



**Aqua for All**

## **Climate Change Policy**

**Version April 2023**

*This policy document provides guidance on assessments and processes develop within Aqua for All with regards to climate change and highlights our commitments to action. Based on this policy document, Aqua for All will determine concrete actions and next steps.*

*The document was first developed in 2022 and is a living document. It is regularly updated to reflect new learnings and developments within the organization and global community.*

*If you have any questions or feedback, please do not hesitate to contact us at: [info@aquaforall.org](mailto:info@aquaforall.org)*

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## Introduction

Climate Change will have profound impacts on Aqua for All's work and mission – climate change (in the form of acute and chronic changes to weather patterns) will impact on the water and sanitation systems in the countries and communities that Aqua for All works in, both through water stress and extreme weather events such as storms and flooding. This in turn will affect the operation of enterprises and the impact they have on communities and users/customers. Conversely, the enterprises or initiatives that Aqua for All supports and finances may have an impact on climate change through increasing or reducing emissions of Greenhouse Gases (GHGs) to the atmosphere during construction, operation and decommissioning of WASH services.

Aqua for All therefore considers the causes and consequences of climate change in all elements of its work. While we recognise that mitigation of climate change needs to remain priority, we also acknowledge that the WASH sector in the countries we work in contributes little to global GHG emissions but is hit hard by the impacts of climate change, hence our focus on climate adaptation. We will ensure that the WASH services we support are made resilient to the impacts of changes to weather, supporting users/ beneficiaries in some of the most climate vulnerable regions of the world adapt to a changing climate, while taking all practical steps to limit or reduce emissions.

This document outlines the processes that Aqua for All follows; how it will track progress and how results will be reported:

- Section 1 outlines our approach to increasing climate resilience of enterprises we work with and how we categorize adaptation impact;
- Section 2 outlines our approach to mitigate GHGs (greenhouse gas emissions), and how we categorize mitigation impact;
- Section 3 outlines how we will integrate climate considerations into our work with Financial Institutions; and
- Section 4 outlines how climate considerations will be embedded within Aqua for All application processes and monitoring procedures.

While we approach mitigation and resilience as separate strands of activity, we recognise the overlap and – in some cases- the trade-off between them<sup>1</sup>. Wherever possible we will seek to support enterprises or initiatives that avoid negative climate impacts and that will maximise the synergies between mitigation and resilience,<sup>2</sup> thereby contributing to low carbon, climate resilient development.

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<sup>1</sup> For example, a diesel water pump emits GHGs but will make a community more resilient to drought caused by climate change; conversely a solar water pump emits no GHGs but if it over-extracts ground water will make a community less resilient.

<sup>2</sup> For example, a solar water pump, as well as reducing emissions compared to a diesel pump, will also make users more able to withstand disruptions to fuel supplies caused by extreme weather events.

# 1. Adaptation

## Background

Global temperature rises have already exceeded 1°C and are projected to increase to more than 1.5°C in the next 10-20 years<sup>3</sup>, leading to chronic and acute changes in the weather. This will include increased drought and wildfires; typhoons, cyclones, flooding and sea level rise; and increased heat and water stress.

Impacts won't be felt equally across the globe. Despite having contributed least to the causes of climate change, it is becoming clear that many low income and already vulnerable communities are likely to be some of the most affected by the impacts of climate change. In the regions in which Aqua for All works, heavy precipitation and associated flooding are projected to intensify and be more frequent in most regions in Africa and Asia; more frequent and/or severe agricultural and ecological droughts are anticipated in Africa<sup>4</sup>. According to the Intergovernmental Panel on Climate Change<sup>5</sup>:

*“Climate change including increases in frequency and intensity of extremes have reduced food and water security, hindering efforts to meet Sustainable Development Goals... Increasing weather and climate extreme events have exposed millions of people to acute food insecurity and reduced water security, with the largest impacts observed in many locations and/or communities in Africa, Asia, Central and South America, Small Islands and the Arctic”.*

As outlined by UN Water<sup>6</sup>, “Climate change is primarily a water crisis. We feel its impacts through worsening floods, rising sea levels, shrinking ice fields, wildfires and droughts.” The WASH sector is therefore considered highly vulnerable to climate change. It is anticipated that it will be impacted in the following ways<sup>7</sup> (see also figure 1 below):

- Increased likelihood and severity of (groundwater) droughts, limiting water availability and reducing water quality. It is estimated that up to 3.5 billion people could face water scarcity by 2025 while demand for water is expected to increase by 30% by 2050. This is attributed to increased temperatures that increase evaporation rates by 2-3%, impacting surface waters directly as well as shallow groundwater resources through higher water demand from vegetation<sup>8</sup>.
- Increased likelihood of flooding of dwellings and WASH infrastructure, which can contaminate water supplies and damage infrastructure.
- Salt water intrusion (due to sea level rise and/or reduced river discharge and/or groundwater depletion) contaminating fresh water aquifers
- More frequent storms, cyclones and hurricanes, which can damage WASH infrastructure.
- Rising temperatures, leading to increased demand for water and increasing the incidence of water borne diseases.
- Displacement of people: driving more to urban areas, putting more pressure on WASH infrastructure.
- Increased costs of doing business/ delivering WASH services to combat the above

It is likely the sector will also be exposed to secondary impacts; for example, reduced output from hydropower can lead to power blackouts, in turn meaning there is no power for grid connected water pumps. Grid electricity supply can also be disrupted if power lines and/or power stations are damaged by lightning strikes during thunderstorms, by storms, flooding or landslides. Supply chain disruptions caused by extreme weather events could, for example, mean disruption in fuel supplies for fossil fuel powered gen sets or water pumps. Moreover, there is growing realisation of the relationship between climate change and conflict, particularly in low income and vulnerable communities. Increasing competition for water for drinking and agriculture (arable and livestock) can place additional pressures

<sup>3</sup> [IPCC AR6 WGII SummaryForPolicymakers.pdf](https://www.ipcc.ch/report/ar6/wgii/downloads/factsheets/IPCC_AR6_WGII_SummaryForPolicymakers.pdf)

<sup>4</sup> [https://www.ipcc.ch/report/ar6/wg1/downloads/factsheets/IPCC\\_AR6\\_WGI\\_Regional\\_Fact\\_Sheet\\_Africa.pdf](https://www.ipcc.ch/report/ar6/wg1/downloads/factsheets/IPCC_AR6_WGI_Regional_Fact_Sheet_Africa.pdf);  
[https://www.ipcc.ch/report/ar6/wg1/downloads/factsheets/IPCC\\_AR6\\_WGI\\_Regional\\_Fact\\_Sheet\\_Asia.pdf](https://www.ipcc.ch/report/ar6/wg1/downloads/factsheets/IPCC_AR6_WGI_Regional_Fact_Sheet_Asia.pdf)

<sup>5</sup> [IPCC AR6 WGII SummaryForPolicymakers.pdf](https://www.ipcc.ch/report/ar6/wgii/downloads/factsheets/IPCC_AR6_WGII_SummaryForPolicymakers.pdf)

<sup>6</sup> <https://www.unwater.org/water-facts/water-and-climate-change>

<sup>7</sup> WSUP, The missing link in climate adaptation, 2021; Dalberg, Assessing the Climate Resilience of Safe Water Enterprises, 2020 (<https://aquaforall.org/news/climate-resilience-study-shows-safe-water-enterprises-are-climate-change-proof/>); and <https://www.wri.org/water>

<sup>8</sup> IPCC, 2021, AR6 WGI Climate Change 2021: The Physical Science Basis.

on populations, already at their limits of adaptive capacity to drought, heat stress and extreme weather events.

For Aqua for All, the increased costs of delivering WASH services will have direct impacts on our mandate:

- the additional costs of making WASH infrastructure and businesses resilient to the impacts of climate change may reduce the bankability of WASH enterprises
- additional costs may also impact on the affordability of services for clients and undermine the business case.

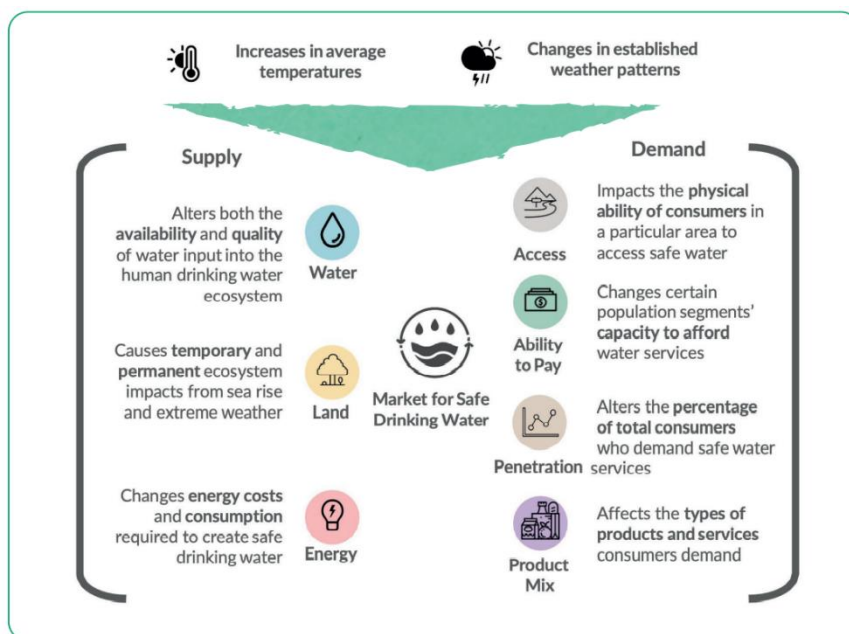


Figure 1: Impacts of Climate Change on Water Supply and Demand over next 10 years (source: Dalberg, Assessing the Climate Resilience of Safe Water Enterprises, 2020)

The financial community has made commitments to increase the amount of finance for adaptation and climate resilient development and to reduce exposure to physical climate risks (see appendix 1).

Going forward, it will be necessary to consider the resilience<sup>9</sup> of enterprises or initiatives and investments to the impacts of climate change and to consider measures to reduce physical risks<sup>10</sup> due to climate change that WASH services are exposed to. As shown in figure 2, resilience can be further split into activities that:

- make the asset/ service itself more able to withstand changing climate (resilience **of** the investment)
- increase the resilience of the local communities (resilience **through** the investment)

<sup>9</sup> Where resilience increases the capacity to cope with a hazardous event or trend, reducing vulnerability. Ultimately, increased resilience will lead to increased adaptation to the impacts of climate change.

<sup>10</sup> Where physical climate risk is a function of hazard (e.g. flood, heat stress, cyclones), exposure (of people, cities, USD of investment) and vulnerability (sensitivity to hazard and ability to adapt)



Figure 2: Distinction between resilience of a project/investment and resilience through a project/investment (source:

<https://openknowledge.worldbank.org/handle/10986/35039>)

## Commitment Adaptation

*We will work with our partners to identify the risks due to a changing climate that their activities may be exposed to, assess the severity of these risks and to develop ways to mitigate and manage them. As part of its investment decision, Aqua for All will consider whether WASH services will be able to withstand the impacts of climate change, as well as to what extent they will help local communities become more resilient to a changing climate. In this way, as well as ensuring our contribution to SDG 6, we will support achievement of the resilience and adaptation components of SDG 13 (take urgent action to combat climate change and its impacts). Inherent to Aqua for All's normal way of working, we work as much as possible with local partners and in line with the Locally Led Adaptation Principles.<sup>11</sup>*

*Aqua for All will:*

- *Screen all new applications to understand an enterprise's or initiative's exposure to climate hazards. Where practicable, partners will be encouraged to include measures to reduce physical climate risks to their operations and/ or measures to increase resilience of local communities.*
- *Review our existing portfolio to better understand exposure to climate hazards and impact on resilience of local communities.*
- *Include metrics for climate resilience as part of Aqua for All's portfolio M&E impact monitoring and management; report on progress annually and, in time, set targets relative to the baseline to increase the amount of support for initiatives that increase resilience to climate change.*

<sup>11</sup> See <https://www.wri.org/initiatives/locally-led-adaptation/principles-locally-led-adaptation> . Added value of formally endorsing these principles will be investigated.

## Assessing climate risks: Resilience of WASH investments

Climate resilience can be considered as a subset of broader resilience. WASH enterprises are subject to numerous risks, including market risks, price risks, institutional risks, climate risks and many others. Aqua for All recognizes therefore that resilience is a multidimensional concept. In our approach, we integrate climate risks with other societal and entrepreneurial dimensions to guide towards identification of holistic adaptation activities/measures. By applying a multidimensional assessment framework, we aim to capture a broad range of components of vulnerability – and use this to assess resilience to climate shocks more specifically.<sup>12</sup>

The physical climate risks WASH services are exposed to can be assessed as follows: <sup>13</sup>

Climate risk = hazard x vulnerability x exposure

Where:

**Hazards** are the physical adverse climate impacts (acute<sup>14</sup> and chronic<sup>15</sup>) that a WASH service may be exposed to, based on available location data (i.e. country, town or geographic coordinates). This can be identified through online tools (see Appendix 8 for details of online tools for the WASH sector). This data can be supplemented with discussions with project developers and customers/ target group who may have a clear idea of the changing climate they are currently experiencing and concerns for the future.

**Vulnerability** is the propensity or predisposition to be adversely affected by climate change and the capacity to recover from it. In general, WASH infrastructure and services are considered vulnerable to the impacts of climate change.

**Exposure** is the presence (location) of people, livelihoods, environmental services and resources, infrastructure, or economic, social, or cultural assets in places that could be adversely affected by climate hazards.

Aqua for All supports enterprises, initiatives or communities in undertaking a climate risk assessment for their location and operation. Based on the gained understanding, we work towards identifying activities or measures to increase resilience.

For this purpose, Aqua for All has developed a methodology and tool to assess climate risk of WASH services, as explained in Box 1. In this assessment exposure is not looked at individually, rather it is factored into the questions on vulnerability. Exposure may be relevant to consider for enterprises/interventions operating in several locations to identify priorities for action, as well as for FIs to understand the level risk their portfolio is exposed to.

