

# The Water Criteria of the Climate Bonds Standard

## Phase 1: Engineered Water Infrastructure

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### ABSTRACT

What can be certified and under what eligibility conditions?

Version 1.0

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## 1. Definitions

**Climate Bonds Initiative (CBI):** An investor-focused not-for-profit organisation, promoting large-scale investments that will deliver a global low carbon and climate resilient economy. The Initiative seeks to develop mechanisms to better align the interests of investors, industry and government to catalyse investments at a speed and scale sufficient to avoid dangerous climate change.

**Climate Bond:** A climate bond is a bond used to finance – or re-finance - projects needed to address climate. They range from wind farms and solar and hydropower plants, to rail transport and building sea walls in cities threatened by rising sea levels. Only a small portion of these bonds have actually been labelled as green or climate bonds by their issuers.

**Certified Climate Bond:** A Climate Bond that is certified by the Climate Bonds Standard Board as meeting the requirements of the Climate Bonds Standard, as attested through independent verification.

**Climate Bonds Standard (CBS):** A screening tool for investors and governments that allows them to identify green bonds where they can be confident that the funds are being used to deliver climate change solutions. This may be through climate mitigation impact and/ or climate adaptation or resilience. The CBS is made up of two parts: the parent standard (Climate Bonds Standard v2.1) and a suite of sector specific eligibility requirements. The parent standard covers the certification process and pre- and post-issuance requirements for all certified bonds, regardless of the nature of the capital projects. The Sector Criteria detail specific requirements for assets identified as falling under that specific sector. The latest version of the CBS is published on the Climate Bonds Initiative website

**Climate Bonds Standard Board (CBSB):** A board of independent members that collectively represents \$34 trillion of assets under management. The CBSB is responsible for approving i) Revisions to the Climate Bond Standard, including the adoption of additional sector Criteria, ii) Approved verifiers, and iii) Applications for Certification of a bond under the Climate Bonds Standard. The CBSB is constituted, appointed and supported in line with the governance arrangements and processes as published on the Climate Bonds Initiative website.

**Climate Bond Certification:** allows the issuer to use the Climate Bond Certification Mark in relation to that bond. Climate Bond Certification is provided once the independent Climate Bonds Standard Board is satisfied the bond conforms with the Climate Bonds Standard.

**Green Bond:** A Green Bond is one in which the proceeds are allocated to environmental projects. The term generally refers to bonds that have been marketed as “Green”. In theory, Green Bonds proceeds could be used for a wide variety of environmental projects, but in practice they have mostly been the same as Climate Bonds, with proceeds going to climate change projects.

**Technical Working Group (TWG):** A group of key experts from academia, international agencies, industry and NGOs convened by the Climate Bonds Initiative. The TWG develops Sector-Specific Criteria - detailed technical criteria for the eligibility of projects and assets as well as guidance on the tracking of eligibility status during the term of the bond. Their draft recommendations are refined through engagement with finance industry experts in convened Industry Working Groups and through public consultation. Final approval of Sector Criteria is given by the CBSB.

**Water Assets:** Engineered, nature-based and hybrid water infrastructure for the purposes of water collection, storage, treatment or distribution, or for flood protection or drought resilience.

The Climate Bonds Initiative gratefully acknowledges the Consortium of Ceres, the Alliance for Global Water Adaptation (AGWA), CDP, and the World Resources Institute (WRI), who supported the development of these Criteria. Special thanks are given to Dr John Matthews, of the Alliance for Global Water Adaptation (AGWA), hosted by the Stockholm International Water Institute (SIWI). Dr Matthews has been the Lead Specialist who co-ordinated the development of the Criteria through the Technical Working Group.

CBI also very gratefully acknowledges the members of the Technical Working Group and the Industry Working Group who generously contributed their time and considerable expertise to the development of these Criteria.

## 2. Introduction

### 2.1. Objectives

Investor demand for green bonds & climate bonds is strong, and will increase in line with the delivery of quality products into the market. Standards, assurance & certification will be essential to improved confidence and transparency, which in turn will enable further strong growth in the market.

