Reporting on global SDG indicator 6.5.2

TEMPLATE of the second cycle for reporting

Content of the template

The template is divided into four parts:

- Section I  - Calculation of SDG indicator 6.5.2
- Section II  - Information on each transboundary basin or group of basins
- Section III - General information on transboundary water management at the national level
- Section IV - Final questions

Country name: [Zimbabwe]
I. Calculation of Sustainable Development Goal indicator 6.5.2

Methodology

1. Using the information gathered in section II, the information gathered in this section allows for the calculation of Sustainable Development Goal global indicator 6.5.2, which is defined as the proportion of transboundary basin area with an operational arrangement for water cooperation.

2. The step-by-step monitoring methodology for indicator 6.5.2, developed by UNECE and UNESCO in the framework of UN-Water, should be referred to for details on the necessary data, the definitions and the calculation.\(^a\)

3. The value of the indicator at the national level is derived by adding up the surface area in a country of those transboundary basins (river and lake basins and aquifers) that are covered by an operational arrangement and dividing the area obtained by the aggregate total area in a country of all transboundary basins (both river and lake basins, and aquifers).

4. Transboundary basins are basins of transboundary waters, that is, of any surface waters (notably rivers, lakes) or groundwaters which mark, cross or are located on boundaries between by two or more States. For the purpose of the calculation of this indicator, for a transboundary river or lake, the basin area is determined by the extent of its catchment. For groundwater, the area to be considered is the extent of the aquifer.

5. An “arrangement for water cooperation” is a bilateral or multilateral treaty, convention, agreement or other formal arrangement among riparian countries that provides a framework for cooperation on transboundary water management.

6. For an arrangement to be considered “operational” all the following criteria need to be in place in practice:

   (a) There is a joint body, joint mechanism or commission (e.g., a river basin organization) for transboundary cooperation (criterion 1);

   (b) There are regular (at least once per year) formal communications between riparian countries in form of meetings (either at the political or technical level) (criterion 2);

   (c) Joint objectives, a common strategy, a joint or coordinated management plan, or an action plan have been agreed upon by the riparian countries (criterion 3);

   (d) There is a regular (at least once per year) exchange of data and information (criterion 4).

Calculation of indicator 6.5.2

7. Please list in the tables below the transboundary basins (rivers and lakes and aquifers) in your country’s territory and provide the following information for each of them:

   (a) The country/ies with which the basin is shared;

   (b) The surface area of the basin (the catchment of rivers or lakes and the aquifer in the case of groundwater) within the territory of your country (in square kilometres (km\(^2\)));

   (c) Whether a map and/or a geographical information system (GIS) shapefile of the basin has been provided;

   (d) Whether there is an arrangement in force for the basin;

   (e) The verification of each of the four criteria to assess operationality;

\(^a\) Available from the UN-Water website: https://www.sdg6monitoring.org/indicators/target-65/indicators652/ (updated version "2020").
(f) The surface area of the basin within the territory of your country which is covered by a cooperation arrangement that is operational according to the above criteria.

8. In case an operational arrangement is in place only for a sub-basin or a portion of a basin, please list this sub-basin just after the transboundary basin it is part of. In case there is an operational arrangement for the whole basin, do not list sub-basins in the table below.
**Table 1**

Transboundary river or lake basin (please add rows as needed)

<table>
<thead>
<tr>
<th>Name of transboundary river or lake basin/sub-basin</th>
<th>It is a basin or a sub-basin?</th>
<th>Countries shared with</th>
<th>Surface area of the basin/sub-basin (in km²) within the territory of the country</th>
<th>Map and/or GIS shapefile provided (yes/no)</th>
<th>Covered by an arrangement entirely, partly, no) (Ref. to questions in sect. II)</th>
<th>Criterion 1 applied (yes/no) (Ref. to questions in sect. II)</th>
<th>Criterion 2 applied (yes/no) (Ref. to questions in sect. II)</th>
<th>Criterion 3 applied (yes/no) (Ref. to questions in sect. II)</th>
<th>Criterion 4 applied (yes/no) (Ref. to questions in sect. II)</th>
<th>Surface area of the basin/sub-basin (in km²) covered by an operational arrangement within the territory of the country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Buzi Basin</td>
<td></td>
<td>Mozambique</td>
<td>3,733</td>
<td>Yes</td>
<td>Entirely</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>3,733</td>
</tr>
<tr>
<td>Limpopo Basin</td>
<td></td>
<td>Botswana, Mozambique, South Africa</td>
<td>62,851</td>
<td>Yes</td>
<td>Entirely</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>62,851</td>
</tr>
<tr>
<td>Okavango Basin</td>
<td></td>
<td>Angola, Botswana and Namibia</td>
<td>21,891</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>-</td>
</tr>
<tr>
<td>Pungwe Basin</td>
<td></td>
<td>Mozambique</td>
<td>1,932</td>
<td>Yes</td>
<td>Entirely</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>1,932</td>
</tr>
</tbody>
</table>

* List sub-basins after the basin they belong to.
<table>
<thead>
<tr>
<th>Name of transboundary river or lake basin/sub-basin</th>
<th>Is it a basin or a sub-basin?</th>
<th>Countries shared with</th>
<th>Surface area of the basin/sub-basin (in km²) within the territory of the country</th>
<th>Map and/or GIS shapefile provided (yes/no)</th>
<th>Covered by an arrangement entirely, partly, no) (Ref. to questions in sect. II)</th>
<th>Criterion 1 applied (yes/no) (Ref. to questions in sect. II)</th>
<th>Criterion 2 applied (yes/no) (Ref. to questions in sect. II)</th>
<th>Criterion 3 applied (yes/no) (Ref. to questions in sect. II)</th>
<th>Criterion 4 applied (yes/no) (Ref. to questions in sect. II)</th>
<th>Surface area of the basin/sub-basin (in km²) covered by an operational arrangement within the territory of the country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Honde Sub-Basin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Save Basin</td>
<td></td>
<td>Mozambique</td>
<td>84,550</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>215,800</td>
</tr>
<tr>
<td>Save Sub-Basin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Runde Sub-Basin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zambezi Basin</td>
<td></td>
<td>Angola, Botswana, Malawi, Mozambique, Namibia, Tanzania, Zambia</td>
<td>215,800</td>
<td>Yes</td>
<td>Entirely</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>215,800</td>
</tr>
</tbody>
</table>

(A) Total surface area of transboundary basins/sub-basins of rivers and lakes covered by operational arrangements within the territory of the country (in km²) (do not double count sub-basins) 284,316

(B) Total surface area of transboundary basins of rivers and lakes within the territory of the country (in km²) (do not double count sub-basins) 390,757
<table>
<thead>
<tr>
<th>Name of the transboundary aquifer</th>
<th>Countries shared with</th>
<th>Surface area of the aquifer(^c) (in km(^2)) within the territory of the country</th>
<th>Map and/ or GIS shapefile provided (yes/no)</th>
<th>Covered by an aquifer specific arrangement entirely, partly, no (Ref. to questions in sect. IJ)</th>
<th>Covered within an arrangement not specific to the aquifer(^d) entirely, partly, no (Ref. to questions in sect. IJ)</th>
<th>Criterion 1 applied (yes/no) (Ref. to questions in sect. II)</th>
<th>Criterion 2 applied (yes/no) (Ref. to questions in sect. II)</th>
<th>Criterion 3 applied (yes/no) (Ref. to questions in sect. II)</th>
<th>Criterion 4 applied (yes/no) (Ref. to questions in sect. II)</th>
<th>Surface area of the aquifer (in km(^2)) covered by an operational arrangement within the territory of the country</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuli-Karoo Aquifer</td>
<td>Botswana and South Africa</td>
<td>7,013.8</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Limpopo Basin Aquifer</td>
<td>Mozambique and South Africa</td>
<td>7,399.4</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Eastern Kalahari Karoo Aquifer</td>
<td>Botswana</td>
<td>19,802.1</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Save Valley Aluvial Aquifer</td>
<td>Mozambique</td>
<td>4,195.5</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Middle Zambezi Aquifer</td>
<td>Zambia</td>
<td>4,224.1</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Nata Karoo Sub-Basin/Caprivi Deep Seated Aquifer</td>
<td>Botswana, Namibia, Zambia and Zimbabwe</td>
<td>10.2</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>(C) Sub-total: surface area of transboundary aquifers covered by operational arrangements (in km(^2))</td>
<td></td>
<td>18,647.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^c\) For a transboundary aquifer, the extent is derived from the aquifer system delineation which is commonly done relying on information of the subsurface (notably the extent of geological formations). As a general rule, the delineation of aquifer systems is based on the delineation of the extent of the hydraulically connected water-bearing geological formations. Aquifer systems are three-dimensional objects and the aquifer area taken into account is the projection on the land surface of the system. Ideally, when different aquifer systems not hydraulically connected are vertically superposed, the different relevant projected areas are to be considered separately, unless the different aquifer systems are managed conjunctively.

\(^d\) In the text of the agreement or arrangement or in the practice.
<table>
<thead>
<tr>
<th>Name of the transboundary aquifer</th>
<th>Countries shared with</th>
<th>Surface area of the aquifer(^c) (in km(^2)) within the territory of the country</th>
<th>Map and/or GIS shapefile provided (yes/no)</th>
<th>Covered by an aquifer specific arrangement entirely, partly, no) (Ref. to questions in sect. II)</th>
<th>Covered within an arrangement not specific to the aquifer(^d) entirely, partly, no) (Ref. to questions in sect. II)</th>
<th>Criterion 1 applied (yes/no) (Ref. to questions in sect. II)</th>
<th>Criterion 2 applied (yes/no) (Ref. to questions in sect. II)</th>
<th>Criterion 3 applied (yes/no) (Ref. to questions in sect. II)</th>
<th>Criterion 4 applied (yes/no) (Ref. to questions in sect. II)</th>
<th>Surface area of the aquifer (in km(^2)) covered by an operational arrangement within the territory of the country</th>
</tr>
</thead>
<tbody>
<tr>
<td>(D) Total surface area of transboundary aquifers (in km(^2))</td>
<td>42,645.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Indicator value for the country

Surface waters:
Percentage of surface area of transboundary basins of rivers and lakes covered by an operational arrangement:
\[ \frac{A}{B} \times 100 = 72.76 \]

Aquifers:
Percentage of surface area of transboundary aquifers covered by an operational arrangement:
\[ \frac{C}{D} \times 100 = 43.73 \]

Sustainable Development Goal indicator 6.5.2:
Percentage of surface area of transboundary basins covered by an operational arrangement:
N.B. Since the exact arial extents of the transboundary aquifers are still to be established, C and D are taken as 0
\[ \left( \frac{A + C}{B + D} \right) \times 100 = 69.90 \]

Spatial information
If a map (or maps) of the transboundary surface water catchments and transboundary aquifers (i.e., “transboundary basins”) is available, please consider attaching them. Ideally, shapefiles of the basin and aquifer delineations that can be viewed in GIS should be sent.

*Find accompanying this resport GIS Shapefiles with delineations of Zimbabwe’s transboundary basins and aquifers. It is important to note that all of Zimbabwe’s Rivers drain beyond the country’s borders.*

Additional information
If the respondent has comments that clarify assumptions or interpretations made for the calculation, or the level of certainty of the spatial information, please write them here:

- **Transboundary cooperation in water matters in the Southern African Development Community is conducted within the framework of the “Revised Protocol on Shared Watercourses”. The transboundary water agreements among SADC members states are guided by the principles enshrined in this protocol.**

- **The transboundary water agreements foster the creation of Basin Commissions (River Basin Organisation) that are mandated with the day to day management of the transboundary basins. The basin commissions are mandated with managing “watercourses”. The term “watercourse” as presented in the transboundary water agreements makes reference to all the waters in the basins, i.e. both surface and groundwater. No aquifer specific agreements are in place for transboundary aquifers.**

- **Currently the management of water resources affairs in the Buzi, Pungwe and Save Basins shared between Mozambique and Zimbabwe is being undertaken by the Mozambique-Zimbabwe Joint Water Commission. Transboundary water management agreements are in place for the Buzi and Pungwe Basins and work has began on the agreement for the Save**
Basin and the setting up of the Commission that will manage the three basins.

- The inclusion of the Nata Sub-Basin and the Eastern Kalahari Karoo Aquifer which are both part of the greater Okavango Basin heavily influenced the final indicator goal. The Nata Catchment and the Eastern Kalahari Karoo Aquifer were not included in the previous report. Since Zimbabwe is not signatory to the OKACOM Agreement, parts 3-12 of the questionnaire were not answered because they do not apply to the country’s status in OKACOM.

- The Southern Africa Development Community Groundwater Management Institute (SADC-GMI) is facilitating work looking into transboundary aquifer management across Southern Africa.

- The figures for the total areas of transboundary aquifers were estimated using GIS Shapefiles sourced from the International Groundwater Resources Assessment Centre (IGRAC) Global Groundwater Information System (GGIS) (https://www.un-igrac.org/global-groundwater-information-system-ggis). More work needs to be done to map the aquifers and fully understand the groundwater dynamics.
Does your country have transboundary agreements or arrangements for the protection and/or management of transboundary waters (i.e., rivers, lakes or groundwater), whether bilateral or multilateral?

Yes ✓/No

If yes, list the bilateral and multilateral agreements or arrangements (listing for each of the countries concerned): [fill in]

II. Questions for each transboundary basin, sub-basin, part of a basin, or group of basins (river, lake or aquifer)

Please complete this second section for each transboundary basin (river or lake basin, or aquifer), sub-basin, part of a basin or a group of basins covered by the same agreement or arrangement where conditions are similar.¹ In some instances, you may provide information on both a basin and one or more of its sub-basins or parts thereof, for example, where you have agreements² or arrangements on both the basin and its sub-basin. You may coordinate your responses with other States with which your country shares transboundary waters, or even prepare a joint report. General information on transboundary water management at the national level should be provided in section III and not repeated here.

Please reproduce this whole section with its questions for each transboundary basin, sub-basin, part of a basin or group of basins for which you will provide a reply.

a. Name of the transboundary basin, sub-basin, part of a basin or group of basins: [Buzi Basin]

List of the riparian States: [Mozambique and Zimbabwe]

In the case of an aquifer, what is the nature of the aquifer and its relation with the river or lake basin:

- Unconfined aquifer connected to a river or lake
- Unconfined aquifer with no or limited relation with surface water
- Confined aquifer connected to surface water
- Confined aquifer with no or limited relation with surface water
- Other

Please describe: [fill in]

Unknown

Percentage of your country’s territory within the basin, sub-basin, part of a basin or group of basins: [0.96%]

1. Is there one or more transboundary (bilateral or multilateral) agreement(s) or arrangement(s) on this basin, sub-basin, part of a basin or group of basins?

One or more agreements or arrangements exist and are in force Yes ✓

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¹ In principle, section II should be submitted for every transboundary basin, river, lake or aquifer, in the country, but States may decide to group basins in which their share is small or leave out basins in which their share is very minor, e.g., below 1 per cent.

² In section II, “agreement” covers all kinds of treaties, conventions and agreements ensuring cooperation in the field of transboundary waters. Section II can also be completed for other types of arrangements, such as memorandums of understanding.
Agreement or arrangement developed but not in force

Agreement or arrangement developed, but not in force for all riparians

*Please insert the name of the agreement(s) or arrangement(s) [fill in]*

Agreement or arrangement is under development

No agreement or arrangement

*If there is no agreement or arrangement or it is not in force, please explain briefly why not and provide information on any plans to address the situation.* [fill in]

If there is no agreement or arrangement and no joint body or mechanism for the transboundary basin, sub-basin, part of a basin or group of basins then jump to question 4; if there is no agreement or arrangement, but a joint body or mechanism then go to question 3.

Questions 2 and 3 to be completed for each bilateral or multilateral agreement or arrangement in force in the transboundary basin, sub-basin, part of a basin or group of basins.

2. (a) Does this agreement or arrangement specify the area subject to cooperation?

Yes ✓

If yes, does it cover the entire basin or group of basins and all riparian States?

Yes ✓

Additional explanations? [The agreement covers the entire Buzi Basin shared between Mozambique and Zimbabwe]

Or, if the agreement or arrangement relates to a sub-basin, does it cover the entire sub-basin?

N/A

Additional explanations? []

Which States (including your own) are bound by the agreement or arrangement? (Please list): [Mozambique and Zimbabwe]

(b) If the agreement or arrangement relates to a river or lake basin or sub-basin, does it also cover aquifers?

Yes ✓

If yes, please list the aquifers covered by the agreement or arrangement: [The agreement highlights the “Monitoring of Groundwater Quality and Quantity” and does not name specific aquifers in the Buzi Basin (None of the aquifers presented in Section I are located in the Buzi Basin)]

(c) What is the sectoral scope of the agreement or arrangement?

All water uses ✓

A single water use or sector

Several water uses or sectors

If one or several water uses or sectors, please list (check as appropriate):

**Water uses or sectors**

Industry ✓
Agriculture
Transport (e.g., navigation)
Households
Energy: hydropower and other energy types
Fisheries
Tourism
Nature protection
Other (please list): [mining, livestock and afforestation]

(d) What topics or subjects of cooperation are included in the agreement or arrangement?

**Procedural and institutional issues**
- Dispute and conflict prevention and resolution
- Institutional cooperation (joint bodies)
- Consultation on planned measures
- Mutual assistance

**Topics of cooperation**
- Joint vision and management objectives
- Joint significant water management issues
- Navigation
- Human health
- Environmental protection (ecosystem)
- Water quality
- Water quantity or allocation
- Cooperation in addressing floods
- Cooperation in addressing droughts
- Climate change adaptation

**Monitoring and exchange**
- Joint assessments
- Data collection and exchange
- Joint monitoring
- Maintenance of joint pollution inventories
- Elaboration of joint water quality objectives
- Common early warning and alarm procedures
- Exchange of experience between riparian States
- Exchange of information on planned measures

**Joint planning and management**
Development of joint regulations on specific topics ✓
Development of international or joint river, lake or aquifer basin management or action plans ✓
Management of shared infrastructure ✓
Development of shared infrastructure ✓
Other (please list): [fill in]

(e) What are the main difficulties and challenges that your country faces with the agreement or arrangement and its implementation, if any?
- Aligning implementation of agreement or arrangement with national laws, policies and programmes
- Aligning implementation of agreement or arrangement with regional laws, policies and programmes
- Lack of financial resources ✓
- Insufficient human capacity ✓
- Insufficient technical capacity ✓
- Tense diplomatic relations
- Non-participation of certain riparian countries in the agreement
- No significant difficulties
Other (please describe): [fill in]

(f) What are the main achievements in implementing the agreement or arrangements and what were the keys to achieving such success? [Mozambique and Zimbabwe have been able to exchange data and conduct joint studies and assessments in the Buzi Basin. This has been achieved due to the mutual understanding and consensus that exists between the two countries]

(g) Please attach a copy of the agreement or arrangement or provide the web address of the document (please attach document or insert web address, if applicable): [Please find attached the Buzi Basin Agreement]

3. Is your country a member of any joint body or mechanism for this agreement or arrangement?
Yes ✓/No
If no, why not? (please explain): [fill in]

Where there is a joint body or mechanism

(a) If there is a joint body or mechanism, which kind of joint body or mechanism (please tick one)?
- Plenipotentiaries
- Bilateral commission ✓
- Basin or similar commission
- Expert group meeting or meeting of national focal points
- Other (please describe): [fill in]
(b) Does the joint body or mechanism cover the entire transboundary basin, sub-basin, part of a basin or group of basins?

Yes ✓ / No □

(c) Which States (including your own) are members of the joint body or mechanism? (Please list): [Mozambique and Zimbabwe]

(d) Are there any riparian States that are not members of the joint body or mechanism? (please list): [No]

(e) If not all riparian States are members of the joint body or mechanism how does the joint body or mechanism cooperate with them?

- No cooperation □
- They have observer status □
- Other (please describe): []

(f) Does the joint body or mechanism have any of the following features (please tick the ones applicable)?

- A secretariat □
- If the secretariat is a permanent one, is it a joint secretariat or does each country host its own secretariat? (Please describe): [Work is underway to put in place a Basin Commission that will manage the Buzi, Pungwe and Save Basins. In the mean time, the Joint Water Commission of Mozambique and Zimbabwe is managing the affairs of the basins. The Joint Water Commission has coordinators in Mozambique and Zimbabwe who are members of staff in the countries’ departments responsible for water]
- A subsidiary body or bodies □
- Please list (e.g., working groups on specific topics): [The Joint Water Commission has working groups responsible for hydrology, water quality, planning and water supply.]
- Other features (please list): [fill in]

(g) What are the tasks and activities of this joint body or mechanism?³

- Identification of pollution sources □✓
- Data collection and exchange □✓
- Joint monitoring □✓
- Maintenance of joint pollution inventories □✓
- Setting emission limits □✓
- Elaboration of joint water quality objectives □✓
- Management and prevention of flood or drought risks □✓
- Preparedness for extreme events, e.g., common early warning and alarm procedures □✓

³ This may include tasks according to the agreement or tasks added by the joint body, or its subsidiaries. Both tasks which joint bodies coordinate and tasks which they implement should be included.
Surveillance and early warning of water related disease
Water allocation and/or flow regulation
Policy development
Control of implementation
Exchange of experience between riparian States
Exchange of information on existing and planned uses of water and related installations
Settling of differences and conflicts
Consultations on planned measures
Exchange of information on best available technology
Participation in transboundary EIA
Development of river, lake or aquifer basin management or action plans
Management of shared infrastructure
Addressing hydromorphological alterations
Climate change adaptation
Joint communication strategy
Basin-wide or joint public participation and consultation of, for example, basin management plans
Joint resources to support transboundary cooperation
Capacity-building
Any other tasks (please list): [fill in]

(h) What are the main difficulties and challenges that your country faces with the operation of the joint body or mechanism, if any?

Governance issues
Please describe, if any: [Lack of a River Basin Commission to manage the affairs of the basin]

Unexpected planning delays
Please describe, if any: [fill in]

Lack of resources
Please describe, if true: [Lack of resources to finance the activities of the Joint Water Commission]

Lack of mechanism for implementing measures
Please describe, if true: [fill in]

Lack of effective measures
Please describe, if true: [fill in]

Unexpected extreme events

Please describe, if any: [The Buzi Basin lies on a cyclone path and is constantly ravaged by floods and extreme weather conditions. The basin also experiences droughts.]

Lack of information and reliable forecasts □ ✓

Please describe, if any: [This is primarily due to lack of infrastructure for collecting real-time and near real time hydrometeorological data. This negatively affects the timeous deserrmination of information.]

Others (please list and describe, as appropriate): [fill in]

(i) Does the joint body or mechanism, or its subsidiary bodies meet regularly?
Yes □ ✓/No □

If yes, how frequently does it meet?
More than once per year □
Once per year □ ✓
Less than once per year □

(j) What are the main achievements with regards to the joint body or mechanism?
[The Joint Water Commission developed a shared vision in the planning, development and management of water resources in the Buzi Basin.]

(k) Did the joint body or mechanism ever invite a non-riparian coastal State to cooperate?
Yes □ ✓/No □

If yes, please give details. If no, why not, e.g. are the relevant coastal States also riparian States and therefore already members of the joint body or mechanism? [fill in]

4. Have joint objectives, a common strategy, a joint or coordinated management plan or action plan been agreed for the basin, sub-basin, part of a basin or group of basins?
Yes ✓ □/No □

If yes, please provide further details: [The objectives, common strategy and coordinated management plan are spelt out in the Buzi Agreement. In addition a roadmap has been put in place to put in place a commission to manage the Buzi, Pungwe and Save Basins]

5. How is the transboundary basin, sub-basin, part of a basins or group of basins protected, including the protection of ecosystems, in the context of sustainable and rational water use?
Regulation of urbanization, deforestation, and sand and gravel extraction. □ ✓

Environmental flow norms, including consideration of levels and seasonality □ ✓

Water quality protection, e.g. nitrates, pesticides, faecal coliforms, heavy metals □ ✓

Water-related species and habitats protection □ ✓

Other measures (please describe): [fill in]
6. (a) Does your country regularly exchange information and data with other riparian States in the basin, sub-basin, part of a basin or group of basins?

Yes ✓ / No □

(b) If yes, how often:

- More than once per year ✓
- Once per year □
- Less than once per year □

(c) Please describe how information is exchanged (e.g. in connection with meetings of joint bodies): [Information and data is shared via emails and whatsapp messages]

(d) If yes, on what subjects are information and data exchanged?

- Environmental conditions ✓
- Research activities and application of best available techniques ✓
- Emission monitoring data □
- Planned measures taken to prevent, control or reduce transboundary impacts □
- Point source pollution sources ✓
- Diffuse pollution sources □
- Existing hydromorphological alterations (dams, etc.) □
- Flows or water levels (including groundwater levels) □
- Water abstractions ✓
- Climatological information ✓
- Future planned measures with transboundary impacts, such as infrastructure development □
- Other subjects (please list): [fill in]

Other comments, e.g. spatial coverage of data and information exchange: [Due to limits in the hydrometrological network, the data does not comprehensively cover the entire basin as desired]

(e) Is there a shared database or information platform?

Yes ✓ / No □

(f) Is the database publicly available?

Yes ✓ / No □

If yes, please provide the web address: [fill in]

(g) What are the main difficulties and challenges to data exchange, if applicable?

- Frequency of exchanges ✓
- Timing of exchanges ✓
- Comparability of data and information □
- Limited spatial coverage □
Inadequate resources (technical and/or financial) ✓

Other (please describe): [fill in]

Additional comments: [fill in]

(b) What are the main benefits of data exchange on the basin, sub-basin, part of a basin or group of basins? (please describe): [Exchanging data is important for water resources planning, water resources management and flood risk management ]

7. Do the riparian States carry out joint monitoring in the transboundary basin, sub-basin, part of a basin or group of basins?

Yes ✓/No ☐

(a) If yes, what does the joint monitoring cover?

<table>
<thead>
<tr>
<th></th>
<th>Hydrological</th>
<th>Ecological</th>
<th>Chemical</th>
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<tbody>
<tr>
<td>Border surface waters</td>
<td>☑</td>
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<tr>
<td>[please describe] Hydrological and chemical monitoring is carried out in the upper parts of the Ruvue Sub-Basin</td>
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<tr>
<td>Transboundary aquifer(s) (connected or unconnected)</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
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<tr>
<td>Aquifer(s) in the territory of one riparian hydraulically connected to a transboundary river or lake</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

(b) If joint monitoring is carried out, how is this done?

National monitoring stations connected through a network or common stations ☑

Please describe: [Monitoring is carried out through a network of national hydrological stations located in Mozambique and Zimbabwe]

Joint and agreed methodologies ☐

Please describe: [According to Section 1h of Article 5 of the Buzi Agreement the riparian states are responsible for establishing “comparable monitoring systems, methods and procedures” in the Buzi Basin. However the “comparable monitoring systems, methods and procedures” are still to be developed]

Joint sampling ☑

Please describe: [fill in]

Common monitoring network ☐

Please describe: [fill in]

Common agreed parameters ☑
Please describe: [The water quality parameters are spelt out in Appendix A of the Buzi Agreement]

(c) Please describe the main achievements regarding joint monitoring, if any: [The joint monitoring has contributed towards flood forecasting and ecological management]

(d) Please describe any difficulties experienced with joint monitoring: [Lack of monitoring infrastructure and a data sharing platform.]

8. Do the riparian States carry out joint assessment of the transboundary basin, sub-basin, part of a basin or group of basins?

Yes ✓/No

If yes, please provide the date of the last or only assessment, the frequency and scope (e.g., surface waters or groundwater only, pollution sources, etc.) of the assessment, and assessment methodology applied: [The last Joint Assessment was carried out in August 2018 as part of the Building River Dialogue and Governance (BRIDGE) Project managed by the International Union for the Conservation of Nature (IUCN)]

9. Have the riparian States agreed to use joint water quality standards?

Yes ✓/No

If yes, what standards have been applied, e.g., international or regional standards (please specify which), or have national standards of the riparian States been applied? [The national standards of the riparian countries were used and the joint standards are spelt out in Appendix A of the Buzi Agreement]

10. What are the measures implemented to prevent or limit the transboundary impact of accidental pollution?

- Notification and communication ✓
- Coordinated or joint early warning or alarm system for accidental water pollution ✓
- Other (please list): [fill in]
- No measures

If not, why not? What difficulties does your country face in putting in place such measures?: [fill in]

11. What are the measures implemented to prevent or limit the transboundary impact of extreme weather events and climate change?

- Notification and communication ✓
- Coordinated or joint alarm system for floods ✓
- Coordinated or joint alarm system for droughts ✓
- Joint climate change adaptation strategy ✓
- Joint disaster risk reduction strategy ✓
- Other (please list): [fill in]
- No measures

If not, why not? What difficulties does your country face in putting in place such measures?: [fill in]
12. Are procedures in place for mutual assistance in case of a critical situation?
Yes ✓ / No ☐
If yes, please provide a brief summary: [Joint operations during floods and food relief during droughts]

13. Are the public or relevant stakeholders involved in transboundary water management in the basin, sub-basin, part of a basin or group of basins?
Yes ☐ ✓ / No ☐
If yes, how? (please tick all applicable)
- Stakeholders have observer status in a joint body or mechanism ☐
- Stakeholders have an advisory role in the joint body ✓
- Stakeholders have a decision-making role in the joint body ☐
If yes, please specify the stakeholders for the joint body or mechanism:
[The public participates in the management of the basin through Catchment and Sub-Catchment Councils.]
- Intergovernmental organizations ✓
- Private sectors organizations or associations ✓
- Water user groups or associations ✓
- Academic or research institutions ✓
- Other non-governmental organizations ☐
- General public ✓
- Other (please specify): [fill in] ☐
- Availability of information to the public ✓
- Consultation on planned measures or river basin management plans4 ✓
- Public involvement ✓
- Other (please specify): [fill in] ☐

Name of the transboundary basin, sub-basin, part of a basin or group of basins: [Limpopo Basin]

List of the riparian States: [Botswana, South Africa, Mozambique and Zimbabwe]

In the case of an aquifer, what is the nature of the aquifer and its relation with the river or lake basin:
- Unconfined aquifer connected to a river or lake ☐
- Unconfined aquifer with no or limited relation with surface water ☐
- Confined aquifer connected to surface water ☐
- Confined aquifer with no or limited relation with surface water ☐

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4 Or, where applicable, aquifer management plans.
Please describe: []

Unknown

Percentage of your country’s territory within the basin, sub-basin, part of a basin or group of basins: [16.08%]

1. Is there one or more transboundary (bilateral or multilateral) agreement(s) or arrangement(s) on this basin, sub-basin, part of a basin or group of basins?
   
   One or more agreements or arrangements exist and are in force  Yes ✓
   
   Agreement or arrangement developed but not in force
   
   Agreement or arrangement developed, but not in force for all riparians

   Please insert the name of the agreement(s) or arrangement(s) [fill in]

   Agreement or arrangement is under development

   No agreement or arrangement

   If there is no agreement or arrangement or it is not in force, please explain briefly why not and provide information on any plans to address the situation: [fill in]

   If there is no agreement or arrangement and no joint body or mechanism for the transboundary basin, sub-basin, part of a basin or group of basins then jump to question 4; if there is no agreement or arrangement, but a joint body or mechanism then go to question 3.

   Questions 2 and 3 to be completed for each bilateral or multilateral agreement or arrangement in force in the transboundary basin, sub-basin, part of a basin or group of basins.

2. (a) Does this agreement or arrangement specify the area subject to cooperation?
   
   Yes ✓
   
   If yes, does it cover the entire basin or group of basins and all riparian States?

   Yes ✓

   Additional explanations? [The Limpopo Water Course Agreement agreement covers the entire basin shared among Botswana, South Africa, Mozambique and Zimbabwe]

   Or, if the agreement or arrangement relates to a sub-basin, does it cover the entire sub-basin?

   N/A

   Additional explanations? [N/A]

   Which States (including your own) are bound by the agreement or arrangement? (Please list): [Botswana, South Africa, Mozambique and Zimbabwe]

   (b) If the agreement or arrangement relates to a river or lake basin or sub-basin, does it also cover aquifers?

   Yes ✓

   If yes, please list the aquifers covered by the agreement or arrangement: [Tulu-Karoo Aquifer, Limpopo Basin Aquifer]
(c) What is the sectoral scope of the agreement or arrangement?

- All water uses [✓]
- A single water use or sector [ ]
- Several water uses or sectors [ ]

If one or several water uses or sectors, please list (check as appropriate):

**Water uses or sectors**

- Industry [✓]
- Agriculture [✓]
- Transport (e.g., navigation) [ ]
- Households [✓]
- Energy: hydropower and other energy types [✓]
- Fisheries [ ]
- Tourism [✓]
- Nature protection [✓]
- Other (please list): [mining] [✓]

(d) What topics or subjects of cooperation are included in the agreement or arrangement?

**Procedural and institutional issues**

- Dispute and conflict prevention and resolution [✓]
- Institutional cooperation (joint bodies) [✓]
- Consultation on planned measures [✓]
- Mutual assistance [✓]

**Topics of cooperation**

- Joint vision and management objectives [✓]
- Joint significant water management issues [✓]
- Navigation [ ]
- Human health [✓]
- Environmental protection (ecosystem) [✓]
- Water quality [✓]
- Water quantity or allocation [✓]
- Cooperation in addressing floods [✓]
- Cooperation in addressing droughts [✓]
- Climate change adaptation [✓]

**Monitoring and exchange**

- Joint assessments [✓]
- Data collection and exchange [✓]
Joint monitoring ✓
Maintenance of joint pollution inventories ✓
Elaboration of joint water quality objectives ✓
Common early warning and alarm procedures ✓
Exchange of experience between riparian States ✓
Exchange of information on planned measures ✓

**Joint planning and management**
- Development of joint regulations on specific topics ✓
- Development of international or joint river, lake or aquifer basin management or action plans ✓
- Management of shared infrastructure ✓
- Development of shared infrastructure ✓

Other *(please list)*: [fill in]

(e) What are the main difficulties and challenges that your country faces with the agreement or arrangement and its implementation, if any?
- Aligning implementation of agreement or arrangement with national laws, policies and programmes
- Aligning implementation of agreement or arrangement with regional laws, policies and programmes
- Lack of financial resources ✓
- Insufficient human capacity ✓
- Insufficient technical capacity ✓
- Tense diplomatic relations
- Non-participation of certain riparian countries in the agreement
- No significant difficulties

Other *(please describe)*: [fill in]

(f) What are the main achievements in implementing the agreement or arrangements and what were the keys to achieving such success? *Integrated water resources planning and management. This has been achieved due to the mutual understanding and consensus that exists among the riparian countries*

(g) Please attach a copy of the agreement or arrangement or provide the web address of the document *(please attach document or insert web address, if applicable)*: [Find accompanying this document the Limpopo Watercourse Commission Agreement]

3. Is your country a member of any joint body or mechanism for this agreement or arrangement?

Yes ✓/No ✓

*If no, why not? (please explain)*: [fill in]

**Where there is a joint body or mechanism**
(a) If there is a joint body or mechanism, which kind of joint body or mechanism (please tick one)?

- Plenipotentaries
- Bilateral commission
- Basin or similar commission
- Expert group meeting or meeting of national focal points
- Other (please describe): [fill in]

(b) Does the joint body or mechanism cover the entire transboundary basin, sub-basin, part of a basin or group of basins?

Yes ✓/No □

(c) Which States (including your own) are members of the joint body or mechanism? (Please list): [Botswana, Mozambique, South Africa and Zimbabwe]

(d) Are there any riparian States that are not members of the joint body or mechanism? (please list): [No]

(e) If not all riparian States are members of the joint body or mechanism how does the joint body or mechanism cooperate with them?

- No cooperation
- They have observer status
- Other (please describe): [N/A]

(f) Does the joint body or mechanism have any of the following features (please tick the ones applicable)?

- A secretariat ✓

  If the secretariat is a permanent one, is it a joint secretariat or does each country host its own secretariat? (Please describe): [The Secretariat is permanent]

- A subsidiary body or bodies

  Please list (e.g., working groups on specific topics): [hydrology Technical Committee, Legal Committee and Technical Task Team]

- Other features (please list): [fill in]

(g) What are the tasks and activities of this joint body or mechanism?

- Identification of pollution sources ✓
- Data collection and exchange ✓
- Joint monitoring ✓
- Maintenance of joint pollution inventories ✓
- Setting emission limits
- Elaboration of joint water quality objectives

5 This may include tasks according to the agreement or tasks added by the joint body, or its subsidiaries. Both tasks which joint bodies coordinate and tasks which they implement should be included.
Management and prevention of flood or drought risks

Preparedness for extreme events, e.g., common early warning and alarm procedures

Surveillance and early warning of water related disease

Water allocation and/or flow regulation

Policy development

Control of implementation

Exchange of experience between riparian States

Exchange of information on existing and planned uses of water and related installations

Settling of differences and conflicts

Consultations on planned measures

Exchange of information on best available technology

Participation in transboundary EIA

Development of river, lake or aquifer basin management or action plans

Management of shared infrastructure

Addressing hydromorphological alterations

Climate change adaptation

Joint communication strategy

Basin-wide or joint public participation and consultation of, for example, basin management plans

Joint resources to support transboundary cooperation

Capacity-building

Any other tasks (please list): [Legal Matters ]

(h) What are the main difficulties and challenges that your country faces with the operation of the joint body or mechanism, if any?

