Gold Standard for the Global Goals

PILOT – REQUIREMENTS GUIDANCE

CLIMATE ADAPTATION REQUIREMENTS GUIDANCE

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RELATED DOCUMENTS

–Climate Adaptation Requirements

CONTACT DETAILS

The Gold Standard Foundation
International Environment House 2
Chemin de Balexert 7-9
1219 Châtelaine Geneva, Switzerland
Tel +41 22 788 70 80
Email help@goldstandard.org

RESILIENT CITIES CATALYST TEAM

Jeb Brugmann

Shail Joshi

Kaiwen Shi

GOLD STANDARD TEAM

Felicity Spors

Caitlin Drake

Abhishek Goyal

CONSULTANTS

Rebecca Laberenne

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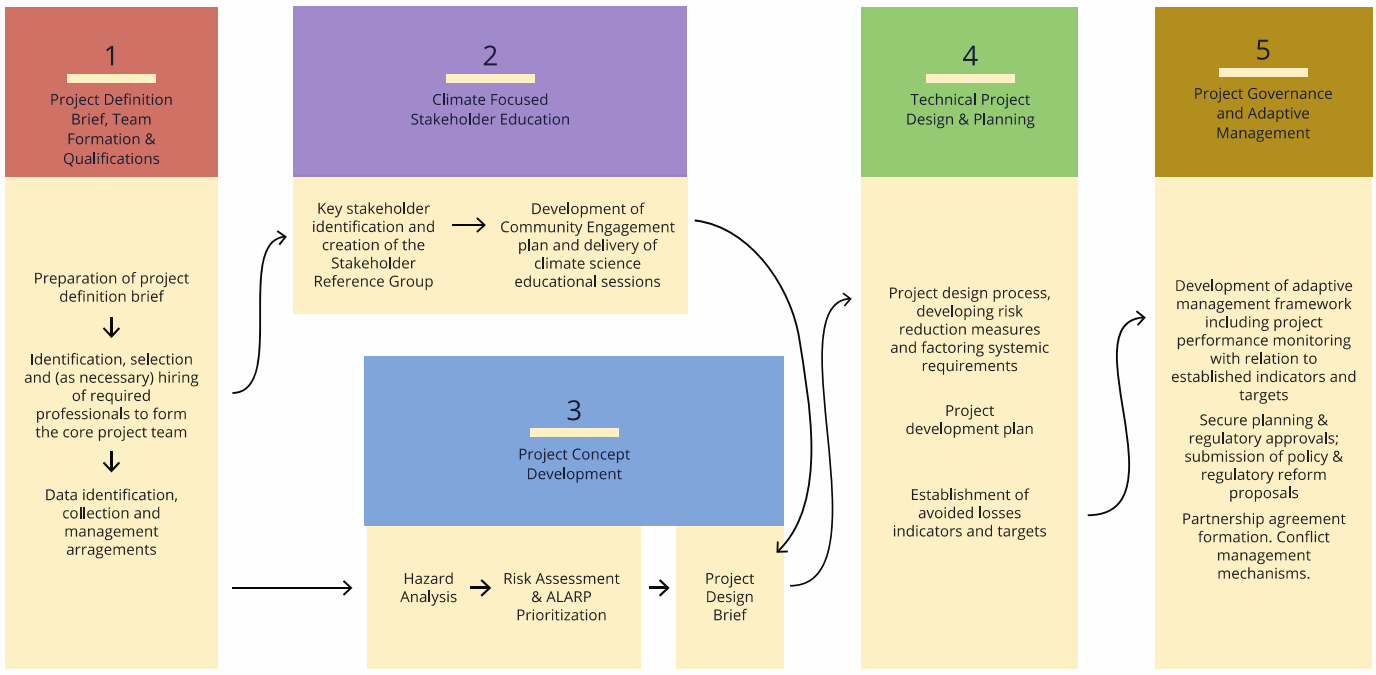
INTRODUCTION

Increasing annual catastrophic losses caused by climate-related and other extreme events arise from poor systemic planning (social, institutional, and economic) making it difficult to cope with the stresses, disruptions, failures, and extreme events associated with climate change.

These losses highlight the growing need to build investment frameworks and professional and management capacity to both accelerate the development of quality adaptation project pipelines and, at the same time, to leverage climate adaptation project investments to further develop local capacities to prepare portfolios of SDG and climate mitigation projects as well.

The adaptation project preparation requirements provide a roadmap for project developers to design and implement projects that take future climate risks fully into account. See the infographic below summarizing the structure of the requirements during the project's five project development phases.



KEY CONCEPTS AND TERM DEFINITIONS

ADAPTIVE CAPACITY: It is the ability to absorb or cope with a climate hazard event or extended climate stress to which a person, party, or asset is determined sensitive.

ASSETS: The physical structures, facilities, networks and other systems which provide services that are essential to the social and economic functioning of a community or society (United Nations Office Disaster Risk Reduction 2009). In the project context, adaptation requires consideration of assets that are on the physical project site (i.e., direct assets) and assets that are not located on the project site but upon which the project will depend and/or that the project will significantly impact. See Project Boundaries, below.

BASELINE: Baseline refers to the datasets showcasing the current/present situation relating to the project, its associated systems and communities and forms the benchmark against which future progress can be assessed or compared.

CLIMATE CHANGE CONDITION: This refers to the change in one or more aspects of the existing climatic regime such as 'Changing Temperatures', 'Changing Precipitation', 'Rising Sea Levels', and other events.

CLIMATE SCIENCE: Climate science investigates the structure and dynamics of earth's climate system. It seeks to understand how global, regional, and local climates are maintained as well as the processes by which they change over time. In doing so, it employs observations and theory from a variety of domains, including meteorology, oceanography, physics, chemistry and more (Parker 2018).

CLIMATE RISK: The potential, when the outcome is uncertain, for adverse consequences on lives, livelihoods, health, ecosystems and species, economic, social and cultural assets, services (including environmental services), and infrastructure. (IPCC). Risk is expressed as the combination of **likelihood** and **consequences** of a climate event or shock and/or of climate change stresses (e.g. damages/losses, injury/death, service interruption). In addition to climate risks resulting from physical climate hazards, there are **transition risks**. Transition risks are risks associated with a transition to a low-carbon economy (financial, political, legal, technology) (IPCC).

DOWNSTREAM: Systems and resources that are external to the project site and/or assets that will be impacted by the project and the project's performance.

EXPOSURE: arises from the range of conditions in an area in which hazard events may occur that may cause deleterious impacts.

1. Exposure may be assessed, for example, by estimating the number of people, the value of assets, the number of critical systems (etc) in the area in which a hazard event may occur.
2. Exposure considers only whether an element is exposed to the hazard or not – it does not evaluate the type of impacts the element might suffer.

EXPOSED PARTY: A person, group, community, species, asset, business, organization, or livelihood that may be harmed or damaged by an identified hazard.

HAZARD LIKELIHOOD: The potential occurrence of a natural or human-induced physical event or trend that may cause loss of life, injury, or other health impacts, as well as damage and loss to property, infrastructure, livelihoods, service provision, ecosystems and environmental resources. (IPCC SRCCL 2019).

1. Climate hazards can be **climate shocks** (high magnitude, low frequency such as hurricanes) or **climate stresses** (low magnitude, high frequency such as nuisance flooding).
2. Unlike other natural hazards, climate hazards are **dynamic** due to climate change. Future hazard conditions will be different from current ones.
    a. Climate change may make climate shocks **more frequent** and/or **more extreme**.
    b. Climate change may affect climate stresses by making regular conditions **more variable** and/or by **changing averages**.

INTOLERABLE AND CRITICAL RISKS: Intolerable risks are those that fundamentally threaten a social norm and therefore cannot be justified except in extraordinary circumstances. Critical risks are those that involve loss of life, serious injury, and/or grave damages associated with substantial human, community, or operational harm.

PROJECT BOUNDARIES: Broadly, adaptation project boundaries can be divided into two categories:

1. Direct/Site: These boundaries are the actual physical boundaries in which the development has been proposed.
2. In-direct (Systemic and/or Landscape Scale): These boundaries include the systems that lie outside of the project's development site but that the project will depend upon, both to function (e.g., power and water supply) and to achieve targeted impacts (e.g., maintenance of biodiversity).

PROJECT LIFESPAN: This term refers to the total time from the project planning phases to the implementation stage to the operations and decommissioning phases, including all intermediary steps in between.

RISK MANAGEMENT: The process of identifying, controlling, and eliminating or minimizing uncertain events that may adversely affect the people, assets, communities, livelihoods, species and investments, thereby strengthening their resilience.

RISK AVOIDANCE: Eliminating the likelihood of a hazard event or exposure to a hazard that would pose potential harm or loss.

RISK MITIGATION: While not reducing the likelihood of a hazard event or exposure to the hazard, risk mitigation measures reduce the harm and losses if the event occurs.

RISK SHARING or POOLING: Establishing mechanisms whereby a group of parties facing the same risks share or 'pool' the costs of mitigation, transfer, and/or recovery from hazard events.

RISK TRANSFER: Transferring the costs of disruption, response, and recovery to an insurer or to capital markets, whether individually or as a risk pool.

SENSITIVITY: The physical predisposition of human beings, infrastructure, and environment to be affected by a dangerous phenomenon due to lack of resistance and predisposition of society and ecosystems to suffer harm as a consequence of intrinsic and context conditions making it plausible that such systems once impacted will collapse or experience major harm and damage due to the influence of a hazard event. (IPCC SREX Ch.2)

SHOCK: Shocks are events that cause an immediate damaging impact. Covariate shocks such as natural disasters or spikes in food prices affect multiple households, communities or regions. Idiosyncratic shocks are smaller in scale - within a household, idiosyncratic shocks may include illness or death of a family member, loss of livestock or of employment. (Government of United Kingdom 2016)

STRESS: Stresses are longer-term conditions and related trends that produce slow onset impacts on the functioning of systems or on the health and well-being of people, other species, and their communities.

UPSTREAM: Systems and resources that are external to the project site and/or asset(s) and upon which the project's performance depends.

VULNERABILITY: The propensity or predisposition to be adversely affected by a climate change shock or stress, including climate variability and extremes. Vulnerability encompasses a variety of concepts and elements including sensitivity (or susceptibility to harm) and lack of capacity to cope and adapt. (IPCC). Vulnerability has two components:

1. **Sensitivity (Susceptibility or Fragility):** Physical predisposition of human beings, infrastructure, and environment to be affected by a dangerous phenomenon due to lack of resistance and predisposition of society and ecosystems to suffer harm as a consequence of intrinsic and context conditions making it plausible that such systems once impacted will collapse or experience major harm and damage due to the influence of a hazard event. (IPCC SREX Ch.2)
2. **Lack of Adaptive Capacity**: Limitations in access to and mobilization of the resources of the human beings and their institutions, and incapacity to anticipate, adapt, and respond in absorbing the socio-ecological and economic impact.