The Climate Bonds Standard and Certification Scheme is an easy-to-use screening tool that allows investors and intermediaries to assess the climate integrity of bonds. It provides a set of transparent, verifiable compliance measures that all Certified Bonds must meet. A key part of the Standard is a set of sector-specific eligibility Criteria that can screen assets and capital projects for the purposes of identifying and certifying only those that have climate integrity, either through their contribution to climate mitigation, and/ or to adaptation and resilience to climate change.

Draft sector-specific Criteria are determined through a multi-stakeholder engagement process, including Technical and Industry Working Groups, convened and managed by the Climate Bonds Initiative, and a period of public consultation. The Climate Bonds Standard Board reviews and approves Criteria prior to release to the market.

This document details:

- The current scope of water assets eligible for certification under the Climate Bond Standard – Section 3;
- The specific Criteria under which these water assets are eligible for certification – Section 4.

In addition, readers of this document are reminded that all bonds certified under the Climate Bonds Standard must also comply with the common requirements set for all certified bonds. These common requirements are contained in the Climate Bond Standard v2.1.

### 2.2. Supplementary information available

For more information on the Climate Bonds Initiative and the Climate Bond Standard & Certification Scheme, see [www.climatebonds.net](http://www.climatebonds.net)

For further information on the Water Criteria specifically, the following package of supplementary documents is also available at <http://www.climatebonds.net/standard/water> :

- Introductory note and FAQs introducing the Water Criteria
- Guidance to Issuers and Verifiers: guidance on the application of the Criteria laid out in this document, including the nature of evidence and disclosure required for compliance.

The Climate Bond Standard v2.1 is available at [https://www.climatebonds.net/standards/standard\\_download](https://www.climatebonds.net/standards/standard_download)

### 2.3. Revisions to these Criteria

These Criteria will be reviewed one year after launch. Generally, they are likely to be revised and refined over time, as more information becomes available. However, certification will not be withdrawn retroactively from bonds certified under earlier versions of the Criteria.

### 3. Scope of the Water Criteria

#### 3.1. A phased approach

The Water Criteria of the Climate Bond Standard are being rolled out in phases.

##### 3.1.1. Phase 1: Engineered water infrastructure

Phase 1 covered engineered water infrastructure for the purposes of water collection, storage, treatment or distribution, or for flood protection or drought resilience.

These include water assets in the ‘water sector’ plus water infrastructure used in the operation, design, and function of a number of other industries, such as mining, manufacturing, power-generation, refinery systems, general cooling uses and irrigation as part of agricultural production. Investments related to water assets in these sectors *are* subject to these Water Criteria, *with the exception of water assets in the fossil fuel and nuclear sectors as the Climate Bonds Standard and Certification Scheme does not support investments in these sectors.*

Phase 1 is now complete and this document reflects the Criteria developed in connection to engineered water infrastructure.

##### 3.1.2. Phase 2: Nature-based and hybrid water infrastructure

Phase 2 is currently underway. This will extend the Water Criteria to incorporate *nature-based and hybrid* water infrastructure for the purposes of water collection, storage, treatment or distribution, or for flood protection or drought resilience.

This may include forests and wetlands that filter water, aquifers that store water for drinking or for flood control, and wetlands that attenuate storm surge or process wastewater effluent.

Phase 2 is expected to complete in the winter 2016/17. Consequently, this document does not currently incorporate Criteria for the assessment of nature-based and hybrid water infrastructure, and cannot be used to certify use of proceeds for these assets or projects. This document will be updated when Criteria relating to nature-based and hybrid water infrastructure are available.

##### 3.1.3. Other

Water can be a source of energy, for example through hydropower, wave and tidal installations. For the avoidance of doubt, assets related to water-driven energy are *not* subject to these Criteria. Readers are referred instead to the specific Hydropower Criteria and Marine Energy Criteria respectively – both currently under development. For more information see <http://www.climatebonds.net/standard/available-soon>

## 4. The Water Criteria

### 4.1. Broad framework of eligibility Criteria

Table 1 indicates use of bond proceeds that may be eligible for certification under the Water Criteria. In general terms, these use of proceeds encompass the financing or refinancing of the installation of new water infrastructure or water-use systems, or extension, enhancement or upgrades to existing infrastructure or water-use systems. The table provides illustrative examples and is not a comprehensive list of every possible water project or asset that would be eligible.