Governance issues

Please describe, if any: [fill in]

Unexpected planning delays

Please describe, if any: [fill in]

Lack of resources

Please describe, if true: [Lack of resources to finance the activities of the Joint Limpopo Watercourse Commission]

Lack of mechanism for implementing measures

Please describe, if true: [fill in]

Lack of effective measures

Please describe, if true: [fill in]
Unexpected extreme events [✓]

Please describe, if any: [The Limpopo Basin lies on a cyclone path and is constantly ravaged by floods and extreme weather conditions. The basin also experiences droughts.]

Lack of information and reliable forecasts [✓]

Please describe, if any: [This is primarily due to lack of infrastructure for collecting real-time and near real time hydrometeorological data. This negatively affects the timely dissemination of information.]

Others (please list and describe, as appropriate): [fill in]

(i) Does the joint body or mechanism, or its subsidiary bodies meet regularly?
   Yes [✓]/No [ ]

   If yes, how frequently does it meet?
   More than once per year [✓]/Once per year [ ]/Less than once per year [ ]

(j) What are the main achievements with regards to the joint body or mechanism?
   [Developing a shared vision in the planning, development and management of water resources of the Limpopo Basin.]

(k) Did the joint body or mechanism ever invite a non-riparian coastal State to cooperate?
   Yes [✓]/No [ ]

   If yes, please give details. If no, why not, e.g. are the relevant coastal States also riparian States and therefore already members of the joint body or mechanism? [fill in]

4. Have joint objectives, a common strategy, a joint or coordinated management plan or action plan been agreed for the basin, sub-basin, part of a basin or group of basins?
   Yes [✓]/No [ ]

   If yes, please provide further details: [The Limpopo Watercourse Integrated Water Resources Plan which spells out the objectives, common strategy and coordinated management plan for the basin.]

5. How is the transboundary basin, sub-basin, part of a basins or group of basins protected, including the protection of ecosystems, in the context of sustainable and rational water use?
   Regulation of urbanization, deforestation, and sand and gravel extraction [✓]
   Environmental flow norms, including consideration of levels and seasonality [✓]
   Water quality protection, e.g. nitrates, pesticides, faecal coliforms, heavy metals [✓]
   Water-related species and habitats protection [✓]
Other measures (*please describe*): [fill in]

6. (a) Does your country regularly exchange information and data with other riparian States in the basin, sub-basin, part of a basin or group of basins?

Yes ✓/No ❌

(b) If yes, how often:

- More than once per year ✓
- Once per year ❌
- Less than once per year ❌

(c) Please describe how information is exchanged (e.g. in connection with meetings of joint bodies): [Information and data is shared via emails and whatsapp]

(d) If yes, on what subjects are information and data exchanged?

- Environmental conditions ✓
- Research activities and application of best available techniques ✓
- Emission monitoring data ❌
- Planned measures taken to prevent, control or reduce transboundary impacts ✓
- Point source pollution sources ❌
- Diffuse pollution sources ❌
- Existing hydromorphological alterations (dams, etc.) ✓
- Flows or water levels (including groundwater levels) ✓
- Water abstractions ❌
- Climatological information ✓
- Future planned measures with transboundary impacts, such as infrastructure development ✓

Other subjects (*please list*): [fill in]

Other comments, e.g. spatial coverage of data and information exchange:

[Data covers the entire basin]

(e) Is there a shared database or information platform?

Yes ✓/No ❌

(f) Is the database publicly available?

Yes ✓/No ❌

*If yes, please provide the web address: [At the moment work is being undertake to upgrade the database.]*

(g) What are the main difficulties and challenges to data exchange, if applicable?

- Frequency of exchanges ✓
- Timing of exchanges ✓
- Comparability of data and information ❌
Limited spatial coverage ✓
Inadequate resources (technical and/or financial) ✓
Other (*please describe*): [fill in]
Additional comments: [fill in]

(h) What are the main benefits of data exchange on the basin, sub-basin, part of a basin or group of basins? (*please describe*): [*Effective and informed water resources planning, development and management.*]

7. Do the riparian States carry out joint monitoring in the transboundary basin, sub-basin, part of a basin or group of basins?

Yes ✓/No □

(a) If yes, what does the joint monitoring cover?

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<tr>
<td>please describe [River flows]</td>
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<td></td>
</tr>
</tbody>
</table>

(b) If joint monitoring is carried out, how is this done?

National monitoring stations connected through a network or common stations ✓

*Please describe*: [*Monitoring is carried out through stations located in the riparian states that are part of the national networks*]

Joint and agreed methodologies □

*Please describe*: [fill in]

Joint sampling □

*Please describe*: [fill in]

Common monitoring network □

*Please describe*: [fill in]

Common agreed parameters ✓

*Please describe*: [fill in]
(c) Please describe the main achievements regarding joint monitoring, if any: [The joint monitoring has greatly contributed towards flood forecasting and management]

(d) Please describe any difficulties experienced with joint monitoring: [Lack of monitoring infrastructure and a data sharing platform.]

8. Do the riparian States carry out joint assessment of the transboundary basin, sub-basin, part of a basin or group of basins?
   Yes [✓] / No []
   If yes, please provide the date of the last or only assessment, the frequency and scope (e.g., surface waters or groundwaters only, pollution sources, etc.) of the assessment, and assessment methodology applied: [2010]

9. Have the riparian States agreed to use joint water quality standards?
   Yes [✓] / No []
   If yes, what standards have been applied, e.g. international or regional standards (please specify which), or have national standards of the riparian States been applied? [Regional Standards are being used in collaboration with national standards of the riparian countries.]

10. What are the measures implemented to prevent or limit the transboundary impact of accidental pollution?
    Notification and communication [✓]
    Coordinated or joint early warning or alarm system for accidental water pollution [✓]
    Other (please list): [fill in]
    No measures [✓]
    If not, why not? What difficulties does your country face in putting in place such measures?: [fill in]

11. What are the measures implemented to prevent or limit the transboundary impact of extreme weather events and climate change?
    Notification and communication [✓]
    Coordinated or joint alarm system for floods [✓]
    Coordinated or joint alarm system for droughts [✓]
    Joint climate change adaptation strategy [✓]
    Joint disaster risk reduction strategy [✓]
    Other (please list): [fill in]
    No measures [✓]
    If not, why not? What difficulties does your country face in putting in place such measures?: [fill in]

12. Are procedures in place for mutual assistance in case of a critical situation?
    Yes [✓] / No []
    If yes, please provide a brief summary: [Joint Operations during flooding and food assistance during droughts.]
13. Are the public or relevant stakeholders involved in transboundary water management in the basin, sub-basin, part of a basin or group of basins?

Yes ✓/No □

If yes, how? (please tick all applicable)

- Stakeholders have observer status in a joint body or mechanism
- Stakeholders have an advisory role in the joint body
- Stakeholders have a decision-making role in the joint body ✓

If yes, please specify the stakeholders for the joint body or mechanism: [fill in]

- Intergovernmental organizations ✓
- Private sectors organizations or associations ✓
- Water user groups or associations ✓
- Academic or research institutions ✓
- Other non-governmental organizations □
- General public ✓
- Other (please specify): [fill in]

Availability of information to the public □
Consultation on planned measures or river basin management plans ✓
Public involvement ✓
Other (please specify): [fill in]

Name of the transboundary basin, sub-basin, part of a basin or group of basins: [Okavango Basin]

List of the riparian States: [Angola, Botswana, Namibia and Zimbabwe]

In the case of an aquifer, what is the nature of the aquifer and its relation with the river or lake basin:

- Unconfined aquifer connected to a river or lake □
- Unconfined aquifer with no or limited relation with surface water □
- Confined aquifer connected to surface water □
- Confined aquifer with no or limited relation with surface water □
- Other □
- Please describe: [fill in]
- Unknown □

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6 Or, where applicable, aquifer management plans.
Percentage of your country’s territory within the basin, sub-basin, part of a basin or group of basins: [5.6%]

1. Is there one or more transboundary (bilateral or multilateral) agreement(s) or arrangement(s) on this basin, sub-basin, part of a basin or group of basins?
   - One or more agreements or arrangements exist and are in force ✓
   - Agreement or arrangement developed but not in force □
   - Agreement or arrangement developed, but not in force for all riparians □

Please insert the name of the agreement(s) or arrangement(s) [Agreement on the Establishment of the Permanent Okavango River Basin Water Commission (OKACOM), However, Zimbabwe is not signatory to the Agreement and hence not a member of OKACOM]
   - Agreement or arrangement is under development □
   - No agreement or arrangement □

If there is no agreement or arrangement or it is not in force, please explain briefly why not and provide information on any plans to address the situation: [fill in]

If there is no agreement or arrangement and no joint body or mechanism for the transboundary basin, sub-basin, part of a basin or group of basins then jump to question 4; if there is no agreement or arrangement, but a joint body or mechanism then go to question 3.

Questions 2 and 3 to be completed for each bilateral or multilateral agreement or arrangement in force in the transboundary basin, sub-basin, part of a basin or group of basins.

2. (a) Does this agreement or arrangement specify the area subject to cooperation?
   - Yes □
   - If yes, does it cover the entire basin or group of basins and all riparian States?
     - Yes □
     - Additional explanations? []
   - Or, if the agreement or arrangement relates to a sub-basin, does it cover the entire sub-basin?
     - N/A □
     - Additional explanations? []
   - Which States (including your own) are bound by the agreement or arrangement?
     (Please list): []

(b) If the agreement or arrangement relates to a river or lake basin or sub-basin, does it also cover aquifers?
   - Yes □
   - If yes, please list the aquifers covered by the agreement or arrangement: []

(c) What is the sectoral scope of the agreement or arrangement?
   - All water uses □
   - A single water use or sector □
Several water uses or sectors

If one or several water uses or sectors, please list (check as appropriate):

**Water uses or sectors**

- Industry
- Agriculture
- Transport (e.g., navigation)
- Households
- Energy: hydropower and other energy types
- Fisheries
- Tourism
- Nature protection
- Other *(please list)*: []

(d) What topics or subjects of cooperation are included in the agreement or arrangement?

**Procedural and institutional issues**

- Dispute and conflict prevention and resolution
- Institutional cooperation (joint bodies)
- Consultation on planned measures
- Mutual assistance

**Topics of cooperation**

- Joint vision and management objectives
- Joint significant water management issues
- Navigation
- Human health
- Environmental protection (ecosystem)
- Water quality
- Water quantity or allocation
- Cooperation in addressing floods
- Cooperation in addressing droughts
- Climate change adaptation

**Monitoring and exchange**

- Joint assessments
- Data collection and exchange
- Joint monitoring
- Maintenance of joint pollution inventories
- Elaboration of joint water quality objectives
33

Common early warning and alarm procedures □
Exchange of experience between riparian States □
Exchange of information on planned measures □

**Joint planning and management**
 Development of joint regulations on specific topics □
 Development of international or joint river, lake or aquifer basin management or action plans □
 Management of shared infrastructure □
 Development of shared infrastructure □
 Other *(please list)*: [fill in]

(e) What are the main difficulties and challenges that your country faces with the agreement or arrangement and its implementation, if any?

Aligning implementation of agreement or arrangement with national laws, policies and programmes □
Aligning implementation of agreement or arrangement with regional laws, policies and programmes □
Lack of financial resources □
Insufficient human capacity □
Insufficient technical capacity □
Tense diplomatic relations □
Non-participation of certain riparian countries in the agreement □
No significant difficulties □
Other *(please list)*: [fill in]

(f) What are the main achievements in implementing the agreement or arrangements and what were the keys to achieving such success? []

(g) Please attach a copy of the agreement or arrangement or provide the web address of the document *(please attach document or insert web address, if applicable)*: []

3. Is your country a member of any joint body or mechanism for this agreement or arrangement?

   Yes ☐/No ☑

   *If no, why not? (please explain): [Zimbabwe is not signatory to the OKACOM Agreement]*

**Where there is a joint body or mechanism**

(a) If there is a joint body or mechanism, which kind of joint body or mechanism *(please tick one)*?

   Plenipotentiaries □
   Bilateral commission □
   Basin or similar commission ☑
   Expert group meeting or meeting of national focal points □
(b) Does the joint body or mechanism cover the entire transboundary basin, sub-basin, part of a basin or group of basins?
Yes ☑/No ☐

(c) Which States (including your own) are members of the joint body or mechanism? (Please list): [Angola, Namibia and Botswana]

(d) Are there any riparian States that are not members of the joint body or mechanism? (please list): [Zimbabwe]

(e) If not all riparian States are members of the joint body or mechanism how does the joint body or mechanism cooperate with them?

- No cooperation ☐
- They have observer status ☐

Other (please describe): [Zimbabwe Cooperates with Botswana on the Nata Sub-basin under the banner of the Botswana-Zimbabwe Joint Water Commission]

(f) Does the joint body or mechanism have any of the following features (please tick the ones applicable)?

- A secretariat ☑

*If the secretariat is a permanent one, is it a joint secretariat or does each country host its own secretariat? (Please describe): [Secretariate is permanent]*

- A subsidiary body or bodies ☐

*Please list (e.g., working groups on specific topics): []*

- Other features (please list): [fill in]

(g) What are the tasks and activities of this joint body or mechanism?

- Identification of pollution sources ☐
- Data collection and exchange ☐
- Joint monitoring ☐
- Maintenance of joint pollution inventories ☐
- Setting emission limits ☐
- Elaboration of joint water quality objectives ☐
- Management and prevention of flood or drought risks ☐
- Preparedness for extreme events, e.g., common early warning and alarm procedures ☐
- Surveillance and early warning of water related disease ☐
- Water allocation and/or flow regulation ☐
- Policy development ☐

---

7 This may include tasks according to the agreement or tasks added by the joint body, or its subsidiaries. Both tasks which joint bodies coordinate and tasks which they implement should be included.
Control of implementation
Exchange of experience between riparian States
Exchange of information on existing and planned uses of water and related installations
Settling of differences and conflicts
Consultations on planned measures
Exchange of information on best available technology
Participation in transboundary EIA
Development of river, lake or aquifer basin management or action plans
Management of shared infrastructure
Addressing hydromorphological alterations
Climate change adaptation
Joint communication strategy
Basin-wide or joint public participation and consultation of, for example, basin management plans
Joint resources to support transboundary cooperation
Capacity-building
Any other tasks (please list): [fill in]

(h) What are the main difficulties and challenges that your country faces with the operation of the joint body or mechanism, if any?

Governance issues
Please describe, if any: [fill in]
Unexpected planning delays
Please describe, if any: [fill in]
Lack of resources
Please describe, if true: [ ]

Lack of mechanism for implementing measures
Please describe, if true: [fill in]
Lack of effective measures
Please describe, if true: [fill in]
Unexpected extreme events
Please describe, if any: []

Lack of information and reliable forecasts
Please describe, if any: []
Others (please list and describe, as appropriate): [fill in]
(i) Does the joint body or mechanism, or its subsidiary bodies meet regularly?
   Yes ☐/No ☐
   If yes, how frequently does it meet?
   More than once per year ☐
   Once per year ☐
   Less than once per year ☐

(j) What are the main achievements with regards to the joint body or mechanism?
   []

(k) Did the joint body or mechanism ever invite a non-riparian coastal State to cooperate?
   Yes ☐/No ☐
   If yes, please give details. If no, why not, e.g. are the relevant coastal States also riparian States and therefore already members of the joint body or mechanism? [fill in]

4. Have joint objectives, a common strategy, a joint or coordinated management plan or action plan been agreed for the basin, sub-basin, part of a basin or group of basins?
   Yes ☐/No ☐☑
   If yes, please provide further details: []

5. How is the transboundary basin, sub-basin, part of a basin or group of basins protected, including the protection of ecosystems, in the context of sustainable and rational water use?
   Regulation of urbanization, deforestation, and sand and gravel extraction. ☐☑
   Environmental flow norms, including consideration of levels and seasonality ☐☑
   Water quality protection, e.g. nitrates, pesticides, faecal coliforms, heavy metals ☐☑
   Water-related species and habitats protection ☐☑
   Other measures (please describe): [fill in]

6. (a) Does your country regularly exchange information and data with other riparian States in the basin, sub-basin, part of a basin or group of basins?
   Yes ☐/No ☐☑
   (b) If yes, how often:
      More than once per year ☐
      Once per year ☐
      Less than once per year ☐
   (c) Please describe how information is exchanged (e.g. in connection with meetings of joint bodies): []
   (d) If yes, on what subjects are information and data exchanged?
      Environmental conditions ☐
Research activities and application of best available techniques
Emission monitoring data
Planned measures taken to prevent, control or reduce transboundary impacts
Point source pollution sources
Diffuse pollution sources
Existing hydromorphological alterations (dams, etc.)
Flows or water levels (including groundwater levels)
Water abstractions
Climatological information
Future planned measures with transboundary impacts, such as infrastructure development
Other subjects (please list): [fill in]
Other comments, e.g. spatial coverage of data and information exchange: []

(e) Is there a shared database or information platform?
Yes □/No □

(f) Is the database publicly available?
Yes □/No □
If yes, please provide the web address: [fill in]

(g) What are the main difficulties and challenges to data exchange, if applicable?
Frequency of exchanges □
Timing of exchanges □
Comparability of data and information □
Limited spatial coverage □
Inadequate resources (technical and/or financial) □
Other (please describe): [fill in]
Additional comments: [fill in]

(h) What are the main benefits of data exchange on the basin, sub-basin, part of a basin or group of basins? (please describe): []

7. Do the riparian States carry out joint monitoring in the transboundary basin, sub-basin, part of a basin or group of basins?
Yes □/No □ N/A
(a) If yes, what does the joint monitoring cover?

<table>
<thead>
<tr>
<th></th>
<th>Hydrological</th>
<th>Ecological</th>
<th>Chemical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Border surface waters</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Surface waters in the entire basin</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>
Hydrological  
Ecological  
Chemical

Surface waters on the main watercourse
Surface waters in part of the basin
please describe []
Transboundary aquifer(s) (connected or unconnected)
Aquifer(s) in the territory of one riparian hydraulically connected to a transboundary river or lake

(b) If joint monitoring is carried out, how is this done?
National monitoring stations connected through a network or common stations
Please describe: []
Joint and agreed methodologies
Please describe: []
Joint sampling
Please describe: [fill in]
Common monitoring network
Please describe: [fill in]
Common agreed parameters
Please describe: [No joint monitoring exercises have been carried out with Zimbabwe]

(c) Please describe the main achievements regarding joint monitoring, if any: []

(d) Please describe any difficulties experienced with joint monitoring: []

8. Do the riparian States carry out joint assessment of the transboundary basin, sub-basin, part of a basin or group of basins?
Yes [X] No [ ]

If yes, please provide the date of the last or only assessment, the frequency and scope (e.g., surface waters or groundwaters only, pollution sources, etc.) of the assessment, and assessment methodology applied: []

9. Have the riparian States agreed to use joint water quality standards?
Yes [X] No [ ] N/A

If yes, what standards have been applied, e.g. international or regional standards (please specify which), or have national standards of the riparian States been applied? []

10. What are the measures implemented to prevent or limit the transboundary impact of accidental pollution?
Notification and communication [X]
Coordinated or joint early warning or alarm system for accidental water pollution

Other (please list): [fill in]

No measures

If not, why not? What difficulties does your country face in putting in place such measures?: [fill in]

11. What are the measures implemented to prevent or limit the transboundary impact of extreme weather events and climate change?

- Notification and communication ✓
- Coordinated or joint alarm system for floods
- Coordinated or joint alarm system for droughts
- Joint climate change adaptation strategy
- Joint disaster risk reduction strategy
- Other (please list): [fill in]

No measures

If not, why not? What difficulties does your country face in putting in place such measures?: [fill in]

12. Are procedures in place for mutual assistance in case of a critical situation?

Yes ☐/No ☑

If yes, please provide a brief summary: []

13. Are the public or relevant stakeholders involved in transboundary water management in the basin, sub-basin, part of a basin or group of basins?

Yes ☑/No ☐ N/A

If yes, how? (please tick all applicable)

- Stakeholders have observer status in a joint body or mechanism
- Stakeholders have an advisory role in the joint body
- Stakeholders have a decision-making role in the joint body

If yes, please specify the stakeholders for the joint body or mechanism: [fill in]

- Intergovernmental organizations
- Private sectors organizations or associations
- Water user groups or associations
- Academic or research institutions
- Other non-governmental organizations
- General public
- Other (please specify): [fill in]

Availability of information to the public

Consultation on planned measures or river basin
management plans

Public involvement

Other (please specify): [fill in]

Name of the transboundary basin, sub-basin, part of a basin or group of basins: [Pungwe Basin]

List of the riparian States: [Mozambique and Zimbabwe]

In the case of an aquifer, what is the nature of the aquifer and its relation with the river or lake basin:

- Unconfined aquifer connected to a river or lake
- Unconfined aquifer with no or limited relation with surface water
- Confined aquifer connected to surface water
- Confined aquifer with no or limited relation with surface water
- Other

Please describe: [fill in]

Unknown

Percentage of your country’s territory within the basin, sub-basin, part of a basin or group of basins: [0.5%]

1. Is there one or more transboundary (bilateral or multilateral) agreement(s) or arrangement(s) on this basin, sub-basin, part of a basin or group of basins?
   - One or more agreements or arrangements exist and are in force       Yes ✔
   - Agreement or arrangement developed but not in force
   - Agreement or arrangement developed, but not in force for all riparians

Please insert the name of the agreement(s) or arrangement(s) [Agreement between the Republic of Zimbabwe and the Republic of Mozambique on Co-operation on the Development, Management and Sustainable Utilization of the Water Resources of the Pungwe Watercourse]

Agreement or arrangement is under development

No agreement or arrangement

If there is no agreement or arrangement or it is not in force, please explain briefly why not and provide information on any plans to address the situation: [fill in]

If there is no agreement or arrangement and no joint body or mechanism for the transboundary basin, sub-basin, part of a basin or group of basins then jump to question 4; if there is no agreement or arrangement, but a joint body or mechanism then go to question 3.

---

8 Or, where applicable, aquifer management plans.
Questions 2 and 3 to be completed for each bilateral or multilateral agreement or arrangement in force in the transboundary basin, sub-basin, part of a basin or group of basins.

2. (a) Does this agreement or arrangement specify the area subject to cooperation?
   Yes ☑

   If yes, does it cover the entire basin or group of basins and all riparian States?
   Yes ☑

   Additional explanations? [The agreement covers the entire basin shared between Mozambique and Zimbabwe]

   Or, if the agreement or arrangement relates to a sub-basin, does it cover the entire sub-basin?
   N/A ☐

   Additional explanations? [N/A]

   Which States (including your own) are bound by the agreement or arrangement? (Please list): [Mozambique and Zimbabwe]

   (b) If the agreement or arrangement relates to a river or lake basin or sub-basin, does it also cover aquifers?
      Yes ☑

      If yes, please list the aquifers covered by the agreement or arrangement: [The agreement highlights the “Monitoring of Groundwater Quality and Quantity” and does not name specific aquifers in the Pungwe Basin]

   (c) What is the sectoral scope of the agreement or arrangement?

      All water uses ☐☑
      A single water use or sector ☐
      Several water uses or sectors ☐

      If one or several water uses or sectors, please list (check as appropriate):

      **Water uses or sectors**

      Industry ☐☑
      Agriculture ☐☑
      Transport (e.g., navigation) ☐
      Households ☑
      Energy: hydropower and other energy types ☑
      Fisheries ☐
      Tourism ☑
      Nature protection ☑
      Other (please list): [mining, livestock and afforestation]

   (d) What topics or subjects of cooperation are included in the agreement or arrangement?

      Procedural and institutional issues
<table>
<thead>
<tr>
<th>Topic</th>
<th>✓/☐</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dispute and conflict prevention and resolution</td>
<td></td>
</tr>
<tr>
<td>Institutional cooperation (joint bodies)</td>
<td>✓/☐</td>
</tr>
<tr>
<td>Consultation on planned measures</td>
<td></td>
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<tr>
<td>Mutual assistance</td>
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<tr>
<td>Joint vision and management objectives</td>
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<tr>
<td>Joint significant water management issues</td>
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<td>Navigation</td>
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</tr>
<tr>
<td>Human health</td>
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<tr>
<td>Environmental protection (ecosystem)</td>
<td></td>
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<tr>
<td>Maintenance of joint pollution inventories</td>
<td></td>
</tr>
<tr>
<td>Elaboration of joint water quality objectives</td>
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<tr>
<td>Common early warning and alarm procedures</td>
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<tr>
<td>Exchange of experience between riparian States</td>
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<tr>
<td>Exchange of information on planned measures</td>
<td>✓/☐</td>
</tr>
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<td><strong>Joint planning and management</strong></td>
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</tr>
<tr>
<td>Development of joint regulations on specific topics</td>
<td>☐✓</td>
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<tr>
<td>Development of international or joint river, lake or aquifer basin management or action plans</td>
<td>☐✓</td>
</tr>
<tr>
<td>Management of shared infrastructure</td>
<td>☐✓</td>
</tr>
<tr>
<td>Development of shared infrastructure</td>
<td>☐✓</td>
</tr>
<tr>
<td>Other (please list): [fill in]</td>
<td></td>
</tr>
</tbody>
</table>

(e) What are the main difficulties and challenges that your country faces with the agreement or arrangement and its implementation, if any?

- Aligning implementation of agreement or arrangement with national laws, policies and programmes ☐
- Aligning implementation of agreement or arrangement with regional laws, policies and programmes ☐
Lack of financial resources ☑
Insufficient human capacity ☑
Insufficient technical capacity ☑
Tense diplomatic relations ☐
Non-participation of certain riparian countries in the agreement ☐
No significant difficulties ☐
Other (please describe): [fill in]

(f) What are the main achievements in implementing the agreement or arrangements and what were the keys to achieving such success? [Integrated water resources planning, development and management. This has been achieved due to the mutual understanding and consensus that exists between the two countries]

(g) Please attach a copy of the agreement or arrangement or provide the web address of the document (please attach document or insert web address, if applicable): [Please find attached a copy of the Pungwe Agreement]

3. Is your country a member of any joint body or mechanism for this agreement or arrangement?
Yes ☑/No ☐

If no, why not? (please explain): [Mozambique-Zimbabwe Joint Water Commission]

Where there is a joint body or mechanism

(a) If there is a joint body or mechanism, which kind of joint body or mechanism (please tick one)?
   Plenipotentiaries ☐
   Bilateral commission ☑
   Basin or similar commission ☐
   Expert group meeting or meeting of national focal points ☐
   Other (please describe): [fill in]

(b) Does the joint body or mechanism cover the entire transboundary basin, sub-basin, part of a basin or group of basins?
Yes ☑/No ☐

(c) Which States (including your own) are members of the joint body or mechanism? (Please list): [Mozambique and Zimbabwe]

(d) Are there any riparian States that are not members of the joint body or mechanism? (please list): [No]

(e) If not all riparian States are members of the joint body or mechanism how does the joint body or mechanism cooperate with them?
   No cooperation ☐
   They have observer status ☐
   Other (please describe): [N/A]
(f) Does the joint body or mechanism have any of the following features (please tick the ones applicable)?

A secretariat

If the secretariat is a permanent one, is it a joint secretariat or does each country host its own secretariat? (Please describe): [Work is underway to put in place a Basin Commission that will manage the Buzi, Pungwe and Save Basins. In the meantime, the Joint Water Commission of Mozambique and Zimbabwe is managing the affairs of the basins. The Joint Water Commission has coordinators in Mozambique and Zimbabwe who are members of staff in the countries’ departments responsible for water]

A subsidiary body or bodies

Please list (e.g., working groups on specific topics): [The Joint Water Commission has structures responsible for hydrology, water quality, planning and water supply]

Other features (please list): [fill in]

(g) What are the tasks and activities of this joint body or mechanism?  
Identification of pollution sources ✓
Data collection and exchange ✓
Joint monitoring ✓
Maintenance of joint pollution inventories ✓
Setting emission limits ✓
Elaboration of joint water quality objectives ✓
Management and prevention of flood or drought risks ✓
Preparedness for extreme events, e.g., common early warning and alarm procedures ✓
Surveillance and early warning of water related disease ✓
Water allocation and/or flow regulation ✓
Policy development ✓
Control of implementation ✓
Exchange of experience between riparian States ✓
Exchange of information on existing and planned uses of water and related installations ✓
Settling of differences and conflicts ✓
Consultations on planned measures ✓
Exchange of information on best available technology ✓
Participation in transboundary EIA ✓

9 This may include tasks according to the agreement or tasks added by the joint body, or its subsidiaries. Both tasks which joint bodies coordinate and tasks which they implement should be included.
(h) What are the main difficulties and challenges that your country faces with the operation of the joint body or mechanism, if any?

- Governance issues
- Unexpected planning delays
- Lack of resources
- Lack of mechanism for implementing measures
- Lack of effective measures
- Unexpected extreme events
- Lack of information and reliable forecasts

Please describe, if any:

- [The need to establish the Buzi, Pungwe, Save (BuPuSa) Watercourse Commission]
- [Pungwe Basin lies on a cyclone path and is constantly ravaged by floods and extreme weather conditions.]
- [This is primarily due to lack of infrastructure for collecting real-time and near real time hydrometeorological data. This negatively affects the timeous desernination of information.]

(i) Does the joint body or mechanism, or its subsidiary bodies meet regularly?

- Yes ✓ / No

If yes, how frequently does it meet?

- More than once per year
- Once per year ✓
Less than once per year

(j) What are the main achievements with regards to the joint body or mechanism? [Developing a shared vision in the planning, development and management of water resources in the Buzi, Pungwe and Save Basin.]

(k) Did the joint body or mechanism ever invite a non-riparian coastal State to cooperate?

Yes ☑/No ☐

If yes, please give details. If no, why not, e.g. are the relevant coastal States also riparian States and therefore already members of the joint body or mechanism? [fill in]

4. Have joint objectives, a common strategy, a joint or coordinated management plan or action plan been agreed for the basin, sub-basin, part of a basin or group of basins?

Yes ☑/No ☐

If yes, please provide further details: [The objectives, common strategy and coordinated management plan are spelt out in the Pungwe Agreement. In addition, a roadmap is in place to establish a commission to manage the Buzi, Pungwe and Save Basins.]

5. How is the transboundary basin, sub-basin, part of a basin or group of basins protected, including the protection of ecosystems, in the context of sustainable and rational water use?

Regulation of urbanization, deforestation, and sand and gravel extraction.

Environmental flow norms, including consideration of levels and seasonality

Water quality protection, e.g. nitrates, pesticides, faecal coliforms, heavy metals

Water-related species and habitats protection

Other measures (please describe): [fill in]

6. (a) Does your country regularly exchange information and data with other riparian States in the basin, sub-basin, part of a basin or group of basins?

Yes ☑/No ☐

(b) If yes, how often:

More than once per year

Once per year

Less than once per year

(c) Please describe how information is exchanged (e.g. in connection with meetings of joint bodies): [Information and data are shared via emails and whatsapp]

(d) If yes, on what subjects are information and data exchanged?

Environmental conditions

Research activities and application of best available techniques

Emission monitoring data
Planned measures taken to prevent, control or reduce transboundary impacts

| Point source pollution sources | ☐ | ☑ |
| Diffuse pollution sources      | ☐ | ☑ |
| Existing hydromorphological alterations (dams, etc.) | ☑ |
| Flows or water levels (including groundwater levels) | ☑ |
| Water abstractions             | ☑ |
| Climatological information     | ☑ |
| Future planned measures with transboundary impacts, such as infrastructure development | ☑ |

Other subjects *(please list)*: [fill in]

Other comments, e.g. spatial coverage of data and information exchange: *[The data covers the upper reached of the basin]*

(e) Is there a shared database or information platform?

Yes ☑/No ☐

(f) Is the database publicly available?

Yes ☑/No ☐

*If yes, please provide the web address: [fill in]*

(g) What are the main difficulties and challenges to data exchange, if applicable?

- Frequency of exchanges ☑
- Timing of exchanges ☑
- Comparability of data and information ☑
- Limited spatial coverage ☑
- Inadequate resources (technical and/or financial) ☑

Other *(please describe)*: [fill in]

Additional comments: [fill in]

(h) What are the main benefits of data exchange on the basin, sub-basin, part of a basin or group of basins? *(please describe)*: *[Equitable water resources allocation and flood forecasting and warning]*

7. Do the riparian States carry out joint monitoring in the transboundary basin, sub-basin, part of a basin or group of basins?

Yes ☑/No ☐

(a) If yes, what does the joint monitoring cover?

<table>
<thead>
<tr>
<th>Hydrological</th>
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<tbody>
<tr>
<td>Border surface waters</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Surface waters in the entire basin</td>
<td>☑</td>
<td>☐</td>
</tr>
</tbody>
</table>
### Joint Monitoring

<table>
<thead>
<tr>
<th></th>
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<th>Ecological</th>
<th>Chemical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface waters on the main watercourse</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surface waters in part of the basin</td>
<td>✓</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Transboundary aquifer(s) (connected or unconnected)</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aquifer(s) in the territory of one riparian hydraulically connected to a transboundary river or lake</td>
<td>✓</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(b) If joint monitoring is carried out, how is this done?
- National monitoring stations connected through a network or common stations
- **Please describe:** [There are a number of upstream stations in Zimbabwe that collect data shared with Mozambique]
- Joint and agreed methodologies
- **Please describe:** [The agreed methodologies are given in the Annexes of the Punger Agreement]
- Joint sampling
- **Please describe:** [fill in]
- Common monitoring network
- **Please describe:** [fill in]
- Common agreed parameters
- **Please describe:** [These are highlighted in Annex 4 of the Pungwe Agreement]

(c) Please describe the main achievements regarding joint monitoring, if any: [The joint monitoring has contributed towards sustainable water resources planning, development and management and flood forecasting]

(d) Please describe any difficulties experienced with joint monitoring: [Lack of monitoring infrastructure and a data sharing platform.]

8. Do the riparian States carry out joint assessment of the transboundary basin, sub-basin, part of a basin or group of basins?
Yes ✓/No
If yes, please provide the date of the last or only assessment, the frequency and scope (e.g., surface waters or groundwaters only, pollution sources, etc.) of the assessment, and assessment methodology applied: [2016, Surface water and pollution sources]

9. Have the riparian States agreed to use joint water quality standards?
   Yes ✓/No ☐
   If yes, what standards have been applied, e.g. international or regional standards (please specify which), or have national standards of the riparian States been applied? [The national standards of the riparian countries were used to come up with the joint standards]

10. What are the measures implemented to prevent or limit the transboundary impact of accidental pollution?
    - Notification and communication ☑
    - Coordinated or joint early warning or alarm system for accidental water pollution ☑
    - Other (please list): [fill in]
    - No measures ☐
    If not, why not? What difficulties does your country face in putting in place such measures?: [fill in]

11. What are the measures implemented to prevent or limit the transboundary impact of extreme weather events and climate change?
    - Notification and communication ☑
    - Coordinated or joint alarm system for floods ☑
    - Coordinated or joint alarm system for droughts ☑
    - Joint climate change adaptation strategy ☑
    - Joint disaster risk reduction strategy ☑
    - Other (please list): [fill in]
    - No measures ☐
    If not, why not? What difficulties does your country face in putting in place such measures?: [fill in]

12. Are procedures in place for mutual assistance in case of a critical situation?
    Yes ✓/No ☐
    If yes, please provide a brief summary: [Joint Operations during floods.]

13. Are the public or relevant stakeholders involved in transboundary water management in the basin, sub-basin, part of a basin or group of basins?
    Yes ✓/No ☐
    If yes, how? (please tick all applicable)
    - Stakeholders have observer status in a joint body or mechanism ☐
    - Stakeholders have an advisory role in the joint body ☑
    - Stakeholders have a decision-making role in the joint body ☐
    If yes, please specify the stakeholders for the joint body or mechanism:
<table>
<thead>
<tr>
<th>Category</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intergovernmental organizations</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Private sectors organizations or associations</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Water user groups or associations</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Academic or research institutions</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Other non-governmental organizations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>General public</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Other (please specify): [fill in]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Availability of information to the public: [fill in]

Consultation on planned measures or river basin management plans: [fill in]

Public involvement: [fill in]

Other (please specify): [fill in]

Name of the transboundary basin, sub-basin, part of a basin or group of basins: [Save Basin]

List of the riparian States: [Mozambique and Zimbabwe]

In the case of an aquifer, what is the nature of the aquifer and its relation with the river or lake basin:

<table>
<thead>
<tr>
<th>Nature of the Aquifer</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unconfined aquifer connected to a river or lake</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unconfined aquifer with no or limited relation with surface water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confined aquifer connected to surface water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Confined aquifer with no or limited relation with surface water</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please describe: [The Save Alluvial Aquifer located in the Save Basin]

Percentage of your country’s territory within the basin, sub-basin, part of a basin or group of basins: [21.63%]

1. Is there one or more transboundary (bilateral or multilateral) agreement(s) or arrangement(s) on this basin, sub-basin, part of a basin or group of basins?

<table>
<thead>
<tr>
<th>Status</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>One or more agreements or arrangements exist and are in force</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agreement or arrangement developed but not in force</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agreement or arrangement developed, but not in force for all riparians</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please insert the name of the agreement(s) or arrangement(s) [fill in]

Agreement or arrangement is under development: [fill in]

No agreement or arrangement: [fill in]

---

10 Or, where applicable, aquifer management plans.
If there is no agreement or arrangement or it is not in force, please explain briefly why not and provide information on any plans to address the situation: [Plans are underway to formulate an agreement for the planning, development and management of the waters of the Save Basin]

If there is no agreement or arrangement and no joint body or mechanism for the transboundary basin, sub-basin, part of a basin or group of basins then jump to question 4; if there is no agreement or arrangement, but a joint body or mechanism then go to question 3.