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<sup>12</sup> How To Do Note: Measuring Climate Resilience, IFAD (2015)

<sup>13</sup> adapted from [1 - Climate Change: New Dimensions in Disaster Risk, Exposure, Vulnerability, and Resilience \(ipcc.ch\)](#)

<sup>14</sup> Event driven hazards such as increased frequency and severity of flooding, cyclones and hurricanes

<sup>15</sup> Longer-term, incremental shifts in weather patterns such as changing rainfall patterns or other permanent climate change impacts like rise of sea level

**Box 1: Aqua for All's climate risk assessment methodology in 3 steps:**

**Step 1 – Assessing climate hazards:**

- Applicants are asked to estimate the hazard level of a list of climate hazards:
  - **Floods:** River/urban/coastal flood, extreme runoff
  - **Water availability risks:** Drought, water scarcity, groundwater reduction
  - **Water quality risks:** Saltwater intrusion, surface water quality risks, groundwater quality risks
  - **Storms:** Cyclones/ hurricanes/storms, hail
  - **Extreme heat events**
  - **Other climate related disasters:** Wildfires, landslides, other
- Initial scoring of the hazard levels is based on the applicants' experience. It can be validated (by the applicant themselves and later the A4A climate team) with an open-source tool (e.g. the WRI Aqueduct Water Risk Tool<sup>16</sup>). Each potential hazard is scored in the following way:
  - 1 - very low hazard level
  - 2 - low hazard level
  - 3 - medium hazard level
  - 4 - high hazard level
- For each hazard with a medium or high hazard level (score 3&4), applicants are asked to answer a questionnaire to assess where vulnerabilities to this hazard could originate and how vulnerable their operations are to it.

**Step 2 – Assessing vulnerability:**

- The components of vulnerability of a community and/or of an enterprise were compiled using different existing taxonomies<sup>17, 18, 19</sup> and modified to match Aqua for All's specific needs. Through a questionnaire the following aspects of vulnerability are assessed:
  - **Environmental:** e.g. reliance on natural environment or resources for operation; status of environmental degradation; resilience of (sub)-surface water sources; availability of alternative water sources;
  - **Social:** potential for change in market demand for product (through the hazard); social impact of disruption; impact of hazard on ability to pay;
  - **Infrastructural:** extent to which infrastructure is hazard-proof; availability of spare parts/dependency on supply chains; dependency on grid electricity/ availability of back-up power system;
  - **Institutional:** institutional/ governance/ management: availability of emergency plans/early warning systems; availability of institutional support to respond to hazards;
  - **Financial:** insurance coverage/ability to draw on emergency funds; costs of reconstruction; share of company's assets exposed to risks
- For each hazard with a medium or high hazard level, applicants are asked to answer the questionnaire and to score vulnerabilities.
  - 1 - very low vulnerability
  - 2 - low vulnerability
  - 3 - medium vulnerability
  - 4 - high vulnerability

**Step 3 – Calculating results**

- The tool calculates the climate risks from the entered scores and gives an indication which climate hazards pose a high risk and need to be assessed in more detail.

<sup>16</sup> Identification of which (existing) tool works best (where/ for what ) still work in progress

<sup>17</sup> Charting a New Climate, UNEP FI, TCFD Banking Physical Risk (2020)

<sup>18</sup> Guidance note: WASH Climate Resilient Development-Risk assessments for WASH, UNICEF and GWP, 2019

<sup>19</sup> The how tough is WASH framework for assessing the climate resilience of water and sanitation, Howard et al., 2021

- Below, an example of the resulting scoring framework is shown.

## RESULTS

### Summary of the assessment outputs - DO NOT FILL - FILLS AUTOMATICALLY

| Hazard                  | Hazard level:<br>own scoring | Tool used to<br>verify | Hazard level:<br>tool scoring | Vulnerability domain |        |           |               |           |
|-------------------------|------------------------------|------------------------|-------------------------------|----------------------|--------|-----------|---------------|-----------|
|                         |                              |                        |                               | Environmental        | Social | Technical | Institutional | Financial |
| Floods                  | 3                            | waterriskfilter        | 3                             | 3.5                  | 1.3    | 1.7       | 3.0           | 4.0       |
| Water availability risk | 4                            | aqueduct               | 4                             | 1.5                  | 3.5    | 2.0       | 3.3           | 3.3       |
| Water quality risk      | 1                            |                        |                               |                      |        |           |               |           |
| Storms                  | 1                            |                        |                               |                      |        |           |               |           |
| Extreme heat            | 3                            | thinkHazard            | 2                             | 1.0                  | 2.3    | 1.0       | 3.0           | 1.3       |
| Other related disasters | 1                            |                        |                               |                      |        |           |               |           |

### Climate risk matrix: Climate risk = hazard x vulnerability

|                         | Environmental | Social | Technical | Institutional | Financial | Risk score | Risk level  |
|-------------------------|---------------|--------|-----------|---------------|-----------|------------|-------------|
| Floods                  | 10.5          | 3.8    | 5.0       | 9.0           | 12.0      | 40         | medium risk |
| Water availability risk | 6.0           | 14.0   | 8.0       | 13.3          | 13.3      | 55         | high risk   |
| Water quality risk      |               |        |           |               |           | 0          |             |
| Storms                  |               |        |           |               |           | 0          |             |
| Extreme heat            | 2.0           | 4.5    | 2.0       | 6.0           | 2.7       | 17         | low risk    |
| Other related disasters |               |        |           |               |           | 0          |             |

1 - 2 = very low risk

2 - 6 = low risk

6 - 12 = medium risk

12 - 16 = high risk

## Categorizing adaptation impact: Resilience *through* WASH services

WASH enterprises or initiatives can have positive (and negative) impacts on the communities in which they operate <sup>20,21</sup>. To ensure that no negative impacts are caused by initiatives supported by Aqua for All, we compiled a list of questions that ensure no significant harm is done (see also chapter 4).

In line with existing taxonomies, we categorize WASH enterprises or initiatives in 3 different levels to assess their contribution to the resilience of the communities in which they are located:

- **Level 1 – building resilience through WASH:** the enterprise or initiative increases resilience through increased availability of WASH services/ products or infrastructure, thereby contributing to improved health and/ or poverty reduction. This recognizes that access to WASH services inherently improves a communities/customers resilience to climate change.
- **Level 2 – building resilience through WASH + specific activities/measures \*** : the enterprise or initiative provides resilience through increased availability of WASH services/ products or infrastructure, *and* includes resilience building activities/measures that reduce identified vulnerabilities to climate hazards (based on the climate risk assessment)
- **Level 3 – building resilience through specific activities/measures \*** : the key focus of enterprise or initiative is on resilience building activities/measures that reduce vulnerability of WASH enterprises, services and/or communities to the impacts of climate change. The enterprise or initiative would not exist in the absence of climate change.

*\* To identify resilience building activities, enterprises or initiatives can look at their climate risk assessment: if high risks were identified during the assessment, Aqua for All aims to support enterprises or initiatives in designing and implementing measures/activities to reduce the risks. Indicators to measure resilience and to set targets on risk reduction shall be designed for every activity.*

As Aqua for All does not only support WASH enterprises or initiatives directly, but also works with and supports financial institutions, investors as well as enabling stakeholders like TA providers or accelerators, we further introduced two other categories to assess the adaptation impact of our portfolio:

- **Adaptation mix** - Initiatives where funds support multiple enterprises, through first loss or guarantees, accelerators and incubators, or through SIINC transactions with mixed impact
- **Adaptation impact indirect** - Initiatives that serve in project/investment preparation like TA support or feasibility studies

Table 1 below gives an overview of how the adaptation impact of WASH enterprises, initiatives and enabling environment initiatives are categorised by Aqua for All, including some examples.

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<sup>20</sup> World Bank, Resilience Rating System, 2021

<sup>21</sup> Race to Resilience, Metrics Framework, 2021

**Table 1 - Categorizing adaptation impact: contribution of WASH enterprises or initiatives to Climate Resilience of Communities/ Beneficiaries<sup>22</sup>**

Note: a long list of possible adaptation activities and measures is given in Appendix 9.

| Level                                                                            | Description                                                                                                                                                                                                                                                                                 | Examples                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Adaptation impact unknown</b>                                                 | <i>Enterprise or initiative cannot be easily assigned into one of the below categories yet or answers to do-no-harm questions are unclear</i>                                                                                                                                               | <i>This category was used in the baseline assessment of Aqua for All's portfolio, as we had not collected all necessary information to categorize all supported enterprises and initiatives with full confidence. Going ahead we strive to minimize the number of enterprises and initiatives in this category to 0.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Level 1 – building resilience through WASH</b>                                | Enterprise or initiative that increases resilience through increased availability of WASH services/ products or infrastructure, thereby contributing to improved health and/ or poverty reduction.                                                                                          | All enterprises or initiatives supported by Aqua for All should fall into this category if they pass the do-no-harm assessment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Level 2 – building resilience through WASH + specific activities/measures</b> | Enterprise or initiative that provides resilience through increased availability of WASH services/ products or infrastructure, <i>and</i> includes resilience building activities/measures that reduce identified vulnerabilities to climate hazards (based on the climate risk assessment) | <p>WASH enterprises that carry out additional activities/measures in the components of vulnerability, e.g.:</p> <ul style="list-style-type: none"> <li>- Improve water resources &amp; environmental resilience <ul style="list-style-type: none"> <li>o Protection of water catchment area</li> <li>o Water re-use in water scarce areas</li> </ul> </li> <li>- Increase infrastructure &amp; supply-chain resilience <ul style="list-style-type: none"> <li>o Hazard-proofing infrastructure</li> <li>o Installation of back-up power supply</li> </ul> </li> <li>- Strengthen institutional/management resilience <ul style="list-style-type: none"> <li>o Development of early warning systems</li> <li>o Capacity building with institutional stakeholders on climate change impacts and institutional support</li> </ul> </li> <li>- Increase social resilience <ul style="list-style-type: none"> <li>o Ensure affordability/payment flexibility of services/ products</li> <li>o Adjust services to reduce customers exposure to hazards</li> </ul> </li> <li>- Improve financial resilience <ul style="list-style-type: none"> <li>o Take out climate risk insurance</li> <li>o Set aside emergency budget</li> </ul> </li> </ul> |
| <b>Level 3 –</b>                                                                 | The key focus of enterprise or initiative is on resilience building activities/measures that reduce                                                                                                                                                                                         | - Enterprises/initiatives implementing any activities listed under level 2, with exclusive focus on climate resilience of all activities                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

<sup>22</sup> Note the Levels 1,2,3 can be mapped to the Rio Markers (refer to appendix 6) where 'Level 1' enterprises/interventions would score 0, 'Level 2' enterprises/interventions would score 1 and 'Level 3' enterprises would score 2.

|                                                          |                                                                                                                                                                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|----------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| building resilience through specific activities/measures | vulnerability of WASH enterprises, services and/or communities to the impacts of climate change. The enterprise or initiative would not exist in the absence of climate change. | <ul style="list-style-type: none"> <li>- Enterprises/Initiatives that focus on developing innovations for a climate resilient WASH sector, e.g.: <ul style="list-style-type: none"> <li>o disaster-proof WASH infrastructure, technology, material and service design (this also means that it should be easy to replace in case it breaks)</li> <li>o water saving/leakage reduction/consumption monitoring technologies or approaches</li> </ul> </li> <li>- Enterprises/Initiatives with outputs that improve resilience or adaptation beyond direct outputs, by affecting institutions, policies, incentives, capacities. (Requirement: need to have a WASH service provider as partial beneficiary and a long-term financing &amp; management strategy in place). E.g.: <ul style="list-style-type: none"> <li>o Groundwater/ catchment restoration initiatives to increase long-term water supply security</li> <li>o Design/testing of climate risk insurances or emergency funds; financial instruments to increase availability and accessibility of climate funding for WASH</li> <li>o Working with institutions on climate change topics, emergency response planning, Sector/stakeholder coordination</li> </ul> </li> </ul> |
| <b>Adaptation mix</b>                                    | Initiatives where funds support multiple enterprises                                                                                                                            | <ul style="list-style-type: none"> <li>- through first loss or guarantees, accelerators and incubators, or through SIINC transactions with mixed impact</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Adaptation impact indirect</b>                        | Initiatives that serve in project/investment preparation                                                                                                                        | <ul style="list-style-type: none"> <li>- TA support or feasibility studies</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

## 2. Mitigation

### Background

In Paris in 2015, an international treaty was agreed to hold “the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels”<sup>23</sup>. The Paris Agreement also emphasises the role of finance in addressing climate change, highlighting the need to make “finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development”. Appendix 1 outlines the response of the financial community.

Subsequent modelling by the Intergovernmental Panel on Climate Change (IPCC)<sup>24</sup> showed that to keep temperature rises to 1.5 °C and avoid the most catastrophic effects of a changing climate, emissions of carbon dioxide need to be reduced by 45% by 2030 and to reach net zero by 2050. IPCC modelling also showed that emissions of methane need to be reduced by c.85% by 2050. At COP26 – the UN Climate Change Conference - in Glasgow in 2021, more than 100 countries signed the Global Methane Pledge, to reduce emissions of methane by 30% (from 2020 levels) by 2030<sup>25</sup>.

Emissions of GHGs from the WASH sector are significant, estimated to be 3-7% of total global GHGs<sup>26</sup>. Sources of GHGs include:

- Energy used to power water and wastewater treatment systems (the WASH sector consumes 4% of electricity produced globally<sup>27</sup>), as well as fossil fuels used to transport water and wastewater to and from users, and fuels used to purify water at the household level
- Biochemical processes involved in water and wastewater treatment (e.g. anaerobic sanitation systems) that lead to release of emissions of methane (CH<sub>4</sub>) and nitrous oxide (N<sub>2</sub>O), almost 30 and 300 times more powerful greenhouse gases than CO<sub>2</sub>.