Table 1 also specifies, for each of these illustrative assets and projects, their eligibility for certification under the Climate Bonds Standard, as follows:

- A green circle indicates these assets and projects are eligible for certification by virtue of the nature of the asset or project, with no further disclosure or documentation required.
- An orange circle indicates where eligibility is conditional on meeting specific requirements. These requirements are described in more detail in the subsections on Mitigation and Adaptation & Resilience below.
- A red circle indicates where the asset or project is not eligible for certification under any circumstances.

To be eligible for inclusion in a certified bond, assets and projects must meet both the requirements of the Mitigation and the Adaptation & Resilience components.

For example, if a project has a green circle under Mitigation, but an orange circle under Adaptation & Resilience, it must meet the requirements of the Adaptation & Resilience component before it can be certified. If a project has an orange circle under Mitigation, and an orange circle under Adaptation & Resilience, it must meet the requirements of both the Mitigation and the Adaptation & Resilience components before it can be certified.

Section 4.2 details the requirements of the Mitigation Component. Section 4.3 details the requirements of the Adaptation and Resilience component.

In addition, any bond-issuing entity seeking certification under the Water Criteria is expected to be aware of and adhering to best practice guidelines or standards related to social and human rights and broader environmental considerations in the context of water development. Appendix 2 lists key best practice guidelines and standards in this regard.

Table 1: Illustrative use of bond proceeds covered by the Water Criteria

| Assets  | Example projects*  | Mitigation | Adaptation & Resilience |
|---|--|------------|-------------------------|
| Including but not limited to:<br>Rainwater harvesting systems<br>Storm water management systems<br>Water distribution systems (excluding irrigation)<br>Infiltration ponds<br>Aquifer storage<br>Groundwater recharge systems<br>Sewer systems<br>Pumps | Improving energy efficiency or shifting to low carbon fuel sources   | ●          | ●                       |
|   | Improving water management and efficiency, e.g. by reducing leaks, reducing urban run-off                  | ●          | ●                       |
|   | Installation or upgrade of water capture and storage infrastructure (excluding the examples listed above)  | ●          | ●                       |
| Including but not limited to:<br>Desalination plants<br>Water recycling systems<br>Wastewater treatment facilities<br>Manure/ slurry treatment facilities   | Shift from anaerobic to aerobic wastewater treatment or separate solids from wastewater management systems | ●          | ●                       |
|   | Generating electricity from sewage methane or biogas production from thermal hydrolysis                    | ●          | ●                       |
|   | Waste energy recovery  | ●          | ●                       |
|   | Improving energy efficiency or shifting to low carbon fuel sources   | ●          | ●                       |
|   | Installation or upgrade of water treatment infrastructure (excluding the examples listed above)            | ●          | ●                       |
| Including but not limited to:<br>Rainwater harvesting systems<br>Gravity fed canal systems<br>Pumped canal or water distribution system<br>Terracing systems<br>Drip or subsurface irrigation   | Installation or upgrade of water irrigation systems  | ●          | ●                       |
|   |  |            |                         |
|   |  |            |                         |
|   |  |            |                         |
|   |  |            |                         |
|   |  |            |                         |
| Including but not limited to:<br>Surge barriers<br>Pumping stations<br>Levees<br>Gates  | Construction or upgrade of flood defense infrastructure  | ●          | ●                       |
|   | Installation or upgrade of flood monitoring and warning systems  | ●          | ●                       |

#### 4.2. Mitigation Component

The Mitigation Component of the Water Criteria is intended to provide transparency over the impact that the use of proceeds will have on GHG emissions, and the degree of mitigation that will be delivered over the operational lifetime of the project or asset.