Questions 2 and 3 to be completed for each bilateral or multilateral agreement or arrangement in force in the transboundary basin, sub-basin, part of a basin or group of basins.

2. (a) Does this agreement or arrangement specify the area subject to cooperation?  
Yes [ ]
If yes, does it cover the entire basin or group of basins and all riparian States?  
Yes [ ]
Additional explanations? []
Or, if the agreement or arrangement relates to a sub-basin, does it cover the entire sub-basin?  
[]
Additional explanations? []
Which States (including your own) are bound by the agreement or arrangement? (Please list): []

(b) If the agreement or arrangement relates to a river or lake basin or sub-basin, does it also cover aquifers?  
[]
If yes, please list the aquifers covered by the agreement or arrangement: []

(c) What is the sectoral scope of the agreement or arrangement?  
- All water uses [ ]
- A single water use or sector [ ]
- Several water uses or sectors [ ]

If one or several water uses or sectors, please list (check as appropriate):  

**Water uses or sectors**  
- Industry [ ]
- Agriculture [ ]
- Transport (e.g., navigation) [ ]
- Households [ ]
- Energy: hydropower and other energy types [ ]
- Fisheries [ ]
- Tourism [ ]
(d) What topics or subjects of cooperation are included in the agreement or arrangement?

**Procedural and institutional issues**
- Dispute and conflict prevention and resolution
- Institutional cooperation (joint bodies)
- Consultation on planned measures
- Mutual assistance

**Topics of cooperation**
- Joint vision and management objectives
- Joint significant water management issues
- Navigation
- Human health
- Environmental protection (ecosystem)
- Water quality
- Water quantity or allocation
- Cooperation in addressing floods
- Cooperation in addressing droughts
- Climate change adaptation

**Monitoring and exchange**
- Joint assessments
- Data collection and exchange
- Joint monitoring
- Maintenance of joint pollution inventories
- Elaboration of joint water quality objectives
- Common early warning and alarm procedures
- Exchange of experience between riparian States
- Exchange of information on planned measures

**Joint planning and management**
- Development of joint regulations on specific topics
- Development of international or joint river, lake or aquifer basin management or action plans
- Management of shared infrastructure
- Development of shared infrastructure
- Other (*please list*): [fill in]
(e) What are the main difficulties and challenges that your country faces with the agreement or arrangement and its implementation, if any?

- Aligning implementation of agreement or arrangement with national laws, policies and programmes
- Aligning implementation of agreement or arrangement with regional laws, policies and programmes
- Lack of financial resources
- Insufficient human capacity
- Insufficient technical capacity
- Tense diplomatic relations
- Non-participation of certain riparian countries in the agreement
- No significant difficulties
- Other (please describe): [fill in]

(f) What are the main achievements in implementing the agreement or arrangements and what were the keys to achieving such success? []

(g) Please attach a copy of the agreement or arrangement or provide the web address of the document (please attach document or insert web address, if applicable): [fill in]

3. Is your country a member of any joint body or mechanism for this agreement or arrangement?

Yes ✓/No

If no, why not? (please explain): []

Where there is a joint body or mechanism

(a) If there is a joint body or mechanism, which kind of joint body or mechanism (please tick one)?

- Plenipotentiaries
- Bilateral commission ✓
- Basin or similar commission
- Expert group meeting or meeting of national focal points
- Other (please describe): [fill in]

(b) Does the joint body or mechanism cover the entire transboundary basin, sub-basin, part of a basin or group of basins?

Yes ✓/No

(c) Which States (including your own) are members of the joint body or mechanism? (Please list): [Mozambique and Zimbabwe]

(d) Are there any riparian States that are not members of the joint body or mechanism? (please list): [No]

(e) If not all riparian States are members of the joint body or mechanism how does the joint body or mechanism cooperate with them?

No cooperation
They have observer status

Other (please describe): []

(f) Does the joint body or mechanism have any of the following features (please tick the ones applicable)?

A secretariat

If the secretariat is a permanent one, is it a joint secretariat or does each country host its own secretariat? (Please describe): [Work is underway to put in place a Basin Commission that will manage the Buzi, Pungwe and Save Basins. In the mean time, the Joint Water Commission of Mozambique and Zimbabwe is managing the affairs of the basins. The Joint Water Commission has coordinators in Mozambique and Zimbabwe who are members of staff in the countries’ departments responsible for water]

A subsidiary body or bodies

Please list (e.g., working groups on specific topics): [hydrology, water quality, planning and water supply ]

Other features (please list): [fill in]

(g) What are the tasks and activities of this joint body or mechanism?\(^\text{11}\)

- Identification of pollution sources
- Data collection and exchange
- Joint monitoring
- Maintenance of joint pollution inventories
- Setting emission limits
- Elaboration of joint water quality objectives
- Management and prevention of flood or drought risks
- Preparedness for extreme events, e.g., common early warning and alarm procedures
- Surveillance and early warning of water related disease
- Water allocation and/or flow regulation
- Policy development
- Control of implementation
- Exchange of experience between riparian States
- Exchange of information on existing and planned uses of water and related installations
- Settling of differences and conflicts
- Consultations on planned measures

---

\(^\text{11}\) This may include tasks according to the agreement or tasks added by the joint body, or its subsidiaries. Both tasks which joint bodies coordinate and tasks which they implement should be included.
Exchange of information on best available technology ✓
Participation in transboundary EIA ✓
Development of river, lake or aquifer basin management or action plans ✓
Management of shared infrastructure ✓
Addressing hydromorphological alterations ✓
Climate change adaptation ✓
Joint communication strategy ✓
Basin-wide or joint public participation and consultation of, for example, basin management plans ✓
Joint resources to support transboundary cooperation ✓
Capacity-building ✓
Any other tasks (please list): [fill in] ✓
(h) What are the main difficulties and challenges that your country faces with the operation of the joint body or mechanism, if any?
Governance issues
Please describe, if any: [Putting in place a River Basin Commission to manage the Buzi, Pungwe and Save Basins]
Unexpected planning delays
Please describe, if any: [fill in] ✓
Lack of resources ✓
Please describe, if true: [The joint Water Commission lacks resources to fully implement its plans]
Lack of mechanism for implementing measures
Please describe, if true: [fill in] ✓
Lack of effective measures
Please describe, if true: [fill in] ✓
Unexpected extreme events ✓
Please describe, if any: [Cyclones, floods and droughts]
Lack of information and reliable forecasts ✓
Please describe, if any: [This is primarily due to a depleted hydrometeorological monitoring system]
Others (please list and describe, as appropriate): [fill in] ✓
(i) Does the joint body or mechanism, or its subsidiary bodies meet regularly? Yes ✓/No
If yes, how frequently does it meet? More than once per year
(j) What are the main achievements with regards to the joint body or mechanism? [The Joint Water Commission has managed to put in place a sound water resources allocation mechanism. The Joint Water Commission also collaborates in flood forecasting disaster management]

(k) Did the joint body or mechanism ever invite a non-riparian coastal State to cooperate?
Yes □/No ✓

If yes, please give details. If no, why not, e.g. are the relevant coastal States also riparian States and therefore already members of the joint body or mechanism? [fill in]

4. Have joint objectives, a common strategy, a joint or coordinated management plan or action plan been agreed for the basin, sub-basin, part of a basin or group of basins?
Yes □/No ✓

If yes, please provide further details: []

5. How is the transboundary basin, sub-basin, part of a basin or group of basins protected, including the protection of ecosystems, in the context of sustainable and rational water use?

Regulation of urbanization, deforestation, and sand and gravel extraction. □✓

Environmental flow norms, including consideration of levels and seasonality □✓

Water quality protection, e.g. nitrates, pesticides, faecal coliforms, heavy metals □✓

Water-related species and habitats protection □✓

Other measures (please describe): [fill in]

6. (a) Does your country regularly exchange information and data with other riparian States in the basin, sub-basin, part of a basin or group of basins?
Yes ✓ □/No □

(b) If yes, how often:

More than once per year □✓

Once per year □

Less than once per year □

(c) Please describe how information is exchanged (e.g. in connection with meetings of joint bodies): [Information is exchanged through emails and whatsapp messages]

(d) If yes, on what subjects are information and data exchanged?

Environmental conditions □✓

Research activities and application of best available techniques □✓

Emission monitoring data □
Planned measures taken to prevent, control or reduce transboundary impacts

- [✓] Point source pollution sources
- [✓] Diffuse pollution sources
- [✓] Existing hydromorphological alterations (dams, etc.)
- [✓] Flows or water levels (including groundwater levels)
- [✓] Water abstractions
- [✓] Climatological information
- [✓] Future planned measures with transboundary impacts, such as infrastructure development

Other subjects (please list): [fill in]

Other comments, e.g. spatial coverage of data and information exchange: [fill in]

- (e) Is there a shared database or information platform?
  - Yes / No [✓]

- (f) Is the database publicly available?
  - Yes / No [✓]

If yes, please provide the web address: [fill in]

- (g) What are the main difficulties and challenges to data exchange, if applicable?
  - Frequency of exchanges [✓]
  - Timing of exchanges [✓]
  - Comparability of data and information [✓]
  - Limited spatial coverage [✓]
  - Inadequate resources (technical and/or financial) [✓]

Other (please describe): [fill in]

Additional comments: [fill in]

- (h) What are the main benefits of data exchange on the basin, sub-basin, part of a basin or group of basins? (please describe): [Improved water resources planning, development and management in the basin]

7. Do the riparian States carry out joint monitoring in the transboundary basin, sub-basin, part of a basin or group of basins?

- Yes [✓] / No [ ]

  - (a) If yes, what does the joint monitoring cover?

<table>
<thead>
<tr>
<th></th>
<th>Hydrological</th>
<th>Ecological</th>
<th>Chemical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Border surface waters</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surface waters in the entire basin</td>
<td>[✓]</td>
<td>[ ]</td>
<td>[ ]</td>
</tr>
</tbody>
</table>
Hydrological  Ecological  Chemical

Surface waters on the main watercourse  
Surface waters in part of the basin  
please describe [fill in]  
Transboundary aquifer(s) (connected or unconnected)  
Aquifer(s) in the territory of one riparian hydraulically connected to a transboundary river or lake  

(b) If joint monitoring is carried out, how is this done?

National monitoring stations connected through a network or common stations  
Please describe: [Monitoring stations in the riparian countries are used]  
Joint and agreed methodologies  
Please describe: [Joint methodologies are adopted in order to have compatible datasets]  
Joint sampling  
Please describe: [fill in]  
Common monitoring network  
Please describe: [The network is made up of stations that are run and managed by the water resources management agencies of the riparian states]  
Common agreed parameters  
Please describe: [The parameters are derived from the standards of the riparian states]  

(c) Please describe the main achievements regarding joint monitoring, if any: [Flood forecasting and disaster risk management]  

(d) Please describe any difficulties experienced with joint monitoring: [Lack of financial resources and limited technical capacity]  

8. Do the riparian States carry out joint assessment of the transboundary basin, sub-basin, part of a basin or group of basins?  

Yes ☑/No ☐  
If yes, please provide the date of the last or only assessment, the frequency and scope (e.g., surface waters or groundwaters only, pollution sources, etc.) of the assessment, and assessment methodology applied: [Surface water and dam operation]  

9. Have the riparian States agreed to use joint water quality standards?  

Yes ☑/No ☐  
If yes, what standards have been applied, e.g. international or regional standards (please specify which), or have national standards of the riparian States been applied? [Adapted from the national standards of the riparian states]
10. What are the measures implemented to prevent or limit the transboundary impact of accidental pollution?

- Notification and communication ✓
- Coordinated or joint early warning or alarm system for accidental water pollution ✓
- Other (please list): [fill in]
- No measures

If not, why not? What difficulties does your country face in putting in place such measures?: [fill in]

11. What are the measures implemented to prevent or limit the transboundary impact of extreme weather events and climate change?

- Notification and communication ✓
- Coordinated or joint alarm system for floods ✓
- Coordinated or joint alarm system for droughts ✓
- Joint climate change adaptation strategy ✓
- Joint disaster risk reduction strategy ✓
- Other (please list): [fill in]
- No measures

If not, why not? What difficulties does your country face in putting in place such measures?: [fill in]

12. Are procedures in place for mutual assistance in case of a critical situation?

Yes ✓/No ☐

If yes, please provide a brief summary: [Joint Operations during floods and food assistance during droughts]

13. Are the public or relevant stakeholders involved in transboundary water management in the basin, sub-basin, part of a basin or group of basins?

Yes ✓/No ☐

If yes, how? (please tick all applicable)

- Stakeholders have observer status in a joint body or mechanism ☐
- Stakeholders have an advisory role in the joint body ✓
- Stakeholders have a decision-making role in the joint body ☐

If yes, please specify the stakeholders for the joint body or mechanism: [fill in]

- Intergovernmental organizations ✓
- Private sectors organizations or associations ✓
- Water user groups or associations ✓
- Academic or research institutions ☐
- Other non-governmental organizations ☐
- General public ☐
Other (please specify): [fill in]

Availability of information to the public
✓

Consultation on planned measures or river basin management plans¹²
✓

Public involvement
✓

Other (please specify): [The general public is involved through local authorities and catchment and sub-catchment councils]

¹² Or, where applicable, aquifer management plans.
Name of the transboundary basin, sub-basin, part of a basin or group of basins:
[Zambezi Basin]

List of the riparian States: [Angola, Botswana, Malawi, Mozambique, Namibia, Tanzania, Zambia, and Zimbabwe]

In the case of an aquifer, what is the nature of the aquifer and its relation with the river or lake basin:

- Unconfined aquifer connected to a river or lake
- Unconfined aquifer with no or limited relation with surface water
- Confined aquifer connected to surface water
- Confined aquifer with no or limited relation with surface water
- Other

Please describe: []

Unknown

Percentage of your country’s territory within the basin, sub-basin, part of a basin or group of basins: [55.2%]

1. Is there one or more transboundary (bilateral or multilateral) agreement(s) or arrangement(s) on this basin, sub-basin, part of a basin or group of basins?
   - One or more agreements or arrangements exist and are in force  Yes □ ✓
   - Agreement or arrangement developed but not in force
   - Agreement or arrangement developed, but not in force for all riparians
   - Please insert the name of the agreement(s) or arrangement(s) [fill in]
   - Agreement or arrangement is under development
   - No agreement or arrangement

   If there is no agreement or arrangement or it is not in force, please explain briefly why not and provide information on any plans to address the situation: [fill in]

If there is no agreement or arrangement and no joint body or mechanism for the transboundary basin, sub-basin, part of a basin or group of basins then jump to question 4; if there is no agreement or arrangement, but a joint body or mechanism then go to question 3.

Questions 2 and 3 to be completed for each bilateral or multilateral agreement or arrangement in force in the transboundary basin, sub-basin, part of a basin or group of basins.

2. (a) Does this agreement or arrangement specify the area subject to cooperation?
   - Yes □ ✓

   If yes, does it cover the entire basin or group of basins and all riparian States?
Yes ✓

Additional explanations? [The agreement covers the entire basin shared among Angola, Botswana, Malawi, Mozambique, Namibia, Tanzania and Zimbabwe]

Or, if the agreement or arrangement relates to a sub-basin, does it cover the entire sub-basin?

N/A □

Additional explanations? [N/A]

Which States (including your own) are bound by the agreement or arrangement? (Please list): [Angola, Botswana, Malawi, Mozambique, Namibia, Tanzania and Zimbabwe]

(b) If the agreement or arrangement relates to a river or lake basin or sub-basin, does it also cover aquifers?

Yes ✓

If yes, please list the aquifers covered by the agreement or arrangement: [Zambezi Watercourse' makes reference to the system of Surface and groundwater of Zambezi. It is important to note that no Aquifer Specific Transboundary Agreements are in place for the Tranboubdary Aquifers shared by Zimbabwe in the Zambezi Basin. Acquifers covered by the ZAMCOM Agreement that fall in Zimbabwe’s territory are the the Middle Zambezi Aquifer and a portion of the Nata Karoo Sub-Basin/Caprivi Deep Seated Aquifer.]

(c) What is the sectoral scope of the agreement or arrangement?

- All water uses ✓
- A single water use or sector □
- Several water uses or sectors □

If one or several water uses or sectors, please list (check as appropriate):

Water uses or sectors

- Industry ✓
- Agriculture ✓
- Transport (e.g., navigation) □
- Households ✓
- Energy: hydropower and other energy types ✓
- Fisheries □
- Tourism ✓
- Nature protection ✓
- Other (please list): [mining, livestock and afforestation]

(d) What topics or subjects of cooperation are included in the agreement or arrangement?

Procedural and institutional issues

- Dispute and conflict prevention and resolution □
- Institutional cooperation (joint bodies) ✓
Consultation on planned measures ✓
Mutual assistance ✓

**Topics of cooperation**
- Joint vision and management objectives ✓
- Joint significant water management issues ✓
- Navigation ✓
- Human health ✓
- Environmental protection (ecosystem) ✓
- Water quality ✓
- Water quantity or allocation ✓
- Cooperation in addressing floods ✓
- Cooperation in addressing droughts ✓
- Climate change adaptation ✓

**Monitoring and exchange**
- Joint assessments ✓
- Data collection and exchange ✓
- Joint monitoring ✓
- Maintenance of joint pollution inventories ✓
- Elaboration of joint water quality objectives ✓
- Common early warning and alarm procedures ✓
- Exchange of experience between riparian States ✓
- Exchange of information on planned measures ✓

**Joint planning and management**
- Development of joint regulations on specific topics ✓
- Development of international or joint river, lake or aquifer basin management or action plans ✓
- Management of shared infrastructure ✓
- Development of shared infrastructure ✓
- Other (*please list*): [fill in]

(e) What are the main difficulties and challenges that your country faces with the agreement or arrangement and its implementation, if any?

- Aligning implementation of agreement or arrangement with national laws, policies and programmes ✓
- Aligning implementation of agreement or arrangement with regional laws, policies and programmes ✓
- Lack of financial resources ✓
- Insufficient human capacity ✓
Insufficient technical capacity ☑
Tense diplomatic relations ☐
Non-participation of certain riparian countries in the agreement ☐
No significant difficulties ☐
Other (please describe): [fill in]

(f) What are the main achievements in implementing the agreement or arrangements and what were the keys to achieving such success? [The main achievement is Integrated Cooperation in water resources development and management. This has led to the development of the Zambezi Basin Development Plan and the establishment of the Zambezi Watercourse Information System (ZAMWIS)]

(g) Please attach a copy of the agreement or arrangement or provide the web address of the document (please attach document or insert web address, if applicable): [http://www.zambezicommission.org/sites/default/files/publication_downloads/zamcom-agreement.pdf]

3. Is your country a member of any joint body or mechanism for this agreement or arrangement?
Yes ☑/No ☐

If no, why not? (please explain): [fill in]

Where there is a joint body or mechanism

(a) If there is a joint body or mechanism, which kind of joint body or mechanism (please tick one)?
   Plenipotentiaries ☐
   Bilateral commission ☐
   Basin or similar commission ☑
   Expert group meeting or meeting of national focal points ☐
   Other (please describe): [fill in]

(b) Does the joint body or mechanism cover the entire transboundary basin, sub-basin, part of a basin or group of basins?
Yes ☑/No ☐

(c) Which States (including your own) are members of the joint body or mechanism? (Please list): [Angola, Botswana, Malawi, Mozambique, Namibia, Tanzania and Zimbabwe]

(d) Are there any riparian States that are not members of the joint body or mechanism? (please list): [No]

(e) If not all riparian States are members of the joint body or mechanism how does the joint body or mechanism cooperate with them?
   No cooperation ☐
   They have observer status ☐
   Other (please describe): [N/A]
(f) Does the joint body or mechanism have any of the following features (please tick the ones applicable)?

A secretariat Yes ✓

If the secretariat is a permanent one, is it a joint secretariat or does each country host its own secretariat? (Please describe): [It is a joint permanent secretariat]

A subsidiary body or bodies □

Please list (e.g., working groups on specific topics): [Zambezi Technical Committee (ZAMTECH), Zambezi Technical Sub-Committee on Hydrology (ZAMSCOH)]

Other features (please list): [Zambezi Basin Council of Ministers]

(g) What are the tasks and activities of this joint body or mechanism?\(^{13}\)

- Identification of pollution sources □ ✓
- Data collection and exchange □ ✓
- Joint monitoring ✓
- Maintenance of joint pollution inventories □
- Setting emission limits □
- Elaboration of joint water quality objectives □ ✓
- Management and prevention of flood or drought risks □ ✓
- Preparedness for extreme events, e.g., common early warning and alarm procedures □ ✓
- Surveillance and early warning of water related disease □
- Water allocation and/or flow regulation □ ✓
- Policy development □
- Control of implementation □
- Exchange of experience between riparian States □ ✓
- Exchange of information on existing and planned uses of water and related installations □ ✓
- Settling of differences and conflicts □ ✓
- Consultations on planned measures □ ✓
- Exchange of information on best available technology □ ✓
- Participation in transboundary EIA □ ✓
- Development of river, lake or aquifer basin management or action plans □ ✓
- Management of shared infrastructure □ ✓

\(^{13}\) This may include tasks according to the agreement or tasks added by the joint body, or its subsidiaries. Both tasks which joint bodies coordinate and tasks which they implement should be included.
Addressing hydromorphological alterations ✓
Climate change adaptation ✓
Joint communication strategy ✓
Basin-wide or joint public participation and consultation of, for example, basin management plans ✓
Joint resources to support transboundary cooperation ✓
Capacity-building ✓
Any other tasks (please list): [fill in]

(h) What are the main difficulties and challenges that your country faces with the operation of the joint body or mechanism, if any?

Governance issues

Please describe, if any: [fill in]

Unexpected planning delays

Please describe, if any: [fill in]

Lack of resources ✓

Please describe, if true: [Inadequate resources to finance the activities of the Zambezi Watercourse Commission]

Lack of mechanism for implementing measures

Please describe, if true: [fill in]

Lack of effective measures

Please describe, if true: [fill in]

Unexpected extreme events ✓

Please describe, if true: [Floods and droughts]

Lack of information and reliable forecasts ✓

Please describe, if any: [This is primarily due to lack of infrastructure for collecting real-time and near real time hydrometeorological data. This negatively affects the timeous desernination of information.]

Others (please list and describe, as appropriate): [fill in]

(i) Does the joint body or mechanism, or its subsidiary bodies meet regularly?

Yes ✓ /No✘

If yes, how frequently does it meet?

More than once per year

Once per year ✓

Less than once per year

(j) What are the main achievements with regards to the joint body or mechanism?

[Developing a shared vision in the planning, development and management of water resources.]
(k) Did the joint body or mechanism ever invite a non-riparian coastal State to cooperate?

Yes □/No N/ □

If yes, please give details. If no, why not, e.g. are the relevant coastal States also riparian States and therefore already members of the joint body or mechanism? [fill in]

4. Have joint objectives, a common strategy, a joint or coordinated management plan or action plan been agreed for the basin, sub-basin, part of a basin or group of basins?

Yes ✓/No □


5. How is the transboundary basin, sub-basin, part of a basin or group of basins protected, including the protection of ecosystems, in the context of sustainable and rational water use?

Regulation of urbanization, deforestation, and sand and gravel extraction. □ ✓

Environmental flow norms, including consideration of levels and seasonality □ ✓

Water quality protection, e.g. nitrates, pesticides, faecal coliforms, heavy metals □ ✓

Water-related species and habitats protection □ ✓

Other measures (please describe): [fill in]

6. (a) Does your country regularly exchange information and data with other riparian States in the basin, sub-basin, part of a basin or group of basins?

Yes ✓/No □

(b) If yes, how often:

More than once per year □ ✓

Once per year □

Less than once per year □

(c) Please describe how information is exchanged (e.g. in connection with meetings of joint bodies): [Data are shared through the Zambezi Watercourse Information System (ZAMWIS)]

(d) If yes, on what subjects are information and data exchanged?

Environmental conditions □ ✓

Research activities and application of best available techniques □ ✓

Emission monitoring data □

Planned measures taken to prevent, control or reduce...
transboundary impacts ✓
Point source pollution sources ✓
Diffuse pollution sources ✓
Existing hydromorphological alterations (dams, etc.) ✓
Flows or water levels (including groundwater levels) ✓
Water abstractions ✓
Climatological information ✓
Future planned measures with transboundary impacts, such as infrastructure development ✓

Other subjects (please list): [fill in]

Other comments, e.g. spatial coverage of data and information exchange: [Date exchanged covers the whole basin]

(e) Is there a shared database or information platform?
Yes ✓/No ✓

(f) Is the database publicly available?
Yes ✓/No ✓

If yes, please provide the web address: [http://zamwis.zambezicomission.org/INFO]

(g) What are the main difficulties and challenges to data exchange, if applicable?
Frequency of exchanges ✓
Timing of exchanges ✓
Comparability of data and information ✓
Limited spatial coverage ✓
Inadequate resources (technical and/or financial) ✓

Other (please describe): [fill in]

Additional comments: [fill in]

(h) What are the main benefits of data exchange on the basin, sub-basin, part of a basin or group of basins? (please describe): [Informed water resources management and flood early warning]

7. Do the riparian States carry out joint monitoring in the transboundary basin, sub-basin, part of a basin or group of basins?
Yes ✓/No ✓

(a) If yes, what does the joint monitoring cover?

<table>
<thead>
<tr>
<th></th>
<th>Hydrological</th>
<th>Ecological</th>
<th>Chemical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Border surface waters</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Surface waters in the entire basin</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Surface waters on the main watercourse</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>
Hydrological | Ecological | Chemical
--- | --- | ---
Surface waters in part of the basin please describe [Hydrological data in the other parts of the basin] | ✓ | | 
Transboundary aquifer(s) (connected or unconnected) | | | 
Aquifer(s) in the territory of one riparian hydraulically connected to a transboundary river or lake | | | 

(b) If joint monitoring is carried out, how is this done?

- National monitoring stations connected through a network or common stations

  *Please describe: [The statins are run by the water resources agencies and departments of the member states]*

- Joint and agreed methodologies

  *Please describe: [fill in]*

- Joint sampling

  *Please describe: [fill in]*

- Common monitoring network

  *Please describe: [fill in]*

- Common agreed parameters

  *Please describe: [These spelt in the Zambezi basin Data Sharing Protocol]*

(c) Please describe the main achievements regarding joint monitoring, if any: [Improved flood forecasting and water resources management]

(d) Please describe any difficulties experienced with joint monitoring: [Inadequate financial resources]

8. Do the riparian States carry out joint assessment of the transboundary basin, sub-basin, part of a basin or group of basins?

Yes ✓/No

If yes, please provide the date of the last or only assessment, the frequency and scope (e.g., surface waters or groundwaters only, pollution sources, etc.) of the assessment, and assessment methodology applied: [Surface water assessment carried out in 2010]

9. Have the riparian States agreed to use joint water quality standards?

Yes ✓/No

If yes, what standards have been applied, e.g. international or regional standards (please specify which), or have national standards of the riparian States been applied? [Regional Stanadards used in conjunction with the standards of the Riparian States]
10. What are the measures implemented to prevent or limit the transboundary impact of accidental pollution?
   - Notification and communication ✓
   - Coordinated or joint early warning or alarm system for accidental water pollution
   - Other (please list): [fill in]
   - No measures
   
   If not, why not? What difficulties does your country face in putting in place such measures?: [fill in]

11. What are the measures implemented to prevent or limit the transboundary impact of extreme weather events and climate change?
   - Notification and communication ✓
   - Coordinated or joint alarm system for floods ✓
   - Coordinated or joint alarm system for droughts ✓
   - Joint climate change adaptation strategy ✓
   - Joint disaster risk reduction strategy ✓
   - Other (please list): [fill in]
   - No measures
   
   If not, why not? What difficulties does your country face in putting in place such measures?: [fill in]

12. Are procedures in place for mutual assistance in case of a critical situation?
    Yes ✓/No ☐
    If yes, please provide a brief summary: [Joint operations during flooding and food assistance during flooding]

13. Are the public or relevant stakeholders involved in transboundary water management in the basin, sub-basin, part of a basin or group of basins?
    Yes ✓/No ☐
    If yes, how? (please tick all applicable)
    - Stakeholders have observer status in a joint body or mechanism
    - Stakeholders have an advisory role in the joint body ✓
    - Stakeholders have a decision-making role in the joint body ✓
    
    If yes, please specify the stakeholders for the joint body or mechanism:
    - The Zambezi Basin Stakeholders’ Committee
    - Intergovernmental organizations ✓
    - Private sectors organizations or associations ✓
    - Water user groups or associations ✓
    - Academic or research institutions ✓
    - Other non-governmental organizations ☐
    - General public ✓
<table>
<thead>
<tr>
<th>Other (please specify): [fill in]</th>
</tr>
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<tbody>
<tr>
<td>Availability of information to the public</td>
</tr>
<tr>
<td>Consultation on planned measures or river basin management plans(^{14})</td>
</tr>
<tr>
<td>Public involvement</td>
</tr>
</tbody>
</table>

\(^{14}\) Or, where applicable, aquifer management plans.
III. Water management at the national level

In this section, you are requested to provide general information on water management at the national level as it relates to transboundary waters. Information on specific transboundary basins, sub-basins, part of basins and groups of basins, should be presented in section II and not repeated here.

1. (a) Does your country’s national legislation, policies, action plans and strategies refer to measures to prevent, control and reduce any transboundary impact?

Yes ✓ No □


(b) Does your country’s legislation provide for the following principles?

- Precautionary principle Yes ✓ No □
- Polluter pays principle Yes ✓ No □
- Sustainable development Yes ✓ No □
- User pays principle Yes ✓ No □

If yes, please briefly describe how these principles are implemented at the national level: [Polluter pays and precautionary principles are stipulated in the Environment Management Act Chapter 20:27 of 2002. The Environmental Management Agency is the government agency responsible for enforcing the polluter pays and precautionary principles through monitoring and policing. The user pays principle is enshrined in the Water Act Chapter 20:24 of 1998. Water users pay for water services through rates and levies paid to local authorities, the Zimbabwe National Water Authority and Sub-Catchment Councils]

(c) Does your country have a national licensing or permitting system for wastewater discharges and other point source pollution? (e.g., in industry, mining, energy, municipal, wastewater management or other sectors)?

Yes ✓ No □

If yes, for which sectors?

- Industry ✓
- Mining ✓
- Energy ✓
- Municipal ✓
- Livestock raising ✓
- Aquaculture ✓

Other (please list): [fill in]
Please briefly describe the licensing or permitting system, indicating whether the system provides for setting emission limits based on best available technology?

If yes, for which sectors? (please list): Effluent discharge in Zimbabwe is regulated by the Environmental Management Act (Chapter 20:27) and Statutory Instrument 7 of 2007 Environmental Management (Effluent and Solid Waste Disposal) Regulations. According to the Act, effluent is “waste water or other fluid originating from domestic, agricultural and industrial activity, whether treated or untreated and whether discharged directly or indirectly into the environment.”. Operators who discharge effluent into the environment are compelled to:

- Provide the Environment Management Board with accurate information on the quantity and quality of the discharge;
- Get an effluent discharge licence issued by the Environment Management Agency and pay a prescribed fee

“The Environment Management Agency is guided by the licence classification criteria contained in the Third Schedule of Statutory Instrument 7 of 2007 Environmental Management (Effluent and Solid Waste Disposal) Regulations in issuing the effluent discharge licences and testing the parameters of the discharge as outlined in the Fourth Schedule of the Statutory Instrument. The licences are classified as follows:

- A blue licence in respect of a disposal which is considered to be environmentally safe;
- A green licence in respect of a disposal that is considered to present a low environmental hazard;
- A yellow licence in respect of a disposal; which is considered to present medium environmental hazard; and
- A red licence in respect of a disposal that is considered to present a high environmental hazard.”

If not, please explain why not (giving the most important reasons) or provide information if there are plans to introduce a licensing or permitting system:

(d) Are the authorized discharges monitored and controlled?

Yes ✓/No

If yes, how? (Please tick the ones applicable):

- Monitoring of discharges ✓
- Monitoring of physical and chemical impacts on water ✓
- Monitoring of ecological impacts on water ✓
- Conditions on permits ✓
- Inspectorate ✓

Other means (please list): [fill in]

If your country does not have a discharge monitoring system, please explain why not or provide information if there are plans to introduce a discharge monitoring system: [fill in]

(e) What are the main measures which your country takes to reduce diffuse sources of water pollution on transboundary waters (e.g., from agriculture, transport, forestry or aquaculture)? The measures listed below relate to agriculture, but other sectors may be more significant. Please be sure to include these under “others”:

Legislative measures
Norm for uses of fertilizers ✓
Norms for uses of manure ☐
Permitting system ☐ ✓
Bans on or norms for use of pesticides ☐ ✓
Others (please list): [fill in]

Economic and financial measures
Monetary incentives ☐
Environmental taxes (such as fertilizer taxes) ☐
Others (please list): [fill in]

Agricultural extension services ☐

Technical measures
Source control measures
Crop rotation ☐ ✓
Tillage control ☐ ✓
Winter cover crops ☐ ✓
Others (please list): [fill in]

Other measures
Buffer/filter strips ☐ ✓
Wetland reconstruction ☐ ✓
Sedimentation traps ☐ ✓
Chemical measures ☐
Others (please list): [fill in]

Other types of measures ☐

If yes, please list: [fill in]

What are the main measures which your country takes to enhance water resources allocation and use efficiency?

Please tick as appropriate (not all might be relevant)

A regulatory system regarding water abstraction ☐ ✓
Monitoring and control of abstractions ☐ ✓
Water rights are defined ☐
Water allocation priorities are listed ☐ ✓
Water-saving technologies ☐ ✓
Advanced irrigation techniques ☐ ✓
Demand management activities ☐ ✓
Other means (please list) ☐

Does your country apply the ecosystems approach?
Yes ✓/No  
If yes, please describe how: [Land, water and ecosystems are managed through stakeholder driven processes]

(h) Does your country take specific measures to prevent the pollution of groundwaters?
Yes ✓/No  
If yes, please briefly describe the most important measures: [Borehole registration and monitoring]

2. Do your national laws require transboundary environmental impact assessment (EIA)?
Yes ✓/No  
If yes, please briefly describe the legislative basis, and any related implementing procedures. [Environmental Management Act]
If not, do other measures provide for transboundary EIA? [fill in]

IV. Final questions

1. What are the main challenges your country faces in cooperating on transboundary waters?
   - Differences between national administrative and legal frameworks  
   - Lack of relevant data and information  ✓
   - Difficulties in data and information exchange  ✓
   - Sectoral fragmentation at the national level  
   - Language barrier  
   - Resource constraints  ✓
   - Environmental pressures, e.g. extreme events  ✓
   - Sovereignty concerns  
   Please list other challenges and/or provide further details: [fill in]

2. What have been the main achievements in cooperating on transboundary waters?
   - Improved water management  ✓
   - Enhanced regional integration, i.e. beyond water  ✓
   - Adoption of cooperative arrangements  ✓
   - Adoption of joint plans and programmes  ✓
   - Long-lasting and sustained cooperation  ✓
   - Financial support for joint activities  ◼
   - Stronger political will for transboundary water cooperation  ◼
   - Better knowledge and understanding  ✓
   - Dispute avoidance  ✓
   - Stakeholder engagement  ✓
Please list other achievements, keys to achieving success, and/or provide concrete examples: [fill in]

3. Please indicate which institutions were consulted during the completion of the questionnaire

- Joint body or mechanism
- Other riparian or aquifer countries
- National water management authority
- Environment agency/ authority
- Basin authority (national)
- Local or provincial government
- Geological survey (national)
- Non-water specific ministries, e.g. foreign affairs, finance, forestry and energy
- Civil society organizations
- Water user associations
- Private sector
- Other (please list): [fill in]

Please briefly describe the process by which the questionnaire was completed:
[The questionnaire was completed through consultation with the above stakeholders. Consultations were made through telephone interviews and emails.]

4. If you have any other comments please add them here (insert comments): [fill in]

5. Name and contact details of the person(s) who filled out the questionnaire (please insert): 

   Gerald T. Mundondwa  
   Hydrologist  
   Department of Water Resources Planning and Management  
   Ministry of Lands, Agriculture, Water and Rural Resettlement  
   11th Floor Kaguvi Building  
   Corner 4th Street/Central Avenue  
   Harare, Zimbabwe  
   Email: gerald.phi@gmail.com  
   Tel: +263 242 700596  
   Cell: +263772253241

   Date: [05 June 2020] Signature: [Signature]

Thank you very much for taking the time to complete this report.
AGREEMENT

BETWEEN

THE REPUBLIC OF MOZAMBIQUE

AND

THE REPUBLIC OF ZIMBABWE

ON

CO-OPERATION ON THE DEVELOPMENT, MANAGEMENT AND SUSTAINABLE UTILISATION OF THE WATER RESOURCES OF THE BUZI WATERCOURSE
PREAMBLE

WHEREAS the Republic of Mozambique and the Republic of Zimbabwe (hereinafter jointly referred to as the “Parties” and individually as the “Party”);

BEARING IN MIND the principles advocated in the Declaration by the Heads of State or Government of Southern African States “Towards the Southern African Development Community” and the Treaty of the Southern African Development Community signed on 17 August 1992; as well as the SADC Protocol on Gender and Development signed on 17 August 2008.