GUIDANCE (FOR PROJECT DEVELOPERS AND VERIFICATION PROFESSIONALS)

1| PROJECT DEFINITION BRIEF, TEAM FORMATION, AND QUALIFICATIONS

1.1 | PROJECT DEFINITION BRIEF

GUIDANCE FOR VERIFICATION PROFESSIONALS FOR REQUIREMENT 1.1

The verification professional should confirm that the preliminary project definition brief has identified, documented, and presented the following:

i. Project goals and objectives, including impact objectives and targeted outcomes. The project's operational lifespan.
ii. The direct project boundaries (as they are understood at project inception), including relevant maps and/or diagrams. For purposes of project definition, the project's direct boundaries are the project site including the areas, assets, settlements, habitats, infrastructures, and resources that will be directly altered by the project.
iii. The indirect or systemic project-related assets, resources and associated upstream systems upon which project performance will depend, as well as any settlements, habitats, systems, and livelihoods and conditions outside of the direct project boundaries that the project will alter or impact as a result of the alterations made in the direct project boundaries.
iv. The identified communities, organisations and individuals that represent a range of different stakeholder groups within the project's direct and in-direct boundaries. The names and contact information for key representatives identified for each stakeholder group (including representatives of identified vulnerable and historically marginalized groups).
v. A high-level Preliminary Climate Importance Review indicating the general severity of climate hazards to the direct project area, site and assets. The climate importance review will be used to guide recommendations by the

verification professional regarding the robustness of data and analytical approaches required to apply the standard in the course of project preparation. (See Appendix A in the 'Guidance Document' for an illustrative template.)

vi. Based on the above documentation and using the table provided in **Appendix A** of the Guidance document, the project development team has identified and conducted an initial high-level 'climate importance' assessment indicating the general severity of climate hazards to the project area, site and/or assets, and the sensitivity of desired project performance to these hazards.

STEP BY STEP GUIDANCE FOR PROJECT OWNERS TO PREPARE THE PROJECT DEFINITION BRIEF TO COMPLY WITH REQUIREMENT 1.1

STAGE	DESCRIPTION OF REQUIRED APPROACH (What)	GUIDANCE FOR PROJECT OWNERS (How)
STEP 1	**Define Project Goals and Objectives** Why is this required: Clear definition of project goals and objectives will be used to assess climate risks, to determine risk management measures, and to inform the project conception process.	a) What are the project's primary objectives and activities? What outputs and outcomes will be considered to represent successful achievement of project objectives? b) Has the project been initiated to address any known existing climate-related conditions and risks? If yes, what are these conditions and risks?
STEP 2	**Define Direct Project Boundaries** Why is this required: Direct climate and other natural hazards and exposures will at a minimum be evaluated for all assets, systems, settlements, persons, and livelihoods located within the direct project boundaries. Risk reduction and adaptation solutions will be informed by this analysis of hazard exposures within the project's geographic boundaries, considering what aspects are	a) What are the geographic boundaries of the project's direct investments and activities? Provide map(s) and/or diagrams. b) Within these project's geographic boundaries, what physical aspects are in control of the project? Consider the following categories and be as specific as possible, for example: • type and placement of buildings and infrastructure (e.g. impervious surfaces) • type and placement of trees/landscaping/crops/water features/etc. • topographic characteristics.

	in direct control or other influence of the project.	c) What other non-physical aspects are in control of the project within the direct project boundaries? ● Programming, access, usage ● Management, staffing, training (e.g. emergency preparedness planning)
STEP 3	**Define Associated Project Systems** Why is this required: Determination of whether effective, reliable, and just adaptation is resulting from the project depends upon the project's dependencies and impacts upon places, resources, and systems located outside of the direct project boundaries. Indirect exposures and vulnerabilities to climate hazards will be evaluated using the definition of the systemic boundaries. While the project may not be able to directly address upstream risks and downstream impacts, it is important to understand them and how to consider them in project design. Understanding downstream impacts allows for improved risk management outcomes as well as the identification (and potential incorporation in the project) of co-benefits that may support broader societal resilience to climate change.	a) What are the systemic boundaries of the project, i.e., the upstream resources, systems, infrastructures, technologies etc upon which the project's ultimate performance is dependent AND any settlements, habitats, systems, and livelihoods outside of the direct project boundaries that will be indirectly and significantly impacted by the project? Consider the following categories and be as specific as possible in listing elements located outside of the project boundaries that would significantly impact the project's performance and area's adaptation to climate change if threatened or eliminated: ● Natural or industrial resource availability and/or quality ● Infrastructure operations/capacity/ performance ● Technologies, data ● Territories, including natural areas and ecosystem services ● Industries and livelihoods ● Human resources capacity/availability b) What are downstream elements (including physical areas) that could be impacted (favourably or poorly) by the project's activities? Consider the following categories and be as specific as possible: ● Land, territories, human settlements ● Species and sensitive habitats ● Environmental quality (e.g. air quality, ground water, deforestation, etc) ● Infrastructure and industry ● Technologies

		• Livelihoods and work/labour conditions
STEP 4	**Identify Project Stakeholders** Why is this required: Understanding adaptation stakeholders is the first step towards engaging them in identifying and understanding climate risks, and in addressing these risks. Stakeholders' contributions are often critical to the success of the project, and the project can also integrate measures to help stakeholders manage their own climate change risks.	Using existing data sources, stakeholder engagement methods, and existing research on the project area list all the types of stakeholders who are anticipated to be impacted by the project and/or could contribute to the project's successful performance over its lifespan. Consider, as applicable, stakeholders from the following categories: 1. Local Residential groups/ homeowner(s) associations/committees 2. Educational entities 3. Local businesses 4. Agricultural entities 5. Industrial units 6. Natural resource management units 7. Local community-based organisations, and/or NGOs 8. Private sector 9. Commercial properties 10. Other(s)
STEP 5	**Determine the Project's Operational Lifespan** Why is this required: Projects must be adapted for a range of possible climate conditions and their related hazards, which may change over their useful life. It is important to know a project's useful life to adequately determine the climate change projections that should be considered when evaluating future climate risk.	What is the project's estimated operational lifespan (or useful life) over which it is expected to achieve the defined project goals and objectives?
STEP 6	**Assess Climate Importance** Why is this required: The project definition brief will also include an initial high-level 'climate importance' assessment indicating the general estimated severity of different climate hazards to	Together with identified stakeholder representatives (see the Stakeholder Reference Group, requirement 2.1), the project team's qualified Adaptation Lead provides an assessment of the project's Climate Importance. This is an initial high-level assessment of the general severity of potential climate change conditions to the project and

the project and its desired performance. The climate importance assessment will be used to guide recommendations by the verification professional regarding detail and robustness of data and analytical approaches required for the project hazard analysis.	to the desired project outcomes. This 'climate importance' is distinct from the Hazard Analysis (requirement 3.1) and Risk Assessment (requirement 3.2) that will go into more detail on climate hazard-specific exposures and risks. Note: Use the table **'General Project Exposure to Climate Hazards vs General Consequences of Climate-Related Failure'** to accomplish this step (refer to **Appendix A**)

1.2 | TEAM QUALIFICATIONS

GUIDANCE FOR VERIFICATION PROFESSIONALS FOR REQUIREMENT 1.2.1-1.2.3

In determining compliance with the requirement, the verification professional should:

1. Confirm that the project team has identified, selected, and formalised the terms of participation, throughout the whole course of project development and implementation, of a **Climate Adaptation Lead**. The adaptation lead must have a university degree in a field relevant to climate adaptation[1] or have completed professional assignments relevant to climate adaptation.[2] *If the project has a High Climate Importance, it is required that the Climate Adaptation Lead have both a relevant university degree and at least 5 years of relevant project experience.* The adaptation lead's role includes ensuring that both scientific and stakeholders' knowledge, views and concerns have been considered during project's climate Hazard Analysis, risk assessments, adaptation measures design, and adaptive management framework design.

[1] Relevant university degrees include the following: architecture, urban planning, civil or environmental engineering, geoscience, emergency and disaster risk management, engineering (mechanical, structural, marine, environmental) social and earth sciences fields.

[2] Relevant professional experience includes any projects involving natural Hazard Analysis, risk assessment, and/or risk management through project planning, design, and/or implementation in which the professional was actively engaged in leading or technical support roles.

2. Confirm that the project team has identified, selected, and formalised the terms of participation, throughout the whole course of project development and implementation, of a **Climate Science Consultant.** The Climate Science Consultant must have a university degree in a field directly pertinent to climate science or climate change adaptation, or a minimum of 5 years of professional experience working on climate change adaptation projects or research. The Climate Science Consultation must have adequate skills to provide guidance, depending on the project's climate importance, to the hazard analysis and to review the climate risk assessment.
3. Confirm that the project team includes at least one member who has a social sciences background and/or professional training and experience in community engagement and facilitation who will serve as the team's **Community Knowledge Representative(s)**. The Community Knowledge Representative(s) will coordinate and ensure the effective and inclusive engagement of associated community stakeholders throughout the project design process. This representative must have knowledge of the history, experiences, needs, and priorities of the relevant local communities and stakeholders, including of local indigenous/tribal affairs, and access to relevant local/indigenous/tribal representatives to be consulted in the project design and implementation process.

STAGE	DESCRIPTION OF REQUIRED APPROACH (What)	GUIDANCE FOR PROJECT OWNERS (How)
STEP 1	**Preliminary Review Stage:** The project team shall submit CV's to be evaluated by the verification professional to verify the following.	1) Project Team includes a **Climate Adaptation Lead:** a) Core project team includes one dedicated Climate Adaptation Lead who has a university degree in a field relevant to climate adaptation or has completed professional assignments relevant to local climate adaptation planning and project preparation. b) Relevant university degrees include the following: architecture, urban planning, civil or environmental engineering, environmental science, geoscience, emergency and disaster risk management, sustainable development, public policy or

administration as well as other science-related, engineering or earth science fields. Relevant professional experience includes any projects involving natural hazard risk assessment or mitigation through project planning and/or design in which the Disaster, Risk Management (DRM) professional was actively engaged (leading or supporting) these aspects of the project. *If the project has a High Climate Importance, it is required that the Climate Adaptation Lead have both a relevant university degree and at least 5 years of relevant project experience.*

2) Project Team advised by a qualified **Climate Science Consultant**:
   a) For projects with a Low Climate Importance, the Climate Science Consultant reviews outputs of activities related to Hazard Analysis and Risk Assessment. For projects with a Medium or High Climate Importance, the Climate Science Consultant participates in data collection and analytical activities related to the Hazard Analysis and Risk Assessment in addition to reviewing outputs. The Climate Science Consultant has a university degree in a field directly tied to climate change adaptation and a minimum of 5 years of professional experience working on climate change adaptation projects or research.
   b) Relevant university degrees include the following: climate science, environmental science, urban planning, civil and environmental engineering, meteorology, geoscience or other science-related or engineering fields. Relevant professional experience includes projects involving climate hazard characterisation or analysis, climate risk assessment, or climate adaptation project planning and/or design in which the Climate Consultant was actively engaged (leading or supporting these aspects of the project).
3) Project Team includes a **Community Knowledge Representative**:
   a) The project development team must identify the local communities including indigenous/tribal communities within the direct and indirect project boundaries and identify a person who is respected by and knowledgeable of those communities to be

		part of the core team. The Community Knowledge Representative must have a social sciences background and/or professional training and experience in community engagement and facilitation. They will have had substantial experience working on shock(s) and/or stress(es) relevant to the affected community(ies) as well as have the ability to support the stakeholder engagement process of the project. The project team must document and consider the expert inputs provided by the Community Knowledge Representative in each stage of the project to ensure acknowledgement and incorporation of local community and historical knowledge, especially under the 'no scientific data available' condition. In the instance that the project is influenced or impacted by Indigenous community issues, then the project team should engage a consultant who has trust and a successful track record of liaison with the relevant Indigenous community.
STEP 2	**Recommended Broader Project Team Knowledge & Skills**	Additional recommended project team qualifications include: — **Design** (architecture, civil engineering, landscape design, urban planning) — Modelling, **data analysis**, GIS — Knowledge of **international best practices** related to the specific climate adaptation project domain (e.g. nature-based solutions, flood control, water and sanitation, etc) — **Cost-benefit analysis** related to climate adaptation and disaster risk reduction — **Monitoring and evaluation** related to climate adaptation / adaptive management
STEP 3	**Recommended Advisory Committee**	If any of above areas of expertise are not able to be incorporated into the project team itself, then an advisory committee should be assembled to periodically review and advise on project development. The multi-disciplinary advisory committee should include local, national and/or international experts in relevant project topic areas (e.g. architectural design, landscape design, Indigenous knowledge, forestry, agriculture, coastal management, urban flooding, etc.) to complement the expertise on the team. This advisory committee is separate from the broader stakeholder consultation process of the project (requirement 2.2).