For use of proceeds subject to a Mitigation Assessment as indicated by an orange circle in Table 1, they are eligible for certification only if either:

- a. No emissions impact is expected, and the issuer discloses the justification for this decision with supporting documentation; or
- b. Emissions impact is expected, and the issuer has estimated the GHG mitigation impact that will be delivered over the operational lifetime of the project or asset. This impact should be defined in terms of the decreased emissions or increased sequestration relative to a business as usual baseline.

Baselines can be determined using credible methodologies such as (but not limited to) the UNFCCC's Clean Development Mechanism (CDM), Climate Action Reserve, American Carbon Registry or national and state approaches or any other credible, robust methodology used by a relevant national or international rating agency or authority (e.g., US Environmental Protection Agency standards).

Under the requirements of the methodology selected, the issuer must describe

- The calculations and assumptions used to arrive at the baseline
- Projected emissions over the life of the project and associated estimated GHG mitigation impact
- A credible, independently verifiable, method of tracking actual emissions and mitigation impact over the life of the bond

These assumptions, values and procedures must be conservative to ensure that the GHG emission reductions or removals are not over-estimated.

Further information on how to conduct a Mitigation Assessment is given in the 'Guidance Note to Issuers and Verifiers available at <http://www.climatebonds.net/standard/water>

### 4.3. Adaptation & Resilience Component

Use of proceeds that are (a) demarcated with an orange circle in the Adaptation and Resilience column in Table 1, and (b) have an expected or remaining operational life of more than 20 years, are subject to a Vulnerability Assessment / Adaptation Plan Evaluation.

For this, the issuer will need to supply a Vulnerability Assessment (i.e. an assessment of climate risks). If the Vulnerability Assessment finds that climate change will significantly impact the project, the issuer will also need to supply a corresponding Adaptation Plan (i.e. a management response plan to the conclusions and findings of the Vulnerability Assessment, noting how identified climate risks will be addressed). As such, the Vulnerability Assessment and the Adaptation Plan are paired documents.

Although Vulnerability Assessment and Adaptation Plans remain somewhat new to the finance community, they have been quite normalized to water managers, engineers, and planners. They are not expected to be long documents and can be quite concise narrative statements. They are likely to refer to and depend on documents produced by other organizations or partners, including ones that do not explicitly refer to the issuance or issuer but that can inform the assessment of climate vulnerability.

Taken together, the Vulnerability Assessment and Adaptation Plan (if required) and their supporting documents serve as the basis for applying the Criteria and determining the eligibility of the bond for certification.

Eligibility for certification depends on the efficacy and thoroughness of the issuer's Vulnerability Assessment and Adaptation Plan, and the underlying climate risk assessment and management plans that they capture. This is assessed via a Scorecard, or checklist, consisting of a series of binary questions.

This Scorecard is given in Appendix 1. It lists a series of questions that must be reported on, where "evidence" of analysis or research should be sought, or where "disclosure" of relevant regulatory, governance, or legal documentation is required.

The Scorecard adopts a definition of climate vulnerability in terms of technical qualities of the assessment process and particular eco-hydrological and climate indicators, as well as aspects of flexibility, governance, and how effectively water users share resources. It is used to determine whether the issuers' Vulnerability Assessment and Adaption Plan sufficiently address these factors, in which case the bond will be eligible for certification.

To achieve this, the questions in the scorecard are grouped into four sections. The first three are: 1) Allocation, 2) Governance, and 3) Technical Diagnostics. Together, these sections address how water will be shared, negotiated, governed and allocated among different stakeholders, and evaluate how the project will affect and be affected by current and future eco-hydrological conditions, the potential risks for an asset or project posed by current and future climate impacts, and how the impact of that asset on relevant ecosystems may change as the climate continues to evolve. These sections are used to assess the issuer's Vulnerability Assessment.

The fourth section relates to the assessment of the Adaptation Plan. This section is much briefer and focuses on the completeness of the coping mechanisms to address identified climate vulnerabilities, including potential or uncertain vulnerabilities.