CONSCIOUS of the mutual advantages of co-operation with regard to the utilisation and development of shared transboundary water resources and the significant contribution which such co-operation could make towards the peace and prosperity of the Parties;

CONSCIOUS of the paucity, value of water resources and the need to provide the Parties with access to sufficient and safe water supplies;

ACKNOWLEDGING the effects of Climate Change on water resources management and development and the environment;

COMMITTED to the realisation of the principles of equitable and reasonable utilisation, as well as the efficient management and sustainable development of the Buzi Watercourse;

DETERMINED to co-operate, seek mutually satisfactory solutions for the needs of the Parties towards water protection and to ensure the sustainable, equitable and participatory management of the water resources of the Buzi Watercourse and increase the derived social and economic benefits for the people living in the basin and other stakeholders;

EXPRESSING the common desire to proceed with sustainable development on the basis of Chapter 18 of Agenda 21 adopted by the United Nations Conference on Environment and Development on 14 June, 1992;

DESIROUS of extending and consolidating the existing relations of good neighbourliness and co-operation with regard to the management and development of the water resources of the Buzi Watercourse on the basis of the Convention on the Law of the Non-navigational Uses of International Watercourses, adopted by the General Assembly of the United Nations on 21 May, 1997, the Revised Protocol on Shared Watercourses in the Southern African Development Community, adopted in August, 2000, the Joint Water Commission Agreement between the Parties signed on 2 December, 2002 as well as the Pungwe Water Sharing Agreement signed on 11 July, 2016; and

RECOGNISING that the Parties need effective and co-ordinated planning to agree on water use in the shared watercourse to enable sustainable development;
HEREBY agree as follows:

**Article 1**

**Definitions**

_In this Agreement the following terms shall have the meanings ascribed to them hereunder unless the context otherwise indicates:_

- **“Basin or Catchment”** means a topographical area upstream of specific reference point that is drained by a river system;

- **“Buzi Watercourse”** means the system of surface and ground waters of the Buzi constituting, by virtue of their physical relationship, a unitary whole flowing normally into a common terminus, the Indian Ocean;

- **“Climate Change”** means significant changes in global temperature, precipitation, wind patterns and other measures of climate that occur over several decades or longer;

- **“Diversions”** means abstractions, impoundments and appropriations of water that change the flow of a river;

- **“Emergency situation”** means a situation that causes or poses an imminent threat of causing serious harm to the Parties and which results suddenly from natural causes, such as torrential rains, floods, droughts, landslides or earthquakes, or from human conduct;

- **“Environmental Impact Assessment”** means a procedure for evaluating the likely impact of a planned measure on the environment;

- **“Equitable and Reasonable Utilisation”** means equitable and reasonable utilisation as provided for under Article 3 (7) (a) and (b), and Article 3 (8) (a) and (b) of the Revised Protocol on Shared Watercourses in the Southern African Development Community;

- **“Flow Regime”** means changes of river level or flows with time and the volume of water in rivers, lakes, reservoirs and marshes;

- **“Impact”** means any effect on the environment caused by an activity that affects the environment including: effects on human health and safety, flora, fauna, soil, air, water, climate, landscape, socio-economic environment or the interaction among these factors and cultural heritage or socio-economic conditions resulting from alterations to these factors;

- **“Intra-basin transfer”** means the artificial conveyance of water from one sub-catchment to another within the same basin;
“Inter-basin transfer” means a withdrawal of water from one river catchment, followed by use and/or return of some or all of that water to a second river basin. The river basin from which the withdrawal or diversion occurs is termed the ‘donor’ basin, and the river basin to which all or a portion of the water is diverted and returned is termed the ‘receiving’ basin;

“Integrated Water Resource Management” means a process which promotes the coordinated development and management of water, land and related resources in order to maximise economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems;

“Long-Term” means a period of 10 to 20 years;

“Medium-Term” means a period of 5 up to 10 years;

“Ministers” means Ministers responsible for water affairs of the Parties;

“Ongoing activity” means any action that would have been subjected to a decision of a competent authority in accordance with an applicable national procedure if it had been a planned measure;

“Planned measure” means any activity or a major change to an ongoing activity subject to a decision of a competent authority in accordance with applicable national procedures;

“Pollution” means any detrimental alteration in the composition or quality of the waters of a shared watercourse, which results directly or indirectly from human conduct;

“SADC Protocol” means the Revised Protocol on Shared Watercourses in the Southern African Development Community signed on the 7th of August, 2000 in Windhoek, Namibia;

“Short-Term” means a period of up to 5 years;

“Strategic Plan” means a master development plan comprising a general planning tool and process for the identification, categorisation and prioritisation of projects and programmes for the efficient management and sustainable development of a Watercourse;

“Significant harm” means non-trivial harm capable of being established by objective evidence without necessarily rising to the level of being substantial;

“Stakeholders” means an individual, living organism, group or organisation that has interest or concern, which can affect or be affected by activities implemented in the Buzi Watercourse;

“Sub-catchment” means a division of a catchment allowing runoff management as near to the source as is reasonable;

“Sustainable Utilisation” means the ability to use water in sufficient quantities and quality
from the local to the global scale to meet the needs of humans and ecosystems for the present and the future; and

"Trans-boundary Impact" means any adverse effect, caused by human conduct, within an area under the jurisdiction of a Party caused by a proposed activity, the physical origin of which is situated wholly or in part within the area under the jurisdiction of the other Party.

Article 2
Scope

This Agreement applies to management and protection measures related to the development and sustainable use of the Buzi Watercourse shared by the Parties.

Article 3
Objective

The objective of this Agreement is to promote coordinated co-operation between the Parties to ensure development, management and sustainable utilisation of the water resources of the Buzi Watercourse.

Article 4
General Principles

1. In the implementation of this Agreement, the Parties commit themselves to the general principles of the SADC Protocol which include, but not limited to, the following:
   a) Sustainable utilisation;
   b) Equitable and reasonable utilisation;
   c) Protection, preservation and conservation of the environment; and
   d) Prevention and mitigation of significant harm.

2. These principles shall be interpreted according to the provisions of Article 3 of the SADC Protocol and developed in accordance with the best international practices.

3. In the implementation of this Agreement, the Parties commit themselves to the provisions of the SADC Protocol on Gender and Development.

Article 5
Responsibilities of the Parties

1. The Parties shall individually and where appropriate, jointly, develop and adopt technical, legal, administrative, financial and other reasonable measures in order to:
a) prevent, reduce and control pollution of surface and ground waters and protect and enhance the quality status of the waters and associated ecosystems for the benefit of present and future generations;
b) prevent, eliminate, mitigate and control Trans-boundary Impact;
c) co-ordinate management plans and planned measures in accordance with Article 4 (1) of the SADC Protocol;
d) promote partnership and stakeholder involvement for effective and efficient water use and management;
e) promote the security of relevant water related infrastructure and prevent accidents;
f) monitor and mitigate the effects of floods and droughts;
g) provide warning of possible floods and implement agreed upon urgent measures during flood situations;
h) establish comparable monitoring systems, methods and procedures;
i) exchange information on the water resources quality, quantity and use;
j) promote the implementation of this Agreement according to its objectives and defined principles; and
k) implement capacity and confidence building programmes.

2. The Parties shall co-operate with the SADC organs and other Shared Watercourse institutions.

3. The Parties shall give their full co-operation and support to the decisions of the Joint Water Commission (JWC), and shall take the necessary legislative, administrative, technical and other measures to give effect to this Agreement or such decisions.

4. The Parties shall develop and implement a Strategic Plan which will guide the development and management of projects and programmes relating to the resources of the Buzi Watercourse.

5. The Parties shall agree on financing modalities for projects and programmes relating to the resources of the Buzi Watercourse.

6. The Parties shall in their respective countries adopt a stakeholder participatory approach in the management, development and utilisation of the water resources of the Buzi Watercourse.

Article 6

Shared Watercourse Institutions

1. The joint body for co-operation between the Parties shall be the JWC.

2. The JWC shall exercise the powers established in the JWC Agreement as well as those
conferred by the Parties, in order to pursue the objectives and provisions established herein.

3. The Parties may establish a joint institution, through an agreement, to carry out daily activities related to the management of the Buzi Watercourse.

4. The joint institution referred to in Article 6 (3) above shall provide regular reports to the JWC.

Article 7

Sustainable Utilisation

1. The Parties are entitled, in their respective territories, to optimal and sustainable utilisation of and benefits from the water resources of the Buzi Watercourse, taking into consideration the interests of the other Party, consistent with adequate protection of the Watercourse for the benefit of present and future generations.

2. The Parties shall co-ordinate their management activities through:
   a) the exchange of information on their respective experiences and perspectives; and
   b) the co-ordination of management plans, programmes and measures, as provided in this Agreement.

3. In pursuance of the objective of this Article, the Parties shall follow the Water Allocation guidelines and the Dam Operating Rules as stipulated in Annex 2, Article 3.

4. In further pursuance of the objective of this Article, the Parties shall disclose, in terms of Annex 3, their intentions of developing new projects that fall outside the scope of Annex 2 during the period of validity of this Agreement.

5. The Parties are committed to develop measures towards improvement of efficiency and rational use of water and its conservation and to promote more efficient water use through adopting better available technology.

Article 8

Equitable and Reasonable Utilisation

1. The Buzi Watercourse shall be managed and utilised in an equitable and reasonable manner.

2. In the application of Equitable Reasonable Utilisation, the Parties shall take into account all the relevant factors and circumstances including, the following:
   a) geographic, hydrographic, hydrological, climatic, ecological and other factors of a natural character;
   b) the social, economic, and environmental needs of the Parties;
   c) the population dependent on the Buzi Watercourse in the territory of the Parties;
d) the effects of the use(s) of the Buzi Watercourse in either of the Parties’ territories;

e) existing and potential uses of the waters of the Buzi Watercourse;

f) existing and planned infrastructure which has the capacity to regulate streamflow of the Watercourse;

g) conservation, protection, development and economic use of the water resources of the Buzi Watercourse and the costs of measures taken to that effect;

h) the availability of alternatives of comparable value, to a planned or existing use of the waters of the Buzi Watercourse; and

i) agreements in force between the Parties.

3. The weight to be given to each factor is to be determined by its importance in comparison with that of other relevant factors. In determining what is an equitable and reasonable use, all relevant factors are to be considered together and a conclusion reached on that basis.

4. The basis for water allocation of the Buzi Watercourse is contained in Annex 2 of this Agreement.

Article 9

Protection, Preservation and Conservation of the Environment

1. The Parties shall individually and where appropriate, jointly, protect, preserve and conserve the ecosystem and the aquatic environment of the Buzi Watercourse, taking into account generally accepted international rules and standards.

2. Each Party shall take all measures necessary to prevent the introduction of alien or new species, into the Buzi Watercourse, which may have effects detrimental to the ecosystem of the Buzi Watercourse resulting in significant harm to the other Party.

3. In ensuring the protection and the preservation of the environment the Parties shall comply with the provisions of Article 4(2) of the SADC Protocol.

Article 10

Prevention and Mitigation of Significant Harm

1. The Parties shall, in utilising the Buzi Watercourse in their territories, take all appropriate measures to prevent the causing of significant harm to the other Party.

2. Where significant harm is nevertheless caused to the other Party, the Party whose use causes such harm shall, take appropriate and corrective measures, having due regard for the provisions of sub-Article (1) above in consultation with the affected Party, to eliminate or mitigate such harm and where appropriate discuss the question of remedial action.

3. Unless the Parties have agreed otherwise, for the protection of the interests of persons,
natural or juridical, who have suffered or are under a serious threat of suffering significant transboundary harm as a result of activities related to the shared Watercourse, the Parties shall not discriminate on the basis of nationality or residence or place where the injury occurred, in granting to such persons, in accordance with its legal system, access to judicial or other procedures, or a right to claim compensation or other relief in respect of significant harm caused by such activities carried on in its territory.

Article 11

Gender Mainstreaming

The Parties shall adopt the necessary measures, policies, strategies, programmes and projects to eliminate discrimination and to achieve gender equality and equity.

Article 12

Water Quality and Prevention of Pollution

1. In order to protect and conserve the water resources of the Buzi Watercourse, the Parties shall, through resolutions adopted by the JWC, and, when appropriate, through the co-ordination of management plans, programmes and measures, proceed to:
   a) develop an evolving classification system for the water resources of the Buzi Watercourse;
   b) classify and state the objectives and criteria in respect of water quality variables to be achieved through the agreed classification system for the water resources;
   c) adopt a list of substances the introduction of which is to be prohibited or limited, investigated or monitored in the water resources of the Buzi Watercourse;
   d) adopt techniques and practices to prevent, reduce and control the pollution and environmental degradation of the Buzi Watercourse that may cause significant harm to the other Party or to their environment, including human health and safety or the use of the waters for any beneficial purpose, or to the living resources of the Watercourse; and
   e) implement a regular monitoring programme including biological, physical and chemical aspects for the Buzi Watercourse and report at the intervals established by the JWC on the status and trends of the associated aquatic, marine and riparian ecosystems in relation to the water quality of the Watercourse.

2. Until such time that water quality objectives and criteria are determined, the Parties shall comply with the provisions of Annex 4.
Article 13

Measurements of Water Quantity and Quality

1. The Parties shall establish, maintain and operate an effective and uniform system:
   a) for making and recording continuous measurements on the Buzi Watercourse of:
      i. the flow within the boundaries of each Party; and
      ii. the volume of stored water, at such locations as the Parties deem necessary to determine:
         (i) the volume of the abstractions from several portions of the catchment area;
         (ii) the flow at selected locations; and
         (iii) the losses from selected reaches with their positions and modes of occurrence.
   b) for making and recording continuous measurements of all diversions, whether natural or artificial, or partly natural and partly artificial and rainfall from the Buzi Watercourse; and
   c) for measuring and monitoring the quality of:
      i. water in the Buzi Watercourse; and
      ii. stored water at such locations within the Buzi Watercourse.

2. The Parties agree to put in place an integrated surface water quantity and quality monitoring network.

Article 14

Exchange of Data and Information

1. The Parties, when sharing data and information shall:
   a) on a regular basis exchange available data and information on the condition of the Buzi Watercourse, in particular that of hydrological, hydrogeological, meteorological, environmental conditions, water quality as well as related forecasts, as provided in the Annex 5;
   b) exchange data, information and study reports on the activities that are likely to cause significant trans-boundary impacts;
   c) exchange at intervals agreed by the JWC, information on the use, quantity and quality of the water resource and the ecological state of the Buzi Watercourse necessary for the implementation of this Agreement;
   d) exchange information and consult each other and if necessary, negotiate the possible effects of Planned measures on the condition of the Buzi Watercourse; and
   e) develop the appropriate measures to ensure that the information is
homogenous, compatible and comparable as agreed by the JWC.

2. If a Party is requested by the other Party to provide data or any information referred to in Article 13 (1), the Party shall be obliged to comply with the request in accordance with Annex 5.

Article 15

Droughts and Floods

1. The Parties undertake to develop and implement a strategy on flood and drought warning and mitigation and any other strategies adopted by the Parties on the Buzi Watercourse.

2. The allocation of the water during drought periods shall be adjusted in accordance with the Annex 2 on Flow Regime which provides the basis on water allocation.

3. The Parties agree to the following order of priorities for water allocation:
   a) Urban, rural and livestock consumption;
   b) Industrial and Mining (IM) water use;
   c) Irrigation;
   d) Environmental Flows (reduced accordingly); and
   e) Others.

4. The Parties shall notify each other without delay and by the most expeditious means of any flood danger.

5. The affected Party may, during flood and drought situations, require the other Party to adopt the flood and drought warning and mitigation measures contained in the strategy referred to in sub-Article 1 above.

Article 16

Climate Change

The Parties shall undertake studies to identify, adopt and implement measures to adapt and mitigate against the impacts of Climate Change in the Buzi Watercourse.

Article 17

Trans-boundary Impact

1. The planned measures listed in Annex 3, regardless of their location that by themselves or by accumulation with the existing ones, which have the potential of significant Trans-boundary Impact on the Watercourse, shall not commence before the provisions of Article 4(1) of the SADC Protocol are complied with.

2. Whenever, a planned measure, not listed in Annex 3, is likely to cause significant Trans-boundary Impact or if either Party expresses concern that such may occur, it
shall not commence before the provisions of Article 4(1) of the SADC Protocol are complied with.

3. In case of planned measures involving a significant Trans-boundary Impact of substantial magnitude, the proponent shall conduct an Environmental Impact Assessment which takes Trans-boundary Impact into account in accordance with procedures determined by the Parties.

4. Whenever an ongoing activity causes or is likely to cause a significant Trans-boundary Impact which will lead a Party to comply with an obligation under this Agreement, the Party concerned shall address the matter through the co-ordination of management plans, programmes or measures.

**Article 18**

**Incidents of Accidental Pollution and Other Emergency Situations**

1. The Parties undertake through their relevant institutions to collaborate and ensure that they:
   a) immediately and by the most expeditious means available, notify the other potentially affected Party, the SADC organs or any other authorised competent international organisations and institutions of any incidents of accidental pollution and other emergency situations originating within their respective territories;
   b) promptly supply the necessary information to the other affected Party and competent organisations with a view to co-operate in the prevention, mitigation and elimination of the harmful effects of the emergency; and
   c) individually and where appropriate, jointly, develop contingency plans for responding to any incidents of accidental pollution and other emergency situations in co-operation, where appropriate, with other potentially affected and/or authorised competent international organisations to take immediately, all practicable measures necessitated by the circumstances to prevent, mitigate and eliminate the harmful effects of the emergency.

**Article 19**

**Flow Regime**

1. The flow regime of the Buzi Watercourse is contained in Annex 2, Article 2.

2. Any abstraction of water from the Buzi Watercourse, regardless of the use or geographical destination of such water, shall be in conformity with Annex 2, Articles 2 and 3 and relevant provisions of this Agreement and its annexes.

3. The Parties have considered the following criteria in establishing the flow regime:
   a) the geographical, hydrological, climatic and other natural characteristics of the
Buzi Watercourse;

b) the need to ensure water of sufficient quantity with acceptable water quality to sustain the watercourse and its associated ecosystems;

c) any present and foreseeable future water requirements; and

d) existing and planned infrastructure which has the capacity to regulate the stream flow of the Buzi Watercourse.

4. The Parties shall develop and implement groundwater quantity and quality monitoring according to Annex 2, Article 4.

Article 20

Intra and Inter-basin Water Transfers

1. The Parties agree on the possibility of intra and inter-basin water transfer in order to develop the resources of the Buzi Watercourse and other basins.

2. The Parties shall notify each other on the need of water transfer to fulfil requirements within and/or to other river basins with water scarcity.

3. The decision of Intra and Inter-basin water transfer shall be made by the Parties with the recommendation of the JWC.

Article 21

Capacity Building

The Parties shall individually and where appropriate, jointly:

a) identify and prioritise capacity building programmes necessary for the implementation and monitoring of this Agreement; and

b) promote awareness and implementation of capacity building programmes for Integrated Water Resource Management institutions and stakeholders.

Article 22

Annexes

1. The Annexes 1, 2, 3, 4 and 5 are part of this Agreement.

2. The Parties may agree on any other annexes they consider necessary through diplomatic channels.

Article 23

Settlement of Disputes

1. Any dispute between the Parties concerning the interpretation or implementation of this Agreement shall be settled amicably through consultation and negotiations
between the Parties.

2. Where the dispute has not been settled within one (1) year, from the date upon which such negotiations were requested, it shall be submitted for mediation as agreed by the Parties.

3. In the event that the dispute has not been resolved by mediation within six (6) months, the dispute shall be referred to a Tribunal of Arbitrators (the Tribunal) appointed by the Parties, as follows:

   (a) the Tribunal shall comprise of three (3) arbitrators, two (2) of which shall be appointed by each Party; and

   (b) the two (2) arbitrators appointed by each Party shall appoint the third arbitrator who shall be the chairperson.

4. The decision of the Tribunal shall be final and binding on the Parties.

5. The costs of any arbitration under this Article shall be borne equally by the Parties.

6. While the process of dispute resolution is ongoing, the Parties agree not to proceed with the object of the dispute until it is resolved.

Article 24
Amendments

1. This Agreement may be amended at any time by mutual consent of the Parties, by an exchange of notes through diplomatic channels.

2. This Agreement may be revised and updated every ten (10) years.

Article 25
Entry into Force, Duration and Termination

1. This Agreement shall be subject to ratification by each Party.

2. This Agreement shall enter into force thirty (30) days after the deposit of the instrument of ratification by the Parties and shall remain in force for a period of ten (10) years.

3. The Agreement shall automatically be renewed for a similar period, unless either Party gives prior written notice of twelve (12) months of its intention to terminate the Agreement.

4. Unless otherwise specifically agreed by the Parties, termination shall not affect the validity of any ongoing activities not fully completed at the time of termination.
Article 26

Depositary of the Agreement

1. The Executive Secretary for SADC shall be the Depositary of this Agreement.

2. The Parties agree to inform each other on the completion of their internal legal processes.

3. The last Party to complete the internal process of ratification shall inform the other and shall be responsible for registering the Agreement with SADC within thirty (30) days.

4. The last Party to complete the internal process of ratification shall request SADC to register this Agreement with the United Nations.

5. In the event that this Agreement is terminated, the Party that initiated the process of termination, shall notify the depositary of the termination of the Agreement within three (3) months after termination of this Agreement.

IN WITNESS WHEREOF the undersigned, being the duly authorised representatives of either Party, have signed and sealed this Agreement in two original copies, in both English and Portuguese languages, both texts being equally authentic.

Signed at Mutare on this 29th day of the month of July 2019

For and on behalf of the Republic of Mozambique
Minister of Public Works, Housing and Water Resources

For and on behalf of the Republic of Zimbabwe
Minister of Lands, Agriculture, Water, Climate and Rural Resettlement
ANNEX 1

MAP OF THE BUZI WATERCOURSE
ANNEX 2

FLOW REGIME AND WATER ALLOCATION
ANNEX 2

FLOW REGIME AND WATER ALLOCATION

Article 1
Determining Criteria

(1) Determination of the flow regime is based on the criteria in Article 8.2 of the Agreement.
(2) The Parties accord a first priority to supply water for domestic, livestock and industrial use.
(3) If, upon review of the hydrology of the system, more water is found to be available in the Buzi watercourse than that contemplated in this Annex, the Parties shall give priority to the water uses referred to in sub Article 1(2) of this Annex, when considering the allocation of the water.
(4) Monitoring of the flow regime shall be carried out at appropriate hydrometrical stations as indicated in Annex 5 of the Agreement.

Article 2
Sub-catchments Considered for the Buzi Watercourse

(1) The Buzi Watercourse, covers a total area of 28,870 km², and it is sub-divided in the following eleven sub-catchments as shown in a Table 1 below.
(2) The net contributions to the total net natural mean annual runoff – MAR, in the natural condition without any land and water use effects and allowing for river channel losses, of 6 878 million m³ of the Buzi watercourse at the estuary by the various catchments are estimated as follows:

<table>
<thead>
<tr>
<th>ID</th>
<th>Sub-catchments</th>
<th>Location</th>
<th>Area (Km²)</th>
<th>MAR (Mm³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Revue (Zomwe)</td>
<td>Zimbabwe</td>
<td>508</td>
<td>176</td>
</tr>
<tr>
<td>2</td>
<td>Rusitu / Lucite</td>
<td>Zimbabwe</td>
<td>1535</td>
<td>665</td>
</tr>
<tr>
<td>3</td>
<td>Buzi Zimbabwe</td>
<td>Zimbabwe</td>
<td>1690</td>
<td>538</td>
</tr>
<tr>
<td>4</td>
<td>Upper Revue</td>
<td>Mozambique</td>
<td>2333</td>
<td>555</td>
</tr>
<tr>
<td>5</td>
<td>Middle Revue</td>
<td>Mozambique</td>
<td>2463</td>
<td>560</td>
</tr>
<tr>
<td>6</td>
<td>Lower Revue</td>
<td>Mozambique</td>
<td>3139</td>
<td>839</td>
</tr>
<tr>
<td>7</td>
<td>Upper Lucite</td>
<td>Mozambique</td>
<td>3251</td>
<td>1366</td>
</tr>
<tr>
<td>8</td>
<td>Lower Lucite</td>
<td>Mozambique</td>
<td>1885</td>
<td>385</td>
</tr>
<tr>
<td>9</td>
<td>Upper Buzi</td>
<td>Mozambique</td>
<td>4476</td>
<td>1177</td>
</tr>
<tr>
<td>10</td>
<td>Middle Buzi</td>
<td>Mozambique</td>
<td>4332</td>
<td>330</td>
</tr>
<tr>
<td>11</td>
<td>Lower Buzi</td>
<td>Mozambique</td>
<td>3258</td>
<td>288</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td>28,870</td>
<td>6878</td>
</tr>
</tbody>
</table>

Table 1: Buzi Watercourse Sub-catchments, Area and Mean Annual Runoff (MAR) Contributions

Article 3
Utilisation of the Water Resources of the Buzi Watercourse

(1) Based on the estimates of the present availability of water in the Buzi Watercourse, the Parties agree to the following annual water uses that will result in a reduction in runoff of the Buzi Watercourse:

<table>
<thead>
<tr>
<th>ID</th>
<th>Type of Use</th>
<th>Annual Water Uses (Mm³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Urban water supply to Chipinge and Chimanimani</td>
<td>13.7</td>
</tr>
<tr>
<td>2</td>
<td>Rural water supply</td>
<td>6.5</td>
</tr>
<tr>
<td>3</td>
<td>Livestock</td>
<td>4.7</td>
</tr>
<tr>
<td>4</td>
<td>Irrigation</td>
<td>250</td>
</tr>
<tr>
<td>5</td>
<td>Industry and other water uses</td>
<td>7.00</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>381.9</td>
</tr>
</tbody>
</table>

Table 3: Utilisation of the Water Resources of the Buzi Watercourse in Mozambique

<table>
<thead>
<tr>
<th>ID</th>
<th>Type of Use</th>
<th>Annual Water Uses (Mm³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Urban water supply to Chimoio, Manica and Gondola</td>
<td>95.3</td>
</tr>
<tr>
<td>2</td>
<td>Rural water supply</td>
<td>8.4</td>
</tr>
<tr>
<td>3</td>
<td>Livestock</td>
<td>7.6</td>
</tr>
<tr>
<td>4</td>
<td>Irrigation</td>
<td>265</td>
</tr>
<tr>
<td>5</td>
<td>Industry and other water uses</td>
<td>8.5</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>384.8</td>
</tr>
</tbody>
</table>

The Parties shall develop and adopt Dam Operating Rules to be approved by the JWC for the benefit of all the stakeholders within the basin in an integrated and equitable manner.

The water allocations in both countries exclude planned projects.

The Parties may convert some of their agreed irrigation use to first priority use at a conversion factor approved by the JWC at the time that the need arises.

The water allocations in Zimbabwe assumes the construction of Mirror Dam.

The water allocations in Mozambique do not require any additional storage dam although Cintura and Lucite Dams and water transfer schemes from Buzi to Save Basin, should be considered for the long term. The construction of Tzate Dam reflects the need for hydropower.

The Parties may convert some of their agreed irrigation use to first priority use at a conversion factor approved by the JWC at the time that the need arises.

(2) The water use (Mm³) by categories in the two countries is given in the following table 4.
Table 4: Water Use Categories in Zimbabwe and Mozambique

<table>
<thead>
<tr>
<th>Type of Water Uses</th>
<th>Zimbabwe (sub-catchments)</th>
<th>Mozambique (sub-catchments)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Revue</td>
<td>Lucite</td>
</tr>
<tr>
<td>Urban water supply</td>
<td>0</td>
<td>6.0</td>
</tr>
<tr>
<td>Rural water supply</td>
<td>0.3</td>
<td>2.5</td>
</tr>
<tr>
<td>Livestock</td>
<td>0.7</td>
<td>0.0</td>
</tr>
<tr>
<td>Irrigation</td>
<td>95.0</td>
<td>94.0</td>
</tr>
<tr>
<td>Industry and other uses</td>
<td>2.8</td>
<td>1.8</td>
</tr>
<tr>
<td><strong>SUB-TOTAL</strong></td>
<td>99.0</td>
<td>106.2</td>
</tr>
<tr>
<td><strong>Country Total</strong></td>
<td>381.0</td>
<td></td>
</tr>
</tbody>
</table>

Where there is a zero (0) in the table it means that there is no water uses in that category.

(3) Until detailed studies on environmental flows required in the various sub-catchments and sections of the main river and tributaries are executed and the environmental flow can thus be defined, the Parties agree that sufficient water should flow in the river system and enter the Buzi Estuary. The following flows, in million m³/month, have been considered to be adequate in normal years, with the average approximately equal to 15% of the MAR at the estuary, or 32.8 m³/s:

- Wet months (December – April) – 21.5 m³/s
- Dry months (May – November) – 11.2 m³/s

(4) When the JWC determines that a drought condition exists and that the water use by the Parties as given in sub-Articles (1), (2) and (3) must be reduced, the irrigation use and the environmental flows shall be the first to be reduced. This shall be followed by reductions in the first priority use, in accordance with plans prepared by the different water users and approved by the JWC.

(5) The operating rules of the existing Chicamba dam and of the new dams that are proposed, namely Mirror Dam and Tsate Dam, shall be reviewed by the JWC from time to time. The operating rules developed by the Parties for those dams in their territory shall ensure that the river losses and the agreed water allocations of the various sectors in the Buzi Watercourse, corresponding to the actual land use, can be supplied. The JWC shall approve the criteria for reducing water use that are included as part of the operating rules. These shall take account of the availability of water and the water requirements in sub-Articles (1), (2), (3) and (4), the determining criteria defined in Article 1 and the acceptability of restrictions for the first priority and irrigation users and the tolerance of the riverine and estuarine ecosystems to reductions in water supply. Adequate account shall be taken of transmission losses and other return flows.
Article 4  
Monitoring of Groundwater Quantity and Quality

1. The Parties shall develop and implement a groundwater monitoring strategy.
2. Each Party should install and maintain a number of boreholes in selected aquifers for the purpose of monitoring groundwater quantity and quality.

Article 5  
Water Conservation

Any Party may use a saving in the agreed water use by a particular sector, as a result of better management practices or other water conservation measures, including pricing policies, for any other purpose within its own territory, provided that the JWC shall be notified accordingly.

Article 6  
Generation of Hydropower

A Party may utilize water within its own territory for the generation of hydropower at existing hydropower stations, and those under construction at the time of this Agreement coming into force, and future installations after the JWC has agreed to the operating rules.

Article 7  
Concluding Provisions

The JWC shall assess any problems regarding the flow regime, any problems that will affect the normal utilization of dams and any problems arising from the minimum flows specified to maintain the ecosystems, taking into consideration the provisions of Article 14 of the Agreement. Any affected Party shall inform the JWC about the problems, so that measures may be considered and adopted to establish a temporary or revised interim flow regime conforming to the general criteria set out in Article 8.2 of the Agreement.
ANNEX 3

PLANNED MEASURES

Article 1

Determining Criteria

1. The Parties accord a high priority to supply water for domestic, livestock and industrial use. In particular, the Parties recognize the strategic importance of guaranteeing the future water demand of the cities and towns of Chipinge and Chimanimani in Zimbabwe and Chimoio, Manica and Gondola in Mozambique.

2. The Parties recognize the projects in this Annex as projects that are contemplated by the Parties to commence before 2025 and that have previously been identified and studied by one or more of the Parties for future implementation.

3. The projects are classified into water utilization projects and water resources development projects.

4. The Parties recognize the usefulness of studying the creation of structural and non-structural measures in order to make more water available, as indicated in Annex 2.

5. For the mere reason that a project is listed in this Annex, the Party is not exempted from complying with the provisions of the Agreement.

6. If more water is made available through structural and non-structural measures in the Buzi watercourse, the Parties shall give priority to the water uses referred to in sub Article 1, when considering the allocation of the water, taking into account the equitable and reasonable utilization by the Parties of the water resources of the Buzi Watercourse.

7. A Party may develop any other project not listed in this Annex, in accordance with the provisions of the Agreement.

Article 2

Planned Measures in Zimbabwe

The following are planned water resources development projects (Table 5) in the Buzi Watercourse in Zimbabwe:
Table 5: Planned Water Utilization and Development Projects in Zimbabwe

<table>
<thead>
<tr>
<th>ID</th>
<th>Name of project</th>
<th>Purpose</th>
<th>Description of the project</th>
</tr>
</thead>
</table>
| 1  | Mirror Dam                             | Augmentation of the water supply to the towns of Chipinge and irrigation in the Buzi sub-basin | Location - Buzi River  
High - 37 m high  
Live storage capacity -23 Mm3 |
| 2  | Haroni Dam                             | To support urban water supply and hydropower generation to Chimaniranti, in the Rusitu / Lucite sub-catchment | Location – Haroni River  
High - 15 m high and with 2  
Live storage capacity = 10 Mm3 |
| 3  | Nyabamba, Rusitu, Nhahonde, Kupinga and Silverstream | Hydropower generation.                                                | Mini- Hydropower Schemes with a total installed capacity of 11.6 MW |
| 4  | Construction of small dams, less than 10 m high | For domestic supply, small scale irrigation, livestock and mini hydropower generation. | Location -  
High < 10m  
Live storage capacity - < 1Mm3 |
### Article 3

**Planned Measures in Mozambique**

The following are planned water resources development projects (Table 6) in the Buzi Watercourse in Mozambique:

**Table 6: Planned Water Utilization and Development Projects in Mozambique**

<table>
<thead>
<tr>
<th>ID</th>
<th>Name of Project</th>
<th>Purpose</th>
<th>Description of the Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tsate Dam</td>
<td>Augmentation of the water supply to the towns of Chimoio, Manica and Gondola, with additional water secured from the Revué sub-basin, via the intake at Chicamba Dam and hydropower generation.</td>
<td>Location - Revue River High - 34 m high Live storage capacity - 35 Mm³</td>
</tr>
<tr>
<td>2</td>
<td>Cintura Dam</td>
<td>Increased irrigation development along the Buzi, Lucite and Revue rivers, reaching a total of about 22,000 ha.</td>
<td>Location - Luciti River High - 81 m high Live storage capacity - 720 Mm³</td>
</tr>
<tr>
<td>3</td>
<td>Miracuene Dam</td>
<td>Increased irrigation development along the Buzi, Lucite and Revue rivers, reaching a total of about 22,000 ha.</td>
<td>Location - Buzi River High - 66 m high Live storage capacity - 709 Mm³</td>
</tr>
<tr>
<td>4</td>
<td>Mweneze Dam</td>
<td>Irrigation and hydropower generation.</td>
<td>Location-Luciti High - 10m Live storage capacity - 100 Mm³</td>
</tr>
<tr>
<td>5</td>
<td>Construction of small dams, less than 10 m</td>
<td>For domestic supply, small scale irrigation, livestock and mini hydropower generation.</td>
<td>Location-High &lt; 10m Live storage capacity - &lt; 1 Mm³</td>
</tr>
<tr>
<td>6</td>
<td>Munhinga Dam</td>
<td>Hydropower generation.</td>
<td>Location- Munhinga Installed Capacity - 9 MW</td>
</tr>
<tr>
<td>7</td>
<td>Mavuza II Dam</td>
<td>Hydropower generation.</td>
<td>Location- Revue River Installed Capacity - 8.2 MW</td>
</tr>
<tr>
<td>8</td>
<td>Mavuza III Dam</td>
<td>Hydropower generation.</td>
<td>Location- Revue River Installed Capacity - 56 MW</td>
</tr>
<tr>
<td>9</td>
<td>Toa Dam</td>
<td>Hydropower generation.</td>
<td>Location- Revue River Installed Capacity - 4.4MW</td>
</tr>
</tbody>
</table>
ANNEX 4

GUIDELINES ON WATER QUALITY MONITORING
ANNEX 4
GUIDELINES ON WATER QUALITY MONITORING

Article 1
Objective of Water Quality Monitoring

1. The objective of water quality monitoring is to ensure that the Buzi watercourse is used in a sustainable manner, in accordance with this Agreement, particularly Article 11.

Article 2
Water Quality Management

1. Water quality is described by the physical, chemical and biological characteristics of the watercourses.

2. Water quality will be managed considering also the character and condition of the in-stream and riparian habitat and the characteristics, condition and distribution of the aquatic biota.

3. Specific studies shall be conducted by the JWC to define the requirements in terms of water quantity and quality for environmental conservation in important sections of the Buzi river and its tributaries and at the estuary.

Article 3
Water Quality Management Goals

1. The water quality management goals for the Buzi watercourse system should ensure that existing aquatic ecosystems are protected, allow for the abstraction for use in the production of drinking water after appropriate treatment and for other water uses without treatment, prevent significant adverse transboundary impacts, prevent deterioration of the water quality of the watercourses, and conform to the values set for the parameters indicated in Appendix A.

2. The JWC can review and may, at any time, revise the parameters, values and/or frequencies given in Appendix A. Revisions may be considered either at the request of a Party or on a proposal within the JWC, in respect of specific river reaches or estuary and whenever there are changes in the human, infrastructural and financial resources of any of the Parties or there are improvements in technical and scientific knowledge.

3. The values mentioned in Appendix A may be temporarily waived in the case of extreme natural hydrological occurrences, including natural enrichment in certain substances. Where a Party waives the stipulated values, it shall forthwith notify the other Party thereof, stating its reasons, the periods anticipated and the proposed mitigation measures to be introduced, if any.

4. Whenever surface water fails to comply with the values for parameters set in Appendix A,
the Parties shall consider adopting, with the least delay, the measures required for the improvement of its quality, including a thorough investigation of the relevant sources of point and diffuse pollution and the enforcement of suitable effluent discharge limits and programs of environmental management.

Article 4
Monitoring of Surface Water Quality

1. Surface water sampling and analysis shall be done for the variables and at the frequency mentioned in Appendix A, and at the prioritized surface monitoring stations, listed in Appendix B or at suitable locations in the vicinity of these stations.