This figure does not include emissions from untreated wastewater, a significant source of emissions, particularly in the countries that Aqua for All works in where the vast majority of wastewater is not treated. Untreated sewage and wastewater running into lakes leads to increased eutrophication and associated emissions of methane<sup>28</sup>. Further, recent research suggests that emissions from on-site sanitation are likely to be underestimated in climate models<sup>29</sup>.

Significant potential exists therefore to reduce WASH sector emissions through energy efficiency measures and use of renewable energy for water and wastewater treatment systems; and (introduction of) wastewater treatment systems that capture and use methane generated in anaerobic decomposition of organic matter. In many of the countries that Aqua for All works in, introduction of safe drinking water removes the need to boil water, thereby reducing local deforestation and further avoiding emissions of GHGs.

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<sup>23</sup> <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>

<sup>24</sup> <https://www.ipcc.ch/sr15/chapter/spm/>

<sup>25</sup> [https://ec.europa.eu/commission/presscorner/detail/en/statement\\_21\\_5766](https://ec.europa.eu/commission/presscorner/detail/en/statement_21_5766)

<sup>26</sup> UN World Water Development Report 2020

<sup>27</sup> *ibid*

<sup>28</sup> Beaulieu et al.; Eutrophication will increase methane emissions from lakes and impoundments during the 21st century. *Nat Commun* **10**, 1375 (2019). <https://doi.org/10.1038/s41467-019-09100-5>

<sup>29</sup> Johnson et al.; Whole-system analysis reveals high greenhouse gas emissions from citywide sanitation in Kampala; *Communications Earth & Environment* (2022). <https://doi.org/10.1038/s43247-022-00413-w>

### Global total net CO<sub>2</sub> emissions

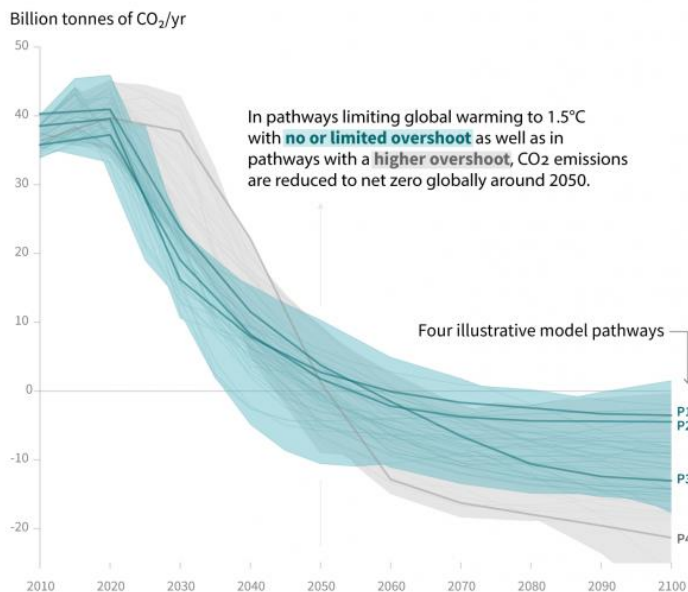


Figure 3: Global Emissions Pathways to limit Global Warming to 1.5°C (source: <https://www.ipcc.ch/sr15/chapter/spm/>)

## Commitment Mitigation

Aqua for All supports the goals of the Paris Agreement and efforts to limit global temperature increases to 1.5°C. As part of its investment process, Aqua for All considers whether WASH enterprises or initiatives will contribute to SDG13 mitigation goals and includes measures to reduce GHG emissions in line with internationally agreed goals i.e. to reduce emissions of carbon dioxide to net zero by 2050 and emissions of methane by 85% by 2050. Specifically, we will:

- Assess climate impact in screening of all new potential enterprises/ initiatives to be supported. Where practicable, applicants will be encouraged to include measures to reduce emissions of GHGs.
- Review existing portfolio to better understand emissions of GHGs and which WASH enterprises or initiatives already include measures to reduce GHGs.
- Include metrics on climate mitigation as part of Aqua for All's portfolio impact monitoring and management; report on progress annually and, in time, set targets to increase the amount of support for initiatives that reduce emissions of GHGs.

Aqua for All also recognises the importance of leading by example and aims to reach net zero emissions for its operations by 2050. We will calculate the carbon footprint of our operations, including those of staff or affiliated consultants in the countries we work in, annually; put in place a plan to reduce emissions and offset residual emissions through the purchase of carbon credits from 2023.

## Categorizing mitigation impact: Greenhouse Gas emissions in the WASH sector

The main routes that WASH enterprises or initiatives could impact on emissions of GHGs are outlined in table 2 below. This was based on an assessment of existing climate mitigation taxonomies (refer to Appendix 2).

**Table 2 - Categorizing mitigation impact: Impact of WASH enterprises or initiatives on emissions of GHGs<sup>30, 31</sup>**

Note: a long list of possible mitigation activities and measures is given in Appendix 9.

| Category                                                                              | Activity                                                                                                                                                       | Example                                                                                                                                                                                                                                                                                                                  | Assumed baseline for emission reductions                                              |
|---------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| <b>GHG impact unknown</b>                                                             | <i>Enterprise or initiative can not be easily assigned into one of the below categories, there is insufficient data available for a serious categorization</i> | <i>This category was used in the baseline assessment of Aqua for All's portfolio, as we had not collected all necessary information to categorize all supported enterprises and initiatives with full confidence. Going ahead we strive to minimize the number of enterprises and initiatives in this category to 0.</i> |                                                                                       |
| <b>GHG reduction likely – Methane (CH<sub>4</sub>)/Nitrous Oxide (N<sub>2</sub>O)</b> | Sanitation enterprises or initiatives that lead to reduced methane or nitrous oxide emissions from anaerobic decomposition of organic matter                   | e.g. <ul style="list-style-type: none"> <li>wastewater/faecal sludge treatment to <ul style="list-style-type: none"> <li>reduce pollution of aquatic ecosystems</li> <li>capture and utilise biogas (methane) generated</li> </ul> </li> <li>dry sanitation systems with aerobic decomposition processes</li> </ul>      | Organic matter in wastewater decomposes anaerobically, methane released to atmosphere |
| <b>GHG reduction likely - CO<sub>2</sub></b>                                          | Installation of renewable energy                                                                                                                               | e.g. <ul style="list-style-type: none"> <li>Solar water pumps replacing diesel/ electrical pumps connected to the grid</li> <li>Switch to renewable energy for (waste)water treatment plants</li> </ul>                                                                                                                  | Continued use of fossil fuel based pump                                               |
|                                                                                       | Efficiency improvements                                                                                                                                        | e.g. <ul style="list-style-type: none"> <li>reduction in water leakages (lower energy consumption for water treatment &amp; pumping)</li> <li>Integration of nature-based solutions, using less energy and resources</li> </ul>                                                                                          | Baseline energy consumption before implementation                                     |
|                                                                                       | Drinking water interventions that reduce the need to boil water using                                                                                          | e.g.                                                                                                                                                                                                                                                                                                                     | Water boiled on traditional stove or locally practiced                                |

<sup>30</sup> Note these categories can be mapped to the Rio Markers (refer to appendix 3) where 'red' and 'blue' enterprises/interventions would score 0 and 'grey' enterprises/interventions would score 1 (generally renewable energy or energy efficiency enterprises/interventions) or 2 (generally methane destruction enterprises/interventions ).

<sup>31</sup> The categories also align with the Common Principles for Climate Mitigation developed by the Joint Climate Finance Tracking Group of multilateral development banks (MDBs) and a group of representatives of the International Development Finance Club (IDFC) member banks in 2021.

|                                                                                                                                                            |                                                                                                 |                                                                                                                                                                                                                                 |                                                         |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|
|                                                                                                                                                            | fuels such as firewood or charcoal (impact on local deforestation) or fossil fuels              | <ul style="list-style-type: none"> <li>Household water treatment (with filters or chlorine solutions/ chemicals)</li> <li>pipeline extension and new connections</li> </ul>                                                     | cooking method, fuelled by wood/ charcoal/ fossil fuels |
|                                                                                                                                                            | Sanitation enterprises that reduce CO <sub>2</sub> emissions and contribute to circular economy | e.g. <ul style="list-style-type: none"> <li>Transformation of waste products into fuel, compost, or fertilizer (may have a double impact reducing CO<sub>2</sub> as well as CH<sub>4</sub>/N<sub>2</sub>O emissions)</li> </ul> | Use of fossil energy                                    |
| <b>GHG impact insignificant</b><br><i>(Activities not expected to have a material impact on GHGs or where more information is needed to assess impact)</i> | Hygiene products; cleaning products                                                             | Impact not expected to be material                                                                                                                                                                                              | n/a                                                     |
|                                                                                                                                                            | Technical assistance, capacity building and Incubator programmes                                | Impact not expected to be material at this stage (although Aqua for All expects emissions from travel (in particular flying) to be minimised as far as possible.                                                                | n/a                                                     |
| <b>GHG increase likely</b><br><i>(Activities likely to increase GHG emissions compared to current situation/ business as usual)</i>                        | WASH enterprises or initiatives that use fossil fuel based equipment                            | e.g. diesel pump                                                                                                                                                                                                                | n/a                                                     |
|                                                                                                                                                            | WASH enterprises or initiatives that lead to unabated release of methane to the atmosphere      | e.g. replacement of dry sanitation with water based sanitation without treatment                                                                                                                                                | n/a                                                     |
| <b>GHG mix</b>                                                                                                                                             | Initiatives that support multiple enterprises                                                   | e.g. through first loss or guarantees, accelerators and incubators, or through SIINC transactions with mixed impact                                                                                                             |                                                         |
| <b>GHG impact indirect</b>                                                                                                                                 | Initiatives that serve in project/investment preparation                                        | e.g. TA support or feasibility studies                                                                                                                                                                                          |                                                         |

## Notes:

- We recognise that a WASH enterprise or initiative may have elements that reduce emissions and elements that increase emissions e.g. a water supply project that supplies water using tankers may lead to reductions of emissions (due to reduced need to boil water and associated reductions in local deforestation) but may also lead to emissions of GHGs (from fuel used in tankers used to transport water). To categorise enterprises or initiatives we consider overall impact of the WASH service, based on qualitative or quantitative (where available) data.
- We recognise also that best practice (e.g. the GHG protocol<sup>32</sup>) requires that all categories of emissions are considered including emissions from manufacturing of components used in the service (e.g. plastic water filters, imported water pumps, solar panels). At this stage, due to limits in data available, we are focusing on a qualitative assessment based on emissions during operation of service provision. As data becomes available, we aspire to undertake a quantitative assessment of emissions, considering scopes 1, 2 and 3 (see diagram below).
- The categories listed above were defined based on review of existing taxonomies and the existing Aqua for All portfolio. It should be considered a dynamic list and new categories will be added as Aqua for All considers different types of WASH enterprises or initiatives. For example, where installation of a wastewater treatment facility leads to protection and/or rehabilitation of water bodies, swamps and wetlands, CO<sub>2</sub> storage may also increase.
- Finally, best practice dictates that portfolios are assessed based on their alignment to Paris Agreement trajectories (see for example, the Science Based Targets Initiative<sup>33</sup>; the Transition Pathway Initiative<sup>34</sup>). To the best of our knowledge, a science based trajectory has not yet been defined for the WASH sector. Our activity therefore focuses on activities that will reduce emissions compared with 'business as usual'. We are however tracking developments in this area<sup>35</sup> and will update our strategy and metrics as guidance on this topic develops.

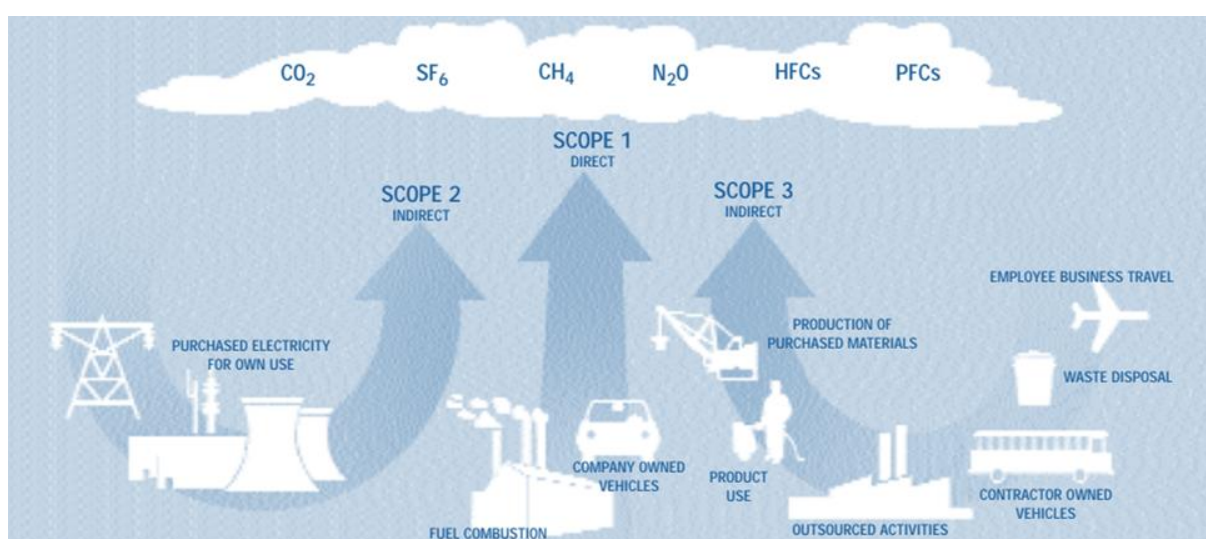


Figure 4: Scope 1,2 and 3 emissions (source: The Greenhouse Gas Protocol, A Corporate Accounting and Reporting Standard, available at <https://ghgprotocol.org/corporate-standard>)

<sup>32</sup> <https://ghgprotocol.org/>

<sup>33</sup> <https://sciencebasedtargets.org/>

<sup>34</sup> <https://www.transitionpathwayinitiative.org/>

<sup>35</sup> See for example <https://www.water.org.uk/netzerowater/>

## Carbon Credits

When WASH enterprises reduce GHG emissions compared to baseline/ alternatives, it may also be possible to monetize this through the sale of Carbon Credits<sup>36</sup>. Aqua for All has supported carbon credit development for water enterprises in India and Ethiopia. Carbon credits can be a potential additional source of revenue for water and sanitation small and medium enterprises (SMEs)<sup>37</sup>. This additional income can be instrumental to these SMEs' efforts to scale, increase their profitability and sustainability, and attract investments.