1.3 | DATA IDENTIFICATION, COLLECTION AND ANALYSIS

GUIDANCE FOR VERIFICATION PROFESSIONALS FOR REQUIREMENT 1.3.1-1.3.2

In determining compliance with the requirement, the verification professional should:

1. Confirm that the project team has prepared a plan to identify, source, collect, and evaluate data sets required to conduct a thorough analysis of the site conditions and climate hazards and risk, minimally within the project boundaries under a range of alternative future climate scenarios. The types of data to be identified and secured include:
    i. The most recent and highest quality scientific data (e.g. highest level of geographic detail, peer reviewed science), including the most recent scientific and engineering assessments of climate change hazards and; scenarios related to the project's defined direct and indirect boundaries.
    ii. Local weather data for the preceding five years and, where possible and relevant the preceding 10 years.
    iii. Documentation of stakeholder accounts and reports of recent weather and other climate-related events, and the impacts of these events.

The project team has provided a plan on how to compensate for lack of data by drawing upon local empirical events and trends and upon the knowledge and guidance of local experts and stakeholders to validate any assumptions to be made.

2. Confirm that the team has identified appropriate (*) strategies for collecting the best quality data for the project across all of the above categories (i-iii). If there are identified gaps or shortfalls in data acquisition, then provide suggestions to the team to address shortcomings.

    *(*) the term **appropriate** will depend on the Climate Importance of the project, and on the enabling conditions for a data-driven approach to climate hazard analysis and risk assessment. Projects with Medium or High Climate Importance and/or those located in contexts where data is more readily available should satisfy a higher threshold in terms of the type, comprehensiveness, accuracy,*

and resolution of data collected or anticipated to be used on the project than for projects with a Low Climate Importance and/or where availability of and access to data is poor.

3. Assess and verify the following when reviewing the final data plan. (All questions must be answered in the affirmative to meet the requirement)**:**
    a) Has the team identified appropriate (*) strategies for identifying, evaluating, and collecting the *best quality data* for the project across all relevant data categories listed in the guidance? (Yes/No)
    b) In the instance that the best quality data cannot be accessed, has the project team taken appropriate (*) actions and utilised best efforts to obtain other, *adequate data* for the project across all relevant data categories listed in the guidance? (Yes/No)
    c) Has the project team identified and/or implemented appropriate (*) actions to address areas of data insufficiency or uncertainty across all relevant data categories listed in the guidance? (Yes/No)

STAGE	DESCRIPTION OF REQUIRED APPROACH (What)	GUIDANCE FOR PROJECT OWNERS (How)
STEP 1	**Preliminary Review Stage:** The project team submits preliminary data plan	Describe the project team's plan and sources (e.g., use of published research, access to government data sources, open data, surveying, stakeholder engagement, etc.) for collecting the following general categories of data and data sets (as relevant to the project) as well as any initial information regarding known sources of data. The data categories of interest are: — **Climate hazard and risk data, including the definition of baseline conditions**. Sources may include: science-based climate condition and hazard studies, reports, datasets and maps, and weather trend data — **Hazard data regarding other natural hazards relevant to the direct and indirect project area.** — **Physical characteristics of the direct project area** — **Socio-economic data** on the different demographic groups and communities that will be affected by the project and by climate

		change within the project's direct and indirect geographic boundaries. — **Upstream dependencies and indirect impacts** of the project and project area within the systemic boundaries defined in the preliminary project definition brief. — **Relevant policies, plans, regulations and standards** related to project scope that must be followed or aligned to
** While not a requirement of the adaptation standard, it is also recommended that the data plan include a brief description of the Project Team's **approach to data management**, including storage and information management system, analysis/modelling/integration software, quality control procedures, plans for dissemination and sharing as well as project team members responsible for each aspect of data management.		
STEP 2	**Project Review Stage:** The Project team shall submit a final data plan	— The Project team's updated plan for collecting data as well as initial information regarding known sources of data (including any stakeholder sourced data), addressing the preliminary comments received from the verification professional. — Description of the data collection process and list of related data/data sets collected for each data category. — Description of project approach to deal with incomplete/insufficient data and/or uncertainties for each data category.
** Optional: updated approach to data management		

2| CLIMATE FOCUSED STAKEHOLDER ENGAGEMENT & EDUCATION

2.1 | CREATION OF STAKEHOLDER REFERENCE GROUP

GUIDANCE FOR VERIFICATION PROFESSIONALS FOR REQUIREMENT 2.1

In determining compliance with the requirement, the verification professional should:

1. Ensure that the project team has provided evidence of the identification the local stakeholder types, groups and communities within the project's defined direct and indirect boundaries (as indicated in the preliminary project definition brief) that are or will be most affected by the project and local climate change impacts. These stakeholders are referred to below as the 'key stakeholder groups'.

2. Review and confirm evidence that the project team has constituted a Stakeholder Reference Group, with mutually agreed terms of reference, that is composed of representatives/liaisons from the identified key stakeholder groups. The mutually agreed terms of reference define who will be consulted by the project team, at a minimum, as required at the different stages of project development, and how such consultation will be organised.

3. Confirm that the project team has secured the support and sanction for the engagement of the constituted Stakeholder Reference Group by any designated traditional leaders for the communities that have been identified in requirement 2.1(i), as are pertinent to the project location and context (e.g., the local chief, head of village head).

STEP BY STEP GUIDANCE FOR PROJECT OWNERS TO PREPARE THE PROJECT DEFINITION BRIEF TO COMPLY WITH REQUIREMENT 1.1

STAGE	DESCRIPTION OF REQUIRED APPROACH (What)	GUIDANCE FOR PROJECT OWNERS (How)
STEP 1	**Selection of representatives & establishment of the Stakeholder Reference Group** The project team's work to fully identify and evaluate the stakeholder groups and types who will be most directly and systemically affected by the project will facilitate the team's ongoing work to design effective measures for climate risk management and to make	— Following the identification of project stakeholder groups and of their stakeholder representatives in **1.1(iv)** and **2.1(i)**, hold discussions with any established councils, organizations, associations, committees, or designated group leaders of each of the key stakeholders as in **2.1(i)**. — Provide these entities and designated leaders with a full briefing about the project, the project development and preparation process and

best use of project investments to provide co-benefits to different stakeholders. Such an effort should facilitate the maintenance of broad-based support for the project's implementation and ensure identification and mitigation of adverse 'downstream' impacts that the project may have.

In selecting representatives to be invited to join the Stakeholder Reference Group the project team shall first respect and invite the nominees of the relevant stakeholders' established councils, committees, associations— whether registered/formal or informal in nature.

The above bodies and committees as well as the nominated stakeholders shall be provided full, advance information regarding the nature of the project, and about the topics, form, and nature of project preparation activities in which the Stakeholder Reference Group (SRG) members are to be engaged. Such information should include information regarding responsibilities, SRG terms of reference, meeting/activities scheduling, and about any honoraria or other support to be provided for their participation.

schedule, the role and any terms of reference for the Stakeholder Reference Group (SRG), the schedule and activities of the SRG, and the responsibilities and related honoraria or any related support to be provided to SRG members as per **2.2**. This information should be provided verbally and in documented/written form in the relevant local language.

— Secure recommendations and nominees for the SRG from the above entities and established stakeholder leaders and meet with the nominees. Provide these nominees with a full briefing about the project, the project development and preparation process and schedule, the role and any terms of reference for the Stakeholder Reference Group (SRG), the schedule and activities of the SRG, and the responsibilities and related honoraria or any related support to be provided to SRG members as per **2.2**. This information also should be provided verbally and in documented/written form in the relevant local language.

— On the basis of these discussions and responses from the nominees, constitute the SRG, ensuring at least one representative from each of the identified key stakeholder groups.

— Ensure and support participation of the SRG members in all climate-based education and knowledge sharing sessions (2.2).

2.2 | DELIVERY OF CLIMATE-SCIENCE BASED EDUCATIONAL SESSIONS AND COMMUNITY ENGAGEMENT PLAN

GUIDANCE FOR VERIFICATION PROFESSIONALS FOR REQUIREMENT 2.2

In determining compliance with the requirement, the verification professional should:

1. Review and confirm documentation of the provision of science-based educational and knowledge sharing sessions about the nature of:
   i) the proposed project
   ii) climate change and climate trends, and about the physical, environmental, economic, and social impacts that these trends could have upon their region and locality
   iii) the ways in which the project owner wishes to engage them in the project risk assessment and further project concept development.

Review and confirm documentation of the concerns, issues, and perspectives shared by Stakeholder Reference Group members regarding the proposed project.

Upon completion of the sessions, the project team shall provide documentation of the workshops/sessions, which includes a record of different concerns, issues, and perspectives expressed by stakeholders and changes agreed regarding the project development process. This has been shared with the Stakeholder Reference Group for its review and inputs prior to completion.

Review and confirm documentation that the Stakeholder Reference Group has been informed and consulted regarding the project and the process for project development and preparation, and related methodologies, including on their role in the collection and/or interpretation of data and information about climate hazard exposures and vulnerabilities.

The document also summarizes a high-level plan outlining the process for future stakeholder engagement. The final document shall be shared with all participants in workshops and information sessions in language(s) that they understand.

STEP BY STEP GUIDANCE FOR PROJECT OWNERS TO COMPLY WITH REQUIREMENTS 2.2

STAGE	DESCRIPTION OF REQUIRED APPROACH (What)	GUIDANCE FOR PROJECT OWNERS (How)
STEP 1	**Conduct Stakeholder Education and Knowledge Sharing Sessions**	— An educational and knowledge sharing session or series of sessions should be organized and presented with the participation of the full project team, the Stakeholder Reference Group members and additional stakeholder representatives identified in **1.1(iv)** and **2.1(i)**. — The information provided in the session(s) shall include science-based information and presentation of key concepts on the nature of climate change and climate trends, and about the physical, environmental, economic, and social impacts that these trends could have upon the project-relevant region and locality, and on the project site and affected communities specifically. — The presentation of the above information should be made with and/or by the Project Team's designated Adaptation Lead and/or qualified Climate Consultant and/or by the project's multi-disciplinary advisory committee consisting of local and/or international experts in relevant project topic areas (e.g. architectural design, landscape design, forestry, agriculture, coastal defence, urban flooding, etc.).

		— The educational and knowledge sharing session(s) and related educational materials shall be presented in the stakeholders' local and regional languages. — The session(s) shall be convened at a time that does not interfere with livelihood activities of the invited stakeholder representatives. — Stakeholders of low-income and/or disadvantaged group backgrounds, or whose participation could expose them to safety concerns, shall be provided financial and/or logistical support to minimise economic burden and any safety risks.
STEP 2	**Develop project stakeholder communication and consultation planfor Stakeholder Reference Group engagement in the project development and adaptive management processes.**	— In consultation with the project's Stakeholder Reference Group, the Project Team will prepare a plan that defines the ways in which SRG members and other identified project stakeholders will be informed, consulted, and involved in the following project development and design activities: — Hazard analysis — Vulnerability/adaptive capacity assessment — Project concept and design development — Final review stage for the project design — Adaptive management plan — The stakeholder engagement plan will indicate when and how the project owner aims to engage stakeholders– including on occasion a broader group of community residents and/or stakeholder representatives– in the collection, review, and/or interpretation of data and other information on local climate risks, vulnerabilities, and adaptive capacity.