2. The results from water quality monitoring shall be exchanged within a week after sample analyses are done.

3. The Parties shall be alerted immediately if any extreme values are found for the parameters indicated, where use of the watercourse could pose a hazard to humans, other water uses or the environment.

4. Existing historical water quality data for the surface water monitoring stations in the Buzi Watercourse, listed in Appendix B, shall be exchanged between the Parties within twelve months of signing of the Agreement.

5. Quarterly reports on the water quality status at the monitoring stations shall be exchanged by the Parties, by within Thirty (30) days after the reporting period.

6. An annual report on the water quality status at the monitoring stations shall be exchanged by the Parties, by 31st January for each year.

7. The Parties shall individually or, where agreed, jointly promote actions to identify, design, establish and re-enforce monitoring systems for the Buzi watercourse.

Article 5
Monitoring of Groundwater Quality

1. Groundwater is part of the watercourse and the sustainable development of groundwater resources at a regional level shall be promoted. This shall include the assessment, exploitation and protection of the groundwater component of the watercourses.

2. Each Party should install and maintain a number of boreholes in selected aquifers for the purpose of monitoring groundwater quality.
Article 6
Bio-Monitoring of Water Quality

The Parties shall develop and implement bio-monitoring programmes in the Buzi Watercourse.

APPENDIX A: WATER QUALITY GUIDELINES

The Parties agree that the minimum parameters to be monitored are those specified in Table 7.

Table 7: Water Quality Monitoring Parameters

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Basic physico-chemical characterization</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature</td>
<td>°C</td>
<td>Blue &lt;35, Green &lt;40, Yellow &lt;40, Red &lt;45</td>
</tr>
<tr>
<td>Electrical Conductivity</td>
<td>μS/Cm</td>
<td>Blue &lt;1000, Green &lt;2000, Yellow &lt;3000, Red &lt;3500</td>
</tr>
<tr>
<td>pH</td>
<td>Ph</td>
<td>Blue 6.0-9.0, Green 5.6-9.10, Yellow 4.5-10.12, Red 0.4-12.14</td>
</tr>
<tr>
<td>Dissolved Oxygen</td>
<td>% Saturation</td>
<td>Blue &gt;60, Green &gt;50, Yellow &gt;30, Red &gt;15</td>
</tr>
<tr>
<td>Total dissolved solids</td>
<td>mg/L</td>
<td>Blue &lt;500, Green &lt;1500, Yellow &lt;2000, Red &gt;3000</td>
</tr>
<tr>
<td>Total suspended solids</td>
<td>mg/L</td>
<td>Blue &lt;25, Green &lt;50, Yellow &lt;100, Red &lt;150</td>
</tr>
<tr>
<td>Turbidity</td>
<td>NTU</td>
<td>Blue &lt;5, Green *, Yellow *, Red *</td>
</tr>
<tr>
<td><strong>Inorganic non metallic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Biological Oxygen Demand</td>
<td>mg/L</td>
<td>Blue &lt;30, Green &lt;50, Yellow &lt;100, Red &lt;120</td>
</tr>
<tr>
<td>Chemical Oxygen Demand</td>
<td>mg/L</td>
<td>Blue &lt;60, Green &lt;90, Yellow &lt;150, Red &lt;200</td>
</tr>
<tr>
<td>Ammonia (N)</td>
<td>mg/L</td>
<td>Blue &lt;0.5, Green ≤1.0, Yellow ≤1.5, Red ≤2.0</td>
</tr>
<tr>
<td>Total Nitrogen (N)</td>
<td>mg/L</td>
<td>Blue &lt;10, Green &lt;20, Yellow ≤30, Red ≤50</td>
</tr>
<tr>
<td>Nitrates</td>
<td>mg/L</td>
<td>Blue &lt;10, Green ≤20, Yellow ≤30, Red ≤50</td>
</tr>
<tr>
<td>Nitrites</td>
<td>mg/L</td>
<td>Blue</td>
</tr>
<tr>
<td>Phosphates</td>
<td>mg/L</td>
<td>Blue &lt;0.5, Green ≤1.5, Yellow ≤3, Red ≤5</td>
</tr>
<tr>
<td>Sulphates</td>
<td>mg/L</td>
<td>Blue &lt;250, Green &lt;300, Yellow ≤400, Red ≤500</td>
</tr>
<tr>
<td>Oxygen Absorbed</td>
<td>PV</td>
<td>Blue &lt;10, Green ≤15, Yellow ≤25, Red ≤40</td>
</tr>
<tr>
<td>Dissolved oxygen</td>
<td>mg/L</td>
<td>Blue 60, Green &gt;50, Yellow &gt;30, Red &gt;15</td>
</tr>
<tr>
<td><strong>Metals</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aluminium</td>
<td>mg/L</td>
<td>Blue *, Green *, Yellow *, Red ≤5</td>
</tr>
<tr>
<td>Cadmium (Cd)</td>
<td>mg/L</td>
<td>Blue ≤0.01, Green ≤0.05, Yellow ≤0.1, Red ≤0.3</td>
</tr>
<tr>
<td>Chromium (Cr (Hex))</td>
<td>mg/L</td>
<td>Blue ≤0.05, Green ≤0.1, Yellow ≤0.2, Red ≤0.5</td>
</tr>
<tr>
<td>Copper (Cu)</td>
<td>mg/L</td>
<td>Blue ≤1.0, Green ≤2.0, Yellow ≤3, Red ≤5590</td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td>mg/L</td>
<td>Blue ≤0.05, Green ≤0.1, Yellow ≤0.2, Red ≤0.5</td>
</tr>
<tr>
<td>Iron (Fe)</td>
<td>mg/L</td>
<td>Blue ≤1.0, Green ≤2.0, Yellow ≤5.0, Red ≤8.0</td>
</tr>
<tr>
<td>Nickel (Ni)</td>
<td>mg/L</td>
<td>Blue ≤0.3, Green ≤0.6, Yellow ≤0.9, Red ≤4.5</td>
</tr>
<tr>
<td>Selenium (Se)</td>
<td>mg/L</td>
<td>Blue ≤0.05, Green ≤0.1, Yellow ≤1.5, Red ≤3</td>
</tr>
<tr>
<td>Zinc (Zn)</td>
<td>mg/L</td>
<td>Blue ≤0.5, Green ≤4.0, Yellow ≤5.0, Red ≤15.0</td>
</tr>
<tr>
<td>Manganese (Mn)</td>
<td>mg/L</td>
<td>Blue ≤0.1, Green ≤0.3, Yellow ≤0.4, Red ≤0.5</td>
</tr>
<tr>
<td>Mercury (Hg)</td>
<td>μg/L</td>
<td>Blue ≤0.01, Green ≤0.02, Yellow ≤0.03, Red ≤0.05</td>
</tr>
<tr>
<td>Copper</td>
<td>mg/L</td>
<td>Blue ≤1.0, Green ≤2.0, Yellow ≤3.0, Red ≤5.0</td>
</tr>
<tr>
<td>Chloride</td>
<td>mg/L</td>
<td>Blue ≤250, Green ≤300, Yellow ≤400, Red ≤500</td>
</tr>
</tbody>
</table>


<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyanide And Related Cyanide</td>
<td>Ppm</td>
<td>≤0.07</td>
</tr>
<tr>
<td>Compounds (CN)</td>
<td></td>
<td>≤0.1</td>
</tr>
<tr>
<td>Cyanide (As Free CN)</td>
<td></td>
<td>≤0.15</td>
</tr>
<tr>
<td>Microbiology</td>
<td></td>
<td>≤1</td>
</tr>
<tr>
<td>Faecal Coliforms (No./100 ml)</td>
<td></td>
<td>≤1000</td>
</tr>
<tr>
<td></td>
<td>(No./100 ML)</td>
<td>&gt;1000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt;1500</td>
</tr>
<tr>
<td></td>
<td></td>
<td>≤2000</td>
</tr>
</tbody>
</table>

Blue Normal: Considered to be environmentally safe.
Green: Considered to present low environmental hazard.
Yellow: Considered to present a medium environmental hazard.
Red: Considered to present a high environmental hazard.
Negligible

The following parameters are to be analyzed in situ: pH, Temperature, Dissolved Oxygen (DO), Turbidity, Electrical Conductivity (EC). The water quality analysis should be carried out at certified laboratories.

The sampling and laboratory analysis should be made quarterly and more or less evenly distributed along the hydrological year, covering the wet and the dry seasons. If technical or financial reasons put a constraint on the number of measurements, the minimum should be two per year, one during the wet season and one during the dry season.

Although the laboratory analyses of metals, particularly cadmium, iron, lead, manganese, zinc and mercury, are quite expensive, an effort should be made in both countries to do it once a year, even if in fewer sites which are deemed to be more critical.

The legal regulations of each country defining the acceptable limits of the monitoring parameters in terms of water quality should be followed, until a general agreement on water quality standards is reached at the SADC level.
APPENDIX B: SURFACE WATER QUALITY MONITORING STATIONS

The Parties agree that the surface water quality monitoring stations in Zimbabwe are as shown in Table 8.

The Parties agree to put in place an integrated surface water quantity and quality monitoring network.

Table 8: Surface Water Monitoring Sites in Zimbabwe

<table>
<thead>
<tr>
<th>ID</th>
<th>Reference</th>
<th>River</th>
<th>Site Description</th>
<th>Latitude</th>
<th>Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Budzi/15</td>
<td>Buzi</td>
<td>Budzi river</td>
<td>-20.29113°</td>
<td>32.68932°</td>
</tr>
<tr>
<td>2</td>
<td>Rusitu/15</td>
<td>Rusitu</td>
<td>Charter turn off towards Kopa shopping centre.</td>
<td>-20.05878°</td>
<td>32.85535°</td>
</tr>
<tr>
<td>3</td>
<td>Nyahode/15</td>
<td>Nyahode</td>
<td>Nyahode river</td>
<td>-20.05162°</td>
<td>32.85594°</td>
</tr>
<tr>
<td>4</td>
<td>ER93</td>
<td>Silverstream</td>
<td>Silver Stream River. Bridge before Wattle Factory.</td>
<td>-19.99528°</td>
<td>32.68932°</td>
</tr>
<tr>
<td>5</td>
<td>Munene</td>
<td>Munene Trib</td>
<td>The area just below the Mutare LA dumpsite.</td>
<td>-18.99314°</td>
<td>32.67706°</td>
</tr>
<tr>
<td>6</td>
<td>Mazonwe/15</td>
<td>Mazonwe</td>
<td>Burma valley, within the Vumba Banana Plantations</td>
<td>-19.11082°</td>
<td>32.85310°</td>
</tr>
<tr>
<td>7</td>
<td>Haroni/14</td>
<td>Haroni</td>
<td>Downstream after the DTZ mine and slimes dam.</td>
<td>-19.80891°</td>
<td>32.96682°</td>
</tr>
</tbody>
</table>

The suggested surface water monitoring stations in Mozambique are listed in the following table 9.

Table 9: Surface Water Monitoring Sites in Mozambique

<table>
<thead>
<tr>
<th>ID</th>
<th>Reference</th>
<th>River</th>
<th>Site Description</th>
<th>Latitude</th>
<th>Longitude</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>ESN</td>
<td>Buzi</td>
<td>Upper Buzi</td>
<td>-20.609772°</td>
<td>32.980569°</td>
</tr>
<tr>
<td>2</td>
<td>ESN</td>
<td>Buzi</td>
<td>Buzi upstream Lucite junction</td>
<td>-20.195444°</td>
<td>33.701546°</td>
</tr>
<tr>
<td>3</td>
<td>E188</td>
<td>Buzi</td>
<td>The area more downstream in Buzi Basin, before discharge into the ocean</td>
<td>-19.897438°</td>
<td>34.617211°</td>
</tr>
<tr>
<td>4</td>
<td>E259</td>
<td>Revue</td>
<td>Northwest Manica upstream Chicamba Dam</td>
<td>-18.986980°</td>
<td>33.049930°</td>
</tr>
<tr>
<td>5</td>
<td>ESN</td>
<td>Zonwe</td>
<td>Upstream of Chicamba Dam</td>
<td>-19.005450°</td>
<td>33.096320°</td>
</tr>
<tr>
<td>6</td>
<td>ESN</td>
<td>Munene</td>
<td>Munene river at the border</td>
<td>-19.018696°</td>
<td>33.135205°</td>
</tr>
<tr>
<td>7</td>
<td>E654</td>
<td>Mossurize</td>
<td>Mossurize river at the border</td>
<td>-19.765868°</td>
<td>33.845805°</td>
</tr>
<tr>
<td>8</td>
<td>E246</td>
<td>Lucite</td>
<td>Lucite upstream Buzi junction. Major tributary of Buzi river</td>
<td>-19.97883</td>
<td>33.39619</td>
</tr>
<tr>
<td>9</td>
<td>E84</td>
<td>Buzi</td>
<td>Eapungabera</td>
<td>-20.4667</td>
<td>32.7667</td>
</tr>
</tbody>
</table>
ANNEX 5

EXCHANGE OF INFORMATION
ANNEX 5

EXCHANGE OF INFORMATION

Article 1
General Principles

1. The Parties shall exchange or facilitate the exchange of information on water quantity, water quality, water use, hydraulic infrastructures and other relevant data and information.

2. The Parties shall individually or, where agreed, jointly develop a mutually accessible and appropriate website where information to be exchanged, as required in terms of the Main Agreement and this Annex, shall be posted and updated by the Parties.

3. The Parties shall put the necessary administrative procedures in place in order to comply with the exchange of information.

4. The Parties shall individually and, where agreed, jointly determine the budget necessary for the actions described, including activities for providing equipment, software and its installation, running and maintenance costs and training activities.

5. The Parties shall establish clear channels of communications, indicating the responsibilities of each involved institution, the personnel and the contacts (phone, cell, fax and e-mail) as well as contacts for emergency situations.

Article 2
Use of Information and Data

1. Buzi basin related information published by a Party within its territory may be used by the other Party for any purpose relevant to the objectives of the Agreement, subject to acknowledgment of the source.

2. Information given by one Party for the exclusive use of the other Party for the purpose of planning, development and management of the Buzi watercourse shall only be used for that purpose.
Article 3
Rainfall Data

1. The following table lists the rainfall monitoring network (Table 10) whose data is to be collected and exchanged by the Parties.

<table>
<thead>
<tr>
<th>Order</th>
<th>Location</th>
<th>Reference</th>
<th>Name / location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Zimbabwe</td>
<td>27-2478 VP 7787 E</td>
<td>Vumba Nation</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>27-2478 VP 8710 H</td>
<td>Chimanimani</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>22-VN 2477 6386 B</td>
<td>Highland Estate</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>27-VN 2477 6167 Z</td>
<td>Chipinge</td>
</tr>
<tr>
<td>1</td>
<td>Mozambique</td>
<td>P-77</td>
<td>Estaquinha</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>P-93</td>
<td>Vila Manica</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>P-122</td>
<td>Acude Mavuizi</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>P-158</td>
<td>Chicamba Dam</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>P-422</td>
<td>Dombe</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>P-759</td>
<td>Messambuzi</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>P-785</td>
<td>Espungabera</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>P-66</td>
<td>Garvin</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>P-91</td>
<td>Garuso</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>P-345</td>
<td>Bandua</td>
</tr>
<tr>
<td>11</td>
<td></td>
<td>P-351</td>
<td>Mucha</td>
</tr>
<tr>
<td>12</td>
<td></td>
<td>P-359</td>
<td>Chibabava</td>
</tr>
<tr>
<td>13</td>
<td></td>
<td>P-1088</td>
<td>Vila do Buzi</td>
</tr>
<tr>
<td>14</td>
<td></td>
<td>P-1110</td>
<td>Daicata</td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>P-1274</td>
<td>Goonda</td>
</tr>
</tbody>
</table>

2. In each station, data should be collected on a daily basis.

3. Exchange of rainfall data should be done on a daily basis during the rainy season and monthly in normal situation.

4. If a flood is foreseen or a high value of rainfall\(^1\) is recorded in a station of a Party, the exchange of information should be done on a daily or hourly basis.

---

\(^1\) For example, a value above the 80% probability threshold.
1. The following table lists the runoff monitoring network (Table 11) whose data is to be collected and exchanged by the Parties.

<table>
<thead>
<tr>
<th>Order</th>
<th>Location</th>
<th>Reference</th>
<th>Code / name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>F3</td>
<td>Upper Chisengu</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>F4</td>
<td>Lower Chisengu</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>F-7</td>
<td>Nyahodi</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>F8</td>
<td>Nyahadi</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>F-10</td>
<td>Zonwe</td>
</tr>
<tr>
<td>6</td>
<td>Zimbabwe</td>
<td>F11</td>
<td>Rusitu Power Station</td>
</tr>
<tr>
<td>7</td>
<td>Zimbabwe</td>
<td>F16</td>
<td>Chipudzana Southdown</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>F-18</td>
<td>Buzi Ypress</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>F19</td>
<td>Bangazaan U/S</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>F20</td>
<td>Bangazaan U/S</td>
</tr>
<tr>
<td>11</td>
<td></td>
<td>F21</td>
<td>Bangazaan D/S</td>
</tr>
<tr>
<td>1</td>
<td>Mozambique</td>
<td>E-84</td>
<td>Espungabera</td>
</tr>
<tr>
<td>2</td>
<td>Mozambique</td>
<td>E-188</td>
<td>Estaquinha</td>
</tr>
<tr>
<td>3</td>
<td>Mozambique</td>
<td>E-244</td>
<td>Chihabava</td>
</tr>
<tr>
<td>4</td>
<td>Mozambique</td>
<td>E-246</td>
<td>Dombc</td>
</tr>
<tr>
<td>5</td>
<td>Mozambique</td>
<td>E-456</td>
<td>Goonda</td>
</tr>
<tr>
<td>6</td>
<td>Mozambique</td>
<td>E-654</td>
<td>Revue na EN1</td>
</tr>
<tr>
<td>7</td>
<td>Mozambique</td>
<td>CHD</td>
<td>Chicambe Dam</td>
</tr>
</tbody>
</table>
2. In each station, water level data should be collected on a daily basis.

3. In each station not provided with a measuring weir, periodic flow measurements shall be made to allow for the re-calibration of the rating curve.

4. Water level data shall be converted into flow data using the adequate rating curve in each station.

5. Exchange of runoff data, comprising water levels, flows and flow measurements, should be done on a monthly basis.

6. If a flood is foreseen or a high-water level, above a defined level of alarm, is recorded in a station of a Party, the exchange of information should be done on a daily or hourly basis.

**Article 5**

**Water Quality Data**

1. The monitoring stations, the parameters to be observed and the frequency of sampling is defined in Annex 4.

2. The results from water quality monitoring shall be exchanged within a week after sample analyses are done.

3. The Parties shall be alerted immediately if any extreme values are found for the parameters indicated, where use of the watercourse could pose a hazard to humans, other water uses or the environment.

**Article 6**

**Water Use Data**

1. The Parties shall collect and organize data on permits and effective water use in different categories: priority uses, namely urban, rural, livestock, tourism, industry and mining; irrigation; and afforestation.

2. Exchange of water use data shall be done on a yearly basis.

**Article 7**

**Hydraulic Infrastructures Data**

1. The Parties shall exchange information about major hydraulic infrastructures, particularly storage dams higher than 6 meters, indicating the characteristics of the dam, spillway and outlets, storage capacity and any other relevant aspect.
2. Each Party shall receive from the owners or the operators of the dams in its country, at least on a monthly basis, the following daily data: water level at the reservoir, reservoir outflow, estimated inflow, rainfall and evaporation.

3. Exchange of reservoir data shall be done on a quarterly basis, including water balance and dam status report.

Article 8
Annual Report

1. A joint annual report shall be prepared by the parties and will include hydrological data and analysis, water quality data and analysis, water use data and trends and hydraulic infrastructures data and information.

Article 9
Other Relevant Information

1. The Parties shall exchange other relevant information as soon as it becomes available, including but not being limited to:
   a) Study reports on the Buzi Watercourse or relevant to the Buzi basin;
   b) New legislation on water resources management or influencing water resources management;
   c) Policies and strategies for water resources development and management prepared at a national or regional level;
   d) Potential new large water users;
   e) Potential new sources of water pollution;
   f) Plans and studies for new hydraulic infrastructures, particularly storage dams.
AGREEMENT

BETWEEN

THE REPUBLIC OF ZIMBABWE

AND

THE REPUBLIC OF MOZAMBIQUE

ON

CO-OPERATION ON THE DEVELOPMENT, MANAGEMENT AND SUSTAINABLE UTILISATION OF THE WATER RESOURCES OF THE PUNGWE WATERCOURSE
PREAMBLE

The Republic of Zimbabwe and the Republic of Mozambique (hereinafter individually referred to as the “Party” and jointly referred to as the “Parties”);

BEARING IN MIND the principles advocated in the Declaration by the Heads of State or Government of Southern African States “Towards the Southern African Development Community” and the Treaty of the Southern African Development Community signed on 17 August 1992;

CONSCIOUS of the mutual advantages of co-operation with regard to the utilisation and development of shared transboundary water resources and the significant contribution which such co-operation could make towards the peace and prosperity of the Parties;

CONSCIOUS of the paucity, value of water resources and the need to provide the Parties with access to sufficient and safe water supplies;

AKNOWLEDGING the effects of Climate Change on water resources management and development and the environment;

COMMITTED to the realisation of the principles of equitable and reasonable utilisation as well as the efficient management and sustainable development of the Pungwe Watercourse;

DETERMINED to co-operate, seek mutually satisfactory solutions for the needs of the Parties towards water protection and to ensure the sustainable, equitable and participatory management of the water resources of the Pungwe Watercourse, and increase the derived social and economic benefits for the people living in the basin, and other stakeholders;

EXPRESSING their common desire to proceed with sustainable development on the basis of Chapter 18 of Agenda 21, adopted by the United Nations Conference on Environment and Development on 14 June 1992;

DESIROUS of extending and consolidating the existing relations of good neighborliness and cooperation with regard to the management and development of the water resources of the Pungwe Watercourse on the basis of the Convention on the Law of the Non-navigational Uses of International Watercourses, adopted by the General Assembly of the United Nations on 21 May 1997, the Revised SADC Protocol on Shared Watercourses in the Southern African Development Community, adopted in August, 2000 as well as the Joint Water Commission (hereinafter referred
to as “JWC”) between the Parties established on 2 December 2002;

RECOGNISING that the Parties need effective and co-ordinated planning to agree on water use in the shared watercourse to enable sustainable development;

HEREBY agree as follows:

ARTICLE 1

Definitions

In this Agreement the following terms shall have the meanings ascribed to them hereunder, unless the context otherwise indicates:

“Catchment” means an area through which any rainfall will drain into the watercourse through surface flow to a common point;

“Diversions” includes abstractions, impounding and appropriations of water that reduce the flow of a river;

“Emergency situation” means a situation that causes or poses an imminent threat of causing serious harm to the Parties and which results suddenly from natural causes, such as torrential rains, floods, landslides or earthquakes, or from human conduct;

“Environmental Impact Assessment” means a national procedure for evaluating the likely impact of a planned measure on the environment;

“Equitable and Reasonable Utilisation (ERU)” means equitable and reasonable utilisation as provided for under Article 3 (7) (a) and (b), and Article 3 (8)(a) and (b) of the Revised SADC Protocol on Shared Watercourses in the Southern African Development Community;

“Flood and Drought Warning and Mitigation Strategy” means the strategy developed under the Pungwe Basin-Transboundary Integrated Water Resources Management and Development (PP2);

“Impact” means any effect on the environment caused by an activity, that affects the environment including: effects on human health and safety, flora, fauna, soil, air, water, climate, landscape, socio-economic environment or the interaction among these factors and cultural heritage or socio-economic conditions resulting from alterations to these factors;
“Ministers” means Ministers responsible for water affairs of the Parties;

“Ongoing activity” means any activity that would have been subjected to a decision of a competent authority in accordance with an applicable national procedure if it had been a planned measure.

“Planned measure” means any activity or a major change to an ongoing activity subject to a decision of a competent authority in accordance with applicable national procedures;

“Pollution” means any detrimental alteration in the composition or quality of the waters of a shared watercourse, which results directly or indirectly from human conduct;

“Pungwe Watercourse” means the system of surface and ground waters of the Pungwe constituting, by virtue of their physical relationship a unitary whole flowing normally into a common terminus, the Indian Ocean.

“SADC Protocol” means the Revised SADC Protocol on Shared Watercourses in the Southern African Development Community signed on the 7th of August 2000 in Windhoek - Namibia;

“Significant harm” means non-trivial harm capable of being established by objective evidence without necessarily rising to the level of being substantial.

“Strategic Plan” means a master development plan comprising a general planning tool and process for the identification, categorisation and prioritisation of projects and programmes for the efficient management and sustainable development of the Pungwe Watercourse;

“Sustainable Development” is development which meets the needs of present generations without compromising future generations to meet their own needs;

“Trans-boundary Impact” means any adverse effect, caused by human conduct, within an area under the jurisdiction of a Party caused by a proposed activity, the physical origin of which is situated wholly or in part within the area under the jurisdiction of the other Party;
ARTICLE 2

Scope

This Agreement applies to management and protection measures related to the development and use of the Pungwe Watercourse shared by the Parties.

ARTICLE 3

Objective

The objective of this Agreement is to promote coordinated co-operation between the Parties to ensure development, management and sustainable utilisation of the water resources of the Pungwe Watercourse.

ARTICLE 4

General Principles

1. In the implementation of this Agreement, the Parties commit themselves to the general principles of the SADC Protocol which include, but are not limited to the following:
   a) Sustainable utilisation;
   b) Equitable and reasonable utilisation;
   c) Protection, preservation and conservation of the environment; and
   d) Prevention and mitigation of significant harm.
2. These principles shall be interpreted according to the provisions of Article 3 of the SADC Protocol and developed in accordance with the best international practices.

ARTICLE 5

Responsibilities of the Parties

1. The Parties shall, individually and, where appropriate, jointly, develop and adopt technical, legal, administrative and other reasonable measures in order to:
   a) prevent, reduce and control pollution of surface and ground waters and protect and enhance the quality status of the waters and associated ecosystems for the benefit of present and future generations;
   b) prevent, eliminate, mitigate and control trans-boundary impact;
   c) co-ordinate management plans and planned measures, in accordance to Article 4 (1) of the SADC Protocol;
   d) promote partnership and stakeholder involvement for effective and efficient water use and management;
e) promote the security of relevant water related infrastructure and prevent accidents;
f) monitor and mitigate the effects of floods and droughts;
g) provide warning of possible floods and implement agreed upon urgent measures during flood situation;
h) establish comparable monitoring systems, methods and procedures;
i) exchange information on the water resources quality, quantity and use;
j) promote the implementation of this Agreement according to its objectives and defined principles; and
k) implement capacity and confidence building programmes.

2. The Parties shall co-operate with the SADC organs and other shared watercourse institutions.

3. The Parties shall give their full co-operation and support to the decisions of the Joint Water Commission (JWC), and shall take the necessary legislative, administrative, technical and other measures to give effect to this Agreement or such decisions.

4. The Parties shall conduct their management and development plans, projects and programmes relating to the resources of the Pungwe Watercourse in accordance with the Strategic Plan.

5. The Parties shall in their respective countries adopt a stakeholder participatory approach in the management, development and utilisation of the water resources of the Pungwe Watercourse.

**ARTICLE 6**

**Shared Watercourse Institutions**

1. The advisory body for co-operation between the Parties is the JWC.
2. The JWC shall exercise the powers established in the JWC Agreement of 2002.
3. The Parties may establish a joint institution, through an Agreement, to carry out daily activities related to the management of the Pungwe Watercourse.
4. In the event of the establishment of the joint institution referred to in sub-Article 3 of this Article, the institution shall provide regular reports to the JWC.
ARTICLE 7

Sustainable Utilisation

1. The Parties shall be entitled, in their respective territories, to optimal and sustainable utilisation of and benefits from the water resources of the Pungwe Watercourse, taking into consideration the interests of the other Party, consistent with adequate protection of the Watercourse for the benefit of present and future generations.

2. The Parties shall co-ordinate their management activities by:
   a) the exchange of information on their respective experiences and perspectives; and
   b) the co-ordination of management plans, programmes and measures, as provided elsewhere in this Agreement.

3. In pursuing the objective of this Article, the Parties shall follow the Water Allocation principles stipulated in Article 17.

4. In further pursuance of the objective of this Article the Parties shall disclose, in terms of Annex 3 their intentions of developing new projects that fall outside the scope of Annex 2 during the period of validity of this Agreement.

5. The Parties are committed to develop measures towards improvement of efficiency and rational use of water and its conservation and to promote more efficient water use through adopting better available technology.

ARTICLE 8

Equitable and Reasonable Utilisation

1. The Pungwe Watercourse shall be managed and utilized in an equitable and reasonable manner.

2. In the application of Equitable and Reasonable Utilisation the Parties shall take into account all the relevant factors, and circumstances including the following:
   a) geographic, hydrographic, hydrological, climatic, ecological and other factors of a natural character;
   b) the social, economic, and environmental needs of the Parties;
   c) the population dependent on the Pungwe Watercourse in the territory of the Parties;
   d) the effects of the use(s) of the Pungwe Watercourse in either of the Parties territories;
   e) existing and potential uses of the waters of the Pungwe Watercourse;
   f) existing and planned infrastructure which has the capacity to regulate streamflow of the watercourse;
   g) conservation, protection, development and economy of the use of the water resources of the Pungwe Watercourse and the costs of measures taken to that effect.
h) the availability of alternatives of comparable value, to a planned or existing use of
the waters of the Pungwe Watercourse;

i) agreements in force between the Parties.

3. The weight to be given to each factor is to be determined by its importance in comparison
with that of other relevant factors. In determining what is an equitable and reasonable use,
all relevant factors are to be considered together and a conclusion reached on the basis of
the whole.

4. The basis for water allocation of the Pungwe Watercourse is contained in Annex 2 of this
Agreement.

ARTICLE 9

Protection, Preservation and Conservation of the Environment

1. The Parties shall, individually and, where appropriate, jointly, protect, preserve and
conserve the ecosystem and the aquatic environment of the Pungwe Watercourse, taking
into account generally accepted international rules and standards.

2. Either Party shall take all measures necessary to prevent the introduction of alien or new
species, into the Pungwe Watercourse, which may have effects detrimental to the
ecosystem of the Watercourse resulting in significant harm to the other Party.

3. In ensuring the protection and the preservation of the environment the Parties shall comply
with the provisions of Article 4(2) of the SADC Protocol.

ARTICLE 10

Prevention and Mitigation of Significant Harm

1. Parties shall, in utilising the Pungwe Watercourse in their territories, take all appropriate
measures to prevent the causing of significant harm to the other Party.

2. Where significant harm is nevertheless caused to the other Party, the Party whose use
causes such harm shall, take all appropriate measures, having due regard for the
provisions of paragraph (1) above in consultation with the affected Party, to eliminate or
mitigate such harm and where appropriate discuss the question of remedial action.

3. Unless the Parties concerned have agreed otherwise for the protection of the interests of
persons, natural or juridical, who have suffered or are under a serious threat of suffering
significant transboundary harm as a result of activities related to the shared Watercourse,
the Parties shall not discriminate on the basis of nationality or residence or place where the
injury occurred, in granting to such persons, in accordance with its legal system, access to judicial or other procedures, or a right to claim compensation or other relief in respect of significant harm caused by such activities carried on in its territory.

ARTICLE 11

Water Quality and Prevention of Pollution

1. In order to protect and conserve the water resources of the Pungwe Watercourse, the Parties shall, through resolutions adopted by the JWC, and, when appropriate, through the co-ordination of management plans, programmes and measures:

   a) develop an evolving classification system for the water resources of the Pungwe Watercourse;
   b) classify and state the objectives and criteria in respect of water quality variables to be achieved through the agreed classification system for the water resources;
   c) adopt a list of substances the introduction of which, is to be prohibited or limited, investigated or monitored in the water resources of the Pungwe Watercourse;
   d) adopt techniques and practices to prevent, reduce and control the pollution and environmental degradation of the Pungwe Watercourse that may cause significant harm to the other Party or to their environment, including human health and safety or the use of the waters for any beneficial purpose, or to the living resources of the Watercourse; and
   e) implement a regular monitoring programme including biological, physical and chemical aspects for the Pungwe Watercourse and report at the intervals established by the JWC on the status and trends of the associated aquatic, marine and riparian ecosystems in relation to the water quality of the Watercourse.

2. The Parties shall comply with the provisions of Annex 4 until such time that the water quality objectives and criteria are determined.

ARTICLE 12

Measurements of Water Quantity and Quality

The Parties shall establish, maintain and operate an effective and uniform system for making and recording continuous measurements of:

   a) the flow of the Pungwe watercourse and its tributaries within the boundaries of each Party and the volume of stored water, at such locations as the Parties may deem necessary to determine:
(i) the volume of the intake from several portions of the catchment area of the Pungwe Watercourse;
(ii) the flow at selected locations along the Pungwe Watercourse; and
(iii) the losses from selected reaches of the Pungwe Watercourse, with their positions and modes of occurrence.

b) all diversions, whether natural or artificial, from the Pungwe Watercourse and its tributaries.

c) water quality of the Pungwe Watercourse and its tributaries and stored water at such locations as the Parties may deem necessary.

ARTICLE 13

Regular Exchange of Data and Information

When sharing information and data the Parties shall:

a) exchange available information on a regular basis on the condition of the Pungwe Watercourse, in particular that of hydrological, hydrogeological, meteorological, environmental conditions, water quality as well as related forecasts, as provided in the Annex 5;

b) exchange data, information and study reports on the activities that are likely to cause significant trans-boundary impacts;

c) exchange at intervals agreed by the JWC, information on the use, quantity and quality of the water resource and the ecological state of the Pungwe Watercourse necessary for the implementation of this Agreement;

d) exchange information and consult each other and if necessary, negotiate the possible effects of planned measures on the condition of the Pungwe Watercourse;

e) develop the appropriate measures to ensure that the information is homogenous, compatible and comparable as agreed by the JWC; and

f) if a Party is requested by the other Party to provide data or any information referred to in this Article, that Party shall be obliged to comply with the request.

ARTICLE 14

Droughts and Floods

1. The Parties undertake to implement the Pungwe Basin Flood and Drought Warning and Mitigation Strategy and any other strategies developed under the Pungwe Programme.

2. The allocation of the waters during drought periods shall be adjusted in accordance with the Annex 2 on Flow Regime which provide the basis on water allocation and also take into consideration recommendations from the Pungwe Basin Flood and Drought Strategy.
The Parties agree the priorities for water allocation as:
   a) Urban, rural and livestock consumption (Primary);
   b) Industrial and Mining (IM) water use;
   c) Irrigation;
   d) Environmental Flows (reduced accordingly); and
   e) Others.

3. The Parties shall notify each other without delay and by the most expeditious means of any flood danger.

4. During flood alarm situations, the affected Party may require the other Party to adopt the measures referred to in the Pungwe Basin Flood and Drought Warning and Mitigation Strategy and any other urgent measures agreed upon, which may be deemed necessary.

**ARTICLE 15**

**Trans-boundary Impact**

1. The planned measures listed in Annex 3 regardless of their location that by themselves or by accumulation with the existing ones, have the potential of significant transboundary impact on the Watercourse, shall not commence before the provisions of Article 4(1) of the SADC Protocol are complied with.

2. Whenever, a planned measure, not listed in Annex 3, is likely to cause significant transboundary impact or if either Party expresses concern that such may occur, it shall not commence before the provisions of Article 4(1) of the SADC Protocol are complied with.

3. In case of planned measure involving a significant transboundary impact of substantial magnitude the Parties shall conduct an environmental impact assessment, which takes transboundary impact into account in accordance with procedures determined by the Parties.

4. Whenever an ongoing activity causes or is likely to cause a significant transboundary impact, which will lead a Party to comply with an obligation, the Party concerned shall address the matter through the co-ordination of management plans, programmes or measures.

**ARTICLE 16**

**Incidents of Accidental Pollution and Other Emergency Situations**

The Parties undertake through their relevant institutions to collaborate between themselves and ensure:

a) immediately and by the most expeditious means available, notify the other Party, the SADC organs or any other authorised competent international organisations and
institutions of any incidents of accidental pollution and other emergency situations originating within their respective territories;

b) prompt supply of the necessary information to the other Party and competent organisations with a view to co-operate in the prevention, mitigation and elimination of the harmful effects of the emergency;

c) individually or jointly, develop contingency plans for responding to any incidents of accidental pollution and other emergency situations in co-operation, where appropriate, with other potentially affected and/or authorised competent international organisations to immediately take, all practicable measures necessitated by the circumstances to prevent, mitigate and eliminate the harmful effects of the emergency.

ARTICLE 17

Flow Regime

1. The flow regime of the Pungwe Watercourse is contained in Annex 2 on Flow Regime and Water Allocation.

2. Any abstraction of water from the Pungwe Watercourse, regardless of the use or geographical destination of such water, shall be in conformity with the Annex 2 on Flow Regime and Water Allocation and relevant provisions of this Agreement and its annexes.

3. The Parties have considered the following criteria in establishing the flow regime:

a) the geographical, hydrological, climatic and other natural characteristics of the Pungwe Watercourse;

b) the need to ensure water of sufficient quantity with acceptable water quality to sustain the watercourse and its associated ecosystems;

c) any present and foreseeable future water requirements; and

d) existing infrastructure which has the capacity to regulate the stream flow of watercourse.

ARTICLE 18

Capacity Building

1. The Parties shall:

a) identify and prioritize capacity building programmes necessary for the implementation and monitoring of this Agreement;

b) promote awareness and capacity building programmes for stakeholders; and

c) promote staff exchange programmes, joint study tours and river basin twinning programmes.