However, complexity of the certification processes and its associated (monitoring) costs mean that carbon credit trajectories are generally only feasible for enterprises with considerable scale and management capacity. For most WASH enterprises the efforts and costs will exceed the potential carbon credit revenues and the enterprises' abilities. Therefore, Aqua for All does not focus on carbon credits in this strategy, but will remain open to support carbon credit development when a specific case merits this.

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<sup>36</sup> A carbon credit is a certificate equivalent to one tonne of carbon dioxide equivalent (CO<sub>2</sub>e) that is removed from the atmosphere or prevented from entering the atmosphere

<sup>37</sup> <https://aquaforall.org/wp-content/uploads/2021/07/Aqua-for-All-Carbon-credits.pdf>

### 3. Financial Institutions

Aqua for All develops innovative finance partnerships with financial institutions (FIs) to develop their water and sanitation (WASH) portfolio and catalyse investments in WASH. The objective of the partnerships is ultimately to support efforts to achieve SDG6 and WASH development in the country.

Banks are at very different stages in their understanding of climate change; Aqua for All therefore tailors its approach to the needs of each FI, seeking to integrate climate considerations in both the partnership development process, as well as the organizational and operational structure of the Aqua for All - FI partnership.

When working with a FI, Aqua for All will support the FI to develop a WASH portfolio that contributes to inclusivity and improved climate resilience. The ultimate climate impacts that Aqua for All achieves through FIs are generated indirectly, through the FI loans, system and processes. Based on the strategy and methodologies outlined in this document, we have integrated climate considerations into our approach when working with FIs.

We have embedded climate considerations into the 'FI Toolkit' that Aqua for All developed in 2022. The FI Toolkit is a bundle of 'living documents' which are intended to guide the Aqua for All team, as well as the FI, throughout the partnership process, to ensure that the partnership and operational implementation is aligned with Aqua for All's development and climate mandate, and impact management system.

The FI Toolkit includes:

- An introduction to key climate considerations relevant to FIs
- Integration of climate considerations into due diligence templates, concept note, proposal and partnership agreements
- Inclusion of climate indicators into impact monitoring procedures

This approach and these materials support FIs to integrate climate considerations into existing processes and to develop 'climate smart' WASH portfolios. FIs globally are facing increasing regulatory requirements around climate risk management<sup>38</sup> and the Aqua for All approach is designed to complement these and support the FIs we work with in meeting these requirements for activities in the WASH sector.

#### Climate Commitment Financial Institutions

##### **Mitigation**

*Aqua for All understands the critical role that the financial sector will play in meeting Paris Agreement goals by aligning finance with 1.5°C pathways. We will support the financial institutions that we work with firstly to understand their role in reducing GHG emissions in the WASH sector.*

*We also intend to:*

- *Support the FIs that we work with to better understand the impact of their WASH investments on GHG emissions.*
- *Support the FIs that we work with to track the impacts of their WASH investments on GHG emissions.*

<sup>38</sup> Including Guidance on Climate-Related Risk Management published by the Central Bank of Kenya (<https://www.centralbank.go.ke/2021/10/15/guidance-on-climate-related-risk-management/>) and the IFRS Sustainability Disclosure Standard S2—Climate-related Disclosures currently under development (<https://www.ifrs.org/groups/technical-readiness-working-group/#resources>)

**Adaptation & Resilience**

*Consideration of impacts of climate change on investments will also be critical for financial institutions. In line with emerging regulatory requirements on climate risk for FIs, we will support the FIs that we work with to better understand the exposure of WASH investments to climate hazards and potential impacts of this.*

*We also intend to:*

- Support the FIs we work with to better understand the role of physical climate risk assessments in identifying, managing and mitigating exposure to climate risks*
- Support the FIs we work with to track potential impact of their WASH investments on the resilience of local communities.*

## 4. Integrating climate considerations into Aqua for All's funding cycle and programme monitoring

### Climate impact assessment process and Do-No-Harm requirements

Aqua for All will embed climate change considerations in both screening of new funding applications and impact monitoring of WASH enterprises, FIs and interventions supported.

Aqua for All has a two-stage funding application process, in which climate will be integrated as follows:

- At the Teaser stage, Aqua for All will ask high level questions about:
  - Expected energy use and, for sanitation enterprises/interventions, how human waste is stored, transported and treated (to assess potential impact on greenhouse gas emissions).
  - Changes to the weather or other climate related impacts already experienced and/expected; any preparations made so that the initiative/ operations can continue operating in changing or extreme weather conditions; and how the initiative/ operations might help users or the wider local community adapt to the impacts of climate change (to assess resilience of and through the initiative)
- At the full proposal stage, Aqua for All will require that partners undertake a more detailed assessment including:
  - Further detail on expected energy use and, for sanitation enterprises/interventions, how human waste is stored and treated.
  - Details of the current situation (to assess whether the proposed initiative has the potential to reduce emissions compared with the current situation).
  - Climate risk assessment as outlined in section 2 of this document including
    - Further detail on climate hazards that initiatives are likely to be exposed to; vulnerability of the initiative to these hazards; and measures planned to reduce climate risk (to assess resilience of the initiative).
    - Detail of whether the initiative is likely to contribute to the resilience of the communities in which they are located (to assess resilience through the initiative).

As shown in figure 5 these baseline assessments lead to the design of adaptation or mitigation measures and the consecutive categorization of adaptation or mitigation impact, as discussed in the previous chapters.

In addition, all enterprises or initiatives supported will need to demonstrate that they are not considered likely to reduce the resilience of the people or ecosystems in which they are located. For this purpose we compiled a number of Do-no-harm questions, aligning with the EU taxonomy for sustainable activities.<sup>39</sup>

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<sup>39</sup> [https://finance.ec.europa.eu/sustainable-finance/tools-and-standards/eu-taxonomy-sustainable-activities\\_en#what](https://finance.ec.europa.eu/sustainable-finance/tools-and-standards/eu-taxonomy-sustainable-activities_en#what)

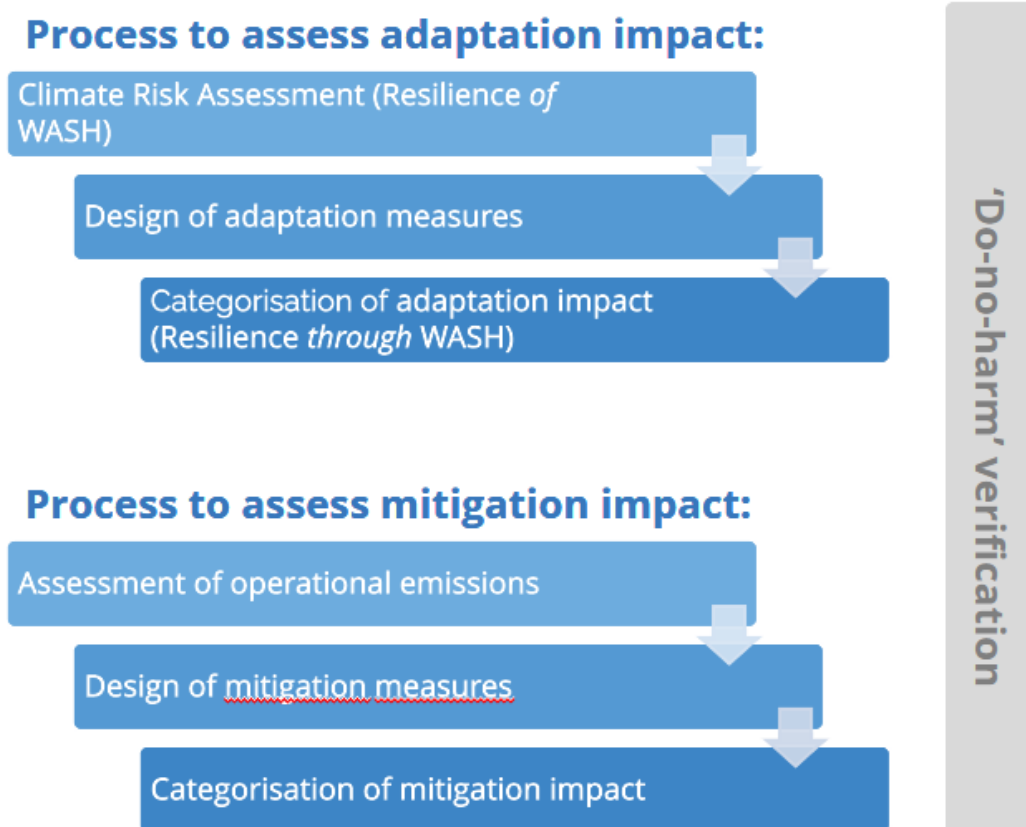


Figure 5: Aqua for All's processes to assess and categorize adaptation and mitigation impact and measures of supported enterprises and initiatives

## Monitoring results & tracking impact at portfolio level

For supported enterprises/ initiatives, Aqua for All undertakes monitoring of initiatives at baseline (start of project), progress review on at least an annual basis and also at the end of Aqua for All's involvement with the enterprise. Climate considerations will be included in monitoring frameworks at all stages of the funding cycle. Questions will be based on indicators outlined in Appendix 4 and Appendix 7, with additional indicators added for individual enterprises/ initiatives, if required.

A review of climate resilience and mitigation indicators was undertaken (refer to Appendix 3 and 6). At portfolio level, the following indicators in table 3 will be tracked by Aqua for All. Based on the data collected, Aqua for All will report on the indicators outlined on an annual basis.

In addition, based on the expected impacts of an individual intervention, additional indicators may be collected to better understand the impact that was realised (e.g. m<sup>3</sup> of water saved). To determine which interventions fall into Levels 2 and 3, additional data will need to be collected at a enterprise/intervention level, refer to Appendix 7.

GHG emission savings may be quantified and reported on where possible, depending on data available at initiative level (refer to Appendix 4).

**Table 3 – Tracking adaptation and mitigation impact at Aqua for All portfolio level**

| Adaptation                                                                                                                                                 | Mitigation                                                                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| <p>Number of enterprises/ initiatives supported that will increase resilience of communities</p> <p>(# and % of total, segregated by adaptation level)</p> | <p>Number of enterprises/ initiatives supported that reduce GHGs</p> <p>(# and % of total, segregated by mitigation category)</p> |
| <p>Amount of financing committed to activities that increase resilience of communities</p> <p>(mEUR and % of total)</p>                                    | <p>Amount of financing committed to activities that reduce GHGs</p> <p>(mEUR and % of total)</p>                                  |
| <p>Amount of financing leveraged for activities that increase resilience of communities</p> <p>(mEUR and disaggregated by public/private)</p>              | <p>Amount of financing leveraged for activities that reduce GHGs</p> <p>(mEUR and disaggregated by public/private)</p>            |
| <p>Number of people made more resilient</p> <p>(# and % of total)</p>                                                                                      | <p>CO2e emissions reduced / avoided</p> <p>(tons/ year)*</p>                                                                      |

## Appendix 1: Response of the financial community to the Paris Agreement

|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Public        | <ul style="list-style-type: none"> <li>• MDBs collectively have committed to increase the amount of climate finance provided, where climate finance is defined for a set of project types/ criteria spanning mitigation, adaption and resilience (<a href="https://www.worldbank.org/en/news/press-release/2021/07/02/mdbs-climate-finance-for-developing-countries-rose-to-us-38-billion-joint-report-shows">https://www.worldbank.org/en/news/press-release/2021/07/02/mdbs-climate-finance-for-developing-countries-rose-to-us-38-billion-joint-report-shows</a>).</li> <li>• Individual MDBs have commitments around reducing emissions and increasing resilience of investments e.g. <a href="https://www.afdb.org/en/topics-and-sectors/sectors/climate-change">https://www.afdb.org/en/topics-and-sectors/sectors/climate-change</a>, <a href="https://www.adb.org/what-we-do/themes/climate-change-disaster-risk-management/main">https://www.adb.org/what-we-do/themes/climate-change-disaster-risk-management/main</a></li> <li>• “EDFIs will align all new financing with the objectives of the Paris Agreement by 2022 and will transition our investment portfolios to net-zero GHG emissions by 2050 at the latest”. They will also develop “practical guidance and initiatives for increasing financing for adaptation and resilience to climate change, particularly to reduce vulnerabilities of communities and natural ecosystems to climate impacts” (<a href="https://edfi-website-v1.s3.fr-par.scw.cloud/uploads/2020/11/1.-EDFI-Statement-on-Climate-and-Energy-Finance-Final.pdf">https://edfi-website-v1.s3.fr-par.scw.cloud/uploads/2020/11/1.-EDFI-Statement-on-Climate-and-Energy-Finance-Final.pdf</a>).</li> </ul>                               |
| Philanthropic | <ul style="list-style-type: none"> <li>• Over 400 foundations are already signatories to the Philanthropy for Climate Initiative (<a href="https://philanthropyforclimate.org/">https://philanthropyforclimate.org/</a>) where the commitment includes an intent to take urgent action on climate change.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Private       | <ul style="list-style-type: none"> <li>• Increasing moves to mandatory climate disclosure globally for financial institutions and products: <ul style="list-style-type: none"> <li>○ Sustainable Finance Disclosure Regulation and EU Taxonomy</li> <li>○ UK (<a href="https://www.gov.uk/government/news/uk-to-enshrine-mandatory-climate-disclosures-for-largest-companies-in-law">https://www.gov.uk/government/news/uk-to-enshrine-mandatory-climate-disclosures-for-largest-companies-in-law</a>), US (<a href="https://www.reuters.com/article/usa-sec-gensler-climate-idUSKBN2IM1UM">https://www.reuters.com/article/usa-sec-gensler-climate-idUSKBN2IM1UM</a>) , Hong Kong (<a href="https://www.esginvestor.net/hkex-issues-guidance-on-tcfd-aligned-climate-disclosures/">https://www.esginvestor.net/hkex-issues-guidance-on-tcfd-aligned-climate-disclosures/</a>) , Singapore (<a href="https://www.esginvestor.net/mandatory-tcfd-reporting-in-singapore-from-2023/">https://www.esginvestor.net/mandatory-tcfd-reporting-in-singapore-from-2023/</a>)</li> <li>○ Kenya (<a href="https://www.centralbank.go.ke/wp-content/uploads/2021/10/Guidance-on-Climate-Related-Risk-Management.pdf">https://www.centralbank.go.ke/wp-content/uploads/2021/10/Guidance-on-Climate-Related-Risk-Management.pdf</a>)</li> <li>○ Much of this is focused on identifying and managing climate risks associated with investments, whereby climate risks are generally categorised into 2 main categories: <ul style="list-style-type: none"> <li>▪ Physical climate risk (impacts of changing weather systems and extreme weather events)</li> <li>▪ Transition risks (impacts of global shift to a low carbon economy e.g. policy changes)</li> </ul> </li> </ul> </li> </ul> |



#### Governance

Disclose the organization's governance around climate-related risks and opportunities.

