Climate Bonds Standard Water Infrastructure Adaptation & Resilience Scorecard

(p20 of Criteria)

**CRITERIA: The project must score at least 60% of the maximum potential score in all parts of the Scorecard**

**Section 4 only needs to be completed for “Nature Based and Hybrid Infrastructure” only (see Criteria for detail)**

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| **Vulnerability Assessment SECTION 1: ALLOCATION**  (To be completed for all Water Infrastructure assets) | | | | | |
|  |  | ***Max Score*** | ***Actual Score*** | ***Requirement: Evidence and/or Disclosure*** | ***Comments*** |
| 1.1 | Are there accountability mechanisms in place for the management of water allocation that are effective at a sub‐basin and/or basin scale? | 1 |  | **Disclosure** |  |
| 1.2 | Are the following factors taken into account in the definition of the available resource pool?   1. Non‐consumptive uses (e.g., navigation, hydroelectricity 2. Environmental flow requirements 3. Dry season minimum flow requirements 4. Return flows (how much water should be returned to the resource pool, after use) 5. Inter‐annual and inter‐seasonal variability 6. Connectivity with other water bodies 7. Climate change impacts | 7 |  | **Evidence** |  |
| 1.3 | Are arrangements in place to accommodate the potentially adverse impacts of climate change on the resource pool? (E.g. using best available science to plan for future changes in availability, undertaking periodic monitoring and updating of available pool.) | 1 |  | **Evidence** |  |
| 1.4 | Is there a distinction between the allocation regimes used in “normal” times and in times of “extreme/severe” water shortage? | 1 |  | **Evidence** |  |
| 1.5 | Are there plans to define “exceptional” circumstances, such as an extended drought, that influence the allocation regime? (E.g., triggers water use restrictions, reduction in allocations according to pre‐defined priority uses, suspension of the regime plan, etc.) | 1 |  | **Evidence** |  |
| 1.6 | For international / trans boundary basins, is there a legal mechanism in place to define and enforce water basin allocation agreements? | 1 |  | **Disclosure** |  |
| 1.7 | Are water delivery agreements defined on the basis of actual in situ seasonal / annual availability instead of volumetric or otherwise inflexible mechanisms? | 1 |  | **Evidence** |  |
| 1.8 | Has a formal environmental flows (e‐ flows)/sustainable diversion limits or other environmental allocation been defined for the relevant sub‐basin or basin? (If there is a pre‐ existing plan, then has the environmental flows program been updated to account for the new project?) | 1 |  | **Evidence** |  |
| 1.9 | Have designated environmental flows / allocation programs been assured / implemented? | 1 |  | **Evidence or Disclosure** |  |
| 1.10 | Has a mechanism been defined to update the environmental flows plan periodically (e.g., every 5 to 10 years) in order to account for changes in allocation, water timing, and water availability? | 1 |  | **Evidence** |  |
| 1.11 | Is the amount of water available for consumptive use in the resource pool linked to a public planning document? (E.g., a river basin management plan or another planning document – please indicate) | 1 |  | **Evidence** |  |
| 1.12 | If present, is the river basin plan a statutory instrument that must be followed rather than a guiding document? | 1 |  | **Disclosure** |  |
| **Total Allocation Score** | | **18** | **/18** |  |  |
| **Eligibility Criterion 1 passed/not passed** | | | **%** |  |  |