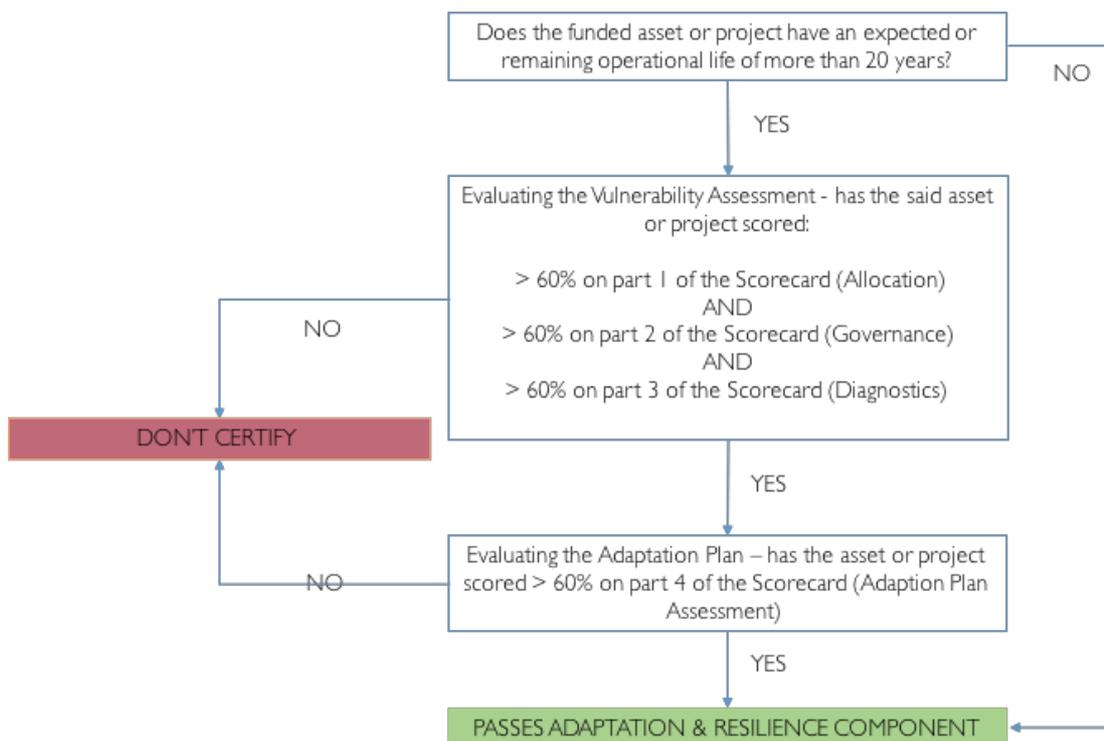
For each question, a 'yes' or 'n/a' response scores 1 point, a 'no' scores 0. To meet the requirements of the Climate Bonds Standard Adaptation and Resilience component:

The project must score at least 60% of the maximum potential score in all four parts of the Scorecard. (That is, must score  $\geq 60\%$  for Allocation,  $\geq 60\%$  for Governance,  $\geq 60\%$  for Technical Diagnostics and  $\geq 60\%$  in the Adaptation Plan Assessment)

It is the issuers responsibility to self-assess and self-score against the Scorecard the project or asset being funded by the bond proceeds in the first instance. Verifiers are required to check this using the information and evidence provided to them by the issuers.

See Figure 1 for a summary of this Adaptation and Resilience component. Further information on how to conduct an Adaptation & Resilience Assessment, including guidance on the nature of the evidence required to support scoring and where that might be sourced, is given in see the 'Guidance Note to Issuers and Verifiers available at <http://www.climatebonds.net/standard/water>

Figure 1: Decision tree for the Adaptation & Resilience component of the Water Criteria