#### Strategy

Disclose the actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy and financial planning where such information is material.

#### Risk Management

Disclose how the organization identifies, assesses, and manages climate-related risks.

#### Metrics and Targets

Disclose the metrics and targets used to assess and manage relevant climate-related risks and opportunities where such information is material.

Source: <https://www.fsb-tcfd.org/>

## Appendix 2: Climate mitigation taxonomies

To ensure alignment with best practice, a review of existing taxonomies was undertaken to determine what kind of enterprises/interventions in the WASH sector would qualify as climate mitigation interventions:

| Taxonomy                                                                                                                                                                                                                                                                                            | Relevant enterprise/intervention types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>MDBs and IDFC, Common Principles for Climate Mitigation Finance Tracking, (Version 3, 2021)<br/> <a href="https://www.eib.org/attachments/documents/mdb_idfc_mitigation_common_principles_en.pdf">https://www.eib.org/attachments/documents/mdb_idfc_mitigation_common_principles_en.pdf</a></p> | <ul style="list-style-type: none"> <li>• Generation of renewable energy from solar PV, wind or small scale hydro</li> <li>• Agricultural projects that contribute to increasing the carbon stock in the soil (e.g. “higher inputs of organic matter to soil, processing and application of manure/digestate preferably with biogas capture for energy”)</li> <li>• Avoided deforestation: “demonstrate a substantial increase in the above- or belowground carbon stock, or a substantial reduction in net GHG emissions or carbon intensity (e.g., tCO2e/unit of outcome)”</li> <li>• Energy efficiency improvements in water supply systems (e.g. low energy equipment, reduction in water losses)</li> <li>• Lower carbon water supply systems (e.g. reducing boiling with water treated at a plant; replacement of tanker with piped network; replacement with local diesel pumps with piped system)</li> <li>• Lower carbon water supply system using energy efficient equipment or demand management (e.g. rainwater harvesting, gravity systems, BAT equipment)</li> <li>• Improved operation and management systems to reduce water loss</li> <li>• Reduction of methane or nitrous oxide emissions through waste water and faecal treatment (to reduce BOD)</li> <li>• Wastewater treatment plant improvements that improve methane collection and destruction and/ or reduce energy use</li> <li>• Improvements to latrines or collection systems – only if in combination with treatment</li> <li>• Wastewater reuse e.g. faecal sludge to replace fertiliser</li> </ul> |
| <p>EU Taxonomy, Contributing to Climate Mitigation (Substantial Contribution criteria) <a href="#">List of sectors - EU Taxonomy Compass   European Commission (europa.eu)</a></p>                                                                                                                  | <ul style="list-style-type: none"> <li>• Electricity generation using solar photovoltaic technology</li> <li>• Construction, extension and operation of water collection, treatment and supply systems – where: <ul style="list-style-type: none"> <li>○ the net average energy consumption for abstraction and treatment equals to or is lower than 0.5 kWh per cubic meter produced water supply</li> <li>○ the leakage level is either calculated using the Infrastructure Leakage Index (ILI) rating method and the threshold value equals to or is lower than 1.5 (or other appropriate method can be used)</li> </ul> </li> <li>• Renewal of water collection, treatment and supply systems – where: <ul style="list-style-type: none"> <li>○ the net average energy consumption of the system is reduced by at least 20% compared to own baseline performance</li> <li>○ current leakage level is reduced by at least 20%</li> </ul> </li> <li>• Construction, extension and operation of centralised waste water systems including collection (sewer network) and treatment where:</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

|                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                | <ul style="list-style-type: none"> <li>○ The net energy consumption of the waste water treatment plant is equal to or less than a defined threshold (depending on size of population served e.g. 35 kWh per population equivalent (p.e.) per annum for treatment plant capacity below 10 000 p.e</li> <li>○ For the construction and extension of a waste water treatment plant or a waste water treatment plant with a collection system, which are substituting more GHG-intensive treatment systems (such as septic tanks, anaerobic lagoons), an assessment of the direct GHG emissions is performed</li> <li>• Renewal of centralised waste water systems including collection (sewer network) and treatment where renewal improves energy efficiency by decreasing the average energy consumption by 20%.</li> <li>• Construction and operation of facilities for the treatment of sewage sludge by anaerobic digestion with the resulting production and utilisation of biogas or chemicals.</li> <li>• Construction and operation of dedicated facilities for the treatment of separately collected bio-waste through composting (aerobic digestion) with the resulting production and utilisation of compost.</li> </ul> |
| Climate Bonds Initiative, Water Infrastructure Criteria, <a href="https://www.climatebonds.net/standard/water">https://www.climatebonds.net/standard/water</a> | <ul style="list-style-type: none"> <li>• Projects involving water distribution systems and pumps where there is an improvement in energy efficiency; shift to low carbon fuel sources; improvement to water management and efficiency, e.g., by reducing leaks</li> <li>• Projects involving wastewater treatment e.g. supporting a shift from anaerobic to aerobic wastewater treatment or separating solids from wastewater management systems; generating electricity from sewage methane or biogas; waste energy recovery; improving energy efficiency or shifting to low carbon fuel sources</li> </ul> <p>Would need to demonstrate GHG reductions or no net impacts on GHGs using an internationally recognised methodology for each potentially qualifying project.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

## Appendix 3: Climate mitigation indicators

Review of existing best practice was undertaken to identify commonly reported indicators. From this, appropriate indicators for Aqua for All can be identified.

| Source                                                                                                                                                                                                                                                                                                                                        | Relevant indicators                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Green Climate Fund, Integrated Results Management Framework, 2021<br><a href="https://www.greencclimate.fund/irmf-policy.pdf">irmf-policy.pdf (greencclimate.fund)</a>                                                                                                                                                                        | Mitigation indicators and selected sub-indicators: <ul style="list-style-type: none"> <li>GHG emissions reduced, avoided or removed/sequestered <ul style="list-style-type: none"> <li>Renewable energy installed (MW)</li> <li>Renewable energy generated (MWh)</li> <li>Annual energy savings (MWh)</li> <li>Value of physical assets more able to reduce GHG emissions (USD)</li> </ul> </li> <li>Hectares of natural resource areas brought under improved low emission management practices</li> </ul> |
| TCFD guidance on Metrics, Targets and Indicators, <a href="https://www.fsb-tcfd.org/publications/">https://www.fsb-tcfd.org/publications/</a>                                                                                                                                                                                                 | <ul style="list-style-type: none"> <li>GHG emissions (of operations and of projects supported)</li> <li>Proportion of revenue, assets, or other business activities aligned with climate-related opportunities</li> <li>Amount of capital expenditure, financing, or investment deployed toward climate related risks and opportunities</li> </ul>                                                                                                                                                          |
| MDBs Climate finance reporting ( <a href="https://www.worldbank.org/en/news/press-release/2021/04/28/multilateral-development-bank-climate-finance-for-developing-countries-rose-to-us\$-38-billion">Multilateral Development Bank Climate Finance for Developing Countries Rose to US\$ 38 Billion, Joint Report Shows (worldbank.org)</a> ) | <ul style="list-style-type: none"> <li>Climate finance committed to activities which mitigate GHGs (based on qualifying criteria outlined above), disaggregated by region, type of instrument, recipient (public/ private), co-financing mobilised (public/ private)</li> </ul>                                                                                                                                                                                                                             |
| UK International Climate Fund indicators ( <a href="https://www.gov.uk/government/publications/uk-climate-finance-results">UK Climate Finance Results - GOV.UK (www.gov.uk)</a> )                                                                                                                                                             | <ul style="list-style-type: none"> <li>Net Change in Greenhouse Gas Emissions (tCO2e) – tonnes of GHG emissions reduced or avoided as a result of ICF</li> <li>Clean Energy: Installed capacity (MW) as a result of ICF</li> <li>Volume of public finance mobilised for climate change purposes as a result of ICF</li> <li>Volume of private finance mobilised for climate change purposes as a result of ICF</li> </ul>                                                                                   |
| ESMA, Final Report on draft Regulatory Technical Standards ( <a href="https://www.esma.europa.eu/sites/default/files/library/jc_2021_03_joint_esas_final_report_on_rts_under_sfdr.pdf">https://www.esma.europa.eu/sites/default/files/library/jc_2021_03_joint_esas_final_report_on_rts_under_sfdr.pdf</a> )                                  | <ul style="list-style-type: none"> <li>Principal adverse sustainability impacts: GHG emissions</li> <li>Alignment of portfolio with EU Taxonomy</li> </ul>                                                                                                                                                                                                                                                                                                                                                  |

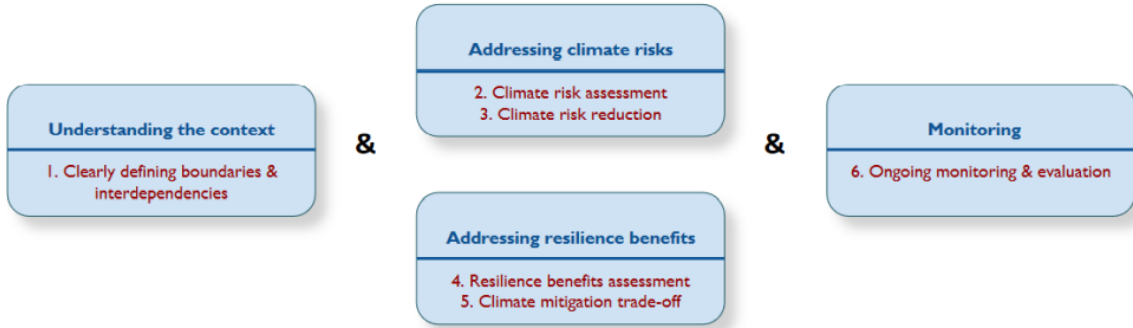
|                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>OECD DAC Rio Markers for Climate Handbook</p> | <p>The OECD Development Assistance Committee (DAC) gathers on an annual basis statistics on official development assistance (ODA) and other resource flows to developing countries from bilateral and multilateral development co-operation providers.</p> <ul style="list-style-type: none"> <li>• Score of 2 where principal objective of intervention is to reduce/ limit GHGs or enhance sequestration</li> <li>• Score of 1 where significant objective is to reduce/ limit GHGs or enhance sequestration</li> <li>• Score of 0 where activity does not target climate mitigation in any significant way</li> </ul> <p>For WASH:</p> <ul style="list-style-type: none"> <li>• Water supply: energy-efficient water pumping systems, and/or pumping systems powered by renewable energies score 1</li> <li>• Sanitation: activities that are designed to save a significant amount of energy (e.g., if energy efficient pumps are employed) and/or to avoid methane gas emissions score 1 or 2</li> </ul> |
|--------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

## Appendix 4: Enterprise/Intervention level indicators needed to estimate GHGs and GHGs avoided/ reduced/ sequestered

| <b>Metric</b>                                                                                                                                                                 | <b>Notes</b>                                                                                                                                 |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Amount and type of [additional] fuel burned each year to deliver service (e.g. amount of diesel burned in generators)                                                         | Needed to calculate additional GHG emissions associated with the service compared to baseline/ business as usual                             |
| Amount of renewable energy installed by the intervention [replacing fossil fuel powered equipment] (e.g. number of solar water pumps and model; kW of solar panels installed) | Needed to calculate GHG emission reductions associated with the service compared with baseline                                               |
| Number of users provided access with safe drinking water where previously water was boiled                                                                                    | Needed to calculate GHG emission reductions associated with the service compared with baseline                                               |
| Volume of wastewater or faecal matter collected and treated                                                                                                                   | Needed to calculate GHG emission reductions associated with the service compared with baseline (assumed to replace anaerobic decomposition). |