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| **Vulnerability Assessment SECTION 2: Governance**  (To be completed for all Water Infrastructure assets) | | | | | |
|  |  | ***Max Score*** | ***Actual Score*** | ***Requirement: Evidence and/or Disclosure*** | ***Comments*** |
| 2.1 | Have water entitlements been defined according to one of the following?   * Purpose that water may be used for * Maximum area that may be irrigated * Maximum volume that may be taken in a nominated period * Proportion of any water allocated to a defined resource pool | 1 |  | **Disclosure** |  |
| 2.2 | Is the surface water system currently considered to be neither over allocated nor over‐used? N.B. Over‐allocated would be if e.g. current use is within sustainable limits but there would be a problem if all legally approved entitlements to abstract water were used. Over‐used would be if existing abstractions exceed the estimated proportion of the resource that can be taken on a sustainable basis. | 1 |  | **Evidence** |  |
| 2.3 | If monitored and the investment uses groundwater, is the groundwater water system currently considered to be neither over‐ allocated nor over‐used?  N.B. Over‐allocated would be if e.g. current use is within sustainable limits but there would be a problem if all legally approved entitlements to abstract water were used. Over‐used would be if existing abstractions exceed the estimated proportion of the resource that can be taken on a sustainable basis. | 1 |  | **Evidence** |  |
| 2.4 | Is there a limit to the proportion (e.g. percentage) of water that can be abstracted? | 1 |  | **Evidence** |  |
| 2.5 | Are governance arrangements in place for dealing with exceptional circumstances (such as drought, floods, or severe pollution events), especially around coordinated infrastructure operations? | 1 |  | **Disclosure** |  |
| 2.6 | Is there a process for re‐evaluating recent decadal trends in seasonal precipitation and flow OR recharge regime, in order to evaluate “normal” baseline conditions? | 1 |  | **Evidence** |  |
| 2.7 | Is there a formal process for dealing with new entrants? | 1 |  | **Disclosure** |  |
| 2.8 | For existing entitlements, is there a formal process for increasing, varying, or adjusted use(s)? | 1 |  | **Disclosure** |  |
| 2.9 | Is there policy coherence across sectors (agriculture, energy, environment, urban) that affect water resources allocation, such as a regional, national, or basin‐wide Integrated Water Resources Management (IWRM) plan? | 1 |  | **Evidence** |  |
| 2.10 | Are obligations for return flows and discharges specified and enforced? | 1 |  | **Disclosure** |  |
| 2.11 | Is there a mechanism to address impacts from users who are not required to hold a water entitlement but can still take water from the resource pool? | 1 |  | **Disclosure** |  |
| 2.12 | Is there a pre‐defined set of priority uses within the resource pool? (E.g., according to or in addition to an allocation regime) | 1 |  | **Disclosure** |  |
| 2.13 | If there are new entrants and/if entitlement holders want to increase the volume of water they use in the resource pool and the catchment is open, are these entitlements conditional on either assessment of third party impacts, an Environmental Impact Assessment (EIA) or an existing user(s) forgoing use? | 1 |  | **Evidence** |  |
| 2.14 | Are withdrawals monitored, with clear and legally robust sanctions? | 1 |  | **Evidence** |  |
| 2.15 | Are there conflict resolution mechanisms in place? | 1 |  | **Disclosure** |  |
| **Total Governance Score** | | **15** | **/15** |  |  |
| **Eligibility Criterion 2 passed / not passed** | |  | **%** |  |  |