2. The Parties shall, individually and, where appropriate, jointly, be responsible for ensuring that capacity is developed in their respective territories.
ARTICLE 19

Annexes

The Annexes attached hereto are an integral part of this Agreement and may be amended by the Parties.

ARTICLE 20

Settlement of Disputes

1. Any dispute between the Parties concerning the interpretation or implementation of this Agreement shall be settled amicably by consultation between the Parties through the Diplomatic Channels:

2. While the process of dispute resolution is ongoing, the Parties agree not to proceed with the object of the dispute until it is resolved.

ARTICLE 21

Amendments

1. This Agreement may be amended at any time by mutual consent of the Parties, by an exchange of notes through the Diplomatic Channels. The date of entry into force of the amendment shall be the date of the last notification.

2. This Agreement may be revised and updated after ten (10) years of its entry into force.

ARTICLE 22

Entry into Force, Duration and Termination

1. This Agreement shall enter into force thirty (30) days after the deposit of the instrument of ratification by the Parties and shall remain in force for a period of ten (10) years.

2. The Agreement shall automatically be renewed for a similar period, unless either Party gives prior written notice of twelve (12) months of its intention to terminate the Agreement.

3. Unless otherwise specifically agreed by the Parties, termination shall not affect the validity of any ongoing activities not fully completed at the time of termination.
ARTICLE 23

Depositary of the Agreement

1. The Executive Secretary for SADC shall be the Depositary of this Agreement.

2. The Parties agree to inform each other on the completion of their internal legal processes. The last Party to complete the internal process of ratification shall inform the other and shall be responsible for registering the Agreement with SADC.

IN WITNESS WHEREOF the undersigned, being duly authorized by their respective Governments, have signed and sealed this Agreement in duplicate, in the English and Portuguese languages, both texts being equally authentic. In case of divergence in the interpretation of the Agreement, the English text shall prevail.

Signed at .................................. on this ...................... day of the month of .................................. 2016

For the Republic of Zimbabwe

For the Republic of Mozambique
ARTICLE 23

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For the Republic of Zimbabwe

For the Republic of Mozambique
ANNEX 1

MAP OF THE PUNGWE WATERCOURSE
Source: Pungwe IWRM Strategy 2007
ANNEX 2

FLOW REGIME AND WATER ALLOCATION
ANNEX 2

FLOW REGIME AND WATER ALLOCATION

ARTICLE 1

Determining Criteria

1. Determination of the flow regime is based on the criteria in Article 8(2) of this Agreement.
2. The Parties accord a first priority to supply water for domestic, livestock and industrial use.
3. If, upon review of the hydrology of the system, more water is available in the Pungwe watercourse than that contemplated in this Annex, the Parties shall give priority to the water uses referred to in sub Article 1(2) of this Annex, when considering the allocation of the water.
4. Monitoring of the flow regime shall be carried out at appropriate hydrometrical stations as indicated in Annex 5 of the Agreement.

ARTICLE 2

Sub-catchments Considered for the Pungwe Watercourse

1. The Pungwe Watercourse, covering 31150 km², is sub-divided into nine sub-catchments presented below.
   a. The sub-catchments in Zimbabwe are:-
      i. Pungwe Zimbabwe – 687 km²; and
      ii. Honde Zimbabwe – 1245 km²
   b. The sub-catchments in Mozambique are:-
      i. Upper Pungwe – 2846 km²
      ii. Nyazonia – 1360 km²
      iii. Middle Pungwe – 5390 km²
      iv. Vunduzi – 3439 km²
      v. Urema – 8402 km²
      vi. Muda – 1336 km²; and
      vii. Lower Pungwe – 6445 km²

2. The net contributions to the total net natural mean annual runoff – MAR, in the natural condition without any land and water use effects and allowing for river channel losses, of 4272 million m³ of the Pungwe watercourse at the estuary by the various catchments are estimated as follows:
a) Pungwe Zimbabwe – 772 million m³
b) Honde Zimbabwe – 530 million m³
c) Upper Pungwe – 328 million m³
d) Nyazonia – 442 million m³
e) Middle Pungwe – 574 million m³
f) Vunduzi – 499 million m³
g) Urema – 509 million m³
h) Muda – 160 million m³
i) Lower Pungwe – 458 million m³
Total Pungwe Basin – 4272 million m³

ARTICLE 3

Utilisation of the Water Resources of the Pungwe Watercourse

1. Based on the estimates of the present availability of water in the Pungwe Watercourse, the Parties agree to the following annual water uses and areas of afforestation that will result in a reduction in stream flow of the Pungwe watercourse:

(a) The Republic of Zimbabwe:
   i. Water supply to Mutare and industrial use – 111.6 million m³
   ii. Hauna growth point and rural water supply – 11.0 million m³
   iii. Irrigation Pungwe Zimbabwe – 65.8 million m³
   iv. Irrigation Honde – 41.5 million m³
   v. Tourism and livestock – 1.5 million m³
   vi. Reduction in streamflow due to afforestation (18,000 ha) – 161.3 million m³

(b) The Republic of Mozambique:
   i. Water supply to Beira and Dondo and industrial use – 98.4 million m³
   ii. Industrial use Middle Pungwe – 32.2 million m³
iii. Rural water supply – 9.4 million m³
iv. Tourism and livestock – 4.5 million m³
v. Irrigation Nyazonia – 75.0 million m³
vi. Irrigation Muda – 33.8 million m³
vii. Irrigation Middle Pungwe – 48.8 million m³
viii. Irrigation Lower Pungwe – 108.3 million m³
ix. Additional irrigation Lower Pungwe with Pavua dam – 168.1 million m³
x. Reduction in streamflow due to afforestation (80,000 ha) – 96.0 million m³

2. The water allocations in Zimbabwe, in particular the water supply to Mutare, assumes the construction of the Pungwe Falls Dam.

3. The water allocations in Mozambique, in particular the irrigation developments in the Nyazonia, Middle and Lower Pungwe, assumes the construction of the Nhacangare Dam. The additional irrigation in the Lower Pungwe is conditional to the construction of the Pavua Dam.

4. The Parties may convert some of their agreed irrigation use to first priority use at a conversion factor approved by the JWC at the time that the need arises.

5. The water use by Zimbabwe shall not exceed the following in the Pungwe and Honde sub-catchments:

   (a) The Pungwe River sub-catchment up to the border with Mozambique:

      i. First priority supplies for Mutare, rural, industry and mining – 116.0 million m³/a

      ii. Irrigation supplies – 65.8 million m³/a

      iii. Tourism and livestock – 0.75 million m³/a

      iv. Reduction in streamflow due to afforestation (9,300 ha) – 83.0 million m³/a

   (b) The Honde River sub-catchment up to the border with Mozambique:

      v. First priority supplies – 6.6 million m³/a

      vi. Irrigation supplies – 41.5 million m³/a
vii. **Tourism and livestock** – 0.75 million m$^3$/a

viii. **Reduction in streamflow due to afforestation (8700 ha)** – 78.3 million m$^3$/a

6. The water use by Mozambique shall not exceed the following in the Nyazonia, Muda, Upper Pungwe, Middle Pungwe and Lower Pungwe sub-catchments:

(a) **The Nyazonia sub-catchment:**
   i. **Reduction in streamflow due to 37500 ha of afforestation** – 45 million m$^3$/a
   ii. **Irrigation supplies** – 75.0 million m$^3$/a

(b) **The Muda sub-catchment:**
   i. **Irrigation supplies** – 33.8 million m$^3$/a

(c) **The Upper Pungwe sub-catchment:**
   i. **Irrigation supplies** – 5.0 million m$^3$/a

(d) **The Middle Pungwe sub-catchment:**
   i. **Priority supplies for domestic, livestock, tourism, industry and mining** – 46.1 million m$^3$/a
   ii. **Reduction in streamflow due to 42500 ha of afforestation** – 51.0 million m$^3$/a
   iii. **Irrigation supplies** – 43.8 million m$^3$/a

(e) **The Lower Pungwe sub-catchment:**
   i. **Priority supplies for Beira, Dondo, rural, industry and mining** – 98.4 million m$^3$/a
   ii. **Irrigation supplies** – 108.3 million m$^3$/a plus an additional 168.1 million m$^3$/a conditional on the construction of Pavua Dam.

7. Until detailed studies on environmental flows required in the various sub-catchments and sections of the main river and tributaries are executed and the environmental flow can thus be defined, the Parties agree that sufficient water should flow in the river system and enter the Pungwe Estuary. The following flows, in million m$^3$/month, have been considered to be adequate in normal years, with the average approximately equal to 15% of the MAR at the estuary, or 20.3 m$^3$/s:
a) Wet months (December – April) – 15.9 m³/s

b) Dry months (May – November) – 3.4 m³/s

8. When the JWC determines that a drought condition exists and that the water use by the Parties as given in sub-Articles (1), (2), (3) and (4) must be reduced, the irrigation use and the environmental flows shall be the first to be reduced. This shall be followed by reductions in the first priority use, in accordance with plans prepared by the different water users and approved by the JWC.

9. The operating rules of the existing and proposed dams may be reviewed by the JWC as and when necessary and the Parties shall enforce these operating rules to ensure that the river losses and the agreed water allocations of the various sectors in the Pungwe Watercourse are met.

10. The JWC shall approve the criteria for reducing water use that are included as part of the operating rules. These shall take account of the availability of water and the water requirements in sub-Articles (1), (2), (3) and (4).

11. The determining criteria defined in Article 1 and the acceptability of restrictions for the first priority and irrigation users and the tolerance of the riverine and estuarine ecosystems to reductions in water supply. Adequate account shall be taken of transmission losses and other return flows.

ARTICLE 4

Water Conservation

Any Party may use a reduction in the agreed water use by a particular sector, as a result of better management practices or other water conservation measures, including pricing policies, for any other purpose within its own territory, provided that the JWC shall be notified accordingly.
ARTICLE 5

Generation of Hydropower
A Party may utilize water within its own territory for the generation of hydropower at existing and future installations, after the Parties have agreed on the operating rules.

ARTICLE 6

Concluding Provisions
The JWC shall assess any problems regarding the flow regime, any problems that will affect the normal utilization of dams and any problems arising from the minimum flows specified to maintain the ecosystems, taking into consideration the provisions of Article 14 of the Agreement. Any affected Party shall inform the JWC about the problems, so that measures (In order to/so as to) may be considered and adopted to establish a temporary or revised interim flow regime conforming to the general criteria set out in Article 8(2) of the Agreement.
ANNEX 3

PLANNED DEVELOPMENT PROJECTS
ANNEX 3
PLANNED DEVELOPMENT PROJECTS

ARTICLE 1
Determining Criteria

1. The Parties accord a high priority to supply water for domestic, livestock and industrial use. In particular, the Parties recognize the strategic importance of guaranteeing the future water demand of the cities of Beira, Dondo and Mutare.

2. The Parties recognize the projects in this Annex as projects that are contemplated by the Parties to commence before 2025 and that have previously been identified and studied by one or more of the Parties for future implementation.

3. The projects are classified into water utilization projects and water resources development projects.

4. The Parties recognize the usefulness of studying the creation of structural and non-structural measures in order to make more water available, as indicated in Annex 2.

5. For the mere reason that a project is listed in this Annex, the Party is not exempted from complying with the provisions of the Agreement.

6. If more water is made available through structural and non-structural measures in the Pungwe watercourse, the Parties shall give priority to the water uses referred to in sub-Article 1 when considering the allocation of the water, taking into account the equitable and reasonable utilization by the Parties of the water resources of the Pungwe Watercourse.

7. A Party may develop any other project not listed in this Annex, in accordance with the provisions of the Agreement.

ARTICLE 2
Reference Projects in Zimbabwe

1. The following water utilization projects are contemplated in the Pungwe Watercourse in Zimbabwe:

   a) Augmentation of the water supply to the city of Mutare, with additional water secured from the main Pungwe river, with the support of the Pungwe Fall Dam.
b) Increased irrigation development in the Pungwe River sub-catchment, in the order of 4000 ha.

c) Increased irrigation development in the Honde River sub-catchment, in the order of 2000 ha.

2. The following water resources development projects are contemplated in the Pungwe Watercourse in Zimbabwe:

   a) Construction of the Pungwe Falls Dam, planned to be 55 m high and with 25 million m³ of live storage capacity, on the Pungwe River, to support the expansion of the water supply to the city of Mutare.

   b) Construction of small dams, less than 10 m high and storage capacity below 1 million m³, for local use for domestic supply, small scale irrigation and mini-hydropower.

   ARTICLE 3

Reference Projects in Mozambique

1. The following water utilization projects are contemplated in the Pungwe Watercourse in Mozambique:

   a) Augmentation of the water supply to the cities of Beira and Dondo, with additional water secured from the main Pungwe river, with the support of the Nhacangare and Pavua dams.

   b) Industrial water supply for the large agro-industrial project of 80000 ha of afforestation for industrial use and for the supporting housing and offices complex.

   c) Increased irrigation development along the Nyazonia river, in the order of 5000 ha, supplied by the additional water secured by the new Nhacangare Dam.

   d) Increased irrigation development along the Middle and Lower Pungwe, in the order of 15000 ha, supplied by the additional water secured by the Nhacangare and Pavua Dams.

2. The following water resources development projects are contemplated in the Pungwe Watercourse in Mozambique:
a) Construction of the Nhacangare Dam, planned to be 34m high and with 140 million m$^3$ of live storage capacity, on the river of the same name.

b) Construction of the Pavua Dam, planned to be 84m high and with 292 million m$^3$ of live storage capacity, on the main Pungwe River.

c) Construction of small dams, less than 10m high with storage capacity below 1 million m$^3$, for local use, domestic supply, small scale irrigation and mini-hydropower.
ANNEX 4

GUIDELINES ON WATER QUALITY MONITORING
ANNEX 4

GUIDELINES ON WATER QUALITY MONITORING

ARTICLE 1

Objective of Water Quality Monitoring

The objective of water quality monitoring is to ensure that the Pungwe watercourse is used in a sustainable manner, in accordance with this Agreement, particularly Article 11.

ARTICLE 2

Water Quality Management

1. Water quality shall be described by the physical, chemical and biological characteristics of the watercourses.

2. Water quality shall be managed by considering the character and condition of the in-stream, riparian habitat and the characteristics, condition and distribution of the aquatic biota.

3. Specific studies shall be conducted by the JWC to define the requirements in terms of water quantity and quality for environmental conservation in important sections of the Pungwe river, its tributaries and at the estuary.

ARTICLE 3

Water Quality Management Goals

1. The water quality management goals for the Pungwe watercourse system must ensure that existing aquatic ecosystems are protected, allowing for the abstraction for use in the production of drinking water after appropriate treatment and for other water uses without treatment, prevention of significant adverse transboundary impacts, prevention on deterioration on the quality of the watercourses, and shall conform to the values set forth in the parameters indicated in Appendix A.

2. The JWC can review and may, at any time, revise the parameters, values and/or frequencies given in Appendix A. Revisions may be considered either at the request of a Party or on a proposal within the JWC, in respect of specific river reaches or estuary and whenever there are changes in the human, infrastructural and financial resources of any of the Parties or there are improvements in technical and scientific knowledge.
3. The values mentioned in Appendix A may be temporarily waived in the case of extreme natural hydrological occurrences, including natural enrichment in certain substances. Where a Party waives the stipulated values, it shall forthwith notify the other Party thereof, stating its reasons, the periods anticipated and the proposed mitigation measures to be introduced, if any.

4. Whenever surface water fails to comply with the values for parameters set in Appendix A, the Parties shall consider adopting, with the least delay, the measures required for the improvement of its quality, including a thorough investigation of the relevant sources of point and diffuse pollution and the enforcement of suitable effluent discharge limits and programs of environmental management.

ARTICLE 4

Monitoring of surface water quality

1. Surface water sampling and analysis shall be done for the variables and at the frequency mentioned in Appendix A, and at the prioritized surface monitoring stations, listed in Appendix B or at suitable locations in the vicinity of these stations.

2. The results of the resource monitoring shall be exchanged within three months after sample analyses are done.

3. The Parties shall be alerted as soon as is practically possible if any extreme values are found for the parameters indicated, where use of the watercourse could pose a hazard to humans, other water uses or the environment.

4. Existing water quality data for the surface water monitoring stations in the Pungwe Watercourse, listed in Appendix B, shall be exchanged between the Parties within twelve months of signing of this Agreement.

5. An annual report on the water quality status at the monitoring stations shall be exchanged by each Party.

6. The Parties shall individually or, where agreed, jointly promote actions to identify, design, establish and re-enforce monitoring systems for the Pungwe watercourse.

ARTICLE 5

Monitoring of Groundwater Quality

Groundwater is part of the watercourse and the sustainable development of groundwater resources at a regional level shall be promoted. This shall include the assessment, exploitation and protection of the groundwater component of the Pungwe watercourses.
ARTICLE 6
Bio-monitoring of Water Quality
1. Use of bio-monitoring method shall be made applied in the future, based on the analysis of benthic communities, mainly micro-invertebrates, fish and algae, as indicators of overall, integrated water quality.
2. A detailed environmental study shall be executed for the establishment of the baseline condition of the various sections of the river network to allow for the use of these bio-indicators.

APPENDIX A: WATER QUALITY GUIDELINES

The parameters to be monitored in both countries shall be the ones included in the following table.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcalinity</td>
<td>mg/L</td>
</tr>
<tr>
<td>BOD</td>
<td>mg/L</td>
</tr>
<tr>
<td>COD</td>
<td>mg/L</td>
</tr>
<tr>
<td>DO</td>
<td>mg/L</td>
</tr>
<tr>
<td>Chlorides</td>
<td>mg/L</td>
</tr>
<tr>
<td>Coliforms</td>
<td>PMN/100 mL</td>
</tr>
<tr>
<td>Conductivity</td>
<td>μOhm/cm</td>
</tr>
<tr>
<td>Nitrates</td>
<td>mg/L</td>
</tr>
<tr>
<td>Nitrites</td>
<td>mg/L</td>
</tr>
<tr>
<td>pH</td>
<td>–</td>
</tr>
<tr>
<td>Phosphates</td>
<td>mg/L</td>
</tr>
<tr>
<td>Sodium</td>
<td>mg/L</td>
</tr>
<tr>
<td>Sulphates</td>
<td>mg/L</td>
</tr>
<tr>
<td>Temperature</td>
<td>°C</td>
</tr>
<tr>
<td>TDS</td>
<td>mg/L</td>
</tr>
<tr>
<td>TSS</td>
<td>mg/L</td>
</tr>
<tr>
<td>Turbidity</td>
<td>NTU</td>
</tr>
</tbody>
</table>

The sampling and laboratory analysis should be made quarterly and more or less evenly distributed along the hydrological year, covering the wet and the dry seasons. If technical or financial reasons put a constraint on the number of measurements, the minimum should be two per year, one during the wet season and one during the dry season.

Water quality should also consider the content of metals, particularly cadmium, iron, lead, manganese, nickel, zinc and mercury. Although the laboratory analyses of these components are quite expensive, an effort should be made in both countries to do it once a year, even if in fewer sites which are deemed to be more critical.

The legal regulations defining the acceptable limits of the monitoring parameters in terms of water quality should be followed, until a general agreement on water quality standards is reached at the SADC level.
APPENDIX B: SURFACE WATER MONITORING STATIONS

The suggested surface water monitoring stations in Zimbabwe are listed in the following table.

<table>
<thead>
<tr>
<th>Reference</th>
<th>River</th>
</tr>
</thead>
<tbody>
<tr>
<td>ER 109</td>
<td>Pungwe</td>
</tr>
<tr>
<td>ER 103</td>
<td>Honde</td>
</tr>
<tr>
<td>ER 110</td>
<td>Nyamukwara</td>
</tr>
</tbody>
</table>

The suggested surface water monitoring stations in Mozambique are listed in the following table.

<table>
<thead>
<tr>
<th>Reference</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>E-64</td>
<td>Pungwe Fronteira</td>
</tr>
<tr>
<td>E-65</td>
<td>Pungwe Sul</td>
</tr>
<tr>
<td>E-67</td>
<td>Mafambisse</td>
</tr>
<tr>
<td>E-70</td>
<td>Nhacangare</td>
</tr>
<tr>
<td>E-72</td>
<td>Nyazonia</td>
</tr>
<tr>
<td>E-73</td>
<td>Honde</td>
</tr>
<tr>
<td>E-74</td>
<td>Metuchira</td>
</tr>
<tr>
<td>E-80</td>
<td>Vanduzi</td>
</tr>
<tr>
<td>E-651</td>
<td>Gorongosa Ponte N1</td>
</tr>
</tbody>
</table>
ANNEX 5

EXCHANGE OF INFORMATION
ANNEX 5
EXCHANGE OF INFORMATION

ARTICLE 1

General Principles

1. The Parties shall exchange or facilitate the exchange of information on water quantity, water quality, water use, hydraulic infrastructures and other relevant data and information.

2. The Parties shall individually or, where agreed, jointly develop a mutually accessible and appropriate website where information to be exchanged, as required in terms of the Main Agreement and this Annex, shall be posted and updated by the Parties.

3. The Parties shall put the necessary administrative procedures in place in order to comply with the exchange of information.

4. The Parties shall individually and, where agreed, jointly determine the budget necessary for the actions described, including activities for providing equipment, software and its installation, running and maintenance costs and training activities.

5. The Parties shall establish clear channels of communications, indicating the responsibilities of each involved institution, the personnel and the contacts (Telephone, Mobile/cell, fax and e-mail) as well as contacts for emergency situations.

ARTICLE 2

Use of Information and Data

1. Pungwe basin related information published by a Party within its territory may be used by the other Party for any purpose relevant to the objectives of the Agreement, subject to acknowledgment of the source.

2. Other information given by one Party to the other, shall be for the exclusive use and purpose of planning, development and management of the Pungwe watercourse.
ARTICLE 3

Rainfall data

1. The following table lists the rainfall monitoring network whose data is to be collected and exchanged by the Parties.

<table>
<thead>
<tr>
<th>Order</th>
<th>Location</th>
<th>Reference</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td>24797459</td>
<td>Chingamwe</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>24797947</td>
<td>Honde B. C.</td>
</tr>
<tr>
<td>3</td>
<td>Zimbabwe</td>
<td>67889030</td>
<td>Nyaga Exp Station</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>24799172</td>
<td>Nyangani Luleche</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>P-96</td>
<td>Dondo</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>P-106</td>
<td>Gondola</td>
</tr>
<tr>
<td>7</td>
<td></td>
<td>P-373</td>
<td>Chitengo O. P.</td>
</tr>
<tr>
<td>8</td>
<td>Mozambique</td>
<td>P-502</td>
<td>Macossa</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>P-812</td>
<td>Gorongosa</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>P-1272</td>
<td>Metuchira</td>
</tr>
<tr>
<td>11</td>
<td></td>
<td>P-1273</td>
<td>Nyazonia</td>
</tr>
</tbody>
</table>

2. In each station, data shall be collected on a daily basis.

3. Exchange of rainfall data shall be done on a monthly basis.

4. If a flood is foreseen or a high value of rainfall is recorded in a station of a Party, the exchange of information shall be done on a daily basis.

1 For example, a value above the 80% probability threshold.
ARTICLE 4

Runoff Data

1. The following table lists the runoff monitoring network whose data is to be collected and exchanged by the Parties.

<table>
<thead>
<tr>
<th>Order</th>
<th>Location</th>
<th>Reference</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Zimbabwe</td>
<td>F-14</td>
<td>Pungwe Falls</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>F-22</td>
<td>Katiyo</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>E-64</td>
<td>Pungwe Fronteira</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>E-65</td>
<td>Pungwe Sul</td>
</tr>
<tr>
<td>5</td>
<td></td>
<td>E-67</td>
<td>Mafambisse</td>
</tr>
<tr>
<td>6</td>
<td></td>
<td>E-70</td>
<td>Nhacangare</td>
</tr>
<tr>
<td>7</td>
<td>Mozambique</td>
<td>E-72</td>
<td>Nyazonia</td>
</tr>
<tr>
<td>8</td>
<td></td>
<td>E-73</td>
<td>Honde</td>
</tr>
<tr>
<td>9</td>
<td></td>
<td>E-74</td>
<td>Metuchira</td>
</tr>
<tr>
<td>10</td>
<td></td>
<td>E-80</td>
<td>Vanduzi</td>
</tr>
<tr>
<td>11</td>
<td></td>
<td>E-651</td>
<td>Ponte da EN-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Gorongosa</td>
</tr>
</tbody>
</table>
2. In each station, water level data should be collected on a daily basis.

3. In each station not provided with a measuring weir, periodic flow measurements shall be made to allow for the re-calibration of the rating curve.

4. Water level data shall be converted into flow data using the adequate rating curve in each station.

3. Exchange of runoff data, comprising water levels, flows and flow measurements, should be done on a monthly basis.

4. If a flood is foreseen or a high water level, above a defined level of alarm, is recorded in a station of a Party, the exchange of information should be done on a daily basis.

**ARTICLE 5**

**Water Quality Data**

1. The monitoring stations, the parameters to be observed and the frequency of sampling are defined in Annex 4.

2. Exchange of water quality data shall be done no later than three months after the results from the field and laboratory analyses are received.

3. The Parties shall be alerted as soon as practically possible if any extreme values are found for the parameters indicated where use of the watercourse could pose a hazard to humans, other water uses or the environment.

**ARTICLE 6**

**Water Use Data**

1. The Parties shall collect and organize data on permits and effective water use in different categories: priority uses, namely urban, rural, livestock, tourism, industry and mining; irrigation; and afforestation.

2. Exchange of water use data shall be done on a yearly basis.
ARTICLE 7
Hydraulic infrastructures data

1. The Parties shall exchange information about major hydraulic infrastructures, particularly storage dams higher than 6 meters, indicating the characteristics of the dam, spillway and outlets, storage capacity and any other relevant aspect.

2. Each Party shall receive from the owners or the operators of the dams in its country, at least on a monthly basis, the following daily data: water level at the reservoir, reservoir outflow, estimated inflow, rainfall and evaporation.

3. Exchange of reservoir data shall be done on a quarterly basis.

4. Each Party shall receive from the dam owners/managers or the operators within its country an annual report on the status of maintenance and safety of the dams. These reports shall be exchanged between the Parties not later than three months after reception.

ARTICLE 8
Annual report

Each Party shall prepare and send to the other Party an annual report, including hydrological data and analysis, water quality data and analysis, water use data and trends and hydraulic infrastructures.

ARTICLE 9
Other relevant information

The Parties shall exchange any other relevant information as soon as it becomes available, including, but not limited to:

a) Study reports on the Pungwe Watercourse or relevant to the Pungwe basin;

b) New legislation on water resources management or influencing water resources management;

c) Policies and strategies for water resources development and management prepared at a national or regional level;

d) Potential new large water users;

e) Potential new sources of water pollution;

f) Plans and studies for new hydraulic infrastructures, particularly storage dams.
AGREEMENT ON THE ESTABLISHMENT OF THE ZAMBEZI WATERCOURSE COMMISSION

Win-win cooperation/ Cooperacao, ganhas tu, ganho eu
Preamble

The Republic of Angola, the Republic of Botswana, the Republic of Malawi, the Republic of Mozambique, the Republic of Namibia, the United Republic of Tanzania, the Republic of Zambia and the Republic of Zimbabwe,

CONSCIOUS of the advantages of regional co-operation with regard to the utilization and development of common water resources and the significant contribution which such co-operation could make towards the peace and prosperity of the Southern African region;

CONSCIOUS of the paucity and value of water resources in the Southern African region and the need to provide the people of the region with access to sufficient and safe water supplies;

RECOGNISING the significance of the Zambezi Watercourse as a major water resource in the region, as well as the need to conserve, protect and sustainably utilise the resources of the Zambezi Watercourse;

COMMITTED to the realisation of the principles of equitable and reasonable utilization as well as the efficient management and sustainable development of the Zambezi Watercourse;

DESIROUS of extending and consolidating the existing relations of good neighbourliness and co-operation with regard to the management and
THE ZAMCOM AGREEMENT

HEREBY agree as follows:

**Article 1**

Definitions

In this agreement, unless the context otherwise indicates –

“Commission” means the Zambezi Watercourse Commission established in terms of Article 3 of this Agreement (hereinafter called “the Commission” or “ZAMCOM”); 

“Council” means the Council of Ministers established in terms of Article 6 of this Agreement.

“Equitable and reasonable utilisation (ERU)” means equitable and reasonable utilisation as provided for under Articles 3 (7) (a) and (b), and Article 3 (8)(a) and (b) of the SADC Protocol;

“Executive Secretary” means the Executive Secretary provided for in terms of Article II of this Agreement;

“Member States” means the States mentioned in the Preamble for which this Agreement has entered into force; and Member State shall have a corresponding meaning;

“Public” means the inhabitants of any Member State, including natural and juristic persons;

“SADC” means the Southern African Development Community;

“Secretariat” means the Secretariat established in terms of Articles 6 of this Agreement;

“Signatory State” means any state mentioned in the Preamble, which has signed this Agreement;

“Strategic Plan” means a master development plan comprising a general planning tool and process for the identification, categorisation and prioritisation of projects and programmes for the efficient management and sustainable development of the Zambezi Watercourse;

“Technical Committee” means the Technical Committee established in terms of Article 6 of this agreement;

“Tribunal” means The Tribunal of the SADC established in terms of Article 9 of the Treaty of the Southern African Development Community, adopted in 1992;

“Zambezi Watercourse” means the system of surface and ground waters of the Zambezi constituting by virtue of their physical relationship a unitary whole flowing normally into a common terminus, the Indian Ocean (An indicative topographical map of the Zambezi Watercourse is contained in Annex 1 to this Agreement).

Article 2

Scope of the Agreement

This Agreement shall apply to the Zambezi Watercourse as defined in Article 1

Article 3

Establishment of the Zambezi Watercourse Commission

1. The Zambezi Watercourse Commission is hereby established.

2. The headquarters of the Commission shall be determined by the Council
3. A Headquarters Agreement shall be concluded between the commission and the Government of the country determined by the Council as host for the Commission.

**Article 4**

**Legal status**

1. The Commission shall be an international organisation and shall have legal personality with capacity and power to enter into contract, acquire, own or dispose of movable or immovable property and to sue and be sued.

2. In the territory of each Member State, the Commission shall, pursuant to paragraph 1 of this Article, have such legal capacity as is necessary for the proper exercise of its functions.

**Article 5**

**Objective and functions of the Commission**

The objective of the Commission is to promote the equitable and reasonable utilization of the water resources of the Zambezi Watercourse as well as the efficient management and sustainable development thereof. To that end the Commission shall have the following functions:

(a) collect, evaluate and disseminate all data and information on the Zambezi Watercourse as may be necessary for the implementation of this Agreement.

(b) promote, support, coordinate and harmonise the management and development of the water resources of the Zambezi Watercourse;

(c) advise Member States on the planning, management, utilization, development, protection and conservation of the Zambezi Watercourse as well as on the role and position of the Public with regard to such activities and the possible impact thereof on social and cultural heritage matters;
(d) advise Member States on measures necessary for the avoidance of disputes and assist in the resolution of conflicts among Member States with regard to the planning management, utilization, development, protection and conservation of the Zambezi Watercourse;

(e) foster greater awareness among the inhabitants of the Zambezi Watercourse of the equitable and reasonable utilization and the efficient management and sustainable development of the resources of the Zambezi Watercourse;

(f) co-operate with the institutions of SADC as well as other international and national organisations where necessary;

(g) promote and assist in the harmonization of national water policies and legislative measures;

(h) carry out such other functions and responsibilities as the Member States may assign from time to time; and

(i) promote the application and development of this Agreement according to its objective and the principles referred to under Article 12.

Article 6

Organs of the Commission
In order for the commission to discharge the functions entrusted to it, the following organs are hereby established:

(a) The Council of Ministers;

(b) The Technical Committee; and

(c) The Secretariat.

Article 7

The Council of Ministers
1. The Council shall comprise one (1) delegate from the Government of each of the Member States. The Government of each Member State shall delegate to the Council the Minister responsible for water resources management and development.

2. The council shall meet once annually in ordinary session and may meet in extraordinary session at the request of any Member State.
3. The council shall at its annual ordinary session elect a Chairperson and Vice-Chairperson from among its members on the basis of rotation and the persons so elected shall function in such capacities until the annual ordinary session of the following year. Unless the Council expressly decides otherwise or unless prevented by unavoidable circumstances, the Vice-Chairperson shall be elected as Chairperson at the annual ordinary session of the year following his or her election as Vice-Chairperson.

4. Decisions of the Council shall be by consensus

5. The quorum for meetings of the Council shall be at least two thirds of the Member States.

Article 8

Functions and powers of the Council

1. The functions of the Council shall be to:

(a) adopt policies and decisions and provide other necessary guidance on the promotion, support and coordination of the efficient management, sustainable development, reasonable and equitable utilisation of the water resources of the Zambezi Watercourse;

(b) oversee the implementation of the plans, programmes and projects of the commission;

(c) approve the plans, programmes and projects to be developed and implemented by the Secretariat in accordance with Article 11;

(d) appoint the Executive Secretary and determine the terms and conditions of his or her service or employment;

(e) approve the annual budget of the Commission before the beginning of the financial year;
(f) approve the annual accounts of the Commission;

(g) appoint independent external auditors and fix their fees and remuneration at the beginning of each financial year;

(h) adopt staff rules, financial rules and rules of procedure for the organs of the Commission;

(i) determine in accordance with the financial rules, the annual contribution of each Member State towards the budget of the Commission; and

(j) approve the development and oversee the implementation of the Strategic Plan for the Zambezi Watercourse.

2. **The powers of the Council shall be to:**
   (a) conclude agreements with Member States, other States, institutions or international organisations;

   (b) allow representatives of non-Member States or international organisations to attend its meetings as observers and determine the terms and conditions for such attendance;

   (c) evaluate programmes and projects with regard to the Zambezi Watercourse and where necessary conduct or commission studies for purposes of evaluating, harmonising or co-ordinating such programmes or projects;

   (d) entertain, address and resolve differences or disputes arising in connection with the interpretation or implementation of this Agreement, referred to it by any council member, the Technical Committee, the Secretariat or any Member State and make recommendations to the parties with a view to arriving at an amicable settlement thereof;

   (e) appoint commissions of enquiry where necessary;
(f) decide on the course of action to be taken in the event of non-compliance with provisions of this Agreement; and,

(g) decide on any matter referred to it by the Technical Committee.

**Article 9**

**The Technical Committee**

1. The Technical Committee shall comprise delegations from each Member State consisting of no more than three (3) members and such number of advisors as each Member State may determine.

2. The Technical Committee shall meet once annually in ordinary session and may meet in extraordinary session at the request of the Secretariat or at least two thirds of the Member States.

3. The Technical Committee shall at its annual ordinary session elect a Chairperson and Vice-Chairperson from among its members on the basis of rotation and the persons so elected shall function in such capacities until the annual ordinary session of the following year. Unless the Technical Committee expressly decides otherwise or unless prevented by unavoidable circumstances, the Vice-Chairperson shall be elected as a Chairperson at the annual ordinary session of the year following his or her election as Vice-Chairperson.

4. Decisions of the Technical Committee shall be by consensus.

5. The quorum for meetings of the Technical Committee shall be at least two thirds of the Member States.
Article 10

Functions and powers of the Technical Committee

1. The functions of the Technical Committee shall be to:

(a) implement policies and decisions of the Council and such other tasks as may be assigned by Council from time to time;

(b) develop the Strategic Plan for the Zambezi Watercourse and recommend it to the Council for approval;

(c) develop and propose for consideration and approval by the Council, rules of application to facilitate ERU of the Zambezi Watercourse pursuant to Article 13, including and not limited to:

(i) establishing strategic hydrometric stations on the Zambezi Watercourse to capture the relevant hydrological data;

(ii) developing and establishing early warning systems against extreme events (floods, droughts and other disaster situations) and procedures to sound alarms for such events; and,

(iii) instituting a monitoring mechanism for water abstractions and intra watercourse transfers.

(d) formulate recommendations on matters for decision by the Council;

(e) appoint the technical personnel of the Secretariat; and,

(f) take action on the recommendations and reports of the Secretariat.

2. The Powers of the Technical Committee shall be to:

(a) make recommendations to the Council on the implementation by Member States of the principles referred to in Article 12 with regard to the Zambezi Watercourse;
(b) make recommendations to the Council on the harmonisation of the water laws and policies of Member States.

(c) make recommendations to the Council on the definition by Member States of the role and position of the Public in respect of the planning, utilization, development, protection and conservation of the Zambezi Watercourse and the possible impact thereof on social and cultural heritage matters;

(d) establish ad hoc or standing working groups, comprising representatives from Member States as may be necessary for the Implementation of this Agreement;

(e) make recommendations to the Council on the standardised methodology to be adopted by Member States for collecting, processing and disseminating data and information with regard to all aspects of the Zambezi Watercourse;

(f) make recommendations to the Council with regard to contingency plans by Member States for responding to emergency situations; and,

(g) assign tasks to, and supervise the Secretariat.

Article 11

The Secretariat

1. The Secretariat shall comprise:

(a) The Executive Secretary;

(b) such number and categories of technical personnel as may be approved from time to time by the Council; and,

(c) such number and categories of supporting administrative personnel as may be approved from time to time by the Council.
2. The Executive Secretary and the technical personnel shall possess appropriate qualifications and experience.

3. The appointment of the Executive Secretary and the technical personnel shall satisfy the requirements for equitable representation of the Member States and a fair gender balance.