## Appendix 1: Scorecard for evaluating the Issuer’s Vulnerability Assessment & Adaptation Plan

|  |  | Requirement<br>E = Provide evidence<br>D = Disclose | Max score | Actual score |
|--|--|---|-----------|--------------|
| <b>FOR EVALUATION OF THE ISSUER’S VULNERABILITY ASSESSMENT</b> |  |   |           |              |
| <b>SECTION 1: ALLOCATION</b>                                   |  |   |           |              |
| 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?  | D   | 1         |              |
| 1.2  | Are the following factors taken into account in the definition of the available resource pool?<br>Non-consumptive uses (e.g., navigation, hydroelectricity)<br>Environmental flow requirements<br>Dry season minimum flow requirements<br>Return flows (how much water should be returned to the resource pool, after use)<br>Inter-annual and inter-seasonal variability <sup>1</sup><br>Connectivity with other water bodies<br>Climate change impacts | E   | 7         |              |
| 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.)   | E   | 1         |              |
| 1.4  | Is there a distinction between the allocation regimes used in “normal” times and in times of “extreme/severe” water shortage?  | E   | 1         |              |
| 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.)  | E   | 1         |              |
| 1.6  | For international / transboundary basins, is there a legal mechanism in place to define and enforce water basin allocation agreements?   | D   | 1         |              |
| 1.7  | Are water delivery agreements defined on the basis of actual in situ seasonal/annual availability instead of volumetric or otherwise inflexible mechanisms?  | E   | 1         |              |
| 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?)   | E   | 1         |              |
| 1.9  | Have designated environmental flows / allocation programs been assured / implemented?  | E or D  | 1         |              |

|                              |  |   |          |  |
|------------------------------|--|---|----------|--|
| 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?  | E | 1        |  |
| 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)   | E | 1        |  |
| 1.12                         | If present, is the water management plan a statutory instrument that must be followed rather than a guiding document?  | D | 1        |  |
|                              | TOTAL ALLOCATION SCORE   |   | Max = 18 |  |
| <b>SECTION 2: GOVERNANCE</b> |  |   |          |  |
| 2.1                          | Have water entitlements been defined according to one of the following? <ul style="list-style-type: none"> <li>• Purpose that water may be used for</li> <li>• Maximum area that may be irrigated</li> <li>• Maximum volume that may be taken in a nominated period</li> <li>• Proportion of any water allocated to a defined resource pool</li> </ul>   | D | 1        |  |
| 2.2                          | Is the surface water system currently considered to be neither over-allocated nor over-used?<br>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.   | E | 1        |  |
| 2.3                          | If the investment uses groundwater, is the groundwater water system currently considered to be neither over-allocated nor over-used?<br>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. | E | 1        |  |
| 2.4                          | Is there a limit to the proportion (e.g. percentage) of water that can be extracted?   | E | 1        |  |
| 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?  | D | 1        |  |
| 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?   | D | 1        |  |
| 2.7                          | Is there a formal process for dealing with new entrants?   | D | 1        |  |
| 2.8                          | For existing entitlements, is there a formal process for increasing, varying, or adjusted use(s)?  | D | 1        |  |
| 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?  | E | 1        |  |