3| PROJECT CONCEPT DEVELOPMENT

3.1 | HAZARD ANALYSIS

GUIDANCE FOR VERIFICATION PROFESSIONALS
FOR REQUIREMENTS 3.1.1 – 3.1.4

In determining compliance with the requirement, the verification professional should:

1. Confirm that the project team has considered the full range (see **Appendix B**, Table 1) of prospective climate change hazard types (including the acute or shock aspects and the chronic or stress aspects of each hazard **) both occurring or expected to occur within the direct and indirect boundaries of the project. Confirm that the project team has provided a documented explanation for the inclusion or exclusion of each type of climate hazard in the hazard analysis.

   ** Please view the 'Key Concepts and Term Definitions' section at the start of the document for definitions of 'Shock' and Stress'

2. Receive and review completed local climate hazard summary tables for the direct project area (i.e., within the project boundaries) and for the areas and/or systems within the indirect project boundaries, both currently and under at least two projected future climate scenarios.

3. Confirm that the above scenarios and tables have been developed in consultation with the climate science consultant and/or technical advisors using both best available scientific data and local knowledge and event data.

4. The hazard summaries should describe the potential of each hazard to impact the project and stakeholders (i.e. the exposed parties) under different identified scenario conditions during the development and operation of the project over its operational lifespan, considering the expected start of appearance or occurrence of the hazards.

5. Receive and review the Hazard Analysis Report that describes the current or potential climate *and non-climate* natural hazards occurring within the project's direct boundaries, and the identified parties or assets that are or will be exposed to these hazards and the nature of such exposure. Further review and ensure that the Hazard Analysis Report describes the current or potential climate hazards occurring within the project's defined indirect boundaries, and the identified parties or assets that are or will be exposed to these hazards and the nature of such exposure.

6. Confirm that the Hazard Analysis Report has been presented to the Stakeholder Reference Group for review, and that the project team has engaged with the SRG to incorporate member inputs into the final hazard analysis of trends and exposures related to each identified climate and non-climate natural hazard.

STEP BY STEP GUIDANCE FOR THE PROJECT TEAM TO COMPLY WITH REQUIREMENTS 3.1.1 – 3.1.4

STAGE	DESCRIPTION OF REQUIRED APPROACH (What)	GUIDANCE FOR PROJECT TEAMS (How)
STEP 1	**Determine Climate Hazard Identification Codes**	**[NB. This document provides fixed format examples of tables that may be used to prepare a standard compliant hazard analysis. Editable xls or pdf versions of these worksheets can be obtained here: XXXXXXXXXX .]** Using Table 1 provided in Appendix B (‘**Climate Hazard Identification Table’)**, please review, edit, and add any relevant climate hazards and their associated identification codes, using the ‘ID naming Logic’ provided in the Table 1 worksheet
STEP 2	**Preliminary Climate Hazard Identification** Why is this required: A full review of all potential types of climate hazards, considering both climate change shocks and stresses, will help ensure that the full, multi-hazard nature of climate change can be accurately characterised for	In consultation with the Stakeholder Reference Group and any other technical advisors, complete the ‘Preliminary Climate Hazard Identification’ table using at a minimum the provided list of climate hazards, including a summary of relevant shock and stress condition impacts associated with each identified climate hazard.

	the direct project area and site, and for the indirect or systemic dimensions of the project.	
STEP 3	**Current and Future Climate Hazard Data** Why is this required: Data and information about current and future climate hazard conditions is used to assess the current climate exposures that the project needs to address as well as to be able to understand the expected change in climate conditions relative to current conditions and related additional exposures or changes in exposures arising from these.	In consultation with any technical advisors, access and document the available science-based data or other **current and future** conditions from reputable local, national and/or international sources. List the data and sources for each relevant hazard, indicating what is the scale/resolution of the data and the related findings (e.g. site-specific, local, regional, national). Complete this review and summary of accessible science and data for each of the climate hazards identified in Step 1. Document the time period and trends of each hazard. If no climate model forecasts are available at a scale/resolution sufficient to guide analysis of hazards within the project's direct and indirect geographic boundaries, then in consultation with the project team's Climate Science Consultant consider the use of weather trend data for the preceding 5-10 years. If no science-based data or projections are available, or if the scale/resolution is insufficient to guide analysis of hazards within the project's direct and indirect boundaries, then identify and document what is the best alternative type of project-level hazard data or other empirical information available, such as historical event data, community resident surveys, etc. For each climate hazard identified in Table 1, use Table 2 **Use Table 2 'Climate Hazard Data Summary Worksheet'** to document the best available information and conclusions indicated in the table's column headings (refer again to **Appendix B**).
STEP 4	**Non-Climate Hazard Data**	In consultation with the Stakeholder Reference Group and other technical

	Why is this required: Climate hazards often combine with each other and with other non-climate hazards to establish the true multi-hazard profile of places, people, assets, and natural systems. For example, the design of a power supply system for a community that confronts only extreme storm risks would be very different from one that confronts both extreme storm and earthquake risks, particularly if there is a probability that both hazard events could happen in the same time span.	advisors, prepare summary profiles of any non-climate hazards (i.e., minimally other natural hazards) to which the *direct* project area could be exposed over the project's useful life. Document these non-climate hazards using Table 3 **'Non-climate Hazard Data Summary'** (referring again to **Appendix B**).
STEP 5	**Hazard Analysis Report** Why is this required: Because there is inherent uncertainty in future climate change projections, when determining appropriate future hazards to be considered for project design, it is useful to use an 'ensemble approach' where multiple versions of climate projections are analysed using both science-based data and local knowledge and event data, and the project is designed to accommodate the range of conditions from the ensemble.	In consultation with relevant advisors and stakeholders, prepare a **draft Hazard Analysis Report.** The Report should consider the potential exposure and nature of exposures of the identified direct and indirect project areas, the key stakeholders, and the relevant assets, systems, habitats and environmental services to each of the documented. The nature of exposure should be considered in terms of the full expected useful life of the project. The draft Hazard Analysis Report may be prepared in a document format to be determined by the project team, but the selected format should ensure comprehension of the findings by the members of the Stakeholder Reference Group.
STEP 6	**Final Hazard Analysis Report**	After review of the draft report by and with the Stakeholder Reference Group, and considering the stakeholders' comments and inputs, the project team should prepare a final Report for submission to the verification professional, which includes information from the hazard analysis and the following items as they pertain to each exposed party identified.

		1. List the geographic boundaries and systemic boundaries, and the assets, programs, and other project investments to be made with each of these contexts. 2. Provide maps/diagrams of the project with its geographic boundaries. 3. For each hazard that was analysed describe a. the sources of natural science, social science, and non-science (e.g., qualitative and anecdotal) data and information used in the analysis b. the level of confidence in hazard projections used, considering the availability and quality of science-based data. 4. With reference to each of the hazards analysed, identify the exposed parties (e.g., groups, communities, settlements, assets, habitats/species, etc) that will be exposed to the hazard. 5. For each exposed parties, relative to each hazard, indicate the nature and time scale of expected exposure.
STEP 7	**Incorporate Hazard Analysis Findings into a Final Project Definition Brief** Why is this required: The full identification of the exposures and related exposed parties completes the definition of the climate change considerations that are core to the success of the project. On this basis, the verification professional will make determinations regarding the robustness of data and analytical approaches required to address hazard exposures in the course of project preparation.	Use the findings of the Climate Hazard Analysis Report to update and revise, as necessary, the Climate Importance Review in the draft Project Definition Brief (see Requirement 1.1(v) and 1.1.1).

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3.2 | RISK ASSESSMENT

GUIDANCE FOR VERIFICATION PROFESSIONALS FOR REQUIREMENTS 3.2

In determining compliance with the requirement, the verification professional should further ensure that:

1. The project team has fully utilized and addressed the findings of the Hazard Analysis Report to complete a comprehensive risk assessment for the climate hazards to which the communities, groups, people, assets, facilities, systems, habitats, species, and livelihoods (henceforth, 'the exposed parties'), either within the defined direct and indirect project boundaries or related to one of the project's performance objectives, are exposed. In doing so the risk assessment has factored climate hazards within the project's defined geographic boundary and within its systemic boundaries as identified in 1.1.
2. Relative to each hazard and the identified exposed parties to each hazard in the Hazard Analysis Report, the risk assessment evaluates the nature of impacts, the likelihood of impacts, and the potential impact consequences for each exposed party.
3. The assessment of impact consequences for each exposed party considers both the sensitivities and the adaptive capacities of each party.
4. The likelihood and consequences of multi-hazard events involving more than one climate change hazard event and/or other non-climate hazard events has been considered.
5. The project team has provided documentation to verify:
    i. that they have provided the preliminary Risk Assessment Report to the Stakeholder Reference Group (SRG) for its members' review
    ii. have taken feedback and documented the inputs from the SRG
    iii. how they have or have not incorporated the SRG's inputs into the final Risk Assessment Report.
6. The final Risk Assessment Report may take the form of assessment tables, graphic, and explanatory texts—or a mix thereof—providing that the Report documents the nature of the exposure, the likelihood of different impacts for each exposure for each exposed party (i.e., time frame of impact and confidence in the

data used), and vulnerability (i.e., sensitivity and adaptive capacity) of each exposed party to the indicated impacts.

STEP BY STEP GUIDANCE FOR PROJECT TEAMs TO COMPLY WITH REQUIREMENT 3.2

STAGE	DESCRIPTION OF REQUIRED APPROACH (What)	GUIDANCE FOR PROJECT TEAM (How)
STEP 1	**Organize the risk assessment process so that a total climate risk profile is created for each of the exposed parties identified in the Hazard Analysis Report.** Why this is required: Risks are differently borne by different groups of people, systems, habitats, assets etc. Similarly, risk management measures need to be differently tailored for such different parties. To ensure that the climate risk assessment is effective and sensitive to the unique nature of risk of such different parties, it is necessary to create a comprehensive profile of the range of climate (as well as pertinent non-climate) risks that may interact with each other and that different parties must confront. Therefore, a multi-hazard risk assessment is to be created for each exposed party (rather than as a multi-party assessment for each hazard). The exposure to a hazard, and the identification of who and what aspects are exposed, is a primary factor in determining overall project climate risk. The purpose of	**[NB. This document provides fixed format examples of tables and worksheets that may be used to prepare a standard, compliant risk assessment. Editable xls or pdf versions of these worksheets can be obtained here: XXXXXXXXXX .]** Create a risk assessment worksheet for each of the exposed parties that have been identified by the Hazard Analysis. If any party is exposed to more than one identified hazard, then it will be helpful to create a risk assessment workbook, consisting of worksheets for each exposure, for each party. **Appendix C** provides a template for a risk assessment worksheet. For each hazard analysed in the Hazard Analysis consider the following questions to identify and document key exposures: a) Who is exposed (e.g., persons, communities, groups, species)? Is it possible to quantify the exposure (e.g. number of people, number of homes)? b) Similarly, what (specific assets, habitats, upstream resources or supply systems, businesses and livelihoods etc) is exposed? Is it possible to quantify the exposure (e.g. value of assets, service coverage, level of utilisation and reliance on an infrastructure)? For both questions: c) Explicitly identify and highlight exposures related to historically disadvantaged population groups (based on race, ethnicity, gender, age, socio-economic conditions, etc) that might contribute to unequal and greater risks due greater

	this step is to identify and document for each exposed party, all of the climate hazards to which that party is or will in the future be exposed.	vulnerability (i.e., higher sensitivity and/or lower adaptive capacity) to those hazards. d) Identify the different aspects of the exposure for each exposed party, including the different impacts that each aspect might have on the exposed party. For example, the exposure of a small business community to coastal flooding might have multiple aspects, each bearing different impacts, that could be mitigated with different adaptation measures: — The buildings could be flooded, resulting in building damage. — Even if the buildings are not damaged, flooding of roadways could prevent workers and customers from reaching the business, resulting in loss of business income. — Power supply could be disrupted. — Sustained losses in business income could lead to potential business insolvency and unemployment in impacts. The risk profile of these businesses should factor the different probabilities and sensitivities of the businesses to such a range of impacts. If using the worksheet template in Appendix C, first get acquainted with the Legend on 'Likelihood of Potential Impact', 'Consequence', and 'Risk Screening Matrix'. This provides a scoring rubric for assessing the risks associated with each hazard exposure. Then complete each cell in the worksheet for each of the selected, relevant climate hazard tabs created.
STEP 2	**Make a preliminary determination of the confidence the team can have at this time in the assessment of risk related to each of the identified exposures for each exposed party.**	For each party, use a ranking or scoring methodology to identify which of the party's exposures should be given highest analytical consideration by the project in the risk assessment process. A rapid 'project relevance' score or ranking may, for instance, be generated by considering the expected degree of impact of the exposure, the confidence in the data used