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| **Vulnerability Assessment SECTION 3: TECHNICAL DIAGNOSTICS**  (To be completed for all Water Infrastructure assets) | | | | | |
|  |  | ***Max Score*** | ***Actual Score*** | ***Requirement: Evidence and/or Disclosure*** | ***Comments*** |
| 1 | Does a water resources model of the proposed investment and ecosystem (or proposed modifications to existing investment and ecosystem) exist? Specify model types, such as WEAP, SWAT, RIBASIM, USACE applications). Scale should be at least sub‐basin. | 1 |  | **Evidence** |  |
| 3.2 | Can the system model the response of the managed water system to varied hydrologic inputs and varied climate conditions? | 1 |  | **Evidence** |  |
| 3.3 | Are environmental performance limits (ecosystem, species, ecological community) and/or ecosystem services specified? | 1 |  | **Evidence** |  |
| 3.4 | Can these performance limits be defined and quantified using the water resources model? | 1 |  | **Evidence** |  |
| 3.5 | Have these limits been defined based on expert knowledge and/or scientific analysis? | 1 |  | **Evidence** |  |
| 3.6 | Are these performance limits linked to infrastructure operating parameters? | 1 |  | **Evidence** |  |
| 3.7 | Are these limits linked to an environmental flows regime? | 1 |  | **Evidence** |  |
| 3.8 | For new projects, is there an ecological baseline evaluation describing the pre‐impact state? | 1 |  | **Evidence** |  |
| 3.9 | For rehabilitation / reoperation projects, is there an ecological baseline evaluation available before the projects was developed? | 1 |  | **Evidence** |  |
| 3.10 | Has there been an analysis that details impacts related to infrastructure construction and operation that has been provided? | 1 |  | **Evidence** |  |
| 3.11 | Are lost species and/or lost or modified ecosystem functions specified for restoration in the environmental evaluation? | 1 |  | **Evidence** |  |
| 3.12 | Have regional protected areas / nature reserves been included in the analysis for impacts from the investment asset and future climate impacts? | 1 |  | **Evidence** |  |
| 3.13 | Does the model include analysis of regression relationships between climate parameters and flow conditions using time series of historical climate and stream flow data? | 1 |  | **Evidence** |  |
| 3.14 | Does the model include climate information from a multi modal ensemble of climate projections (eg from the Climate Wizard or the World Bank’s Climate Portal) to assess the likelihood of climate risks for the specified investment horizons (s)? | 1 |  | **Evidence** |  |
| 3.15 | Are changes in the frequency and severity of rare weather events such as droughts and floods included? | 1 |  | **Evidence** |  |
| 3.16 | Are sub‐annual changes in precipitation seasonality included? | 1 |  | **Evidence** |  |
| 3.17 | Is GCM climate data complemented with an analysis of glacial melt water and sea level rise risks, where appropriate (e.g., high or coastal elevation sites)? | 1 |  | **Evidence** |  |
| 3.18 | Is paleo‐climatic data (e.g., between 10,000 and >1000 years before present) included? | 1 |  | **Evidence** |  |
| 3.19 | Is the number of model runs and duration of model runs disclosed? | 1 |  | **Evidence** |  |

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| 3.20 | Has a sensitivity analysis been performed to understand how the asset performance and environmental impacts may evolve under shifting future flow conditions? | 1 |  | **Evidence** |  |
| 3.21 | Is directly measured climate data available for more than 30 years and incorporated into the water resources model? | 1 |  | **Evidence** |  |
| 3.22 | Has evidence demonstrated that climate change has already had an impact on operations and environmental targets? Are these impacts specified and, to the extent possible, quantified? These impacts should be responded to directly in the Adaptation Plan. | 1 |  | **Evidence** |  |
| 3.23 | Does the evidence suggest that climate change will have an impact on operations and environmental targets over the operational lifespan? Are these impacts specified and, to the extent possible, quantified? These impacts should be responded to directly in the Adaptation Plan. | 1 |  | **Evidence** |  |
| 3.24 | Is there a discussion of the uncertainties associated with projected climate impacts on both operations and environmental impacts? | 1 |  | **Evidence** |  |
| **Total Governance Score** | | **24** | **/24** |  |  |
| **Eligibility Criterion passed / not passed** | |  | **%** |  |  |