|   |  |        |          |  |
|---|--|--------|----------|--|
| 2.10                                    | Are obligations for return flows and discharges specified and enforced?  | D      | 1        |  |
| 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?   | D      | 1        |  |
| 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)  | D      | 1        |  |
| 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? | D      | 1        |  |
| 2.14                                    | Are withdrawals monitored, with clear and legally robust sanctions?  | E      | 1        |  |
| 2.15                                    | Are there conflict resolution mechanisms in place?   | E or D | 1        |  |
|   | TOTAL GOVERNANCE SCORE   |        | Max = 15 |  |
| <b>SECTION 3: TECHNICAL DIAGNOSTICS</b> |  |        |          |  |
| 3.1                                     | Does a water resources model of the proposed investment and ecosystem (or proposed modifications to existing investment and ecosystem) exist?<br>Specify model types, such as WEAP, SWAT, RIBASIM, USACE applications). Scale should be at least sub-basin.  | E      | 1        |  |
| 3.2                                     | Can the system model the response of the managed water system to varied hydrologic inputs and varied climate conditions?   | E      | 1        |  |
| 3.3                                     | Are environmental performance limits (ecosystem, species, ecological community) and/or ecosystem services specified?   | E      | 1        |  |
| 3.4                                     | Can these performance limits be defined and quantified using the water resources model?  | E      | 1        |  |
| 3.5                                     | Have these limits been defined based on expert knowledge and/or scientific analysis?   | E      | 1        |  |
| 3.6                                     | Are these performance limits linked to infrastructure operating parameters?  | E      | 1        |  |
| 3.7                                     | Are these limits linked to an environmental flows regime?  | E      | 1        |  |
| 3.8                                     | For new projects, is there an ecological baseline evaluation describing the pre-impact state?  | E      | 1        |  |
| 3.9                                     | For rehabilitation / reoperation projects, is there an ecological baseline evaluation available before the projects was developed?   | E      | 1        |  |
| 3.10                                    | Has there been an analysis that details impacts related to infrastructure construction and operation that has been provided?   | E      | 1        |  |
| 3.11                                    | Are lost species and/or lost or modified ecosystem functions specified for restoration in the environmental evaluation?  | E      | 1        |  |
| 3.12                                    | Have regional protected areas / nature reserves been included in the analysis for impacts from the investment asset and future climate impacts?  | E      | 1        |  |

|   |  |   |          |  |
|---|--|---|----------|--|
| 3.13  | Does the model include analysis of regression relationships between climate parameters and flow conditions using time series of historical climate and streamflow data?  | E | 1        |  |
| 3.14  | Does the model include climate information from a multi-modal ensemble of climate projections (e.g., from the Climate Wizard or the World Bank's Climate Portal) to assess the likelihood of climate risks for the specified investment horizon(s)?                                | E | 1        |  |
| 3.15  | Are changes in the frequency and severity of rare weather events such as droughts and floods included?   | E | 1        |  |
| 3.16  | Are sub-annual changes in precipitation seasonality included?  | E | 1        |  |
| 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)?   | E | 1        |  |
| 3.18  | Is paleo-climatic data (e.g., between 10,000 and >1000 years before present) included?   | E | 1        |  |
| 3.19  | Is the number of model runs and duration of model runs disclosed?  | E | 1        |  |
| 3.20  | Has a sensitivity analysis been performed to understand how the asset performance and environmental impacts may evolve under shifting future flow conditions?  | E | 1        |  |
| 3.21  | Is directly measured climate data available for more than 30 years and incorporated into the water resources model?  | E | 1        |  |
| 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                         | E | 1        |  |
| 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 | E | 1        |  |
| 3.24  | Is there a discussion of the uncertainties associated with projected climate impacts on both operations and environmental impacts?   | E | 1        |  |
|   | TOTAL DIAGNOSTIC SCORE   |   | Max = 24 |  |
| <b>FOR EVALUATION OF THE ISSUER'S ADAPTATION PLAN</b> |  |   |          |  |
| <b>SECTION 4: ADAPTATION PLAN</b>                     |  |   |          |  |
| AP.1  | Is there a plan to restore or secure lost/modified ecosystem functions / species?  | E | 1        |  |
| AP.2  | Is the adaptation plan for environmental targets / infrastructure robust across specified observed / recent climate conditions? Confer VA  | E | 1        |  |
| AP.3  | Is the adaptation plan for environmental targets / infrastructure robust across specified projected climate conditions? Confer VA  | E | 1        |  |
| AP.4  | Is there a monitoring plan designed to track ongoing progress and impacts to inform future decisions?  | E | 1        |  |

WATER CRITERIA OF THE CLIMATE BONDS STANDARD

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|      |   |   |         |  |
|------|---|---|---------|--|
| 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? | E | 1       |  |
|      | TOTAL ADAPTATION PLAN SCORE   |   | Max = 5 |  |

## Appendix 2: Social and human rights and broader environmental considerations

In addition, any bond-issuing entity seeking certification under the Water Criteria is expected to be aware of and adhering to best practice guidelines or standards related to social and human rights and broader environmental considerations in the context of water development.