## Appendix 5: Climate Resilience Taxonomies

| Taxonomy                                                                                                                                                                                  | Relevant enterprise/intervention types                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>MDBs and IDFC, Common Principles for Climate Change Adaptation Finance Tracking, 2015 (<a href="#">Common Principles for Climate Change Adaptation Finance Tracking (eib.org)</a>)</p> | <ul style="list-style-type: none"> <li>Activities that address current and expected effects of climate change, where such effects are material for the context of those activities. This could be stand-alone projects, multiple projects under larger programmes, or components of a larger project. To demonstrate that an investment qualifies as adaptation finance, the following steps should be followed: <ul style="list-style-type: none"> <li>Setting out the context of risks, vulnerabilities and impacts related to climate variability and climate change;</li> <li>Stating the intent to address the identified risks, vulnerabilities and impacts in project documentation;</li> <li>Demonstrating a direct link between the identified risks, vulnerabilities and impacts, and the financed activities.</li> </ul> </li> </ul> <p>Where possible, adaptation activities are disaggregated from non-adaptation activities.</p>                                                                                                                                                                                                                                                                                                                      |
| <p>Climate Bonds Initiative, Climate Resilience Principles, 2019 (<a href="#">Climate Resilience Principles   Climate Bonds Initiative</a>)</p>                                           | <ul style="list-style-type: none"> <li>Requires the issuer to “understand the climate risks faced by the asset and/or activity and system which is the focus of the bond’s use of proceeds, or impacted by it, and to address those risks through flexible risk-reduction measures which take account of inherent uncertainties around climate change, and ensure the asset, activity and/or system is ‘fit-for-purpose’ in the face of that uncertainty”</li> <li>Figure below shows assessment process: <ul style="list-style-type: none"> <li>Understanding the context: boundaries defined and interdependencies between assets, activities and broader system identified</li> <li>Physical climate risk assessment: considering hazards, exposure and vulnerability</li> <li>Climate risk reduction: identified risks have been mitigated to a tolerable level such that the asset or activity is fit-for-purpose, and does no significant harm to the resilience of the system of which it is a part</li> <li>Resilience benefits assessment: demonstration of resilience benefits to system using specific and quantifiable performance standards</li> <li>Climate mitigation trade off: still being defined</li> <li>Ongoing M&amp;E</li> </ul> </li> </ul> |

|                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
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|                                                                                                                                                                                     | <p><i>Figure 5: Overview of the Climate Resilience Principles</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <p>EU Taxonomy, <a href="#">List of sectors - EU Taxonomy Compass   European Commission (europa.eu)</a></p>                                                                         | <p>A robust climate risk assessment that is proportionate to the scale of activity and its lifespan has been carried out according to the following steps:</p> <ol style="list-style-type: none"> <li>screening of the activity to identify which physical climate risks may affect the performance of the economic activity during its expected lifetime;</li> <li>where the activity is assessed to be at risk from one or more of the physical climate risks identified, a climate risk and vulnerability assessment to assess the materiality of the physical climate risks on the economic activity;</li> <li>an assessment of adaptation solutions that can reduce the identified physical climate risk</li> </ol> <p>Following this, the economic activity has implemented physical and non-physical solutions ('adaptation solutions') that substantially reduce the most important physical climate risks that are material to that activity. The adaptation solutions implemented, amongst other factors, do not adversely affect the adaptation efforts or the level of resilience to physical climate risks of other people, of nature, of cultural heritage, of assets and of other economic activities; are consistent with local, sectoral, regional or national adaptation plans and strategies; and are monitored and measured against pre-defined indicators and remedial action is considered where those indicators are not met.</p> |
| <p>World Bank, Resilience Rating System, 2021 (<a href="#">Resilience Rating System : A Methodology for Building and Tracking Resilience to Climate Change (worldbank.org)</a>)</p> | <p>Considers:</p> <ul style="list-style-type: none"> <li>resilience of the investment (i.e. resilience of the project design and the extent to which a project's assets have considered climate risks in their design and financial analysis of the project)</li> <li>resilience through the project (i.e. whether a project's objective is to enhance the targeted sector's and beneficiaries' climate resilience through its interventions)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

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|                                                                                                                    | <h3 style="text-align: center;">Resilience Rating System</h3> <div style="display: flex; justify-content: space-around;"> <div style="width: 45%;"> <h4 style="color: #800080;">resilience of the project</h4> <div style="margin-bottom: 10px;"> <p><b>C</b></p> <ul style="list-style-type: none"> <li>The project has conducted a basic climate and disaster risk screening and provides a qualitative estimate of residual risks and a justification for the level of risk.</li> </ul> </div> <div style="margin-bottom: 10px;"> <p><b>B</b></p> <ul style="list-style-type: none"> <li>The project has conducted a multi-model risk assessment and considered adaptation options for identified risks.</li> </ul> </div> <div> <p><b>A</b></p> <ul style="list-style-type: none"> <li>The project has conducted a quantitative stress test to ensure that plausible risks do not make it economically unviable.</li> </ul> </div> <p><b>Rating +</b><br/>The project explicitly discusses the possibility of unexpected impacts and performs a systematic analysis of uncertainties that informs contingent planning in case of unanticipated changes.</p> </div> <div style="width: 45%;"> <h4 style="color: #008080;">resilience through the project</h4> <div style="margin-bottom: 10px;"> <p><b>C</b></p> <ul style="list-style-type: none"> <li>The project is a development project that increases local incomes, reduces poverty, or provides beneficiaries with improved infrastructure or financial services.</li> </ul> </div> <div style="margin-bottom: 10px;"> <p><b>B</b></p> <ul style="list-style-type: none"> <li>The project includes resilience-building activities and reduces identified vulnerabilities (adaptation co-benefits).</li> </ul> </div> <div> <p><b>A</b></p> <ul style="list-style-type: none"> <li>The project is transformational in improving resilience, with impacts beyond direct outputs through improved institutions, policies, incentives, technologies, or capacities.</li> </ul> </div> <p><b>Rating +</b><br/>The project monitors and tracks the progress of resilience-building activities through at least one climate indicator that is embedded in the project's monitoring and evaluation strategy.</p> </div> </div> |
| <p>Race to Resilience Metrics Framework, 2021 (<a href="#">202109 Metrics framework WIP.pptx (unfccc.int)</a>)</p> | <ul style="list-style-type: none"> <li>Scope of projects included in metrics framework</li> </ul> <div style="border: 1px solid black; padding: 5px;"> <p><b>Initiative / project focus</b></p> <div style="margin-bottom: 10px;"> <p>✓ <b>Project focused on resilience</b></p> <p>Resilience-building focus, whether targeting individuals, communities, regions, natural systems or broader institutions</p> </div> <div style="margin-bottom: 10px;"> <p>✓ <b>Project with resilience embedded</b></p> <p>Embedded resilience-building activities that reduce identified vulnerabilities alongside other potential development benefits</p> </div> <div> <p>✗ <b>Project not targeting resilience</b></p> <p>A development focused project, programme or policy support that increases local incomes, reduces poverty, or improves infrastructure or services but does not explicitly target climate shocks or stresses</p> </div> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

## Appendix 6: Climate Resilience Indicators

| Source                                                                                                                                                                                | Relevant indicators                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Green Climate Fund, Integrated Results Management Framework, 2021<br><a href="#">irmf-policy.pdf (greenclimate.fund)</a>                                                              | Adaptation indicators and selected sub-indicators: <ul style="list-style-type: none"> <li>• Direct and indirect beneficiaries reached across 4 adaptation results areas (most vulnerable people and communities; health, well-being, food and water security; infrastructure and built environment; ecosystems and ecosystem services) <ul style="list-style-type: none"> <li>◦ Beneficiaries (female/male) with more climate-resilient water security</li> </ul> </li> <li>• Value of physical assets made more resilient to the effects of climate change</li> <li>• Hectares of natural resource areas brought under climate-resilient management practices</li> </ul> |
| TCFD guidance on Metrics, Targets and Indicators, <a href="https://www.fsb-tcfd.org/publications/">https://www.fsb-tcfd.org/publications/</a>                                         | <ul style="list-style-type: none"> <li>• Amount and extent of assets or business activities vulnerable to physical risks</li> <li>• Amount of capital expenditure, financing, or investment deployed toward climate-related risks and opportunities</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                            |
| MDBs Climate finance reporting ( <a href="#">Multilateral Development Bank Climate Finance for Developing Countries Rose to US\$ 38 Billion, Joint Report Shows (worldbank.org)</a> ) | <ul style="list-style-type: none"> <li>• Climate finance committed to adaptation activities (based on qualifying criteria outlined above), disaggregated by region, type of instrument, recipient (public/ private), co-financing mobilised (public/ private)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                  |
| MDBs and IDFC, 2019 <a href="#">A Framework and Principles for Climate Resilience Metrics in Financing Operations   Publications (iadb.org)</a>                                       | <ul style="list-style-type: none"> <li>• Framework for developing metrics based on Logical model/ Theory of Change i.e. considering both project design (metrics on inputs and activities) and project results (outputs, outcomes and impacts)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                 |
| UK International Climate Fund indicators ( <a href="#">UK Climate Finance Results - GOV.UK (www.gov.uk)</a> )                                                                         | <ul style="list-style-type: none"> <li>• Number of people supported to better adapt to the effects of climate change as a result of ICF</li> <li>• Number of people whose resilience has been improved as a result of ICF</li> <li>• Volume of public finance mobilised for climate change purposes as a result of ICF</li> <li>• Volume of private finance mobilised for climate change purposes as a result of ICF</li> </ul>                                                                                                                                                                                                                                           |
| Race to Resilience Metrics Framework, 2021<br>( <a href="#">202109 Metrics framework WIP.pptx (unfccc.int)</a> )                                                                      | <p>Inputs: Number of projects supported</p> <p>Outcomes:<br/>Primary metrics (based on projects, programmes or policy support (PPPS) that deliver increased resilience):</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

|                                           | <ul style="list-style-type: none"><li>No. of individuals (or companies/ cities/ countries) with increased resilience. Based on no. of individuals (or companies/ cities/countries) receiving support from PPPS</li></ul> Secondary metrics: <ul style="list-style-type: none"><li>Hazard focus</li><li>Location (country/ region/ city)</li><li>Marrakech and AR5 action proxy classification (see below)</li><li>Means of implementation (e.g. technology transfer, finance)</li><li>Type of good or service</li><li>Disaggregation by gender, socioeconomic level</li></ul> Cross-cutting:<br>Finance mobilised <table><tr><th colspan="2">Marrakech action</th><th colspan="2">AR5 WGII category and subcategory correspondence</th></tr><tr><td>1</td><td>Climate risk vulnerability assessments, disclosure &amp; monitoring</td><td>2<br/>6</td><td>Structural/physical<br/>Social<br/>Technological<br/>Informational</td></tr><tr><td>2</td><td>Early warning systems &amp; early action</td><td>2<br/>6</td><td>Structural/physical<br/>Social<br/>Technological<br/>Informational</td></tr><tr><td>3</td><td>Preparedness, contingency plans/ emergency response</td><td>6</td><td>Social<br/>Informational</td></tr><tr><td>4</td><td>Climate risk governance &amp; capacity building</td><td>9<br/>10</td><td>Institutional<br/>Institutional<br/>Laws and regulations<br/>Government policies and programs</td></tr><tr><td>5</td><td>Nature-based solutions to reduce risks</td><td>3</td><td>Structural/physical<br/>Ecosystem-based</td></tr><tr><td>6</td><td>Climate proofing infrastructure &amp; services</td><td>1<br/>4</td><td>Structural/physical<br/>Structural/physical<br/>Engineered and built environment<br/>Services</td></tr><tr><td>7</td><td>Risk transfer: Insurance &amp; social protection</td><td>8</td><td>Institutional<br/>Economic</td></tr><tr><td>8</td><td>Sharing knowledge &amp; best practice on climate risk management</td><td>5<br/>7</td><td>Social<br/>Social<br/>Educational<br/>Behavioral</td></tr><tr><td>9</td><td>Volume, quality and access of public and private finance</td><td>8</td><td>Institutional<br/>Economic</td></tr></table> | Marrakech action                                 |                                                                                            | AR5 WGII category and subcategory correspondence |  | 1 | Climate risk vulnerability assessments, disclosure & monitoring | 2<br>6 | Structural/physical<br>Social<br>Technological<br>Informational | 2 | Early warning systems & early action | 2<br>6 | Structural/physical<br>Social<br>Technological<br>Informational | 3 | Preparedness, contingency plans/ emergency response | 6 | Social<br>Informational | 4 | Climate risk governance & capacity building | 9<br>10 | Institutional<br>Institutional<br>Laws and regulations<br>Government policies and programs | 5 | Nature-based solutions to reduce risks | 3 | Structural/physical<br>Ecosystem-based | 6 | Climate proofing infrastructure & services | 1<br>4 | Structural/physical<br>Structural/physical<br>Engineered and built environment<br>Services | 7 | Risk transfer: Insurance & social protection | 8 | Institutional<br>Economic | 8 | Sharing knowledge & best practice on climate risk management | 5<br>7 | Social<br>Social<br>Educational<br>Behavioral | 9 | Volume, quality and access of public and private finance | 8 | Institutional<br>Economic |
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| Marrakech action                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | AR5 WGII category and subcategory correspondence |                                                                                            |                                                  |  |   |                                                                 |        |                                                                 |   |                                      |        |                                                                 |   |                                                     |   |                         |   |                                             |         |                                                                                            |   |                                        |   |                                        |   |                                            |        |                                                                                            |   |                                              |   |                           |   |                                                              |        |                                               |   |                                                          |   |                           |
| 1                                         | Climate risk vulnerability assessments, disclosure & monitoring                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 2<br>6                                           | Structural/physical<br>Social<br>Technological<br>Informational                            |                                                  |  |   |                                                                 |        |                                                                 |   |                                      |        |                                                                 |   |                                                     |   |                         |   |                                             |         |                                                                                            |   |                                        |   |                                        |   |                                            |        |                                                                                            |   |                                              |   |                           |   |                                                              |        |                                               |   |                                                          |   |                           |
| 2                                         | Early warning systems & early action                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 2<br>6                                           | Structural/physical<br>Social<br>Technological<br>Informational                            |                                                  |  |   |                                                                 |        |                                                                 |   |                                      |        |                                                                 |   |                                                     |   |                         |   |                                             |         |                                                                                            |   |                                        |   |                                        |   |                                            |        |                                                                                            |   |                                              |   |                           |   |                                                              |        |                                               |   |                                                          |   |                           |
| 3                                         | Preparedness, contingency plans/ emergency response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 6                                                | Social<br>Informational                                                                    |                                                  |  |   |                                                                 |        |                                                                 |   |                                      |        |                                                                 |   |                                                     |   |                         |   |                                             |         |                                                                                            |   |                                        |   |                                        |   |                                            |        |                                                                                            |   |                                              |   |                           |   |                                                              |        |                                               |   |                                                          |   |                           |
| 4                                         | Climate risk governance & capacity building                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 9<br>10                                          | Institutional<br>Institutional<br>Laws and regulations<br>Government policies and programs |                                                  |  |   |                                                                 |        |                                                                 |   |                                      |        |                                                                 |   |                                                     |   |                         |   |                                             |         |                                                                                            |   |                                        |   |                                        |   |                                            |        |                                                                                            |   |                                              |   |                           |   |                                                              |        |                                               |   |                                                          |   |                           |
| 5                                         | Nature-based solutions to reduce risks                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 3                                                | Structural/physical<br>Ecosystem-based                                                     |                                                  |  |   |                                                                 |        |                                                                 |   |                                      |        |                                                                 |   |                                                     |   |                         |   |                                             |         |                                                                                            |   |                                        |   |                                        |   |                                            |        |                                                                                            |   |                                              |   |                           |   |                                                              |        |                                               |   |                                                          |   |                           |
| 6                                         | Climate proofing infrastructure & services                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1<br>4                                           | Structural/physical<br>Structural/physical<br>Engineered and built environment<br>Services |                                                  |  |   |                                                                 |        |                                                                 |   |                                      |        |                                                                 |   |                                                     |   |                         |   |                                             |         |                                                                                            |   |                                        |   |                                        |   |                                            |        |                                                                                            |   |                                              |   |                           |   |                                                              |        |                                               |   |                                                          |   |                           |
| 7                                         | Risk transfer: Insurance & social protection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 8                                                | Institutional<br>Economic                                                                  |                                                  |  |   |                                                                 |        |                                                                 |   |                                      |        |                                                                 |   |                                                     |   |                         |   |                                             |         |                                                                                            |   |                                        |   |                                        |   |                                            |        |                                                                                            |   |                                              |   |                           |   |                                                              |        |                                               |   |                                                          |   |                           |
| 8                                         | Sharing knowledge & best practice on climate risk management                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 5<br>7                                           | Social<br>Social<br>Educational<br>Behavioral                                              |                                                  |  |   |                                                                 |        |                                                                 |   |                                      |        |                                                                 |   |                                                     |   |                         |   |                                             |         |                                                                                            |   |                                        |   |                                        |   |                                            |        |                                                                                            |   |                                              |   |                           |   |                                                              |        |                                               |   |                                                          |   |                           |
| 9                                         | Volume, quality and access of public and private finance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 8                                                | Institutional<br>Economic                                                                  |                                                  |  |   |                                                                 |        |                                                                 |   |                                      |        |                                                                 |   |                                                     |   |                         |   |                                             |         |                                                                                            |   |                                        |   |                                        |   |                                            |        |                                                                                            |   |                                              |   |                           |   |                                                              |        |                                               |   |                                                          |   |                           |
| OECD DAC Rio Markers for Climate Handbook | <p>The OECD Development Assistance Committee (DAC) gathers on an annual basis statistics on official development assistance (ODA) and other resource flows to developing countries from bilateral and multilateral development co-operation providers. To be eligible for the adaptation marker, interventions should:</p> <ul style="list-style-type: none"><li>Set out the context of risks, vulnerabilities and impacts related to climate variability and climate change</li><li>State the intent to address the identified risks, vulnerabilities and impacts in project documentation</li><li>Demonstrate a clear and direct link between the identified risks, vulnerabilities and impacts and the specific project activities</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                  |                                                                                            |                                                  |  |   |                                                                 |        |                                                                 |   |                                      |        |                                                                 |   |                                                     |   |                         |   |                                             |         |                                                                                            |   |                                        |   |                                        |   |                                            |        |                                                                                            |   |                                              |   |                           |   |                                                              |        |                                               |   |                                                          |   |                           |

