto regresará a Mendoza para una reunión de formulación de decisiones, basada en el marco XLRM desarrollado por empresa consultora. Los participantes incluirán representantes de *Irrigación*, empresas de Agua y Energía y otros actores clave interesados (tales como la unidad ambiental). Utilizando los resultados de la actividad de modelado acoplado, este taller ayudará a definir las incertidumbres clave, las métricas de desenvolvimiento y las decisiones de inversión para evaluar en el estudio. Al finalizar el taller, la firma consultora preparará un memorando interno que define el alcance del análisis.
- 3.1.4 Refinamiento del modelo y recopilación de datos:** En la Tarea 4, el equipo perfeccionará y ampliará los modelos acoplados para reflejar los elementos de estudio adicionales definidos en el taller de formulación de decisiones. Esto podría incluir, por ejemplo, el desarrollo de un nuevo módulo demográfico para capturar los cambios de población en las dos cuencas y la demanda de agua resultante. Esto también podría incluir ampliar el tratamiento de la incertidumbre y el cambio climático para incluir los cambios en la variabilidad interanual y la intensidad e intensidad de la sequía (Groves et al., 2018). Luego se compilarán los datos climáticos y demográficos necesarios para desarrollar una gama de escenarios futuros plausibles para poner a prueba el sistema de gestión del agua y cualquier inversión nueva. Por último, se finalizará el diseño experimental, esto es, el conjunto de simulaciones que se llevarán a cabo para respaldar el análisis de vulnerabilidad. El resultado de esta tarea será el modelo integrado completo y la simulación de línea base finalizada-presentada en lo que sería la primera versión de una herramienta interactiva de apoyo a la toma de decisiones para consideración de los planificadores del agua de Mendoza.
- 3.1.5 Análisis de vulnerabilidad de línea base:** En la Tarea 5, se evaluará el sistema actual de gestión del agua en los escenarios futuros plausibles seleccionados (según el diseño experimental) y se definirán las vulnerabilidades clave a corto y largo plazo. Los resultados de la simulación se asimilarán a la herramienta interactiva de apoyo a la toma de decisiones para compartir con los planificadores y otros actores clave. La firma consultora también preparará un memorando interno del proyecto con la evaluación de vulnerabilidad.
- 3.1.6 Taller de vulnerabilidad:** Para la Tarea 6, el equipo del proyecto regresaría a Mendoza para facilitar un taller de varios días sobre (1) las vulnerabilidades clave y (2) opciones adicionales de gestión del agua. El taller sería altamente participativo, y los asistentes utilizarían la herramienta interactiva de soporte de decisiones para participar en los análisis realizados hasta la fecha. Al finalizar el taller, la firma consultora preparará un memorando interno que describirá los resultados y las opciones adicionales que se modelarán y analizarán.

3.1.7 Evaluación de opciones: En la Tarea 7, se actualizará el modelo de gestión del agua para: (i) incluir opciones adicionales de gestión del agua; (ii) evaluar la estrategia óptima para cada futuro usando una rutina de optimización; (iii) identificar las opciones comunes (políticas sectoriales e inversiones), o aquellas robustas en el rango de futuros plausibles; y (iv) definir las vulnerabilidades residuales. Estos análisis se incorporarán en la herramienta de apoyo a la toma de decisiones para facilitar la interpretación del equipo extendido, el cual utilizará los resultados técnicos para definir un enfoque adaptativo para implementar nuevas inversiones y cambios de gestión. La firma consultora volverá a actualizar el memorándum interno con la descripción del análisis y la discusión de los resultados.

3.1.8 Taller de adaptaciones robustas: Para la Tarea 8, el equipo de la firma consultora volverá nuevamente a Mendoza para facilitar un taller de varios días. Este taller final presentará la evaluación de las opciones y los planes robustos, revisará su confiabilidad, ventajas y desventajas, y buscará consenso sobre opciones sólidas de implementación a corto plazo.

3.1.9 Reporte Final: La firma consultora producirá un informe técnico final revisado por pares que será publicado por el BID. Incluiría todo el material generado anteriormente durante la ejecución del estudio (memorandos) y el material adicional que describe la implementación de las recomendaciones de inversión y gestión. Por último, esta tarea incluiría un resumen de investigación utilizando al nombre de la firma consultora como líder de la investigación para difusión.

4. Duración del estudio

4.1 Se propone un cronograma de 14 meses para completar el estudio. Este podría acelerarse para reducir un par de meses dependiendo de la disponibilidad de datos y el estado de la modelación existente.

	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
1) Kick-off meeting														
2) Preliminary modeling														
3) Decision framing workshop														
4) Model refinement														
5) Baseline vulnerability analysis														
6) Vulnerability workshop														
7) Evaluation of options														
8) Adaptations workshop														
9) Final report														

5. Personal de la firma

El equipo para desarrollar el estudio deberá estar conformado por un grupo de expertos en planeación de recursos hídricos con experiencia en la aplicación del método XLMR en Latinoamérica para el manejo de incertidumbre. El equipo básico deberá estar integrado por:

- Investigador Principal, co-líder técnico
- Co-líder técnico

- Analista de Investigación
- Asistente Administrativo
- Revisor Senior (control de calidad)

6. **Costo Total**

El costo del estudio será de US\$200,000. El presupuesto incluye los costos de viaje del personal de la firma consultora relacionados a cuatro (4) misiones. El monto incluye igualmente más de 100 días trabajo del equipo de investigación junto a la generación de documentación de soporte y revisión del reporte final como también de resúmenes de acompañamiento a la investigación que se vayan generando.

7. **Referencias**

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HRD Terms of Reference

Consultants

Job Title: Climate Change and Disaster Risk Contractual support

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 contractuels.

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 screening¹ 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

¹ 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.

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 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 (1) support the IDB implement, improve, and build capacity on methods and tools for climate and disaster risk analysis and the identification of resilience opportunities in the preparation and implementation phases of projects and investment portfolios, and to (2) help project teams, under the guidance of CCS, ESG, and RND, to identify and address disaster and climate change risks in the eligibility and quality review stages of the project cycle.

All activities will be coordinated with the Community of Practice on Resilience (CPR) 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:

- Contribute to develop the Methodology to assess Disaster Risk Management in the project cycle, in a joint effort with CCS, ESG, 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.
- Climate Change and Disaster Risk Safeguard Screening: Support ESG and CCS in the adequate implementation of the disaster and climate change risk screening methodology for projects².
- 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.

² This methodology is currently being prepared by the Bank and includes the development, application, and continuous improvement of the disaster and climate change risk screening tool.

- 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 projects³.
- Work with the CPR 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.
- Support the establishment of a monitoring, evaluation, and learning process where the approach disaster and climate risk screening can be peer-reviewed.

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:** 3 years
- **Starting date:** January 1st, 2019
- **Location:** Headquarters in Washington D.C.
- **Responsible Person:** The Climate Change Division of the IDB (CSD/CCS) will have the responsibility of the execution and supervision of this contract. This will be done in close coordination with the Environmental and Social Safeguards Unit VPS/ESG and with the Environment, Rural Development and Disaster Risk Management Division (CSD/RND).
- **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.

³ This includes the revision of past DRAs and propose improvements in the methodology.

Our culture: 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.

About us: 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.

Payment and Conditions: 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.

Visa and Work Permit: 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

Consanguinity: 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 contractuels, will not be eligible to provide services for the Bank.

Diversity: 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.