This includes, but is not limited to:

- UN Office of the High Commissioner for Human Rights, *Realising the Human Rights to Water and Sanitation: A Handbook by the UN Special Rapporteur Catarina De Albuquerque*, 2014,
- UN Office of the High Commissioner for Human Rights, *Guiding Principles on Business and Human Rights*, 2011.
- Interfaith Center on Corporate Responsibility, *The 2013 ICCR Water Roundtable: Stakeholder Responsibilities in Managing Access to Water*
- UN Global Compact, *The CEO Water Mandate, Guidance for Companies on Respecting the Human Rights to Water and Sanitation: Bringing a Human Rights Lens to Corporate Water Stewardship*, January 2015.

In addition, although these Criteria are not to be applied to assets and projects related to hydropower, which will have their own specific Criteria, the following standards and guidelines relating to hydropower development are also noted for their contribution to the pool of best practice guidance relating to broader environmental and social aspects:

- International Finance Corporation, *Performance Standards on Environmental and Social Sustainability*, January 2012.
- International Finance Corporation, *Hydroelectric Power: A Guide for Developers and Investors*, Chapter 12: Environmental and Social Impact Mitigation. February 2015.
- International Hydropower Association, *Hydropower Sustainability Assessment Protocol*, November 2010.
- World Commission on Dams, *Dams and Development: A New Framework for Decision-Making*, Chapter 4: People and Large Dams- Social Performance. November 2000.
- The World Bank, *Operation Manual 4.10 – Indigenous Peoples*, July 2005.
- The World Bank, *Operation Manual 4.12 – Involuntary Resettlement*, December 2001.

This information was reviewed by the following individuals. Any errors, omissions or otherwise are our responsibility.

- Rachel Davis - Managing Director Shift Project
- Patricia Jones - Senior Program Leader, Human Right to Water Unitarian Universalist Service Committee
- Jamie Skinner - Principal Research, Natural Resources Group; Team Leader, Water International Institute for Environment and Development

### Appendix 3: Experts engaged in development of the Water Criteria

Water Criteria development has been led by a consortium consisting of the Climate Bonds Initiative, AGWA, Ceres, CDP and the World Resources Institute (WRI). To develop the phase 1 Water Criteria, focusing on grey or built or engineered water infrastructure, the consortium convened a Technical Working Group (TWG) and an Industry Working Group, with representatives from investors, public utilities, water NGOs and international policy bodies from around the world.

#### Technical Working Group Members:

Lead: Dr. John Matthews, Alliance for Global Water Adaptation (AGWA)

- Dr. Casey Brown, University of Massachusetts, Hydrology
- Dr. Christine Chan, Alliance for Global Water Adaptation (AGWA)
- Torgny Holmgren, Stockholm International Water Institute
- Cate Lamb, Water Program, CDP
- Dr. Xavier Leflaive, OECD
- Sharlene Leurig, Sustainable Water Infrastructure Program, Ceres.
- Dr. Junguo Liu, IIASA, Chinese Academy of Sciences
- Dr. Cedo Maksimovic, Urban Water Research Group, Imperial College London
- Betsy Otto, Water Program, World Resource Institute.
- Thomas Panella, Asia Development Bank
- Dr. Guy Pegram, Pegasys, South Africa
- Dr. LeRoy Poff, Colorado State University, Stream Ecology Lab
- Matt Ries, Water Environment Federation
- Will Sarni, Deloitte
- Manisha Singh, WiseLion LLC
- Dr. Mark Smith, IUCN
- Bill Stannard, AWWA
- Bob Zimmerman, Charles River Watershed Association

#### Industry Working Group members:

- Arturo Buenaventura Pouyfaucou, Abengoa Water S.A.
- Mike Brown, San Francisco Public Utilities Commission
- Paul Fleming, Seattle Public Utilities
- Mark Kim, DC Water, U.S.
- Piet Klop, PGGM
- Cameron Ironside, International Hydropower Association
- Hannah Leckie, OECD
- Jessica Robinson, Asria
- Eric Schellekens, Arcadis
- Paul Wood, Water Fund LLC

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