4. The Secretariat shall be headed by the Executive Secretary who shall be appointed or re-appointed for periods not longer than three years each.

5. **The Executive Secretary shall:**

   (a) appoint the supporting administrative personnel of the secretariat in accordance with the procedures and the terms and conditions of service determined by the Council;

   (b) prepare and submit the annual budget to the Technical Committee for its consideration and recommendations to the Council;

   (c) prepare and submit a Strategic Plan to the Technical Committee for its consideration and recommendation to the Council;

   (d) prepare and submit annually to the independent external auditors appointed by the Council the books and accounts of the Commission;

   (e) prepare the ordinary and extraordinary meetings of the Council and the Technical Committee;

   (f) report annually to the Technical Committee on its activities as well as the programmes and projects planned, initiated or executed;

   (g) be responsible for the effective and efficient functioning of the Secretariat as administrative head; and,

   (h) perform all such other functions as the Council or the Technical Committee may from time to time assign.
6. The Secretariat shall:

(a) provide technical and administrative services to the Council under the Technical Committee’s supervision;

(b) facilitate the development of a Strategic Plan, annual work programme, plans, studies, assessments and other documents required for the implementation of this Agreement for the approval of the Technical Committee;

(c) collect, obtain, collate and evaluate data and information with regard to all relevant aspects of the Zambezi Watercourse as well as disseminate all such data and information to the Member States;

(d) institute research and training programmes aimed at the sustainable utilization, protection and management of the Zambezi Watercourse;

(e) advise Member States on the planning, utilization, development, protection and conservation, of the Zambezi Watercourse as well as the role and position of the Public with regard to such activities and the possible impact thereof on social and cultural heritage matters;

(f) advise the council and the Technical Committee on the listing and the effects of substances, the introduction of which into the Zambezi Watercourse shall be prohibited, limited, investigated or monitored by Member States, and provide guidelines for their mitigation;

(g) on the request of one or more of the Member States and subject to the approval of the Council, plan and implement development programmes or projects with regard to the Zambezi Watercourse;

(h) develop and distribute programmes and materials aimed at fostering greater awareness among the inhabitants of the Zambezi River Basin on the equitable and reasonable utilization of the Zambezi Watercourse on the basis of the principles referred to in Article 12;
(i) co-operate with the institutions of SADC and others as necessary and provide such data and information as may be reasonably required and be requested by such institutions;

(j) obtain financial and technical support for the implementation of programmes, plans and projects necessary for the achievement of the objective of this Agreement in accordance with the guidelines and directives provided by the Council from time to time;

(k) implement the decisions of the Council and of the Technical Committee;

(l) make recommendations to the Technical Committee on the harmonisation of the national water policies and laws of the Member States; and,

(m) perform all such other functions as the Council or the Technical Committee may from time to time assign.

**Article 12**

**Principles**

1. In the implementation of this Agreement, the Member States commit themselves to the following principles:

(a) principle of sustainable development;

(b) principle of sustainable utilization;

(c) principle of prevention of harm;

(d) principle of precaution;

(e) principle of inter-generational equity;
(f) principle of assessment of trans-frontier impacts;

(g) principle of co-operation; and

(h) principle of equitable and reasonable utilization.

2. These principles shall be interpreted according to the provisions of Articles 3 of the SADC Protocol, and developed in accordance with the latest scientific concepts and with the best international practices.

**Article 13**

**Equitable and Reasonable Utilization**

1. The Zambezi Watercourse shall be managed and utilized in an equitable and reasonable manner.

2. The rules of application of ERU shall be developed by the Technical Committee as provided for under Article 10 (1) (c).

3. In the application of ERU the Technical Committee shall take into account all the relevant factors, and circumstances including the following:

(a) geographic, hydrographic, hydrological, climatic, ecological and other factors of a natural character;

(b) the social, economic, and environmental needs of the Member States;

(c) the population dependent on the Zambezi Watercourse in each Member State;

(d) the effects of the use or uses of the Zambezi Watercourse in one Member State on other Member States;

(e) existing and potential uses of the waters of the Zambezi Watercourse;
(f) conservation, protection, development and economy of the use of the water resources of the Zambezi Watercourse and the costs of measures taken to that effect; and,

(g) the availability of alternatives of comparable value, to a planned or existing use of the waters of the Zambezi Watercourse.

4. The weight to be given to each factor is to be determined by its importance in comparison with that of the relevant factors. In determining what is an equitable and reasonable use, all relevant factors are to be considered together and a conclusion reached on the basis of the whole.

5. In the application of ERU, Member States shall take into account the provisions of Articles 14(4).

Articles 14

General responsibilities of Member States

1. Member States shall in their respective territories utilize the Zambezi Watercourse in an equitable and reasonable manner with a view to attaining optimal utilization thereof and benefits therefrom consistent with adequate protection of the Zambezi Watercourse.

2. Member States shall individually and jointly take all precautionary and preventive measures in the utilization of the resources of the Zambezi Watercourse so as not to cause significant harm to the Watercourse nor to any Member State, including harm to human health and safety.

3. Member States shall take all appropriate technical, legislative, administrative and other measures in the utilisation of the Zambezi Watercourse in order to:

(a) prevent, reduce or control pollution of the surface and ground waters of the Watercourse and to protect and enhance the quality status of the water and associated ecosystems for the benefit of present and future generations;
(b) prevent, eliminate, mitigate or control adverse transboundary impacts;

(c) co-ordinate management plans and planned measures;

(d) promote partnerships in effective and efficient water use; and,

(e) prevent the occurrence of disputes.

4. Where significant harm is nevertheless caused to another Member State, the State whose use causes such harm shall, in the absence of agreement to such use, take all appropriate measures, having due regard to the provisions of paragraph 3 above and in consultation with the affected States, to eliminate or mitigate such harm and, where appropriate, to discuss the question of compensation.

5. Member States shall give their full co-operation and support to the decisions of the Council and the Technical Committee, and shall take the necessary legislative, administrative, technical and other measures to give effect to this Agreement or such decisions.

6. Member States undertake to respect the international character and legal personality of the Commission and shall not seek to unduly influence the Executive Secretary or the technical and supporting administrative personnel of the Secretariat.

7. Each Member State shall, as may be required for the exercise of its functions under this Agreement, facilitate expeditiously the granting of visas and other travel documents to the Executive Secretary, the technical and supporting administrative personnel of the Secretariat as well as to the delegates of Member States to meetings of the Council and the Technical Committee.

8. Each Member State shall provide the Executive Secretary, the technical and supporting administrative personnel of the Secretariat with all the necessary access rights required for the exercise of their functions under this Agreement; provided that Member States may not be obliged to provide access rights if it would be prejudicial to their defence or national security.
9. Member States shall conduct their management and development plans, projects and programmes relating to the resources of the Zambezi Watercourse in accordance with the Strategic Plan.

10. Member States shall in their respective countries collaborate closely with civil society, institutions and organisations responsible for water resources management, development and utilization.

11. Each Member State shall take the necessary legislative, administrative or other measures to extend the privileges and immunities provided for in the SADC Protocol on Immunities and Privileges to ZAMCOM, the Executive Secretary and the personnel of the Secretariat, as well as delegates of Member States to the meetings of the Council or the Technical Committee.

**Article 15**

**Furnishing of data and information**

1. Member States shall, on a regular basis, provide the Secretariat as well as all the other Member States with readily available or obtainable data and information with regard to all aspects of the Zambezi Watercourse.

2. If a Member State should be requested by the Secretariat or another Member State to provide data or information which is not readily available or obtainable, it shall employ its best efforts to comply with the request but may condition its compliance upon the payment by the requesting Member State or the Secretariat of the reasonable costs of collecting and, where appropriate, processing such data and information.

3. Member States shall employ their best efforts to collect and, where appropriate, to process data and information with regard to the Zambezi Watercourse, in a manner which, facilitates its utilization by the Secretariat and other Member States. Where appropriate, Member States shall make every effort to employ the standardised methodology for collecting, processing and disseminating data and information recommended by the Commission.
4. A Member State shall not be obliged to supply data or information to the Secretariat or any other Member State if it would be prejudicial to its defence or national security. A Member State shall however co-operate in good faith with the Secretariat or other Member State and provide as much data and information especially on hydrological matters and matters potentially harmful to people and the environment as circumstances permit.

**Article 16**

**Planned programmes, projects or activities of Member States**

1. A Member State planning any programme, project or activity with regard to the Zambezi Watercourse or which may adversely affect the Watercourse or any other Member State shall forthwith notify the Secretariat thereof and provide the Commission with all available data and information with regard thereto.

2. If the Commission or any Member State has reasonable grounds to believe that another Member State is planning a programme, project or activity referred to in paragraph (1) of this Article, the Commission or such Member State may request the other Member State planning the programme, project or activity to comply forthwith with the provisions of paragraph (1) of this article. The request shall be accompanied by a documented explanation setting forth its reasons.

3. In the event of the Member State planning such programme, project or activity finding that the programme, project or activity will not adversely affect the Zambezi Watercourse or any other Member States, it shall so inform the Commission and the relevant Member State or States, providing a documented explanation setting forth the reasons for such finding.

4. The Commission shall study and evaluate the data and information pertaining to the planned programme, project or activity and report to the relevant Member State or States on its findings as to the possible effects thereof within a period of six months after having received the relevant data and information.
5. In the event of a dispute arising between Member States with regard to the effect of such programme, project or activity, such Member States shall, on the requests of any one of them and utilising the good offices of the Commission, promptly enter into consultations and negotiations with a view to arriving at a settlement of such dispute during the course of the consultations and negotiations, the Member State planning the programme, project or activity shall if so requested by the other Member State, refrain from implementing or permitting the implementation of such programme, project or activity for a period agreed upon by the Member States involved or, failing such agreement, for a period determined by the Commission.

6. If so requested by any Member State and subject to the decision of the Commission to that effect and the conditions which the Commission may impose including the contributions of the relevant Member States towards defraying the costs involved, the Commission may undertake a fact finding study with regard to the aspects in dispute between the Member States involved and if appropriate, may appoint consultants to assist it in such a study.

7. If agreed to by the Member States involved and subject to the decision of the Commission, the Commission may undertake the co-ordination and harmonisation of programmes, projects or activities planned by two or more Member States. Member States shall, where appropriate, make every effort to co-ordinate and harmonise programmes projects and activities with regard to the Zambezi Watercourse.

8. Member States shall ensure that the Public in an area likely to be affected by a proposed programme, project or activity are informed thereof and are provided with the opportunity for making comments thereon or objections thereto as well as on the transmittal of such comments or objections to the Commission.

**Article 17**

**Emergency situations**

1. For the purposes of this Article, “emergency” means a situation resulting suddenly either from natural causes or from human conduct and causing or posing an imminent threat of causing serious harm to the Zambezi Watercourse or to a Member State.
THE ZAMCOM AGREEMENT

2. A Member State shall, without delay and by the most expeditious means available notify and promptly supply all the necessary information to other potentially affected Member States as well as the Secretariat of any emergency originating within its territory.

3. A Member State within whose territory an emergency originates shall, in co-operation with potentially affected Member States and where appropriate, the Secretariat, immediately take all practicable measures necessitated by the circumstances to prevent, mitigate and eliminate harmful effects of the emergency.

4. Member States shall individually and/or jointly develop contingency plans for responding to emergencies in co-operation, where appropriate, with the Secretariat and competent institutions and international organisations.

**Article 18**

**Shared watercourse agreements**

1. In the absence of any agreement to the contrary, nothing in this Agreement shall affect the rights or obligations of a Member State arising from agreements in force for it on the date on which it became a party to this Agreement.

2. Notwithstanding the provisions of paragraph 1, Member States which are parties to agreements referred to in paragraph 1 shall harmonise such agreements with this Agreement.

**Article 19**

**Financial provisions**

1. The budget of the Commission shall be drawn from annual cash contributions by Member States; donations, grants and loans from bilateral and multilateral organizations, monies raised internally; and other sources of funding agreed to by the Council.

2. The contributions of Member States to the ordinary budget of the Commissions shall be determined by the Council.
3. Unless specified by the Council, contributions by Member States to projects implemented by the Commission could either be in cash or in kind; in kind contributions include: staff time, experts, training facilities, services, office accommodation and equipment or any other contributions as may be agreed by Council from time to time.

Article 20

Non-compliance

1. In the event of any Member State failing to fulfil its obligations under this Agreement, such Member State shall forthwith, and in any event no later than thirty (30) days after such failure, send written communication to the Secretariat explaining the failure and setting forth the reasons therefore, including any measures taken to remedy the failure.

2. Upon receipt of the written communication from the Member State, the Secretariat shall immediately enter into consultations with such Member State with a view to providing such assistance as may be necessary to procure the fulfilment of the obligations in question.

3. In the event of the consultations between the Member State and the Secretariat failing to achieve the result anticipated in paragraph 1 within six (6) months of the commencement of the consultations, the Secretariat shall refer the matter to the Council for its decision.

Article 21

Settlement of disputes

1. In the event of a dispute with regard to the planning, management, utilization development, protection and conservation of the Zambezi Watercourse or the interpretation and application of this agreement, arising among Member States, the Member States which are parties to the dispute, shall expeditiously enter into consultations and negotiations in the spirit of good faith and equity with a view to arriving at an amicable settlement.
2. The Council may, where appropriate, make recommendations to the parties to the dispute with a view to arriving at an amicable settlement thereof.

3. If the parties to the dispute have not arrived at a settlement through the means provided for in paragraphs (1) and (2) of this Article, the dispute may unless the parties to the dispute agree on another means of settlement, be brought before the Tribunal by way of an agreement between the Member States which are parties to the dispute or by way of a reasoned and documented petition on the part of one or more of the parties to the dispute. A copy of the agreement or petition, as the case may be, shall be lodged with the Executive Secretary.

4. If a dispute arises between the Commission on the one hand and a Member States on the other, such dispute shall be referred to the Tribunal for decision.

**Article 22**

**Advisory opinion**

1. The Council may request the Tribunal to give an advisory opinion on the utilization, development, protection and conservation of the Zambezi Watercourse

2. The Executive Secretary shall forthwith notify all Member States of the request for an advisory opinion.

3. All costs involved in obtaining such an advisory opinion shall be borne by the Commission.

**Article 23**

**Withdrawal**

1. At any time after three (3) years from the date on which this Agreement has entered into force for a Member State, that Member State may withdraw from this Agreement upon the expiration of twelve (12) months from the date of giving to the Executive Secretary, a written notice to that effect.
2. The text of any amendment to this Agreement proposed by a Member State shall be notified by the Secretariat to the Member States at least six (6) months before the meeting of the Council at which such amendment is proposed for adoption.

3. The amendment shall enter into force thirty (30) days after the Council's approval pursuant to paragraph 1.

**Article 26**

**General and final provisions**

1. The working languages of the Commission shall be English and Portuguese.

2. This Agreement shall enter into force thirty (30) days after the date on which two thirds of the Member States listed in the preamble to this Agreement have deposited their instruments of ratification with The Executive Secretary of SADC who shall act as Depository for this Agreement.

3. This Agreement shall remain open for accession by any of the states listed in the preamble upon such terms and conditions as may be approved by the Council.

4. This Agreement drawn up in two original texts in the English and Portuguese languages respectively, both texts being equally authentic, shall be deposited with the Depository which shall transmit a certified copy to each Signatory State.
of giving to the Executive Secretary, a written notice to that effect.

2. Any Member State which has withdrawn pursuant to paragraph 1 shall cease to enjoy all rights and benefits under this Agreement upon the withdrawal becoming effective, but shall remain bound by the obligations herein for a period of twelve (12) months from the date of giving notice to the date the withdrawal becomes effective.

3. Any asset of the Commission situated in the territory of a Member State which has withdrawn from this Agreement shall continue to be an asset of the Commission and be available for its use.

4. A Member State which has withdrawn from this Agreement shall not be entitled to enforce any claim against the Commission by way of execution against the assets of the Commission until the dissolution of the Commission

**Article 24**

**Dissolution**

1. The Council may decide by a resolution supported by at least three quarters of the Member States to dissolve ZAMCOM or any of its organs and determines the terms and conditions for dealing with its liabilities and the disposal of its assets

2. Notification of a proposal to dissolve ZAMCOM shall be given to all the other Member States by the Member State wishing to make such a proposal at least six (6) months prior to submitting it to the Council. The Council shall not decide on such proposal until a period of at least twelve (12) months has elapsed after the proposal has been submitted to it.

**Article 25**

**Amendment**

1. This Agreement may be amended by a decision of the Council taken by consensus
IN WITNESS WHEREOF, the duly authorized representatives of the Zambezi Watercourse States have signed this Agreement.

DONE at Kasane, Botswana this 13th day of July in the year two thousand and four.

[Signatures]
THE REPUBLIC OF ANGOLA
THE REPUBLIC OF NAMIBIA
THE REPUBLIC OF BOTSWANA
THE UNITED REPUBLIC OF TANZANIA
THE REPUBLIC OF MALAWI
THE REPUBLIC OF ZAMBIA
THE REPUBLIC OF MOZAMBIQUE
THE REPUBLIC OF ZIMBABWE
Zambezi Watercourse Commission Secretariat (ZAMSEC)
128 Samora Machel Avenue
P.O. Box CY 118
Harare
Zimbabwe
Tel: +263 4 253 361/3
Voip: +263 8677 000 313
Email: zamcom@zambezicommission.org
Website: www.zambezicommission.org
Zambezi Watercourse Commission

RULES AND PROCEDURES
FOR SHARING OF DATA AND INFORMATION RELATED TO THE MANAGEMENT AND DEVELOPMENT OF THE ZAMBEZI WATERCOURSE

Adopted by the ZAMCOM Council on
25th February 2016
Effective Date: 26th March 2016
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PREAMBLE

The Member States of the Zambezi Watercourse Commission, being the Republic of Angola, the Republic of Botswana, the Republic of Malawi, the Republic of Mozambique, the Republic of Namibia, the United Republic of Tanzania, the Republic of Zambia and Republic of Zimbabwe;

INSPIRED by the establishment of the Zambezi Watercourse Commission (ZAMCOM) through the Agreement on the Establishment of the Zambezi Watercourse Commission (ZAMCOM-Agreement), which entered into force on 19 June 2011

ACKNOWLEDGING that ZAMCOM, through the ZAMCOM-Agreement, was established within the framework of the Southern African Development Community Revised Protocol on Shared Watercourses, which was adopted on 07 August 2000 and entered into force in 2003;

CONSCIOUS of the benefits of regional cooperation with regard to water related data and information exchange;

AFFIRMING the importance for an effective, sustainable, reliable and accessible water resources information system for the Zambezi watercourse;

COMMITTED to the sharing of data and information in accordance with Article 15 of the ZAMCOM-Agreement and Article 3 (6) of the SADC Revised Protocol on Shared Watercourses;

ACKNOWLEDGING the cooperative spirit among Member States for the development of the ZAMWIS database, which being hosted at the ZAMCOM Secretariat (ZAMSEC) and also installed at a key institution at each of the eight Member States, will be a solid common reference for all the Member States when discussing the future development and management of the basin

HEREBY AGREE AS FOLLOWS:
PART I: RULES FOR SHARING DATA AND INFORMATION

Article 1: Definitions and Acronyms

For the purpose of these Rules and Procedures the following terms shall mean, unless otherwise stated:

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Environment Data</td>
<td>Data related to the conditions and functioning of natural and physical resources, e.g. ecosystems and their constituent parts</td>
</tr>
<tr>
<td>Government Institutions</td>
<td>Institutions mandated by statutory law as part of a Member State’s government structure, e.g. ministries, departments, parastatals</td>
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<tr>
<td>Hydrological Data</td>
<td>This concerns the water cycle including surface water and groundwater</td>
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<tr>
<td>Internally shared data</td>
<td>Data that will only be shared among:</td>
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<td></td>
<td>- The National Focal Institutions of the respective Member States.</td>
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<td></td>
<td>- Other Government Institutions within the Member States upon official request for access to the ZAMWIS data and information through the National Focal Institutions.</td>
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<tr>
<td>Knowledge products</td>
<td>This concerns documents, reports, photos and other information not being time-series or spatial data.</td>
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<tr>
<td>Member States</td>
<td>Countries having ratified the ZAMCOM Agreement</td>
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<tr>
<td>Meteorological Data</td>
<td>Data which describes the atmosphere, including temperature, pressure, wind and air density</td>
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<tr>
<td>Multinational Organisations</td>
<td>Organisations collecting information relevant for ZAMWIS and not controlled/managed by a single Member State</td>
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<tr>
<td>National Focal Institution</td>
<td>Government Institution designated by a Member State as focal point for that country to engage with ZAMCOM on all matters related to data and information sharing in terms of these Rules and Procedures</td>
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<tr>
<td>Planning instruments</td>
<td>Government instruments relevant for water resources management planning, such as policies, legal instruments, strategies, master plans etc.</td>
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<tr>
<td>Publicly shared data</td>
<td>Data that will be made publicly available via the ZAMWIS web page</td>
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<tr>
<td>Readily available data</td>
<td>Data that are collected as part of the normal national monitoring programs</td>
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<tr>
<td>Spatial data</td>
<td>Information about the locations and shapes of geographic features and the relationships between them, usually stored as coordinates and topology, basically any data that can be mapped. It includes both traditional GIS data as well as remote sensing data</td>
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<tr>
<td>Socio-economic data</td>
<td>Data related to the social and economic conditions and activities</td>
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<tr>
<td>Source institution</td>
<td>The organisation originally collecting and/ or producing the data</td>
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<td>Time series data</td>
<td>A sequence of numerical data points in successive order, usually occurring in uniform intervals. Common type of time series data to be shared between the Member States will e.g. include discharge and rainfall time series data.</td>
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<tr>
<td>Water Quality data</td>
<td>Data which describes the physical, chemical and biological properties of the water</td>
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<tr>
<td>Zambezi Watercourse</td>
<td>Means the system of surface and groundwater of the Zambezi constituting by virtue of their physical relationship a unitary whole flowing into the Indian Ocean as a common terminus</td>
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<tr>
<td>ZAMCOM Agreement</td>
<td>Agreement on the Establishment of the Zambezi Watercourse Commission (ZAMCOM)</td>
</tr>
<tr>
<td>Acronyms</td>
<td>Description</td>
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<td>-----------</td>
<td>-----------------------------------------------------------------------------</td>
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<tr>
<td>DSS</td>
<td>Decision Support System</td>
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<td>GIS</td>
<td>Geographic Information System</td>
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<tr>
<td>IT</td>
<td>Information Technology</td>
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<td>MoU</td>
<td>Memorandum of Understanding</td>
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<td>NFI</td>
<td>National Focal Institution</td>
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<td>RS</td>
<td>Remote sensing</td>
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<td>SADC</td>
<td>Southern African Development Community</td>
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<tr>
<td>WRIS</td>
<td>Water Resources Information System</td>
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<tr>
<td>ZAMWIS</td>
<td>Zambezi Water Information System (housed within ZAMSEC and NFI)</td>
</tr>
<tr>
<td>ZAMSEC</td>
<td>Secretariat of the Zambezi Watercourse Commission</td>
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<tr>
<td>ZAMCOM</td>
<td>Zambezi Watercourse Commission</td>
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</tbody>
</table>
Article 2: Scope and Structure of the Rules and Procedures

1. These Rules and Procedures shall apply to the sharing of data and information relevant to the equitable and reasonable utilisation, management and sustainable development of the Zambezi Watercourse. These Rules and Procedures shall not apply to information exchange in emergency situations as defined in Article 17 of the ZAMCOM-Agreement.

2. These Rules and Procedures consist of two parts, namely
   a) ‘Part I: Rules for Sharing Data and Information, which sets out the agreed rules for data sharing, cost sharing\(^1\), roles of institutions\(^2\); and
   b) ‘Part II: Technical Procedures and Specifications’, specifying the data to be shared, technical standards and procedures of data and information exchange.

3. Part I and Part II form inter-related components of these Rules and Procedures. Whereas each part is valid only in conjunction with the respective other part, the amendment of each part is subject to different rules, each defined in Article 11 of these Rules and Procedures.

Article 3: Objectives of the Rules and Procedures

1. The overall objective of these Rules and Procedures is to give effect to the provisions on data sharing in the ZAMCOM Agreement and the SADC Protocol on Shared Watercourses in order “to ensure that relevant and quality assured data and information are shared timely between the Member States in order to facilitate that the Member States - through ZAMCOM - will be able to take informed decisions in relation to the planning and management of the shared water resources in the Zambezi watercourse”.

2. The specific objectives of these Rules and Procedures are to specify:
   a) The type of data and information to be shared as well as source, frequency, format, standards, quality assurance, and the method of transfer
   b) Roles and responsibilities of involved institutions
   c) Time frames for supplying the agreed data and information
   d) Ownership and access rights to shared data and information

Article 4: Legal Framework

1. These Rules and Procedures are based on, and facilitate the implementation of, the relevant provisions on data sharing and information exchange of the ZAMCOM Agreement and the SADC Revised Protocol on Shared Watercourses, these being

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\(^1\) Reference is made to Article 10: Costs Implications
\(^2\) Reference is made to Article 9: Roles and Responsibilities
a) in terms of the ZAMCOM-Agreement:

**Article 5 (a)*** stating that one of the functions of ZAMCOM is to “collect, evaluate and disseminate all data and information on the Zambezi Water course as may be necessary for the implementation of this (ZAMCOM) Agreement”;

**Article 10 (2) (e)*** stating that the powers of the Technical Committee shall be to “make recommendations to the Council on the standardised methodology to be adapted by Member States for collecting, processing and disseminating data and information with regard to all aspects of the Zambezi Watercourse”;

**Article 11 (6) (c)*** stating that the Secretariat shall “collect, obtain, collate and evaluate data and information with regard to all relevant aspects of the Zambezi Watercourse as well as disseminate all such data and information to the Member States”; and

**Article 15*** stipulating that

1. Member States shall, on a regular basis, provide the Secretariat as well as all the other Member States with readily available or obtainable data and information with regards to all aspects of the Zambezi Watercourse.
2. If a Member State should be requested by the Secretariat or another Member State to provide data or information which is not readily available or obtainable, it shall employ its best efforts to comply with the request but may condition its compliance upon the payment by the requesting Member State or the Secretariat of the reasonable costs of collecting and, where appropriate, processing such data and information.
3. Member States shall, on a regular basis, provide the Secretariat as well as all the other Member States with readily available or obtainable data and information with regards to all aspects of the Zambezi Watercourse.
4. A Member State shall not be obliged to supply data or information to the Secretariat or any other Member State if it would be prejudicial to its defence or national security. A Member State shall however co-operate in good faith with the Secretariat or other Member States and provide as much data and information especially on hydrology matters and matters potentially harmful to people and the environment as circumstances permit.

b) in terms of the Revised SADC Protocol on Shared Watercourses:

**Article 3 (6)*** stipulating that ‘State Parties shall exchange available data and information regarding the hydrological, hydro geological, water quality, meteorological and environmental condition of shared watercourses’; and

**Article 5: Data and Information Categories***

1. The Member States agree to share all data and information relevant for the planning, management and sustainable development of the Zambezi Watercourse, including but not limited to the following data and information categories:
a) Hydrology
b) Meteorology
c) Water quality
d) Socio-economy
e) Environment
f) Planning instruments (e.g. policies, legal instruments, strategies, master plans, etc.)

The exact data and information to be shared are specified in Part II

2. The data and information to be shared between the Member States includes data formats such as:
   a) Time series
   b) Spatial data
   c) Knowledge products

3. The data and information to be shared between the Member States shall consist of all relevant past and present data and information needed to describe and understand the actual situation of the watercourse, as well as causes for possible changes.

4. The exact relevant data and information to be shared within the above categories shall be reviewed and determined by ZAMTEC on an annual basis, in accordance with Article 11 of these Rules and Procedures, and listed in Part II: Technical Specifications. Part II also describes the access level, frequency, format, source, quality assurance and method of transfer.

5. The Member States agree that in addition to the above-mentioned data and information to be provided from the respective Member States, already publicly available data and information related to the Zambezi watercourse will also regularly be integrated into ZAMWIS to serve the ZAMCOM objectives.

Article 6: Ownership and Access to Shared Data and Information

Ownership:

1. The ownership of the originally supplied data and information remains with the source institution.

2. The ownership of data and information generated through processing by ZAMCOM shall be with the Member States collectively. ZAMSEC will acknowledge the original source(s) institution when producing processed information. Such acknowledgement shall be visible along with the processed product(s).

Level of access:

3. In agreement with the respective Member State their provided data and information will be categorised in one of the following two categories:
   a) Data and information to be shared publicly
   b) Data and information only to be shared internally
4. Data and information categorised as ‘to be shared publicly’ can at any time be shared publicly through the ZAMCOM website.

5. Data and information categorised as ‘not to be shared publicly’ meaning “only to be shared internally” shall only be made available to:

   a) The National Focal Institutions of the respective Member States.
   b) Other Government Institutions within the Member States upon official request for access to the ZAMWIS data and information through the National Focal Institutions and upon conclusion of the non-disclosure agreement (provided in Part II of these Rules and Procedures) with ZAMCOM.

6. Where the National Focal Institutions or other government institutions employ a consultant for technical studies, ‘data only to be shared internally’ may be temporarily provided to the consultant for the purposes of such study, provided that such data is
   a) essential for carrying out the study, and
   b) subject to conclusion of a non-disclosure agreement in accordance with the ZAMCOM standards (provided in Part II of these Rules and Procedures) with the consultant.

Article 7: Data Security

1. Once the data have been provided to ZAMSEC and incorporated into ZAMWIS it is the responsibility of ZAMSEC to make sure that the data and information “only to be shared internally” will only be shared with the intended institutions/organisations in accordance with Article 6 (5). To serve this purpose ZAMSEC will ensure that ZAMWIS is constructed in a way that only users with permission to access internal data will be able to do so.

2. Organizations and institutions other than Government Institutions in the Member States who want to make use of data and information categorised as “only to be shared internally”, for national or transboundary purposes, are requested to contact the source institution in the respective Member State to get permission to use the data. ZAMCOM may facilitate such a process, if it is for transboundary purposes.

3. In case that a consultant will be assisting ZAMCOM in carrying out services that require the consultant to have access to data and information “only to be shared internally”, the consultant shall sign an agreement with ZAMCOM stating that they will only use these data and information for this specific purpose and that they will delete/destroy the received data and information upon completion of the service carried out for ZAMCOM.

4. While every effort has been made by the ZAMCOM through its Member States and ZAMSEC to share accurate, quality-controlled data and information through the ZAMWIS in accordance with the provisions of the ZAMCOM Agreement and these rules and procedures, the ZAMCOM and its Member States cannot guarantee in any way whatsoever the correctness nor accuracy of the data and information provided. Use and application of the ZAMWIS data and information is therefore fully at the responsibility and discretion of any user and neither ZAMCOM nor the Member States shall bear any liability for incorrect or inaccurate data and information.
Article 8: Operational Procedures for Data and Information Sharing

1. The data and information to be provided by the respective Member States are listed in Part II, Section 1. Part II, Section 2 also specifies the source institution, monitoring frequency, data formats, transfer frequency and transfer method.

2. Prior to submission of data and information to ZAMCOM, the National Focal Institutions ensure that all data and information provided to ZAMCOM has been quality assured by the relevant source institution.

3. The Member States agree that harmonised quality standards will be developed if and when required. ZAMCOM will facilitate such harmonisation as stated in the ZAMCOM Agreement.

4. Unless otherwise agreed, the method of transferring data and information will be as direct upload of electronic files to the ZAMWIS where all received data will be stored. Regular backup procedures will ensure that received data are not lost in case of IT breakdown.

Article 9: Roles and Responsibilities

National Focal Institutions

1. Each Member State shall appoint a National Focal Institution, responsible for carrying out the Member State’s duties with respect to all data and information sharing described in these Rules and Procedures. The role of the National Focal Institutions is to ensure that all agreed data and information are provided to ZAMSEC in a timely manner. In case a national source institution is not providing the agreed data to the designated National Focal Institution within the agreed time frame, the National Focal Institution will make contact with the respective provider in order to facilitate a prompt delivery of data. The National Focal Institutions will appoint a national contact person(s), who will facilitate the data exchange between the Member State and ZAMSEC.

2. The National Focal Institution will deal with the Government Institutions in the respective Member State when such Institutions are requesting data and information available in ZAMWIS. When data and information “only to be shared internally” are requested to be shared with a Government Institution the National Focal Institution shall ensure that data is only transferred after the Government Institution concludes the non-disclosure agreement with ZAMCOM in accordance with Article 6 (5) (b).

3. The appointment of and/or change of any National Focal Institution shall be communicated to ZAMSEC in writing by the respective Member State in a timely manner.

ZAMCOM Technical Committee (ZAMTEC)

4. The role of the ZAMTEC is to review the relevance of the data and information sharing requirements as specified in Part II. This is in order to propose and agree on changes to the types of data and information to be shared when necessary, in order to ensure the continued relevance of the data and information. The individual ZAMTEC Members will also support the appointed
National Focal Institutions in their task of making sure that agreed data and information is shared in a timely manner with ZAMSEC, in accordance with these Rules and Procedures.

5. ZAMCOM may enter into MoU with relevant multi-national organisations in order to facilitate direct data and information transfer between these organisations and ZAMCOM.

ZAMCOM Secretariat (ZAMSEC):

6. ZAMSEC shall at all times maintain an updated record of the National Focal Institutions.

7. ZAMSEC is responsible for the operation of the ZAMWIS and will as such monitor the actual uploading/receipt of data and information from the Member States.

8. Further, ZAMSEC shall:
   a) Implement and maintain an appropriate data security system of ZAMWIS in accordance with Article 7.
   b) Prepare bulletins of information derived from data including updating various thematic reports and maps.
   c) Advise the Member States through ZAMTEC on the continuous review of data and information sharing requirements of each Member State.
   d) Facilitate the harmonisation of data and information quality standards if needed.

9. In relation to the National Focal Institutions, ZAMSEC shall:
   a) Confirm to the National Focal Institutions when data and information is well received.
   b) Inform the National Focal Institutions when their received data and information are visible on the windows version of ZAMWIS.
   c) Remind respective National Focal Institutions when receipt of data and information is delayed.
   d) Assist the National Focal Institutions in the Member States with technical backstopping and training, and capacity building, when needed.
   e) Prepare and share a short annual report on the status of received data and information, as well as how the data and information has or will be used.

Article 10: Costs Implications

1. The Member States shall provide readily available data and information to ZAMCOM without financial compensation.

2. In the case that ZAMCOM or another Member State is requesting data or information that is not readily available or obtainable, the Member State requested to provide such data or information may request a reasonable financial compensation for providing such data or information, as stipulated in Article 15 (2) of the ZAMCOM-Agreement.
Article 11: Amendment of the Rules and Procedures

1. All proposed amendments to Part I of these Rules and Procedures, as defined in Article 2 (2) of these Rules and Procedures, shall be in writing to ZAMCOM and require mutual agreement by all Member States. Such agreement shall be expressed through a decision by the Council of Ministers in accordance with Article 7 (4) of the ZAMCOM-Agreement and Section 2.4 of the ZAMCOM Governance Guidelines.

2. Part II of these Rules and Procedures shall be reviewed and, when necessary, updated on an annual basis. By adopting these Rules and Procedures the Council of Ministers delegates the authority and responsibility for the annual review and update to the ZAMTEC, to be carried out in accordance with Chapter 3 of the ZAMCOM Governance Guidelines on the rules for ZAMTEC.

Article 12: Dispute Resolution

1. In the event of a dispute with regard to the interpretation and application of these Rules and Procedures, arising among Member States, the Member States which are parties to the dispute shall expeditiously enter into consultations and negotiations, at the level of ZAMTEC, in the spirit of good faith and equity with a view to arriving at an amicable settlement.

2. ZAMTEC may, where appropriate, make recommendations to the parties to the dispute with a view to arriving at an amicable settlement thereof.

3. In case a solution is not found at the level of ZAMTEC, the dispute shall be referred to the Council of Ministers for negotiations and resolution by consensus in accordance with Article 7 (4) of the ZAMCOM-Agreement and Section 2.4 of the ZAMCOM Governance Guidelines.

Article 13: Rules and Procedures Languages

1. These Rules and Procedures exist in two original texts in the English and Portuguese languages respectively, both texts being equally authentic.

Article 14: Entry into Force

1. These Rules and Procedures shall enter into force thirty (30) days after their adoption by the ZAMCOM Council of Ministers in the minutes of the Council of Ministers’ meeting.
PART II: TECHNICAL PROCEDURES AND SPECIFICATIONS FOR DATA AND INFORMATION SHARING

Section 1: Introduction
This Part II of the Rules and Procedures complements the legal rules for data and information sharing and exchange stipulated in Part I. As such this Part II forms the technical component of the Rules and Procedures and aims at providing clear technical guidance to the practitioners in ZAMSEC and the Member States in charge of data and information sharing and maintaining the ZAMWIS.

Part II describes the procedures and specifications for data sharing, such as the type of data to be shared, the frequency and procedures for transfer of data, as well as the levels of access. This part further provides detail on the institutional framework (i.e. the National Focal Institutions) for data and information exchange and the procedures for annual review and update of this Part II. Finally, it also includes a brief description of ZAMWIS, the software tool used for sharing the data.

Section 2: ZAMWIS
In technical terms, the Zambezi Water Information System (ZAMWIS) is the centre-point of data and information sharing and exchange between Member States in the Zambezi Basin. Housed within ZAMSEC, the ZAMWIS is the software tool used for the actual exchange and sharing of the data and information. ZAMWIS is a Water Resources Information System (WRIS), which later will be extended to include a Decision Support System (DSS) that will facilitate the use of the shared data and information for strategic planning and utilisation of the water resources in the basin.