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| **SECTION 4: NATURE BASED SOLUTIONS**  **(to be completed for nature-based solutions and hybrid water infrastructure only)**  **Ie this section only needs to be completed if:**   1. **As a nature based solution, the asset reflects the intentional use of natural and / or nature based features, processes, and functions, as an integral part of addressing a human need and doing so in a manner that protects, manages, restores, and / or enhances natural features, processes, and systems in a functioning and sustainable manner.** 2. **Where feasible, the asset prioritises natural features over nature – based features. Such features include the protection, restoration, expansion, and / or creation of natural systems and processes as an explicit component of the desired project outcomes.** | | | | | |
| **SECTION 4.1: SITE INVENTORY**  **How well do we understand the systems and processes at the project site?** | | | | | |
|  |  | ***Max Score*** | ***Actual Score*** | ***Requirement: Evidence and/or Disclosure*** | ***Comments*** |
| 4.1.1 | Is this a “greenfield site” (i.e., undeveloped land used for agriculture, landscape design, or left to evolve naturally)? If so, will existing ecosystem services be expanded / supported / maintained? | 1 |  | **Evidence** |  |
| 4.1.2 | Has an eco-hydrological model been developed? | 4 |  | **Evidence** |  |
| 4.1.3 | Specify model type, such as WEAP, SWAT, RIBASIM, USACE. | 1 |  | **Evidence** |  |
| 4.1.4 | Have sources of pollution been analysed for the following (even if none have been found)?   * Point source * Nonpoint source | 2 |  | **Evidence** |  |
| **Total Site Inventory Score** | | **8** |  |  |  |
| **Eligibility Criterion passed / not passed** | |  | **%** |  |  |

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| **SECTION 4.2: ECOLOGICAL BASELINES FOR MANAGEMENT**  **Do we understand how the ecological characteristics of the site will evolve over time?** | | | | | |
|  |  | ***Max Score*** | ***Actual Score*** | ***Requirement: Evidence and/or Disclosure*** | ***Comments*** |
| 4.2.1 | Is there an inventory of species that can be used as a baseline for vegetation and animal species? | 1 |  | **Evidence** |  |
| 4.2.2 | If there is an inventory of species that can be used as a baseline for vegetation and animal species, does it specify or identify endangered / threatened species, ecological communities, or categories of species? | 1 |  | **Evidence** |  |
| 4.2.3 | Have studies on current or potential climate impacts on key species (e.g., endangered or threatened species) been included? | 1 |  | **Evidence** |  |
| 4.2.4 | Is the flow regime used as a basis for ecological management? | 1 |  | **Evidence** |  |
| 4.2.5 | Is there a climate trends analysis for the site or region based on at least 30 years of climate data? | 1 |  | **Disclose** |  |
| 4.2.6 | Is there an assessment of exotic invasive species? | 1 |  | **Evidence** |  |
| 4.2.7 | If there is an assessment of exotic invasive species, has a plan been developed to cope with exotic invasive species? | 1 |  | **Evidence** |  |
| 4.2.8 | Has there been an assessment of trade-offs between reliability vs environmental benefits to support decision making processes? | 1 |  | **Evidence** |  |
| **Total Ecological Management Score** | | **8** | **/8** |  |  |
| **Eligibility Criterion passed / not passed** | |  | **%** |  |  |

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| **SECTION 4.3: DATA INVENTORIES OF LOCALISED & INDIGENOUS ASSETS**  **Do we have access to adequate, credible data about the project site?** | | | | | |
|  |  | ***Max Score*** | ***Actual Score*** | ***Requirement: Evidence and/or Disclosure*** | ***Comments*** |
| 4.3.1 | Is there an inventory of existing water-related ecosystem services based on 30 or more years of data? | 1 |  | **Evidence** |  |
| 4.3.2 | Does any existing inventory of water-related ecosystem services related to runoff / land-use include the following data?   * Fire regime * Sediment / erosion load * Nutrient load * Land-use change | 3 |  | **Evidence** |  |
| 4.3.3 | Do inventories of water-related ecosystem services related to water *quality* include the following data:   * Water quality for environmental services (e.g., habitat, ecological communities, erosion) * Water quality for human needs / services (e.g., drinking water, agriculture) | 2 |  | **Evidence** |  |
| 4.3.4 | Is there an existing inventory of water-related ecosystem services related to water *quantity*?   * Water quantity for environmental services (e.g., habitat, flow regime) * Water quality for human needs / services (e.g., service reliability) | 2 |  | **Evidence** |  |
| **Total Existing Inventories Score** | | **8** | **/8** |  |  |
| **Eligibility Criterion passed / not passed** | |  | **%** |  |  |