	Why is this required: For a typical project the hazard analysis will have identified a range of hazards. For each hazard, the analysis will have further used data and science of different degrees of certainty or confidence. The initial assessment confidence level evaluation assists the project team and verification professionals to allocate assessment work to those exposures that are most certain, and that will have the greatest impact within a relevant current, short- or near-term timeframe.	to analyse potential impact, and the timeframe of possible impact (i.e., an impact far into the future may be less relevant to the project today.) Consider the confidence of the assessment team in the data that has been used in the hazard analysis. On this basis consider whether the risk can be confidently assessed at this time, whether further information or expertise will be required to assess the risk with confidence, or even whether the risk must just be monitored given a low level of certainty about exposure. Consider the expected timeframe for the potential hazard impact to further evaluate the importance of adaptation action during the current timeframe for project design and execution. There may be lower confidence regarding the nature of exposures and impacts for a hazard that is not expected to emerge for a decade or more. For preliminary assessment purposes consider whether the exposure and associated harms and losses are expected: a. Current/In Next 5 years b. 5-15 years c. 15 + years On the basis of the above exposure confidence exercise—for each party and its different exposures—the project team can make determinations regarding methods (e.g., qualitative or quantitative) and resources allocation to further assess risk (i.e., likelihood and sensitivity) of harms (e.g., to health and safety) and losses (e.g., to assets, livelihoods, incomes) that could arise from the exposure.
STEP3	**For each of the hazards to which the party is expected to be exposed, assess the Likelihood of Potential Impact from each of the exposures.**	Reflecting the degree of technical/analytical attention needing to be applied (i.e., as per the assessment confidence review) for each identified exposure, now use a standard risk matrix scoring approach to evaluate and score the likelihood of impact of the different impacts of hazard exposure upon each exposed party. The likelihood of impact can be evaluated with reference to the

		likelihood of specific events occurring (e.g., a major flood event) and/or the likelihood of the exposure creating a stress (e.g., increased incidence of farmers' crop failure due to persistent wetness.). The worksheet provided in Appendix C uses the following 'Likelihood of Potential Impact' legend for this purpose. The Likelihood score is developed on a scale of 1-5, with: a. 1 = Improbable: So unlikely that it can be assumed that the hazard condition may never be experienced. b. 2 = Remote: Unlikely but possible to occur several times over the life of the project-related asset, system, place etc. c. 3 = Occasional: Will occur sometime over the life of the project-related asset, system, place etc d. 4 = Probable: Will occur several times or cumulatively over the life of the project-related asset, system, place etc e. 5 = Frequent: Likely to occur on an annual, seasonal, or otherwise regular basis
STEP 4	**For each of the hazards to which the party is expected to be exposed, assess the Vulnerability to Impact from each of the exposures. This involves assessing and documenting the party's degree of Sensitivity to the exposure and its Adaptive Capacities associated with each type or incident of hazard exposure.** <u>Why is this required</u>: In addition to likelihood of hazard exposure, the vulnerabilities of the exposed parties and assets are another key determinant of potential harm or losses (i.e.,	For each of the identified exposed assets/systems/parties, the project team shall identify and document the characteristics and extent of sensitivity and adaptive capacities to the considered climate hazards conditions, identified in the 'Exposure section' above. In the 'Description of Vulnerability (Sensitivity aspect), the project team should identify and describe the characteristics of sensitivity, keeping in mind the following questions: — What are physical or environmental sources of sensitivity? In other words, what physical characteristics are likely to create more severe impacts due to the climate hazard? — What other (social, economic, political, cultural) sources of sensitivity are likely to exacerbate impacts of the event or

risk). There are two aspects of vulnerability: sensitivity and adaptive capacities.

Sensitivity is: physical predisposition of human beings, infrastructure, and environment to be affected by a dangerous phenomenon due to lack of resistance and predisposition of society and ecosystems to suffer harm as a consequence of intrinsic and context conditions making it plausible that such systems once impacted will collapse or experience major harm and damage due to the influence of a hazard event.

Adaptive Capacity is: capacity to anticipate, adapt, and respond in absorbing the socio-ecological and economic impact based on one's socio-economic and political standing.

reduce the ability to cope or recover from the event?

For both questions, explicitly identify and highlight the sensitivities of historically disadvantaged population groups (based on race, ethnicity, gender, age, socio-economic conditions, etc) that might contribute to unequal and greater harm and losses due to the relevant climate hazards and within/associated with the project's site and systemic boundaries.

Examples of physical or environmental sources of sensitivity:

- For flood risk: topographic conditions (e.g. low-lying areas); quantity of impervious surfaces; deforestation
- For drought: crops that are sensitive to drought.
- For extreme heat: urban environments with large areas of asphalt or dark surfaces
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- Examples of social sensitivities:
- Low security of housing tenure and quality of housing
- History of discrimination and/or belligerent treatment of minority groups (in terms of race, caste, religion) by local authorities and/or other community members
- Low legal and social status of women, LGBTQIA+

Next, determine the level of **Adaptive Capacity** of the relevant asset/system/party in relation to the considered exposure over three scales: low, medium, and high. Many socio-economic and political factors would determine the adaptive capacity of a particular asset/system/party. So, consider the following factors while evaluating the adaptive capacities:

1. Possession of knowledge and information, including knowledge co-production and sharing (e.g. level of education, skill sets, access to data and data management systems)
2. Access to assets (e.g. infrastructure, land, natural resources, materials,

technology, human resources) and financial resources (e.g. access to capital, insurance, wealth, GDP) to prevent or reduce harm and losses and recover rapidly.
3. Existing community capital, social cohesion and formal or informal networks for mutual response and recovery support
4. Possession of insurance to cover harms and losses associated with an exposure event.
5. Relevant institutional and governance capacities across scales to anticipate, incorporate and respond to evolving risk (e.g. experience of leaders, existence of emergency response or business continuity plans, policies and regulations that support disaster risk management and rapid recovery)
6. Demographics and health conditions (e.g. age, gender, health conditions, access to health care, presence of infectious disease)

Examples of social, economic, political or cultural vulnerability arising from low adaptive capacity:
- For flood risk: homeowners without flood insurance
- For drought: populations without access to alternate sources of water or rural, isolated communities
- For extreme heat: neighbourhoods without access to easy green spaces/shade; communities with aging populations

Please note: The assessment to determine the Adaptive Capacity of an asset/system/party is qualitative in nature and hence input from the stakeholder reference group as well scientific and demographic studies should influence the final evaluation of the capacity to adapt.

During and/or following the above the project team's initial identification of sensitivities and adaptive capacities, the project team shall seek input and validation from the Stakeholder Reference

		Group and any other stakeholders to complete the vulnerability assessment. **Note**: Refer to Appendix C, Table 2's 'VULNERABILITIES, CONSEQUENCES AND RISK RATING' section to complete this step.
STEP 5	**Determine the Consequence of the exposure on the relevant party**	Using the Vulnerability assessment you conducted above, evaluate the impact a particular considered exposure would have on the asset/system/party and determine the consequence. Refer to the 'Consequence' legend to determine the appropriate category for the exposure: 1. **Marginal:** The event commonly results in minor or less than minor, ecosystem and asset/system/party damage requiring repair or restoration, or operational losses that cannot be recovered. 2. **Moderate:** The event may commonly cause limited but potentially costly disruption to operations and system productivity, and require repairs or restoration, but these can be counteracted or controlled without major system damage. 3. **Critical:** The event may commonly cause severe injury or illness and/or major ecosystem, asset/system/party damage, thereby causing cessation of operations and requiring emergency services, and costly repairs and/or reconstruction and extended recovery to previous system productivity. 4. **Catastrophic:** The event may commonly cause death and/or major ecosystem, asset or system destruction, thereby ceasing all operations for an extended period, requiring extended emergency services, and costly and extended reconstruction. **Please note:** The assessment to determine the consequence of an exposure is qualitative in nature and hence input from the stakeholder reference group as well scientific and

		demographic studies should influence the final evaluation.
STEP 6	**Conduct and determine the cumulative Risk Rating for the exposed party given the hazard exposure conditions pertinent to that party.**	To determine the cumulative risk rating of all the considered hazards, you will refer to the 'Risk Screening Matrix' in the spreadsheet. Use the final score from the 'Exposures and timelines' section of the worksheet and the 'Consequence' rating to determine the level of risk with the considered probability of the exposures and vulnerabilities to them. In the event that every considered hazard has a different consequence level, making it difficult to determine the aggregated consequence, the project team in collaboration with the stakeholder reference group must use their best judgement based on the scientific studies, hazard, exposure, and vulnerability analysis to finalise the 'consequence level' Input the identified rating in the appropriate cell as: *'On a scale of 1-25, without implementation of adequate risk management measures, the risk associated with this aspect of the project ranks as (low/medium/serious/high) + (score)'.* Colour the cell based on the legend. **Repeat this process for each exposed party, assessing and completing a risk rating for each of the hazard condition to which that party is deemed exposed.** **Please Note:** **For projects with High Climate Risks, it is recommended that a professional climate risk assessment is procured**. A professional climate risk assessment is a *quantitative* risk assessment performed by an experienced professional in disaster risk management. Professional risk assessments should consider the potential for **multi-hazard effects** in which other climate hazards, or non-climate hazards, interact to increase

		risk (e.g. forest fires increasing flood hazard). For non-climate hazards identified in the hazard analysis, although not a requirement of the adaptation standard, it is recommended that a similarly robust approach be used to assess those risks, keeping in mind that climate hazards may increase the risk of non-climate hazards (e.g. drought conditions making the risk of fire greater). **Note**: Refer to Appendix C, Table 2's 'VULNERABILITIES, CONSEQUENCES AND RISK RATING' section to complete this step.
STEP 7	**Document results of these risk assessments in the 'Summary of Risk Assessment' tab of the workbook**	Revisit the Summary tab and input all the risk rating under the relevant hazards for each exposed asset/system/party with relevant colors and risk ratings (low/medium/serious/high) + (score 1-25) **Note**: Refer to Appendix C, Table 1 to complete this step.