Figure 1 The ZAMWIS Water Resources Information System and its users. The Windows version of ZAMWIS is installed at ZAMWIS and the National Focal Institutions in the eight Member States. Publicly shared data will be available to any Internet user through the Web-version of ZAMWIS.
The system consists of both a Windows- and Web-version. The Windows-version is installed at the ZAMSEC as well as at the National Focal Institution in each of the eight countries, cf. Figure 1. The database is installed on the server at these locations, which can be accessed from client computers at these institutions. It is also through these Windows-versions of ZAMWIS that data is entered into the system. Most of the time series data will be entered into the system at the National Focal Institutions and transferred to ZAMSEC, while the spatial data and knowledge products will regularly be entered at ZAMSEC directly. More detail of the data exchange and sharing mechanisms is provided in Section 3 through 5. As the Windows version is only accessible for ZAMSEC and NFIs, all the ZAMWIS data will be available through this version, i.e. publicly shared data as well as internally shared data.

The Web-version of ZAMWIS (www.zamwis.zambezicommission.org) is also hosted at ZAMSEC. It is a Web-application which is publicly available through the Internet. It has basically the same functionalities for viewing and downloading data as the Windows-version. However, the Web-version does not allow uploading of data to the system and data can also not be modified.

Section 3: Sharing of time series data
This section provides information on:

1) The frequency of sharing and exchange of time series data;
2) The type of time series data to be shared;
3) The procedures for data exchange;
4) Quality assurance of data; and
5) A list of the stations in the individual Member States for which data will be shared.

3.1 Time-series data sharing frequency
The frequency of data and information transfer shall be as follows:
1) Quarterly:
   a) For most of the time series data the Member States will, on a quarterly basis\(^3\), provide ZAMSEC with new data from the preceding quarter.
   b) These data may for example be used for long-term planning.
2) Near real-time:
   a) There will be an online transfer of data to ZAMSEC from all the SADC-HYCOS stations in all the Member States. The most recent of these data will be made available for viewing online via the Web-version of ZAMWIS. However, the full time series will only be available through the Windows-version through the quarterly updates.
   b) This data will be useful, for example, for short-term and seasonal planning, and flood warning.
   c) For the future, the aim is to also share data from stations other than the SADC-HYCOS stations in near real-time format, if and when the technology allows for this.

3.2 Type of time series data to be shared
The key data which eventually is aimed to be shared between the Member States, their monitoring frequency, units to be used, transfer frequency and method of transfer are listed in Table 1 below.

---
\(^3\) End March, June, September and December
Initially the focus is on the sharing of water levels, discharge and rainfall data, while the eventual aim is to include all the hydro-meteorological and environmental variables listed in Table 1. The actual stations for which time series data, based on the most recent review, is to be shared between the Member States through ZAMWIS are listed in the tables in Section 3.5.

<table>
<thead>
<tr>
<th>Type of data</th>
<th>Monitoring Frequency</th>
<th>Units</th>
<th>Transfer Frequency</th>
<th>Transfer Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water levels</td>
<td>Daily</td>
<td>m</td>
<td>Quarterly</td>
<td>Exchange files</td>
</tr>
<tr>
<td>Discharge</td>
<td>Daily</td>
<td>m³/s</td>
<td>Quarterly</td>
<td>Exchange files</td>
</tr>
<tr>
<td>Rainfall</td>
<td>Daily</td>
<td>mm/day</td>
<td>Quarterly</td>
<td>Exchange files</td>
</tr>
<tr>
<td>Evaporation¹</td>
<td>Daily</td>
<td>mm/day</td>
<td>Quarterly</td>
<td>Exchange files</td>
</tr>
<tr>
<td>Temperature¹</td>
<td>Daily</td>
<td>°C</td>
<td>Quarterly</td>
<td>Exchange files</td>
</tr>
<tr>
<td>Sediment concen²</td>
<td>Depend on availability</td>
<td>mg/l</td>
<td>Quarterly</td>
<td>Exchange files</td>
</tr>
<tr>
<td>Water Quality²</td>
<td>Depend on availability</td>
<td>N/A</td>
<td>Quarterly</td>
<td>Exchange files</td>
</tr>
<tr>
<td>Water level</td>
<td>May vary</td>
<td>m</td>
<td>Near real-time</td>
<td>Telemetric</td>
</tr>
<tr>
<td>Discharge</td>
<td>May vary</td>
<td>m³/s</td>
<td>Near real-time</td>
<td>Telemetric</td>
</tr>
<tr>
<td>Rainfall¹</td>
<td>May vary</td>
<td>mm</td>
<td>Near real-time</td>
<td>Telemetric</td>
</tr>
</tbody>
</table>

Note: ¹ These data are presently not shared, but the aim is eventually to include this type of data in the data sharing between the Member States.

3.3 The procedures for data exchange

Quarterly exchange of time series data

The administration part of ZAMWIS provides functionality for keeping the databases at the National Focal Institutions and ZAMSEC synchronized to ensure that ZAMSEC receives the most recent time series data to be shared from each Member State and that the compiled data subsequently are shared with each of the Member States. The organisational workflow related to keep the databases synchronized is the following:

1) After the end of each quarter, the National Focal Institutions will ensure that their ZAMWIS database is updated with the times series to be shared and which are readily available.
2) The National Focal institutions will then after the end of each quarter generate an exchange file with changes that have occurred in their database and avail that file to ZAMSEC
3) ZAMSEC will load the received exchange files from the eight Member States into their database
4) ZAMSEC will based on a schedule generate an exchange file with changes that have occurred in the database and disseminate that exchange file to the National Focal Institutions in the eight Member States for loading

This procedure will ensure that changes in a database at any National Focal Institution will be propagated to ZAMSEC and from there further to all the other National Focal Institutions.

The ZAMWIS System Administration Manual, which will be provided to each Member State, explains the detail related to uploading and downloading of exchange files between the National Focal Institutions and ZAMSEC.

Exchange and sharing of near real-time data

The ZAMWIS installation at ZAMSEC will be configured to download the latest recordings from the SADC-HYCOS network and have the data imported to the ZAMWIS database at ZAMSEC. It is the responsibility of ZAMSEC to ensure that the downloading process is working, while it is the
responsibility of the National Focal Institutions that the stations are working and are transmitting the data to the receiver.

### 3.4 Quality assurance

The time series data to be provided by the Member States shall be the officially processed and quality assured data. It should be the aim that the data collection procedures follow WMO standards, and that the data also have been through quality check and quality assurance procedures according to WMO guidelines and standards, as described in e.g. 1) Guide to Hydrological Practices, Vol I: Hydrology – From Measurement to Hydrological Information, WMO No. 168, 6th Edition, 2008, and 2) Manual on Stream Gauging, Vol I (Fieldwork) & Vol II (Computation of Discharge), WMO No. 1044 (2010).

The quality assurance is to be carried out by the source institution, which will either be the National Focal Institution or another source institution. When ZAMSEC receives the data, they may carry out an additional quality check. However, if any possible errors are detected, ZAMSEC cannot change/correct the data itself, but will have to refer back to the source institutions and request for the data to be corrected (as needed) and re-submitted.

### 3.5 List of time series data to be exchanged and shared

The monitoring stations for which time series shall be provided by Member States and shared are listed in the following tables. The relevant stations have been identified through a consultative process with the Member States. During the annual review of the lists, these might be adjusted as new stations may be added and stations no longer found relevant or which may have been closed down may be deleted.

The tables are grouped into two types of tables: 1) Tables showing stations for which data will be exchanged on a quarterly basis (Tables 3-5), and 2) Tables listing stations for which exchange of near real-time data will take place (Tables 6-7). Table 2 provides an overview of the tables listing the different types of time series data to be shared.

#### Table 2 List of tables indicating the stations for which data should be exchanged and shared

<table>
<thead>
<tr>
<th>Table 3</th>
<th>River gauging stations</th>
<th>Quarterly</th>
<th>Exchange files</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 4</td>
<td>Lake stations</td>
<td>Quarterly</td>
<td>Exchange files</td>
</tr>
<tr>
<td>Table 5</td>
<td>Rainfall stations</td>
<td>Quarterly</td>
<td>Exchange files</td>
</tr>
<tr>
<td>Table 6</td>
<td>River gauging station</td>
<td>Near real time</td>
<td>Data acquisition</td>
</tr>
<tr>
<td>Table 7</td>
<td>Lake stations</td>
<td>Near real time</td>
<td>Data acquisition</td>
</tr>
</tbody>
</table>

It is very important to note that the lists include the stations for which data should be shared, i.e. historical data as well as quarterly updates. Once this document has entered into force (cf. Article 14), the Member States shall provide the historical data from the listed stations. Regarding the quarterly updates or near real time acquisition, it should be noted that some of the stations are presently not operational, which is indicated in the status column. Thus, the quarterly sharing of time series data will obviously only be for the stations indicated as operational. As soon as a station becomes operational the Member States will start sharing the data from the station. The status of the stations should be reviewed and updated, if necessary, as part of the annual review.
Table 3 List of River gauging stations in the Zambezi Basin, for which mean daily discharge (m³/s) shall be shared between the eight Member States on a quarterly basis. Note that this is the total list of station intended to be shared. However, some of the stations were not operational at the time of the latest review (reflected in the list) as they need either rehabilitation (if it is existing stations) or need to be constructed, and data could therefore not be shared at the time the review. As soon as they become operational, the respective Member States should start sharing the data and the status should be updated during the next review.

<table>
<thead>
<tr>
<th>No</th>
<th>Country</th>
<th>Sub-basin</th>
<th>River</th>
<th>Station ID</th>
<th>Station Name</th>
<th>Status (Operational / Rehabilitation needed / To be constructed)</th>
<th>To be publicly shared (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>101</td>
<td>Angola</td>
<td>Upper Zambezi</td>
<td>Luena</td>
<td>627403</td>
<td>Luena</td>
<td>Rehabilitation needed</td>
<td>No</td>
</tr>
<tr>
<td>102</td>
<td>Angola</td>
<td>Upper Zambezi</td>
<td>Luena</td>
<td>627402</td>
<td>Chafinda</td>
<td>Rehabilitation needed</td>
<td>No</td>
</tr>
<tr>
<td>103</td>
<td>Angola</td>
<td>Upper Zambezi</td>
<td>Lumege</td>
<td>627401</td>
<td>Canhange</td>
<td>Rehabilitation needed</td>
<td>No</td>
</tr>
<tr>
<td>104</td>
<td>Angola</td>
<td>Upper Zambezi</td>
<td>Zambeze</td>
<td>627412</td>
<td>Lóvua</td>
<td>To be constructed</td>
<td>No</td>
</tr>
<tr>
<td>105</td>
<td>Angola</td>
<td>Upper Zambezi</td>
<td>Zambeze</td>
<td>627404</td>
<td>Cazombo</td>
<td>To be constructed</td>
<td>No</td>
</tr>
<tr>
<td>106</td>
<td>Angola</td>
<td>Upper Zambezi</td>
<td>Zambeze</td>
<td>627406</td>
<td>Lumbala Caquengue</td>
<td>To be constructed</td>
<td>No</td>
</tr>
<tr>
<td>107</td>
<td>Angola</td>
<td>Upper Zambezi</td>
<td>Lusavó</td>
<td>627405</td>
<td>Lusavó</td>
<td>To be constructed</td>
<td>No</td>
</tr>
<tr>
<td>108</td>
<td>Angola</td>
<td>Luanginga</td>
<td>Luangua</td>
<td>627407</td>
<td>Luangua</td>
<td>To be constructed</td>
<td>No</td>
</tr>
<tr>
<td>109</td>
<td>Angola</td>
<td>Lungue Bungo</td>
<td>Lungué Bungo</td>
<td>627408</td>
<td>Lungué Bungo</td>
<td>To be constructed</td>
<td>No</td>
</tr>
<tr>
<td>110</td>
<td>Angola</td>
<td>Cuando/Chobe</td>
<td>Lombo</td>
<td>627409</td>
<td>Ponte Mavinga</td>
<td>To be constructed</td>
<td>No</td>
</tr>
<tr>
<td>111</td>
<td>Angola</td>
<td>Cuando/Chobe</td>
<td>Cuando</td>
<td>627410</td>
<td>Somil</td>
<td>To be constructed</td>
<td>No</td>
</tr>
<tr>
<td>112</td>
<td>Angola</td>
<td>Cuando/Chobe</td>
<td>Cuando</td>
<td>627411</td>
<td>Cangombe</td>
<td>To be constructed</td>
<td>No</td>
</tr>
<tr>
<td>201</td>
<td>Botswana</td>
<td>Cuando/Chobe</td>
<td>Chobe</td>
<td>6614</td>
<td>Ngoma Bridge</td>
<td>Operational</td>
<td>No</td>
</tr>
<tr>
<td>202</td>
<td>Botswana</td>
<td>Cuando/Chobe</td>
<td>Chobe</td>
<td>6624</td>
<td>Kasane</td>
<td>Operational</td>
<td>No</td>
</tr>
<tr>
<td>203</td>
<td>Botswana</td>
<td>Cuando/Chobe</td>
<td>Chobe</td>
<td>6634</td>
<td>Mowana</td>
<td>Operational</td>
<td>No</td>
</tr>
<tr>
<td>204</td>
<td>Botswana</td>
<td>Cuando/Chobe</td>
<td>Linyanti</td>
<td>6414</td>
<td>Sajawa</td>
<td>Operational</td>
<td>No</td>
</tr>
<tr>
<td>205</td>
<td>Botswana</td>
<td>Cuando/Chobe</td>
<td>Kwando</td>
<td>6125</td>
<td>Bates Camp</td>
<td>Operational</td>
<td>No</td>
</tr>
<tr>
<td>301</td>
<td>Malawi</td>
<td>Shire Basin/Lake Malawi</td>
<td>Shire</td>
<td>1B1</td>
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Table 4 List of Lake stations in the Zambezi Basin, for which daily WL (m) shall be shared between the eight Member States on a quarterly basis. Note that this is the total list of station intended to be shared. However, some of the stations were not operational at the time of the latest review (reflected in the list) as they need either rehabilitation (if it is existing stations) or need to be constructed, and data could therefore not be shared at the time a review. As soon as they become operational, the respective Member States should start sharing the data and the status should be updated during the next review.

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Table 5 List of rainfall stations (presently mainly SADC-HYCOS stations) in the Zambezi Basin, for which daily rainfall (mm/day) shall be shared between the Member States on a quarterly basis. Note that this is the total list of station intended to be shared. However, some of the stations were not operational at the time of the latest review (reflected in the list) as they need either rehabilitation (if it is existing stations) or need to be constructed, and data could therefore not be shared at the time a review. As soon as they become operational, the respective Member States should start sharing the data and the status should be updated during the next review.

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<td>Shire Basin/Lake Malawi</td>
<td>1G3</td>
<td>Shire at Tengani</td>
<td>Rehabilitation needed¹</td>
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</tr>
<tr>
<td>303</td>
<td>Malawi</td>
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<td>Ruo at Sandama</td>
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<td>No</td>
</tr>
<tr>
<td>304</td>
<td>Malawi</td>
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<td>9B7</td>
<td>Songwe at Mwandenga</td>
<td>Rehabilitation needed¹</td>
<td>No</td>
</tr>
<tr>
<td>402</td>
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<td>291</td>
<td>Caia (Ex Marromau)</td>
<td>Operational</td>
<td>No</td>
</tr>
<tr>
<td>403</td>
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<td>Tete</td>
<td>310</td>
<td>Zumbo</td>
<td>Operational</td>
<td>No</td>
</tr>
<tr>
<td>501</td>
<td>Namibia</td>
<td>Cuando/Chobe</td>
<td>68022</td>
<td>Kongola</td>
<td>Operational</td>
<td>No</td>
</tr>
<tr>
<td>502</td>
<td>Namibia</td>
<td>Barotse</td>
<td>68017</td>
<td>Katima Mulilo</td>
<td>Operational</td>
<td>No</td>
</tr>
<tr>
<td>503</td>
<td>Namibia</td>
<td>Cuando/Chobe</td>
<td>68021</td>
<td>Ngoma Gate</td>
<td>Operational</td>
<td>No</td>
</tr>
<tr>
<td>504</td>
<td>Namibia</td>
<td></td>
<td></td>
<td>Mapiilla Island</td>
<td>To be constructed</td>
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</tr>
<tr>
<td>601</td>
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<td>Masigira Rainfall Station</td>
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<td>701</td>
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<td>Chavuma</td>
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<td>No</td>
</tr>
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<td>Operational</td>
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<td>Zambia</td>
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<td>Nanas Farn</td>
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</tr>
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<td>Zambia</td>
<td>Kafue</td>
<td>4-669</td>
<td>Hook Bridge</td>
<td>Operational</td>
<td>No</td>
</tr>
<tr>
<td>705</td>
<td>Zambia</td>
<td>Kafue</td>
<td>4-760</td>
<td>Namwala Pontoon</td>
<td>Operational</td>
<td>No</td>
</tr>
<tr>
<td>706</td>
<td>Zambia</td>
<td>Luangwa</td>
<td>5-800</td>
<td>Ndevu Camp</td>
<td>Rehabilitation needed</td>
<td>No</td>
</tr>
<tr>
<td>707</td>
<td>Zambia</td>
<td>Luangwa</td>
<td>5-940</td>
<td>Great East Road Bridge</td>
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<td>No</td>
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<td>Tete</td>
<td>C68</td>
<td>Aurelia Flumes</td>
<td>Operational</td>
<td>No</td>
</tr>
<tr>
<td>802</td>
<td>Zimbabwe</td>
<td>Tete</td>
<td>D75</td>
<td>Mazowe Bridge</td>
<td>Operational</td>
<td>No</td>
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</table>
Table 6 List of SADC-HYCOS river gauging stations in the Zambezi Basin, for which near real-time discharge data \( (m^3/s) \) shall be shared between the Member States. Note that this is the total list of station intended to be shared. However, some of the stations were not operational at the time of the latest review (reflected in the list) as they need either rehabilitation (if it is existing stations) or need to be constructed, and data could therefore not be shared at the time a review. As soon as they become operational, the respective Member States should start sharing the data and the status should be updated during the next review.

<table>
<thead>
<tr>
<th>No</th>
<th>Country</th>
<th>Sub-basin</th>
<th>River</th>
<th>Station ID</th>
<th>Station Name</th>
<th>Status (1. Operational / Rehabilitation needed / To be constructed)</th>
<th>To be publicly shared (Yes/No)</th>
</tr>
</thead>
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<tr>
<td>301</td>
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<td>Shire Basin/Lake Malawi</td>
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<td>1B1</td>
<td>Shire at Liwonde</td>
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<td>Shire Basin/Lake Malawi</td>
<td>Shire</td>
<td>1G3</td>
<td>Shire at Tengani</td>
<td>Rehabilitation needed(^2)</td>
<td>No</td>
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<tr>
<td>303</td>
<td>Malawi</td>
<td>Shire Basin/Lake Malawi</td>
<td>Ru</td>
<td>14D3</td>
<td>Ru at Sandama</td>
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</tr>
<tr>
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<td>Shire Basin/Lake Malawi</td>
<td>Songwe</td>
<td>9B7</td>
<td>Songwe at Mwandenga</td>
<td>Rehabilitation needed(^2)</td>
<td>No</td>
</tr>
<tr>
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<td>Shire Basin/Lake Malawi</td>
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<td>Zambezi</td>
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<td>No</td>
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<td>Mozambique</td>
<td>Tete</td>
<td>Zambezi</td>
<td>310</td>
<td>Zumbo</td>
<td>Operational</td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>Mozambique</td>
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<td>Zambezi</td>
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<td>Zumbo</td>
<td>Operational</td>
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<td>Zambezi</td>
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<td>Zumbo</td>
<td>Operational</td>
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<td>Namibia</td>
<td>Cuando/Chobe</td>
<td>Kwando</td>
<td>68022</td>
<td>Kongola</td>
<td>Operational</td>
<td>No</td>
</tr>
<tr>
<td>502</td>
<td>Namibia</td>
<td>Barotse</td>
<td>Zambezi</td>
<td>68017</td>
<td>Katima Mulilo</td>
<td>Operational</td>
<td>No</td>
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<td>Ngoma Gate</td>
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<td>Cuando/Chobe</td>
<td>Chobe</td>
<td>68021</td>
<td>Ngoma Gate</td>
<td>Operational</td>
<td>No</td>
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<td>Cuando/Chobe</td>
<td>Chobe</td>
<td>68021</td>
<td>Ngoma Gate</td>
<td>Operational</td>
<td>No</td>
</tr>
<tr>
<td>601</td>
<td>Tanzania</td>
<td>Shire Basin/Lake Nyasa</td>
<td>Ruhuhu</td>
<td>1RB2</td>
<td>Ruhuhu at Masigira</td>
<td>Operational</td>
<td>No</td>
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<tr>
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<td>Upper Zambezi</td>
<td>Zambezi</td>
<td>1-105</td>
<td>Chavuma</td>
<td>Operational</td>
<td>No</td>
</tr>
<tr>
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<td>Kabompo</td>
<td>1-950</td>
<td>Watopa</td>
<td>Operational</td>
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<td>Kafue</td>
<td>4-669</td>
<td>Hook Bridge</td>
<td>Operational</td>
<td>No</td>
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<tr>
<td>705</td>
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<td>Kafue</td>
<td>Kafue</td>
<td>4-760</td>
<td>Namwala Pontoon</td>
<td>Operational</td>
<td>No</td>
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<td>706</td>
<td>Zambia</td>
<td>Luangwa</td>
<td>Luangwa</td>
<td>5-800</td>
<td>Ndevu Camp</td>
<td>Rehabilitation needed(^{2})</td>
<td>No</td>
</tr>
<tr>
<td>707</td>
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<td>Luangwa</td>
<td>Luangwa</td>
<td>5-940</td>
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<td></td>
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<td>Luangwa</td>
<td>Luangwa</td>
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<td>D75</td>
<td>Mazowe Bridge</td>
<td>Operational</td>
<td>No</td>
</tr>
</tbody>
</table>
Note: 1) Construction not fully completed

Table 7 List of Lake stations in the Zambezi Basin, for which near real-time water level data (m) shall be shared between the Member States. Note that is the total list of station intended to be shared. However, some of the stations were not operational at the time of the latest review (reflected in the list) as they need either rehabilitation (if it is existing stations) or need to be constructed, and data could therefore not be shared at the time a review. As soon as they become operational, the respective Member States should start sharing the data and the status should be updated during the next review.

<table>
<thead>
<tr>
<th>No</th>
<th>Country</th>
<th>Lake</th>
<th>Station ID</th>
<th>Station Name</th>
<th>Status (1. Operational / To Be Rehabilitated / To be constructed)</th>
<th>To be publicly shared (Yes/No)</th>
</tr>
</thead>
<tbody>
<tr>
<td>301</td>
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<td>Lake Malawi</td>
<td>16G1</td>
<td>Lake Malawi at Nkhata-Bay</td>
<td>Need rehabilitation¹</td>
<td>No</td>
</tr>
</tbody>
</table>

¹) Rehabilitation not fully completed
Section 4: Sharing of Spatial data
Spatial data consist of traditional GIS data as well as remote sensing (RS) data. Obtaining, processing and uploading of most of the GIS and RS data will be the responsibility of ZAMSEC, while the provision of national GIS data mainly will be the responsibility of the Member States, through the National Focal Institutions. Spatial data will be shared publicly, unless there is a good reason for keeping them as only internally shared data. The projection of spatial data should be in decimal degrees (WGS84).

The roles and responsibilities of ZAMSEC and the National Focal Institutions, respectively, are briefly described below.

4.1 Sharing of spatial data through ZAMSEC
ZAMSEC will be responsible for uploading of all spatial data to ZAMWIS, including data provided by the Member States, as well as data which ZAMSEC has required from third parties, both GIS and RS data. This is done to ensure data consistency and uniformity.

ZAMSEC will be responsible for obtaining GIS and in particular remote sensing data from third parties, e.g. ESA, NASA, process the data and upload them to ZAMWIS. Routines have been established so this process to a large degree is automated to save resources, but it is the responsibility of ZAMSEC to maintain these procedures.

ZAMSEC shall ensure that relevant and available GIS and RS data generated during transboundary projects are compiled and uploaded to ZAMWIS.

ZAMSEC will during the annual review of Part II of this document request for the updated station layers from the Member States to ensure that ZAMWIS contain up-to-date station layers for all type of time series data listed in Table 1. ZAMSEC shall thereafter ensure that the basin-wide station layers in ZAMWIS are updated accordingly.

4.2 Spatial data to be provided by the Member States
The National Focal Institution, shall, following the annual review and update of Part II of this document, ensure that the station layers for all type of time series data listed in Table 1 are updated and provide the updated layers to ZAMSEC.

The Member States shall, through the National Focal Institution, assist in generating relevant national GIS data (e.g. location of planned hydropower plants, location of existing or planned major irrigation schemes) as and when needed.

Section 5: Sharing and exchange of knowledge products
Sharing of knowledge products is also an important part of the data sharing between the Member States. The sharing of knowledge products is divided into:

1) Sharing of national documents, which is the responsibility of the National Focal Institution
2) Sharing of transboundary, regional and international documents, which is the responsibility of ZAMSEC

The format of the knowledge products should be as PDF-file.

5.1 Sharing and updating ZAMWIS with national documents
It is the responsibility of the National Focal Institution (NFI) to acquire new national documents relevant for the management of the Zambezi watercourse. This will mainly, but not exclusively, include
knowledge products related to the water, and other relevant sectors, e.g. energy, agriculture, fisheries, environment, tourism and transport/navigation. Without being an exhaustive list, knowledge products in this context as a minimum includes documents such as:

1) Various Acts (such as Water Act, Environmental Management Act, etc.);
2) National Water Policy and other relevant policies;
3) Various strategies and plans such as Master Plans (e.g. water, irrigation, hydropower, etc.), Catchment Management Strategies and Plans; and
4) Documents related to major water development projects, such as major irrigation and hydropower projects.

The NFI will forward new documents to ZAMSEC by mail or other proper method available depending on the size of the documents.

ZAMSEC will review the received document and if found relevant in the transboundary context ZAMSEC will upload the document to ZAMWIS.

The knowledge products to be shared are in most cases already official and publicly available publications. Thus, unless otherwise indicated, the documents forwarded by the National Focal Institutions to ZAMSEC, are considered to be publicly shared data.

5.2 Sharing of transboundary, regional and international documents

It is the responsibility of ZAMSEC to identify and acquire new transboundary, regional and international documents relevant for the management of the Zambezi Watercourse. This will mainly include knowledge products related to the water sector, and other relevant sectors, e.g. energy, agriculture, fisheries, environment, tourism and transport/navigation. ZAMSEC will review the documents and if found relevant in the transboundary context they will be upload and shared through ZAMWIS. The Zambezi Outlook Reports, Zambezi River Basin – Atlas of the Changing Environment, Dam Synchronisation and Flood Releases in the Zambezi Basin Project reports, and the Multi-Sector Investment Opportunities Analysis reports are examples of documents which are highly relevant documents to be shared through ZAMWIS.

Section 6: National Focal Institutions in the Member States

The main roles and responsibilities of the National Focal Institution (NFI) are described in Article 9 of Part I.

Each NFI has appointed a contact person, who is the key person through whom ZAMSEC will communicate with the NFIs. A list of the NFIs, and the details of the contact persons are given in Table 8. It is the responsibility of the contact person to inform ZAMSEC in case of any changes in the table, and the table will also be reviewed as part of the annual review of Part II.
### Table 8: List of National Focal Institutions in the Member States, including the responsible contact person and his/her contact details

<table>
<thead>
<tr>
<th>Country</th>
<th>Name and Address of National Focal Institution</th>
<th>Name and designation of contact person</th>
<th>Phone of contact person</th>
<th>E-mail of contact person</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angola</td>
<td>INRH, Talatona neighborhood - MAT Street Administrative Complex Classics Talatona, Block C (5 Building) RC Law Luanda</td>
<td>Narciso Augusto Ambrosio Chefe do Departamento de Planeamento dos Recursos Hídricos e Hidrologia</td>
<td>+244923 647 899</td>
<td>luimm_007@hotmail Nарс<a href="mailto:io.ambrosio@inarh.gv.ao">io.ambrosio@inarh.gv.ao</a></td>
</tr>
<tr>
<td>Botswana</td>
<td>Ministry of Mines, Energy and Water Resources Department of Water Affairs Private Bag 0029, Gaborone</td>
<td>Ontlogetse Dikgomo Principal Hydrologist</td>
<td>+267 3607 100 +26772 106 960</td>
<td><a href="mailto:odikgomo@gov.bw">odikgomo@gov.bw</a></td>
</tr>
<tr>
<td>Malawi</td>
<td>Ministry of Irrigation and Water Development Department of Water Resources, Tikwere House, City Centre, Private Bag 390, Capital City, Lilongwe 3, Malawi.</td>
<td>Susan Kumwenda Hydrologist</td>
<td>+265 1 770 344 +265 999 280 911</td>
<td><a href="mailto:susankumwenda@yahoo.co.uk">susankumwenda@yahoo.co.uk</a></td>
</tr>
<tr>
<td>Mozambique</td>
<td>ARA-Zambéze Bairro M’padue EN7-Tete CP-67 Cidade de Tete Tete</td>
<td>Manuel Jose Mahunguana Hydrologist</td>
<td>+258 827 606 601 +258 842 560707</td>
<td><a href="mailto:mahunguanamanuel@gmail.com">mahunguanamanuel@gmail.com</a></td>
</tr>
<tr>
<td>Namibia</td>
<td>Ministry of Agriculture, Water and Forestry Department of Water Affairs Luther St, Windhoek P/Bag: 13184, Windhoek</td>
<td>Jacobine Amutenya Hydrologist</td>
<td>+264-61-208 7111 +264 814 082 869</td>
<td><a href="mailto:jtamutenya@gmail.com">jtamutenya@gmail.com</a></td>
</tr>
<tr>
<td>Tanzania</td>
<td>Ministry of Water and Irrigation Water Resources Department, Morogoro Road PO Box 9153 Dar-es-Salaam</td>
<td>Diana J. Kimbute Hydrologist</td>
<td>+255 222 450 244 +255 786 752 925</td>
<td><a href="mailto:dkimbute@gmail.com">dkimbute@gmail.com</a> <a href="mailto:mwkedi@yahoo.com">mwkedi@yahoo.com</a></td>
</tr>
<tr>
<td>Zambia</td>
<td>Water Resources Management Authority, PO Box 51059 Lusaka</td>
<td>Rowen Jani Senior Hydrologist</td>
<td>+260 974 606 743 +260 972 346 481</td>
<td><a href="mailto:Rowen.jani@gmail.com">Rowen.jani@gmail.com</a></td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>Block 4 East Celestial Park Borrowdale Road Box CY617 Harare</td>
<td>Nyashadzashwe Viriri Data and Research Manager</td>
<td>+263 773 578 689</td>
<td><a href="mailto:nviriri@zinwa.co.zw">nviriri@zinwa.co.zw</a></td>
</tr>
</tbody>
</table>
### Table 9 List of ZAMWIS contact details at ZAMCOM Secretariat (ZAMSEC)

<table>
<thead>
<tr>
<th>Country</th>
<th>Name and designation of contact person</th>
<th>Phone of contact person</th>
<th>E-mail of contact person</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hastings Chibuye</td>
<td>+263 772 25 97 93</td>
<td><a href="mailto:katubwe@zambezicommission.org">katubwe@zambezicommission.org</a></td>
</tr>
<tr>
<td></td>
<td>Programme Manager, Data, Information, Knowledge Management and Decision Support Systems (ZAMWIS)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Chipo Zimbowah</td>
<td>+263 773 58 76 34</td>
<td><a href="mailto:chipo@zambezicommission.org">chipo@zambezicommission.org</a></td>
</tr>
<tr>
<td></td>
<td>ITC Officer</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>ZAMCOM Administrative Assistant (Thembie Dube)</td>
<td>+263 4 253361-3</td>
<td><a href="mailto:zamcom@zambezicommission.org">zamcom@zambezicommission.org</a></td>
</tr>
</tbody>
</table>

**NOTE:** email communication to ZAMSEC related to ZAMWIS should be addressed to Hastings Chibuye and Chipo Zimbowah with copy to Administrative Assistant at zamcom@zambezicommission.org.
Section 7: Annual review process

The objective of the annual review of Part II, in accordance with Article 11 (2) of Part I, is to ensure that the document is a dynamic and updated document which at all times reflects the practical needs for shared data for water resources management purposes at both national and basin level. The review process also allows for the inclusion into the data sharing and exchange framework of new important and useful data types and source which have become available. It further provides for the expansion of data provision from other source institutions in the Member States if and when arrangements have been made with them to share their data.

The review and update of Part II of shall be carried out in accordance with Art. 11 (2) of Part I of these Rules and procedures in conjunction with the relevant provisions of the ZAMCOM Governance Guidelines.

The annual review (and possible update) of this Part II is to be carried out and agreed on at the annual ordinary ZAMTEC meeting, held usually in the first quarter of each year. In order for ZAMTEC to be in a position to take a decision at the ordinary meeting, the technical review and preparation process at country and ZAMSEC level needs to be initiated and carried out well in advance. The following provides an overview of key steps in the review process and applicable time lines (cf. Table 10):

Step 1: Technical review at national and ZAMSEC level

Each Member State shall carry out an internal review of the functionality and usefulness of the shared data and information. During this review, possible information gaps shall be identified, as shall potential new sources of data and information. The review shall also assess whether the data types, monitoring frequencies etc. set out in Part II are serving their intended purposes, and make proposal for amendment if found necessary.

At the same time, the technical personnel within ZAMSEC using the ZAMWIS, and being in charge of maintaining/ running it, shall carry out a review of the overall functionality of the system and propose amendments seen to be necessary from their perspective.

Step 2: Submission of review proposals to ZAMSEC

The review findings and resulting proposals for amendment of the system shall be submitted to ZAMSEC for consolidation.

Step 3: Consolidation of proposals and development of draft updated Part II; circulation to Member States

The submitted proposals shall be consolidated by ZAMSEC into a draft for an updated Part II. In consolidating the submitted proposals ZAMSEC shall take all submissions appropriately into account, while at the same time ensuring technical feasibility of the proposed amendments.

The consolidated draft of updated Part II shall be circulated to the Member States for review.

Step 4: Review of draft updated Part II and agreement on proposal to ZAMTEC

The Member States, together with ZAMSEC shall review the proposed draft with a view at agreeing on a joint draft for submission for approval to ZAMTEC. This review could be carried out electronically, but it is proposed that where possible, it is undertaken at a ZAMSCOH meeting, thereby ensuring that all Member States collectively discuss the technical implications and feasibility of the proposed amendments. The ZAMSCOH shall agree on a final draft version to be submitted to ZAMTEC.
Step 5: Circulation of proposal to ZAMTEC members

The consolidated and jointly agreed proposal shall be circulated to ZAMTEC in a timely manner, ensuring compliance with the ZAMCOM governance guidelines (sections on ZAMTEC meeting preparation).

Step 6: Review and adoption by ZAMTEC

At their ordinary meeting, ZAMTEC shall review and adopt the updated Part II, either as per submitted proposal or subject to any amendments ZAMTEC sees fit.

Step 7: Communication of agreed changes to ZAMSEC staff and NFIs

Following adoption of the updated Part II by ZAMTEC, the ES shall communicate the agreed changes to the technical staff within ZAMSEC and the NFIs, so that the necessary adjustments to the system are made in a timely manner and the system is operated as per the amended specifications.

Table 10 Overview of annual review process, and timelines

<table>
<thead>
<tr>
<th>Step</th>
<th>Task</th>
<th>Responsible</th>
<th>Activity period/ deadline</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>Technical review at national and ZAMSEC level</td>
<td>NFI, Nat. source institutions; ZAMSEC</td>
<td>September/ October</td>
</tr>
<tr>
<td>Step 2</td>
<td>Submission of review proposals to ZAMSEC</td>
<td>NFI, ZAMSEC</td>
<td>Latest 31 October</td>
</tr>
<tr>
<td>Step 3</td>
<td>Consolidation of proposals and development of draft updated Part II; circulation to Member States</td>
<td>ZAMSEC</td>
<td>Latest 15 November</td>
</tr>
<tr>
<td>Step 4</td>
<td>Review of draft updated Part II and agreement on proposal to ZAMTEC</td>
<td>Countries (through ZAMSCOH)</td>
<td>Latest 15 December</td>
</tr>
<tr>
<td>Step 5</td>
<td>Circulation of proposal to ZAMTEC Members</td>
<td>ZAMSEC</td>
<td>January (one month prior to ZAMTEC meeting)</td>
</tr>
<tr>
<td>Step 6</td>
<td>Review and adoption by ZAMTEC</td>
<td>ZAMTEC</td>
<td>February</td>
</tr>
<tr>
<td>Step 7</td>
<td>Communication of agreed changes to ZAMSEC staff and NFIs</td>
<td>ZAMSEC</td>
<td>Immediately after the ZAMTEC meeting</td>
</tr>
</tbody>
</table>
Figure 2: Map showing river gauging stations in the Zambezi Basin, for which mean daily discharge (m$^3$/s) should be shared between the eight Member States on a quarterly basis (corresponding to Table 3). Note: Ume from Zimbabwe is not included as the coordinates were not available.
Figure 3 Map showing SADC-HYCOS river gauging stations in the Zambezi Basin, for which near real-time discharge data (m³/s) shall be shared between the eight Member States (corresponding to Table 6).
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