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| **SECTION 4.4: BROADER ECOSYSTEM IMPACTS**  **Do we understand how the project’s impacts may extend beyond the site?** | | | | | |
|  |  | ***Max Score*** | ***Actual Score*** | ***Requirement: Evidence and/or Disclosure*** | ***Comments*** |
| 4.4.1 | Has there been a determination of proposed / estimated impacts from project construction and operations regarding local, upstream, and downstream species / ecological communities? | 1 |  | **Evidence** |  |
| 4.4.2 | Has there been a determination of proposed / estimated impacts on existing local, upstream, and downstream eco-hydrological systems from modification regarding:   * Pollution * Downstream flow regime * Groundwater impacts * Land tenure (e.g., public vs private) | 4 |  | **Disclose** |  |
| 4.4.3 | Has there been a determination of proposed / estimated impacts and benefits on eco-hydrological systems from changes in allocation via the following?   * Relevant environmental flows management plans * Groundwater management plans | 2 |  | **Disclose** |  |
| 4.4.4 | Has the monitoring system contributed to the development and goals of the basin management plan? | 1 |  | **Disclose** |  |
| **Total Broader Impacts Systems Score** | | **8** | **/8** |  |  |
| **Eligibility Criterion passed / not passed** | |  | **%** |  |  |

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| **SECTION 4.5: MONITORING & MANAGEMENT SYSTEMS**  **Do we have effective management processes and tools to maintain ecological integrity over time?** | | | | | |
|  |  | ***Max Score*** | ***Actual Score*** | ***Requirement: Evidence and/or Disclosure*** | ***Comments*** |
| 4.5.1 | Have target performance indicators been explicitly defined for:   * Infrastructure services * Ecosystem services | 1 |  | **Evidence** |  |
| 4.5.2 | Is there a monitoring plan in place for infrastructure performance indicators? | 4 |  | **Evidence** |  |
| 4.5.3 | Is there a monitoring plan in place for ecosystem performance indicators? | 2 |  | **Evidence** |  |
| 4.5.4 | Are monitoring outcomes connected to the decision making and management / operations process? | 1 |  | **Evidence** |  |
| 4.5.5 | Is there a multi-stakeholder basin management plan? |  |  | **Disclose** |  |
| **Total Monitoring and Management Systems Score** | | **6** | **/6** |  |  |
| **Eligibility Criterion passed / not passed** | |  | **%** |  |  |

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| **Section 5: ADAPTATION PLAN**  (To be completed for all Water Infrastructure assets) | | | | | |
|  |  | ***Max Score*** | ***Actual Score*** | ***Requirement: Evidence and/or Disclosure*** | ***Comments*** |
| AP.1 | Is there a plan to restore or secure lost/modified ecosystem functions / species? | 1 |  | **Evidence** |  |
| AP.2 | Is the adaptation plan for environmental targets / infrastructure robust across specified observed / recent climate conditions? Confer VA | 1 |  | **Evidence** |  |
| AP.3 | Is the adaptation plan for environmental targets / infrastructure robust across specified projected climate conditions? Confer VA | 1 |  | **Evidence** |  |
| AP.4 | Is there a monitoring plan designed to track ongoing progress and impacts to inform future decisions? | 1 |  | **Evidence** |  |
| AP.5 | Is there a plan to reconsider on a periodic basis the VA for operational parameters, governance and allocation shifts, and environmental performance targets? | 1 |  | **Evidence** |  |
| **TOTAL ADAPTATION PLAN SCORE:** | | 5 | 5/5 |  |  |
| **Eligibility Criterion passed / not passed** | |  | % |  |  |