3.3 | ADAPTATION DESIGN BRIEF

GUIDANCE FOR VERIFICATION PROFESSIONALS FOR REQUIREMENTS 3.3.1 – 3.3.3

In determining compliance with the requirement, the verification professional should ensure that:

1. The submitted Adaptation Design Brief covers the topics specified in requirement 3.3, incorporating data, information, findings, and conclusions derived from the Hazard Analysis Report and the Project Risk Assessment Report.

2. The Adaptation Design Brief has drawn upon the conclusions of the risk assessment to determine:
   i. those risks that need to be given priority consideration in the current design of the project and

ii. those that need to be further monitored to determine the actual nature of risk prior to defining risk management measures.

3. The preparation of the Brief has involved engagement with the Stakeholder Reference Group who, for the prioritised risks, were also consulted on defining targets for risk reduction and/or mitigation.

4. The Brief describes the adaptation measures already being planned by the project developers, as well as the recommended adaptation measures along with their associated social and environmental co-benefits, to be pursued as part of the project technical design.

5. For all risks, the Adaptation Design Brief establishes indicators to be used in monitoring the extent and changing nature of risk. For each risk monitoring indicator, the project team together with the project owner(s) have established indicator values or thresholds that, when occurring, will trigger further risk assessment and/or risk management measures.

STEP BY STEP GUIDANCE FOR PROJECT OWNERS TO COMPLY WITH REQUIREMENTS 3.3.1 – 3.3.3

STAGE	DESCRIPTION OF REQUIRED APPROACH (What)	GUIDANCE FOR PROJECT OWNERS (How)
STEP 1	**Decide on the identified risks that will be given priority consideration in the project design.** Why is this required: The risk assessment may likely have identified a wide range of climate risks of varying risk levels. Given the available resources, the level of tolerability for different risks, and the complexity involved in trying to reduce or mitigate all risks, the project team will likely need to determine which climate	The project team together with the Stakeholder Reference Group will evaluate which risks should receive priority consideration in designing the project. An ALARP (As Low As Reasonably Practical) approach is recommended for such prioritization. An ALARP approach weighs the risk (and associated potential losses) against the sacrifice (and associated potential costs) needed to reduce the risk to an acceptable degree. There are three factors in an ALARP evaluation of any risk to be addressed: 1) level of risk as determined in the risk assessment process,

	risks will receive priority consideration for near-term reduction or mitigation in the project design.	2) degree of societal/stakeholder concern about the risk, and 3) cost of alternative risk management measures to address the risk. Risks can be categorized as follows: **Unacceptable or Intolerable Risks:** Risk reduction is essential regardless of cost. Unacceptable risks typically include those with **catastrophic consequences** and that have relatively near-term probability. **Critical Risks:** Risk reduction and/or mitigation is essential regardless of cost. Critical risks typically include those with emergency impacts with **critical consequences** and likelihood within a 10 year period. **Manageable Risks:** Risks with **moderate consequences** for which risk reduction and/or mitigation are recommended, but with reference to cost and existing stakeholder concern. These risks should be managed and monitored to change in status. **Acceptable:** Risks with **marginal consequences** to be managed directly by affected stakeholders. — Eliminating unacceptable and critical risks to the extent possible is a reasonable focus in the project design process. — — ALARP differs from Benefit-Cost Analysis. (The standard does not require a Benefit-Cost Analysis, although that may be recommended.) The ALARP process does not primarily focus on balancing the costs and benefits of measures. Rather it focuses on ensuring that measures are considered in the project design process except where they would involve grossly disproportionate sacrifices. Typically, in project design, a decision about a measure is weighted towards adoption, because the presumption is that the adaptation project owner has a primary duty to

		reduce risk under a range of future climate conditions. Decisions not to address a risk would be based on the i) the low risk rating, ii) the unreasonableness, sacrifice, or disproportionate benefits derived from the cost of the possible risk reduction measures.
STEP 2	**For the selected priority risks, agree upon project performance targets for reduction and/or mitigation** Why is this required: Determination of targeted risk reduction or mitigation for each priority risk provides an important guide to the project team and its technical advisors regarding project design elements.	For the prioritised risks, define the desired targets for risk reduction and/or mitigation outcomes. These targets will be used to evaluate alternative risk management measures during the project design process. For all other identified, lower priority climate risks, indicate any management objectives to be considered during the project design process.
STEP 3	**Prepare an Adaptation Design Brief to guide the project design process.** Why is this required: The Design Brief serves as a comprehensive point of reference for technical design team members and stakeholders as they work together to identify and evaluate the range of alternative project measures and designs that would fulfil project objectives and climate risk reduction targets.	On the basis of the risk assessment and the prioritisation of risks, prepare a document that will guide the project design process and the selection of project risk reduction and mitigation measures. The Design Brief is prepared by the project team. The contents to be included in a design brief are indicated in Requirement 3.3.

4| TECHNICAL PROJECT DESIGN AND PLANNING

4.1 | PROJECT DESIGN PROCESS

GUIDANCE FOR VERIFICATION PROFESSIONALS FOR REQUIREMENTS 4.1.1 – 4.1.2

In determining compliance with the requirement, the verification professional should ensure:

1. The project development team has provided sufficient evidence detailing the project design process which has considered risk prevention, mitigation, and/or management approaches to overcome intolerable and critical risks for each of the related at-risk parties or assets, as identified in the risk assessment. At least two options to address identified intolerable and critical risks have been considered in the design process.
2. Stakeholders involved in the compliance process of Requirement 3, have been again invited to take part in designing innovative project concepts in relation to the identified priority risks.

GUIDANCE FOR VERIFICATION PROFESSIONALS FOR REQUIREMENT 4.1.3-4.1.4

In determining compliance with the requirement, the verification professional should ensure:

1. That the project team has considered and documented the systemic requirements necessary for the continued ability of the project-related assets and parties in the direct boundaries of the project to deliver and maintain designed functions, infrastructures, risk reduction and other targeted co-benefits under the range of climate scenarios selected in 3.1. The considered requirements shall include project materials and equipment, technologies, supporting infrastructure, utility, and services systems.
2. That the project design incorporates features, measures, and mechanisms to maintain function and performance of the project-related assets, systems, and services within the direct project boundaries under extraordinary or “shock” event conditions to which the project site or asset is exposed, such that if there is a failure under extreme conditions the potential cascading impacts are minimized.

GUIDANCE FOR VERIFICATION PROFESSIONALS FOR REQUIREMENT 4.1.5

In determining compliance with requirement 4.1.5, the verification professional should ensure that the project design reflects the following factors:

i. the potential co-benefits that the adaptation measures could deliver, and

ii. Potential negative, unintended consequences of the measures that will need to be managed.

STEP BY STEP GUIDANCE FOR PROJECT OWNERS TO COMPLY WITH REQUIREMENT 4.1.1-4.1.5

STAGE	DESCRIPTION OF REQUIRED APPROACH (What)	GUIDANCE FOR PROJECT OWNERS (How)
STEP 1	**Use the findings and information documented during the risk assessment process (Requirement 3.2) to estimate the anticipated losses and harms under the 'No Adaptation Project Condition (baseline)' for each of the identified at-risk parties under each defined climate conditions** Why is this required: Avoided losses estimations facilitate 1) the attraction of investment in the project by investors seeking to address climate change impacts and 2) establish a framework for monitoring of project's benefits and its adequacy in reducing or mitigating the impacts of climate change.	Requirement 4.3 involves the definition of qualitative, quantitative, and to the extent possible the budgetary or financial benefits associated with implementation of the adaptation project, as designed. The first step in making such an estimation is to document the range of harms and losses anticipated, under each climate condition, related to each of the risks being addressed in the project's design. Estimates related to each risk should be made for each of the identified parties (i.e., including people, livelihoods, assets, habitats, ecosystem services etc) facing that risk. The estimation for each at-risk party will require establishing agreement on measures or indicators for harms and/or losses that pertain to each of the identified at-risk parties. The choice of a measurements or indicators typically should factor: — The data that is and will be repeatedly available to determine the actual level of harms and/or losses at any point in time. — The level of technical support that will be required and available to gather data about current indicator values and to make projections about the expected harms and/or losses using that indicator, in particular when seeking

		to quantify and/or monetize projected harms and losses — The indicators that are most salient to the public, decision makers, and investors when making their decisions. Once indicators are selected for each at-risk party, the project team together with stakeholders and technical advisors should complete a table with estimates of the expected harms and losses under each climate condition, for each party, under the No Adaptation Project Condition (baseline). **Note:** Use the **'Documentation of expected losses' table** to record the conclusions of this step (refer to **Appendix D**)
STEP 2	C**onsidering the risk management measures that will be implemented through the project, estimate the anticipated losses and harms for each at risk party under each defined climate conditions when the project is delivered (i.e., the Climate Adapted Condition)** Why is this required: The estimation of anticipated harms and losses under both the No Adaptation Project Condition (baseline) and the Climate Adaptation Project Condition enables estimation of harms and losses that will be avoided through implementation of the project.	After establishing the harm and loss estimates for each relevant at-risk party under No Adaptation Project conditions (baseline), use the same measurements or indicators together with data and findings from project design process (Requirements 4.1.1 to 4.1.5) to estimate the losses and harms for each at-risk party once the project is fully implemented. Estimate harms and losses for each of the climate conditions. The project team together with stakeholders and technical advisors should complete a table with estimates of the expected harms and losses under the Climate Adapted Condition. **Note:** Use the **'Documentation of expected losses' table** to record the conclusions of this step (refer to **Appendix D**)
STEP 3	**Complete calculation and documentation of the avoided losses and harms under the Climate Adapted condition**	Condition indicates the extent of harm and loss prevention or reduction to be achieved through project implementation. Investors and decision makers may also require estimation of the related costs for achieving or maintaining the avoidance of harm and loss related to each adaptation measure that is incorporated into the project. Investors may require a present

value calculation of the value of the avoided losses over the functional life of each project measure. However, expression of harm and loss prevention in monetary terms is not a requirement of compliance with the standard.

If a monetary estimate of harm and loss avoidance is undertaken, it is recommended that these estimates also factor any revenues, increased incomes, and/or increased asset values that may arise due to implementation of the adaptation measures. These economic benefits provide further justification to investors and decision makers for bearing the costs of harm and loss reduction. They may even provide a return on investment.

Finally, a project that is designed with creativity will also provide non-adaptation and non-revenue co-benefits that are not directly associated with climate risk management. For instance, a measure to reduce flooding can also be designed to provide a green space amenity. Investors and decision makers may wish to consider the full range of non-revenue benefits associated with bearing the costs of adaptation measure

Note: Use the **'Calculation of Avoided Losses table'** to record the conclusions of this step (refer to **Appendix D**) and indicate the type of information that the project team will seek to provide in building the case for project investment and for approvals by decision making authorities.

4.2 | PROJECT DEVELOPMENT PLAN

GUIDANCE FOR VERIFICATION PROFESSIONALS FOR REQUIREMENT 4.2

The project team has provided a project development plan that specifies the local, sub-national, and national policy compliance and approval requirements necessary for full implementation of the project design. This includes recommendations and

guidance pertaining to amendments or reforms to governmental plans, regulations, codes, standards, or procedures that may be necessary to enable project delivery.

The project development plan describes the further stakeholder engagement requirements, timelines, and resource requirements for further technical development and implementation requirements for each of the measures included in the project design.

4.3 | RISK REDUCTION MEASURES

GUIDANCE FOR VERIFICATION PROFESSIONALS FOR REQUIREMENT 4.3.1 – 4.3.2

In determining compliance with the requirement, the verification professional should ensure:

1. That project team has presented documentation of the measurable targets and indicators for the avoidance of harm and losses during the specified period of project function, and under the considered climate scenarios. Specifically, the project team has provided:
   i. Documentation of calculations and/or estimations of the quantified avoidance of harms and losses over the period of project function, doing so relative to the No Adaptation Project Condition (baseline), and where possible also in monetary terms.