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|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <ul style="list-style-type: none"> <li>• Score of 2 where principal objective of intervention is to increase resilience</li> <li>• Score of 1 where significant objective is to increase resilience</li> <li>• Score of 0 where activity does not target climate resilience in any significant way</li> </ul> <p>For WASH:</p> <ul style="list-style-type: none"> <li>• Water supply: investments in improving the climate resilience of the water supply and sanitation services; investments in increasing storage to ensure access where climate change is expected to increase water stress and shortages.</li> <li>• Sanitation: treatment of water resources with the introduction of recycled water; wastewater management systems, or systems designed to protect the quality and quantity of existing water resources in the face of climate change, e.g. through the recycling of wastewater.</li> </ul> |
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## Appendix 7: Enterprise/Intervention level indicators to determine contribution of an enterprise or intervention to climate resilience

| Metric                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Notes                                            |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
| Hazards identified as high risk                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | e.g. drought, flooding                           |
| List of climate related interventions and % progress made over reporting year                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Climate proofing infrastructure or service       |
| Number of individuals made more resilient to climate change (based on number of people receiving support through Level 2 and Level 3 interventions)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Data for Level 1 interventions already collected |
| <p>Additional metrics can be collected according to selected adaptation activities and could include:</p> <ul style="list-style-type: none"> <li>- Additional storage capacity installed [m<sup>3</sup>]</li> <li>- Water use reductions/savings [m<sup>3</sup>]</li> <li>- Flood proof toilets installed [no]</li> <li>- Flood protection infrastructure installed [%]</li> <li>- Sites designed with additional adaptation considerations [no]</li> <li>- Time saved [hr]</li> <li>- Catchment management strategy implemented [%]</li> <li>- Wastewater treated/ available for reuse [m<sup>3</sup>]</li> <li>- Waste contained, collected &amp; safely treated [m<sup>3</sup>]</li> <li>- Improved water quality downstream [change in BOD/COD]</li> <li>- Cross-cutting improvements on livelihood, soil [e.g. trees planted/compost produced]</li> <li>- Feed stock produced [t]</li> </ul> | To be developed at enterprise/intervention level |

## Appendix 8: Free software tools to identify physical climate risk

| Name                                                                                                                                                                                                                                                                                                                                                                                                            | Hazards covered                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Inputs                                                   | Outputs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Think Hazard<br><a href="https://thinkhazard.org/en/">https://thinkhazard.org/en/</a>                                                                                                                                                                                                                                                                                                                           | Flooding (urban, coastal and river)<br>Wildfire<br>Water scarcity<br>Extreme heat<br>Landslide<br>Tsunami<br>Cyclone<br>Volcano<br>Earthquake                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | National, provincial or district name                    | Exposure to hazards: High/ medium/ low/ very low<br><br>Clicking on each hazard gives recommendations and guidance on how to reduce the risk from each hazard within the project area, and provides links to additional resources such as country risk assessments, best practice guidance, additional websites.<br><br>Also highlights how each hazard may change in the future as a result of climate change (though no reference to specific climate scenario).                                          |
| WRI Aqueduct Water Risk Tool<br><a href="https://www.wri.org/data/aqueduct-water-risk-atlas">https://www.wri.org/data/aqueduct-water-risk-atlas</a><br><br>Details of methodology and scoring:<br><a href="https://www.wri.org/research/aqueduct-30-updated-decision-relevant-global-water-risk-indicators">https://www.wri.org/research/aqueduct-30-updated-decision-relevant-global-water-risk-indicators</a> | Overall physical water risk or can focus on particular aspect:<br><i>Physical risks quantity</i> <ul style="list-style-type: none"> <li>- Water stress</li> <li>- Water depletion</li> <li>- Interannual variability</li> <li>- Seasonal variability</li> <li>- Groundwater table decline</li> <li>- Riverine flood risk</li> <li>- Coastal flood risk</li> <li>- Drought risk</li> </ul> <i>Physical risks quality</i> <ul style="list-style-type: none"> <li>- Untreated wastewater connected</li> <li>- Coastal Eutrophication potential</li> </ul> <i>Regulatory and Reputational risk</i> <ul style="list-style-type: none"> <li>- Unimproved/ no drinking water</li> </ul> | Enter on map, upload file or enter address/ co-ordinates | Baseline score: <ul style="list-style-type: none"> <li>- overall physical water risk (low, low-medium, medium-high, high, extremely high)</li> <li>- for specific aspect (low, low-medium, medium-high, high, extremely high)</li> </ul> Future score: <ul style="list-style-type: none"> <li>- based on 3 scenarios (optimistic, BAU, pessimistic) based on IPCC RCP scenarios</li> <li>- for overall physical water risk or for specific aspects presented as absolute or change from baseline</li> </ul> |

|                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                           | <ul style="list-style-type: none"> <li>- Unimproved/ no sanitation</li> <li>- Peak RepRisk Country ESG Risk Index</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <p>WWF Water Risk Filter<br/> <a href="https://waterriskfilter.org/">https://waterriskfilter.org/</a></p> | <p>Overall basin risk or can focus on a particular aspect:</p> <p>Physical risk</p> <ul style="list-style-type: none"> <li>- Water scarcity (and sub categories)</li> <li>- Flooding (and sub categories)</li> <li>- Water quality ((and sub categories)</li> <li>- Ecosystem services status</li> <li>- Biodiversity</li> </ul> <p>Regulatory Risk</p> <ul style="list-style-type: none"> <li>- Enabling Environment</li> <li>- Institutions and Governance</li> <li>- Management Instruments</li> <li>- Infrastructure and Finance</li> </ul> <p>Reputation Risk</p> <ul style="list-style-type: none"> <li>- Cultural importance</li> <li>- Biodiversity importance</li> <li>- Media Scrutiny</li> <li>- Conflict</li> </ul> | <p>Need to create a user account, then enter details of company and sites associated with that company. Can enter sector and location of sites.</p> | <p>Risk analysis section gives:</p> <ul style="list-style-type: none"> <li>- Map with baseline rating for overall basin risk and particular aspects (very low risk to very high risk across 5 categories)</li> <li>- Details across different sites</li> <li>- Future rating based on 3 different climate scenarios for overall risk and particular aspects</li> </ul> <p>By answering questions about water use at a particular site, more detailed analysis/ scoring can be generated. Unsure how useful this is for A4A as seems more tailored for sectors other than WASH.</p> |

## Appendix 9: Long list of possible mitigation & adaptation activities for WASH enterprises and interventions

### Mitigation: Strategies, interventions, activities, measures likely to reduce greenhouse gas (GHG) emissions

|                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Transition to <b>renewable energy</b>                                                                                                                                                                                                                                   | e.g. <ul style="list-style-type: none"> <li>○ Solar water pumps replacing diesel/ electrical pump</li> <li>○ Switching to renewable (off)grid energy supply</li> <li>○ Electric vehicles replacing petrol or diesel-powered vehicles</li> </ul>                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Efficiency improvements, energy saving</b>                                                                                                                                                                                                                           | e.g. <ul style="list-style-type: none"> <li>○ Reduction of water leakages, NRW, to reduce the energy consumption for water treatment &amp; pumping</li> <li>○ Energy saving measures</li> <li>○ Route optimisation</li> <li>○ Decentralized water supply with a lower energy consumption for pumping &amp; treatment or reduced truck water supply in comparison to centralized piped water supply</li> <li>○ Nature-based solutions for (waste)water treatment, like bank filtration, constructed wetlands, water retention measures</li> </ul>                                                                   |
| <b>Drinking water</b> projects that reduce the need to boil water                                                                                                                                                                                                       | e.g. <ul style="list-style-type: none"> <li>○ Household water treatment solutions for places without/with challenging freshwater supply: low energy water purification equipment</li> <li>○ Pipeline extensions and new connections</li> <li>○ New boreholes/rehabilitation of existing boreholes, supplying drinking water quality</li> </ul>                                                                                                                                                                                                                                                                     |
| <b>Value chain</b> related emission reduction                                                                                                                                                                                                                           | e.g. <ul style="list-style-type: none"> <li>○ Switching to locally produced/available material</li> <li>○ Reduce waste, increase reuse</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Sanitation projects <ul style="list-style-type: none"> <li>- that <b>reduce methane/N<sub>2</sub>O</b> emissions from anaerobic decomposition of organic matter;</li> <li>- that reduce CO<sub>2</sub> emissions by turning waste into <b>reuse products</b></li> </ul> | e.g. <ul style="list-style-type: none"> <li>○ dry sanitation systems with aerobic decomposition processes</li> <li>○ wastewater/faecal sludge treatment that <ul style="list-style-type: none"> <li>○ reduces pollution of aquatic ecosystems (reduces eutrophication and related methane emissions)</li> <li>○ captures and utilise biogas (methane) generated</li> </ul> </li> <li>○ Transformation of waste products into fuel, like briquettes, to replace other fuels</li> <li>○ Transformation of waste products into compost/fertilizer that additionally sequesters carbon when applied to soil</li> </ul> |

## Adaptation: Strategies, interventions, activities, measures to increase a company's resilience and that of the communities/households they serve (Adaptation - Level 2).

The following is a non-exhaustive list of adaptation activities to respond to climate risks that were identified in a climate risk assessment for to the location of operations. Activities are structured according to vulnerability domain they respond to. Activities can be carried out at the enterprise, customer, community or enabling environment level.