Descriptions and documentation of any additional SDG and other co-benefits that are expected to be delivered to the community and to specific stakeholders based on the project design.

STEP BY STEP GUIDANCE FOR PROJECT OWNERS TO COMPLY WITH REQUIREMENT 4.3

See the combined guidance requirements 4.3 and 5.1.1 and 5.1.2, below.

5| PROJECT GOVERNANCE AND ADAPTIVE MANAGEMENT

5.1 | MONITORING PLAN

GUIDANCE FOR VERIFICATION PROFESSIONALS FOR REQUIREMENTS 5.1.1 – 5.1.2

In determining compliance with the requirement, the verification professional should ensure:

1. The project development team has provided documentation of a project monitoring plan detailing monitoring and evaluation methodology to be applied at least bi-annually during project implementation and post-implementation operations to track the effectiveness of risk reduction measures, status of projected co-benefits, and avoided harms and losses outcomes relative to those estimated.

Indicators are included to monitor:

i. Effectiveness of each of the incorporated risk management measures based upon the realization of the project's targeted projections for avoided harms and losses,

ii. The delivery of project co-benefits for intended project users/beneficiaries as included in the project design.

5.1.1 The project monitoring plan shall incorporate an **adaptive management approach** that recognises the need to augment and adapt risk reduction measures arising from changing climate and non-climate scenarios, in which:

i. The risk management indicators established in the Avoided Losses Estimation process (Requirement 4.3) are monitored.

ii. A further assessment of specific risks is initiated if and when the related indicator trigger values (defined in Requirement 4.3) materialize, including as necessary the re-convening of project owners, and/or users/stakeholders, and/or investors to evaluate additional climate risk management measures.

iii. Guided by the findings of the further risk assessment indicated in 5.1.2(ii), the developer, owner, and/or operator of the project and its associated assets and

services, design and undertake corrective actions to achieve the risk management targets and co-benefits as established in 3.3.3(v) and 4.3.

STEP BY STEP FOR PROJECT OWNERS TO COMPLY WITH REQUIREMENTS 4.2 – 5.1.2

STAGE	DESCRIPTION OF REQUIRED APPROACH (What)	GUIDANCE FOR PROJECT OWNERS (How)
STEP 1	**The project team together with technical partners and service providers and the Stakeholder Reference Group first defines the indicators and target indicator values to be achieved through implementation of the project design for each area or aspect of intended harm and loss reduction.**	Select indicators that can be used over the lifetime of the project and its operations to monitor the effectiveness of project designs in managing priority risks of harm and loss. A quality indicator typically: — Is simple to measure and understand. — Is aligned with the priority interests of project owners, investors, and stakeholders and relevant to their concerns so that it informs their behaviours and decisions. — The data required to measure the indicator will remain accessible over time, is affordable, and is of reliable quality. The determination of target values for each indicator will reflect the extent to which the nature of project designs and measures can effectively influence outcomes, and the degree of acceptability of outcomes (as per the ALARP exercise).
STEP 2	**The project team together with technical partners and service providers and the Stakeholder Reference Group determines the trigger values and/or events that indicate inadequacy of the project design, in the context of evolving climate conditions, to satisfactorily achieve or maintain targeted indicator values.**	The determination of trigger values for each indicator should be informed by the determinations in the ALARP exercise regarding intolerable and critical conditions. Trigger indicator values or events indicate the emergence or existence of intolerable and/or critical risk. Trigger values and events represent outcome and event thresholds that, when occurring, instigate re-evaluation of the effectiveness of measures and the considering project changes and additions.

STEP 3	**The project team and technical partners may wish to estimate the monetary value of avoided harms & losses related to each adaptation measure incorporated into the project design. This can be used to justify any additional cost associated with the measure(s) (e.g., in a cost-benefit calculation) and may also aid the attraction of investment in the project.**	The estimation of monetary value will require the use of methodologies and data that are generally unique to the relevant type of avoided harm or loss. Estimation will likely require the engagement of specialist advisors, who are familiar with current valuation methods and data. Adaptation measures that support the establishment of project revenue streams or rent/fee premiums enable the inclusion of cost-offsetting incomes in avoided loss and damages calculations. Monetary value may also be attributable to identified project co-benefits, further offsetting costs in these calculations.
STEP 4	**Document the agreed indicators, indicator target values, indicator and event triggers, and avoided harm and loss calculations.**	The **'Adaptive Management/Trigger Conditions Table'** (**Appendix E**) is provided for documentation of decisions pertaining to requirements 4.2 through 5.1.2.

GUIDANCE FOR VERIFICATION PROFESSIONALS FOR REQUIREMENTS 5.1.3 – 5.1.4

In determining compliance with the requirement, the verification professional should ensure:

1. That the project team and/or post-commissioning project owner have established and maintained the assigned professional capacity and resources to establish and implement a project monitoring plan using the indicators, targets, and triggers established in 5.1.1-5.1.2.

2. That the instance that the project-related assets are subject to other government or corporate risk and/or asset management plans and procedures, the adaptive management framework established in 5.1.1-5.1.2 is being coordinated with and/or integrated into these procedures.

3. That the project team and/or the post-commissioning project owner team has established and documented the procedure(s) that will be followed in the instance that targeted risk reduction/mitigation and avoided harms and loss outcomes are

consistently and/or substantially not being achieved, which process will be adequate to engage stakeholders and investments to augment and adapt risk reduction measures in particular due to changing climate conditions.

5.2 | COOPERATIVE AND COLLABORATIVE AGREEMENTS

GUIDANCE FOR VERIFICATION PROFESSIONALS FOR REQUIREMENT 5.2

As part of the above evaluation of approvals and agreements for full project implementation, the verification professional should identify whether the project team has made best efforts to determine if amendments, permits, waivers, modifications, or reforms are required to plans, regulations, policies, standards or other legal procedures to enable project implementation as designed.

In determining compliance with the requirement, the verification professional should review documentation and have discussions with the project team and/or post-commissioning project owner and with selected, relevant policy and regulatory authority officials, property owners, and investors to confirm whether approvals and agreements have been secured for the full implementation of the project as designed.

5.3 | REGULATORY APPROVAL AND ADOPTION

GUIDANCE FOR VERIFICATION PROFESSIONALS FOR REQUIREMENT 5.3

In the instance that amendments, allowances, permits, waivers, or reforms are required as per 5.2 to implement the project as designed, the verification professional should determine whether proposals **have been submitted to and/or adopted** by the relevant local, regional, and national governing and regulatory bodies.

In the instance that policies, plans, regulations etc (as per 5.2) do not enable implementation of the project as designed, and that amendments, permits, allowances, waivers or reforms to overcome these barriers are deemed unlikely, then the verification professional should confirm that the project team has established a

plan for adapting the project design to achieve similar levels of risk reduction and mitigation in ways that are in accordance with official requirements.

5.4 | MITIGATION AND/OR MANAGEMENT OF FUTURE CONFLICTS

GUIDANCE FOR VERIFICATION PROFESSIONALS FOR REQUIREMENT 5.4

In determining compliance with the requirement, the verification professional should review documents that confirm:

1. That project owners and project development team **have included** mechanisms for addressing or otherwise managing potential future conflicts related to challenges associated with lack of achievement of the targeted avoided losses in the project delivery plans.

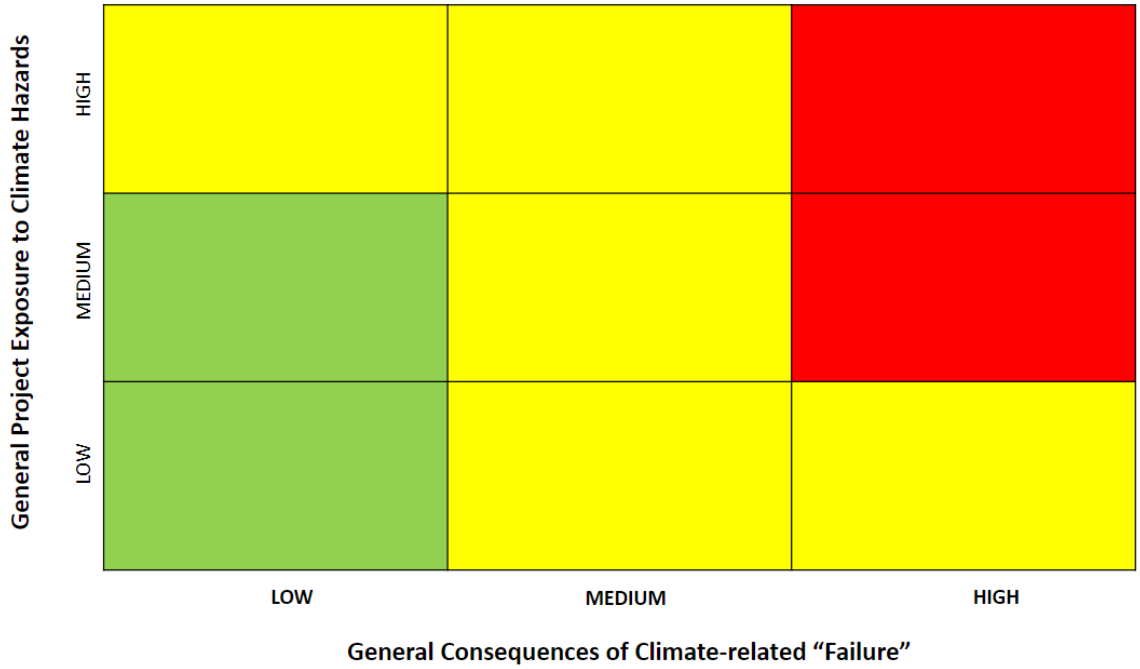
2. That the above mechanisms further **ensure** that agreements and contracts related to the project with investors, affected asset and business owners, project implementation partners, and project beneficiaries contain clauses that:

    i. Take into consideration the uncertainties regarding emerging climate and other non-climate natural disaster risk scenarios that could affect project performance. Stating that they cannot predict or control how climate change trends and impacts will manifest within the project boundaries, and therefore cannot guarantee that the climate risk management measures designed into the project will prove adequate to achieve the targeted levels of harm and loss avoidance.
    ii. Waive the project owner, project developer, and investors of liability for climate change related harms and losses.
    iii. Contain provisions for efficiently resolving any conflicts that may arise pertaining to implementation of the project as designed and associated with any future harms or losses due to climate change.

APPENDIXES

APPENDIX A

REQUIREMENT 1.1: Use the table 'General Project Exposure to Climate Hazards vs General Consequences of Climate-Related Failure' to accomplish this requirement.



IMPLICATIONS OF CLIMATE IMPORTANCE CATEGORY:

High Climate Importance: recommend following a more rigorous, quantitative approach to hazard analysis and risk assessment, even if it requires greater project resources.

Medium Climate Importance: recommend following a more rigorous, quantitative approach to hazard analysis and risk assessment, unless resources and capacity preclude this.

Low Climate Importance: minimum, qualitative approaches to hazard analysis and risk assessment are acceptable

APPENDIX B

Using the following tables please **complete the 'Hazard Analysis' Requirements (3.1)** and present the documented data in a single PDF as part of the larger documentation process for verification purposes.

TABLE 1: Climate Hazard Identification Codes

PLEASE NOTE: Every condition's hazard type can have more than 1 occurrences. For example, it is possible that in X region where the project is located, there might be two heat and cold events resulting in different conditions. For such instances use CTHC.1 for the first condition and CTHC.2 for the second and so on and so forth. In case you have a hazard type not part of the list below, please create a new line in the relevant section and add in a new ID. **Logic for the ID:** (Initials of the climate change condition + initials of the hazard type) + 1,2.....

Climate Change Conditions	Hazard Type	Hazard ID
CHANGING TEMPERATURE	Heat and/or Cold	(Heat)CTH.1, CTH.2, … OR (Cold) CTC.1, CTC.2…
	Sea surface temperature	CTST.1, CTST.2…
	Air Quality Reduction	CTAQ.1, CTAQ.2…
CHANGING PRECIPITATION	Increased rainfall Intensity	CPIR.1, CPIR.2..
	Delayed Rainy Season Onset	CPDR.1, CPDR.2,
	Extreme Rainfall during El Niño events	CPER.1, CPER.2,...
	Drought during La Niña events	CPDL.1,CPDL.2, ...
SEA LEVEL RISE	Coastal Flooding	SRCF.1, SRCF.2, …
	Coastal Erosion	SRCE.1, SRCE.2, …
OTHER EXTREME EVENTS	Ocean acidification	OEOA.1, OEOA.2…
	Climate Related Disease Outbreaks	OEDO.1, OEDO.2….
	More Frequent El Nino Events	OEME.1, OEME.2…
	Sandstorms	OESS.1, OESS.2…

	Windstorms	OEWS.1, OEWS.2…
	Arctic and Glacier Melt	OEAG.1, OEAG.2…
	Biodiversity Loss	OEBL.1, OEBL.2…
NON-CLIMATE HAZARDS	Pluvial Flooding	NCPF.1, NCPF.2…
	Invasive Species	NCIS.1, NCIS.2….
	Landslides	NCLS.1, NCLS.2…

TABLE 2: Preliminary Climate Hazard Identification

Please fill out both the table below to the best of your knowledge. Feel free to add rows within each section if needed.

Definitions:

Shock: Shocks are events that cause an immediate damaging impact. Covariate shocks such as natural disasters or spikes in food prices affect multiple households, communities or regions. Idiosyncratic shocks are smaller in scale - within a household, idiosyncratic shocks may include illness or death of a family member, loss of livestock or of employment.

Stress: Stresses are often longer-term trends that have slow onset impacts and undermine existing systems over time

Climate Change Condition	Related Climate Hazards	Climate Hazard ID	Relevance to the Project (Relevant project, Relevant system, not relevant)	Initial Statement (brief description) of Impact for Relevant Shock on the Project and/or System	Initial Statement (brief description) of Impact for Relevant Stress on the Project and/or System
CHANGING TEMPERATURE					
CHANGING PRECIPITATION					
RISING SEA LEVEL					

OTHER EXTREME EVENTS					

TABLE 3: Current and future Climate Hazard Data Summary

Please fill out both the tables below to the best of your knowledge. Feel free to add rows within each section if needed. Each hazard condition could be an ongoing and current issue and/or a future threat or both. So please fill all the appropriate columns as needed.

Climate Change Conditions Categories	Climate Hazard ID	Current Climate Hazard	Future Climate Hazard	Provide a description of the hazard as a type of shock/stress or both based on the given definitions of shocks and stresses	Science-based hazard data and source(s)	Scale of data	Notes on condition assumptions and time horizon (level of conservatism)	Non-science based data and source(s) or approach	Proposed approach to addressing insufficient data	Recommended consideration in risk assessment
CHANGING TEMPERATURE										
CHANGING PRECIPITATION										
RISING SEA LEVEL										
OTHER EXTREME EVENTS										

TABLE 4: Other Non-Climate Hazard Data Summary

Hazard Type	Hazard ID	Provide a description of the hazard as a type of shock/stress or both based on the given definitions of shocks and stresses	Science-based hazard data and source(s)	Scale of data	Non-science based data and source(s) or approach (or proposed approach to addressing insufficient data)	Potential multi-hazard effect with other identified hazards

TABLE 5: Hazard Analysis Summary

Climate Change Condition	Climate Hazard ID	Climate Change Conditions Categories	Current Climate Hazards	Scale of data	Future Climate Hazards	Scale of data	Confidence of Future Projections	Relative Immediacy of Impact	Non-science based data and source(s) or approach	Direct Exposed Parties & Assets	Indirect Exposed Parties & Assets	Contemporaneous impacts	Climate condition Summary Statement	Recommended Risk Assessment treatment
CHANGING TEMPERATURE														
CHANGING PRECIPITATION														
SEA LEVEL RISE														
OTHER EXTREME														

EVENTS														
NON-CLIMATE HAZARDS														

APPENDIX C

Using the following tables please **complete the 'Risk Assessment' Requirements (3.2)** and present the documented data in a single PDF as part of the larger documentation process for verification purposes.

RISK ASSESSMENT LEGEND

Likelihood of Potential Impact				CONSEQUENCE	
5	**Frequent**	Likely to occur on an annual, seasonal, or otherwise regular basis		**Marginal**	The event commonly results in minor or less than minor, ecosystem and asset damage requiring repair or restoration, or operational losses that cannot be recovered.
4	**Probable**	Will occur several times or cumulatively over the life of the project-related asset, system, place etc		**Moderate**	The event may commonly cause limited but potentially costly disruption to operations and system productivity, and require repairs or restoration, but these can be counteracted or controlled without major system damage.
3	**Occasional**	Will occur sometime over the life of the project-related asset, system, place etc		**Critical**	The event may commonly cause severe injury or illness and/or major ecosystem, asset or system damage, thereby causing cessation of operations and requiring emergency services, and costly repairs and/or reconstruction and extended recovery to previous system productivity.

2	**Remote**	Unlikely but possible to occur several times over the life of the project-related asset, system, place etc.		**Catastrophic**	The event may commonly cause death and/or major ecosystem, asset or system destruction, thereby ceasing all operations for an extended period, requiring extended emergency services, and costly and extended reconstruction.
1	**Improbable**	So unlikely that is can be assumed that the event may never be experienced.			

LIKELIHOOD & RELATIVE IMMEDIACY OF IMPACT	**Probability**	**CONSEQUENCE**			
		Marginal - 1	**Moderate - 2**	**Critical - 3**	**Catastrophic - 5**
	Frequent - 5	Low -5	Serious – 10	High – 15	High - 25
	Probable - 4	Low – 4	Medium – 8	High – 12	High - 20
	Occasional - 3	Low -3	Medium – 6	Serious – 9	High – 15
	Remote - 2	Low – 2	Low – 4	Medium – 6	Serious - 10
	Improbable - 1	Low – 1	Low – 2	Low – 3	Low - 5

Table 1: Summary of Exposed Parties

EXPOSED ASSETS/ SYSTEMS/ PARTIES	Climate Change conditions										Total			
	(INPUT: Hazard condition 1)	(INPUT: Hazard condition 2)	(INPUT: Hazard condition 3)	(INPUT: Hazard condition 4)	(INPUT: Hazard condition 5)	(INPUT: Hazard condition 6)	(INPUT: Hazard condition 7)	(INPUT: Hazard condition 8)	(INPUT: Hazard condition 9)	(INPUT: Hazard condition 10)	Low	Medium	Serious	High

Total											0			

Table 2:

EXPOSURES AND TIMELINES				
Considered Exposure		**Description of Asset/System/Party Exposure**	**Relative Immediacy of Potential Impact (in next 5 yrs, 5-15years, 15+ years)**	**Likelihood of Potential Impact**
1				
2				
3				
4				
5				
			MEDIAN	#NUM!

VULNERABILITIES, CONSEQUENCES AND RISK RATING							
Considered Exposure		**Description of Vulnerability (Sensitivity Aspect)**	**Level of Adaptive Capacity (low, medium, high)**	**Provide an explanation for your answer on the level of Adaptive Capacity**	**Consequences**	**Risk Rating** (Use the colored Likelihood vs Consequence sheet)	**Level of Risk Acceptability** (Unacceptable Critical, Manageable, Acceptable)
1							
2							
3							
4							
5							

APPENDIX D

Using the following tables please **complete the 'Project Technical Design and Planning' Requirements (4.1-4.3)** and present the documented data in a single PDF as part of the larger documentation process for verification purposes.

TABLE 4.5: Avoided Loss Estimation table (use the same table separately for Step 1 and Step 2). Please note: The table below contains an example, to be deleted and is only for reference purposes.

At-Risk Party	Type of Harm or Loss	Measure or Metric of Harm or Loss	Degree of Harm or Loss, No Adaptation Project Condition (baseline) ---------- Degree of Harm or Loss, Climate Adapted Condition		
			Climate condition A	Climate condition B	Climate condition C
Resident Population	Loss of life	Deaths arising from flood event	n/a	n/a	1-5 persons
			[Climate Adapted Condition]	[Climate Adapted Condition]	[Climate Adapted Condition]
Building A	Flood damage to main floor	Monetary cost of repairs per annum (20 year period, present value)	$100,000	$250,000	$2,000,000
			[Climate Adapted Condition]	[Climate Adapted Condition]	[Climate Adapted Condition]
Building A	Loss of business income	Monetary reduction in sales per annum (20 year period, present value)	$500,000	$500,000	$1,000,000
			[Climate Adapted Condition]	[Climate Adapted Condition]	[Climate Adapted Condition]
Swift River	Erosion of riparian area	Decline in fish repopulation, average per annum	10% decline in fish population	25% decline in fish population	50% decline in fish population
			[Climate Adapted Condition]	[Climate Adapted Condition]	[Climate Adapted Condition]

The above examples illustrate that the kinds of metrics for anticipated harm and losses may need to vary depending upon the nature of the expected impact and the data and technical support available to calculate a monetary value for various types of harm and loss.

TABLE 4.5: Calculation of Avoided Losses table (use the table for Step 3)

			Period of Estimation	Discount Rate Applied	Revenues	Non-Revenue Benefits	
			[Years]	[Avg % for Period]			
			Losses	Costs/Expenditures			
At Risk Entity Type	Proposed Climate Adapta-tion Measure	Nature of Climate Risk Addressed in this Measure	Harm & Loss Avoided through this Measure during Period of Estimation	Cost of Adaptation Measure Implementation, Operation & Maintenance over functional life/use of Investment	Anticipated Revenues Arising from Adaptation Measures (e.g. including asset/land value appreciation, tax collection increases)	Anticipated Co-Benefits Arising from Adaptation Measure(s)	Valuation of Non-Revenue Co-Benefits
At-Risk Assets							
A							
B							
C							
etc							
At-Risk Economic Activities							
F							
G							
H							
etc							
At-Risk Social Welfare							
J							
K							
L							
etc							

APPENDIX E

Using the following tables please **complete the 'Project Governance and Adaptive Management (5.1-5.4)** and present the documented data in a single PDF as part of the larger documentation process for verification purposes.

TABLE 5.2: Adaptive Management/Trigger Conditions table. Please note: The table below contains an example, to be deleted and is only for reference purposes.

Measure or Metric of Harm or Loss	Targeted Degree of Harm or Loss, Climate Adapted Condition			Indicators & Trigger Values for Review of Risk Management Measures	Indicators & Trigger Values for Review of Climate conditions
	Climate condition A	Climate condition B	Climate condition C		
Deaths arising from flood event	n/a	n/a	n/a		
Monetary cost of repairs per annum arising from climate change event	n/a	n/a	500000		
Monetary reduction in sales per annum arising from climate change	n/a	n/a	$250,000		
Decline in fish population arising from climate change event, average per annum	n/a	n/a	15% decline in fish population		

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