**Floods:** River/urban/coastal flood, extreme runoff

|                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
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| <b>Water resources &amp; environmental resilience</b> | e.g. <ul style="list-style-type: none"> <li>• Construction of water retention measures (dams, stormwater retention basins, floodplain restoration) to regulate runoff and reduce peak flows of heavy rain events</li> <li>• Afforestation to increase water storage in vegetation, to increase infiltration into soils and to reduce soil erosion</li> <li>• Construction of buffer zones around water source to avoid contamination from run-off</li> <li>• Protect coastlines with mangrove forests, dikes</li> </ul>                                                                                                                                |
| <b>Social resilience</b>                              | e.g. <ul style="list-style-type: none"> <li>• Capacity building with customers or communities on how to deal with flood impacts</li> <li>• Ensure affordability/payment flexibility of services/ products, e.g. by facilitating access to (micro)credits</li> <li>• Hotline for pipe-breaks, overflowing pits</li> <li>• HH water treatment solutions</li> </ul>                                                                                                                                                                                                                                                                                       |
| <b>Technical &amp; supply-chain resilience</b>        | e.g. <ul style="list-style-type: none"> <li>• Adapted design of infrastructure to resist floods <ul style="list-style-type: none"> <li>○ Construction above flood level</li> <li>○ Usage of robust materials and reinforced assembling accessories</li> <li>○ Ensure vehicles can operate in flood conditions</li> </ul> </li> <li>• Sourcing of alternative suppliers and materials in case of supply chain disruption</li> <li>• Stocking of critical supplies</li> <li>• Installation of back-up power source to ensure services can continue in times of grid outage</li> <li>• Back-up water source: storage tank/alternative borehole</li> </ul> |
| <b>Institutional/Management resilience</b>            | e.g. <ul style="list-style-type: none"> <li>• Building capacities to deal with climate change impacts with institutional stakeholders through sector engagement</li> <li>• Pre-hazard planning: Pit latrine/ septic tank emptying before the start of rainy/ flood seasons</li> <li>• Develop/gain access to early warning systems and emergency plans</li> </ul>                                                                                                                                                                                                                                                                                      |
| <b>Financial resilience</b>                           | e.g. <ul style="list-style-type: none"> <li>• In case of operations in various places – prioritise where investments should go based on flood risk</li> <li>• Take out flood risk insurance</li> <li>• Set aside emergency budget</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                           |

**Water availability risks:** Drought, water scarcity, groundwater reduction

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|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Water resources &amp; environmental resilience</b> | e.g. <ul style="list-style-type: none"> <li>• Ensure alignment of operations with watershed management strategy, monitor sustainable abstraction</li> <li>• Construction of rainwater collection, retention and infiltration measures (infiltration basins, sand dams, storage tanks, reservoirs, wetlands)</li> <li>• Afforestation: vegetation can enhance rainfall locally and in down-wind regions by increasing air moisture. Note: afforestation can have negative impacts on the water balance, if water intensive tree are planted as well as in the first years after planting</li> </ul>                                                                                                                 |
| <b>Social resilience</b>                              | e.g. <ul style="list-style-type: none"> <li>• Capacity building on how to deal with water availability risks for customers or communities: inform on rainwater harvesting solutions, water saving measures</li> <li>• Reward low water consumption</li> <li>• Ensure affordability/payment flexibility of services/ products, e.g. by facilitating access to (micro-)credits</li> <li>• (how to respond to a change in market demand? E.g. if more irrigation water is needed?)</li> </ul>                                                                                                                                                                                                                         |
| <b>Technical &amp; supply-chain resilience</b>        | e.g. <ul style="list-style-type: none"> <li>• Implement water consumption monitoring and saving measures, like smart water meters, water saving technologies</li> <li>• switching to dry sanitation solutions</li> <li>• Sourcing of alternative suppliers and materials in case of supply chain disruption</li> <li>• Stocking of critical supplies</li> <li>• Back-up power source to ensure services can continue in times of grid outage</li> <li>• Back-up water source: storage tank/alternative borehole</li> <li>• Drill boreholes deeper than currently required in anticipation of declining groundwater levels (last resort solution)</li> <li>• Support water reuse and greywater recycling</li> </ul> |
| <b>Institutional/Management resilience</b>            | e.g. <ul style="list-style-type: none"> <li>• Build capacities to deal with water availability risks with other stakeholders through sector engagement</li> <li>• Connect at watershed level with other stakeholder</li> <li>• Pre-hazard planning: ration water consumption if dry spell is expected</li> <li>• Develop early warning systems and emergency plans</li> </ul>                                                                                                                                                                                                                                                                                                                                      |
| <b>Financial resilience</b>                           | e.g. <ul style="list-style-type: none"> <li>• In case of operations in various places – prioritise where investments should go based on water availability risks</li> <li>• Take out climate risk insurance</li> <li>• Set aside emergency budgets</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

**Water quality risks:** Saltwater intrusion, surface water quality risks, groundwater quality risks

|                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Water resources &amp; environmental resilience</b> | <p>Saltwater intrusion, groundwater quality risks<br/>- depending on type of risk and origin - e.g.</p> <ul style="list-style-type: none"> <li>• ensure sustainable abstraction and management of groundwater to avoid overexploitation, favouring saltwater intrusion, contaminant accumulation and oxidation</li> <li>• Recharge aquifers through infiltration basins, managed aquifer recharge</li> <li>• Prevent groundwater water pollution from human waste through adequate sanitation systems</li> </ul> <p>Surface water quality risks<br/>-depending on type of risk and origin - e.g.</p> <ul style="list-style-type: none"> <li>• Protect water sources from (agricultural) runoff through vegetation buffer strips</li> <li>• Prevent surface water pollution from human waste through adequate sanitation</li> </ul> |
| <b>Social resilience</b>                              | <p>e.g.</p> <ul style="list-style-type: none"> <li>• Capacity building on how to deal with water quality risks for customers or communities</li> <li>• Provision of water filters for treatment at home</li> <li>• Ensure affordability/payment flexibility of services/ products, e.g. by facilitating access to (micro-)credits</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Technical &amp; supply-chain resilience</b>        | <p>e.g.</p> <ul style="list-style-type: none"> <li>• Usage of materials that can withstand water quality changes</li> <li>• Identification of alternative technologies for water treatment</li> <li>• Preparing back-up water source: storage tank/alternative borehole</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Institutional/Management resilience</b>            | <p>e.g.</p> <ul style="list-style-type: none"> <li>• Building capacities to deal with water quality risks with institutional stakeholders, e.g. through TA/sector engagement</li> <li>• Develop early warning systems and emergency plans</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Financial resilience</b>                           | <p>e.g.</p> <ul style="list-style-type: none"> <li>• In case of operations in various places – prioritise where investments should go based on climate risk</li> <li>• Take out climate risk insurance</li> <li>• Set aside emergency budget</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

**Storms:** Cyclones/ hurricanes/storms, hail

|                                                       |                                                                                                                                        |
|-------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| <b>Water resources &amp; environmental resilience</b> | <p>e.g.</p> <ul style="list-style-type: none"> <li>• Mangrove replanting, afforestation to reduce soil erosion, break winds</li> </ul> |
| <b>Social resilience</b>                              | e.g.                                                                                                                                   |

|                                                |                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                | <ul style="list-style-type: none"> <li>• Capacity building on how to deal with storms for customers or communities</li> <li>• Ensure affordability/payment flexibility of services/ products, e.g. by facilitating access to (micro-)credits</li> </ul>                                                                                                                                                                    |
| <b>Technical &amp; supply-chain resilience</b> | e.g. <ul style="list-style-type: none"> <li>• Adapted design of infrastructure to resist storms, usage of robust materials and reinforced assembling accessories</li> <li>• Sourcing of alternative suppliers and materials in case of supply chain disruption</li> <li>• Stocking of critical supplies</li> <li>• Installation of back-up power source to ensure services can continue in times of grid outage</li> </ul> |
| <b>Institutional/Management resilience</b>     | e.g. <ul style="list-style-type: none"> <li>• Building capacities to deal with storms with institutional stakeholders, e.g. through TA/sector engagement</li> <li>• Develop early warning systems and emergency plans</li> </ul>                                                                                                                                                                                           |
| <b>Financial resilience</b>                    | e.g. <ul style="list-style-type: none"> <li>• In case of operations in various places – prioritise where investments should go based on climate risk</li> <li>• Take out climate risk insurance</li> <li>• Set aside emergency budget</li> </ul>                                                                                                                                                                           |

#### Extreme heat events

|                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                         |
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| <b>Water resources &amp; environmental resilience</b> | e.g. <ul style="list-style-type: none"> <li>• Afforestation to provide shade, cool down the environment</li> </ul>                                                                                                                                                                                                                                                                                                      |
| <b>Social resilience</b>                              | e.g. <ul style="list-style-type: none"> <li>• Capacity building on how to deal with extreme heat with customers or communities</li> </ul>                                                                                                                                                                                                                                                                               |
| <b>Technical &amp; supply-chain resilience</b>        | e.g. <ul style="list-style-type: none"> <li>• Adapted design of infrastructure to provide shade to customers and employees, reduce the time the spent in heat</li> <li>• Sourcing of alternative suppliers and materials in case of supply chain disruption</li> <li>• Stocking of critical supplies</li> <li>• Installation of back-up power source to ensure services can continue in times of grid outage</li> </ul> |
| <b>Institutional/Management resilience</b>            | e.g. <ul style="list-style-type: none"> <li>• Building capacities to deal with extreme heat with institutional stakeholders, e.g. through TA/sector engagement</li> <li>• Develop early warning systems and emergency plans</li> </ul>                                                                                                                                                                                  |
| <b>Financial resilience</b>                           | e.g. <ul style="list-style-type: none"> <li>• In case of operations in various places – prioritise where investments should go based on climate risk</li> <li>• Take out climate risk insurance</li> <li>• Set aside emergency budget</li> </ul>                                                                                                                                                                        |

**Other climate related disasters: Wildfires, landslides**

|                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Water resources &amp; environmental resilience</b> | <p>Wildfire</p> <p>-depending on type of risk and origin - e.g.</p> <ul style="list-style-type: none"> <li>• Advocate for sustainable forest and land-use management</li> <li>• Ensure availability of moisture in the environment by capturing rainfall, storing it in water bodies like check-dams or infiltrating it in the ground</li> <li>• Wetland restoration</li> </ul> <p>Landslides</p> <p>-depending on type of risk and origin - e.g.</p> <ul style="list-style-type: none"> <li>• Advocate for sustainable forest and land-use management</li> <li>• Afforestation to stabilize slopes</li> <li>• Protect water source with buffer stripes</li> </ul> |
| <b>Social resilience</b>                              | <p>e.g.</p> <ul style="list-style-type: none"> <li>• Capacity building on how to deal with other related disasters for customers or communities</li> <li>• Ensure affordability/payment flexibility of services/ products, e.g. by facilitating access to (micro-)credits</li> </ul>                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Technical &amp; supply-chain resilience</b>        | <p>e.g.</p> <ul style="list-style-type: none"> <li>• Adapted design of infrastructure, usage of robust materials and reinforced assembling accessories</li> <li>• Identifying alternative suppliers and sources of materials in case of supply chain disruption</li> <li>• Stocking of critical supplies</li> <li>• Installation of back-up power source to ensure services can continue in times of grid outage</li> </ul>                                                                                                                                                                                                                                        |
| <b>Institutional/Management resilience</b>            | <p>e.g.</p> <ul style="list-style-type: none"> <li>• Building capacities to deal with climate change disasters with institutional stakeholders, e.g. through TA/sector engagement</li> <li>• Develop early warning systems and emergency plans</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Financial resilience</b>                           | <p>e.g.</p> <ul style="list-style-type: none"> <li>• In case of operations in various places – prioritise where investments should go based on climate risk</li> <li>• Take out climate risk insurance</li> <li>• Set aside emergency budget</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                            |

## Projects with key focus on building resilience of WASH services (Adaptation - Level 3)

Aqua for All built on the following two definitions to categorize high focus adaptation projects:

World Bank, Resilience Rating System, 2021: *“The project is transformational in improving resilience, influencing resilience or adaptation beyond direct outputs by affecting institutions, policies, incentives, capacities, and so on.”*

Race to Resilience, Metrics Framework, 2021: *“The project has a resilience-building focus, whether targeting individuals, communities, regions, natural systems or broader institutions”*

|                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Projects implementing any activities listed under level 2, with exclusive focus on climate resilience of all project activities                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Projects/enterprises that focus on developing innovations for a climate resilient WASH sector                                                                                                                                                                                             | e.g. <ul style="list-style-type: none"> <li>• nutrient/ energy/ water recovery from greywater/wastewater/ faecal sludge</li> <li>• disaster-proof WASH infrastructure, technology, material and service design (this also means that it should be easy to replace in case it breaks)</li> <li>• resource efficient WASH infrastructure, technology, material and service design</li> <li>• nature-based WASH infrastructure, technology, material and service design</li> <li>• sustainable groundwater extraction technologies or approaches</li> <li>• water saving/leakage reduction/consumption monitoring technologies or approaches</li> <li>• approaches to diversify drinking water sources</li> </ul> |
| Projects with outputs that improve resilience or adaptation beyond direct outputs, by affecting institutions, policies, incentives, capacities.<br><br>Requirements: need to have a WASH service provider as partial beneficiary and a long-term financing & management strategy in place | e.g. <ul style="list-style-type: none"> <li>• Design/testing of climate risk insurances or emergency funds</li> <li>• Working with institutions on climate change topics, emergency response planning</li> <li>• Sector/stakeholder coordination</li> <li>• Design and testing of financial instruments to increase availability and accessibility of climate funding for WASH</li> <li>• Catchment management strategy planning and implementation</li> <li>• ...</li> </ul>                                                                                                                                                                                                                                  |

\*Note: for these to be considered adaptation projects/measures, they must respond to current and/ or expected effects of climate change at the location of implementation

## **Two in one: Projects with adaptation and mitigation potential**

Amongst the above listed activities there are many that are listed double, as they have both, adaptation and mitigation potential. Here just a few:

- nutrient/ energy/ water recovery from waste water/ faecal sludge treatment
- wastewater/faecal sludge treatment to reduce pollution of aquatic ecosystems
- off-grid, renewable energy supply
- reduction in water leakages/water consumption monitoring
- Switching to locally produced/available material
- Most nature-based solutions
- Water retention features can protect from floods and recharge groundwater if strategically positioned

Rainwater harvesting during rainy seasons can be a back-up water source for (non)drinking water and agricultural use in times of low water availability or water quality challenges, reduce costs for customers and pressure on the aquifer