



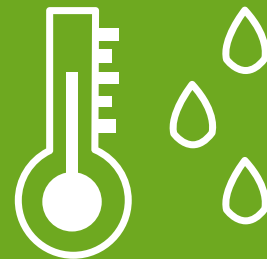
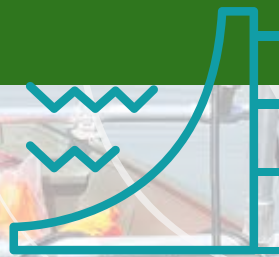
**OKACOM**

*The Permanent Okavango River Basin Water Commission  
Comissão Permanente das Águas da Bacia Hidrográfica do Rio Okavango*



# Rules and Procedures on the Sharing of Data & Information for the Cubango-Okavango River Basin

**JUNE 2020**



**Manual**



# Foreword

It has been just over twenty-five years since the Governments of Angola, Botswana and Namibia committed to an agreement on the sustainable management of the natural resources of the Cubango-Okavango River Basin, through cooperation in adopting criteria that embraces the principles of conservation, equitable allocation and information sharing. It is comforting to note that the three Member States have worked together to develop, investigate and allow themselves to be guided through international support to put in place institutional, technical, infrastructural and capacity building instruments that allows for effective functionality of the Permanent Okavango River Basin Water Commission (OKACOM).

In an endeavour to monitor the status of the basin hydrological, ecological and socio-economic dimensions and driven by national policy priorities, OKACOM developed a Data Sharing Protocol in 2010. While the protocol has been a key instrument in guiding the Okavango Basin monitoring activities by each member state and collectively as a regional tool, it has since out-lived its applicability and thrust looking at the changing data management environment. A review was hence commissioned in 2019 through the support of the EU Programme on Transboundary Water Management in the Cubango-Okavango River Basin (CORB).

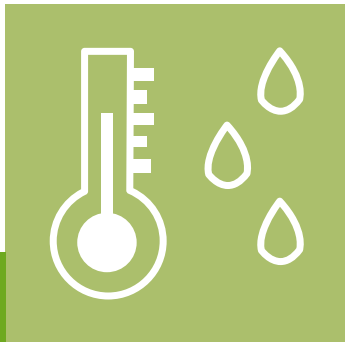
It is with great satisfaction that I present the *Rules and Procedures on the Sharing of Data and Information for the Cubango-Okavango River Basin* as a product of the review exercise. In using this document Member States will be better equipped to cooperate, harmonise action, adopt common applications, build institutional and technical capacity through a suite of data sharing procedures that have been commonly agreed between them. This instrument has taken cognisance of the emerging trans-boundary river basin dynamics, the prevailing policy needs, the changing climatic situation in the region and globally and the dire need to improve socio-economic status within the CORB.

It is hoped that all government, technical, community and non-state actors will collaborate in ensuring that the Rules and Procedures on the Sharing of Data and Information for the CORB are duly utilised and adhered to. The long-term desire to support decisions based on empirical evidence is highly dependent on the data sharing procedures that are contained in this instrument.

The support received from our cooperating partners and our Member States in consulting and developing the Rules and Procedures on the Sharing of Data and Information for the Cubango-Okavango River Basin is highly appreciated.



**Cynthia Ortmann**  
OKACOM Commissioner: Namibia





## List of Acronyms

<b>BDMF</b>	Basin Development and Management Framework
<b>CORB</b>	Cubango-Okavango River Basin
<b>DRIFT</b>	Downstream Response to Imposed Flow Transformations
<b>DSS</b>	Decision Support System
<b>EA</b>	Enumerator Area
<b>FEWS</b>	Flood Early Warning System
<b>FTP</b>	File Transfer Protocol
<b>GIS</b>	Geographic Information System
<b>ICP</b>	International Cooperating Partner
<b>IPDTC</b>	Institutional and Policy Development Technical Committee
<b>IT</b>	Information Technology
<b>MoU</b>	Memorandum of Understanding
<b>OBSC</b>	Okavango Basin Steering Committee (of OKACOM)
<b>OIKMS</b>	Okavango Information and Knowledge Management System
<b>OKACOM</b>	Permanent Okavango River Basin Water Commission
<b>OKASEC</b>	Secretariat of OKACOM
<b>OKASS</b>	Okavango Assessment System
<b>ORI</b>	Okavango Research Institute
<b>RS</b>	Remote Sensing
<b>SADC</b>	Southern African Development Community
<b>SASS</b>	South African Scoring System
<b>TDA</b>	Transboundary Diagnostic Analysis
<b>WRTC</b>	Water Resources Technical Committee (of OKACOM)

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## Preamble

The Member States of the Permanent Okavango River Basin Water Commission (OKACOM), being the Republic of Angola, the Republic of Botswana, and the Republic of Namibia;

- **INSPIRED** by the establishment of the Permanent Okavango River Basin Water Commission through the Agreement on the Establishment of a Permanent Okavango River Basin Water Commission (OKACOM-Agreement), which entered into force on 15th September 1994;
- **ACKNOWLEDGING** that OKACOM operates 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;
- **CONSIDERING** the importance of an effective, sustainable, reliable and accessible water resources information system for the Cubango-Okavango River Basin;
- **COMMITTED** to the sharing of data and information in accordance with the OKACOM-Agreement, the SADC Revised Protocol on Shared Watercourses, and the OKACOM Protocol on Hydrological Data Sharing for the Okavango River Basin (of 2010);
- **ACKNOWLEDGING** the cooperative spirit among Member States for the development of the OKACOM Decision Support System (DSS), which being hosted at the OKACOM Secretariat (OKASEC) will be a solid common reference for all the Member States when discussing the future development and management of the basin

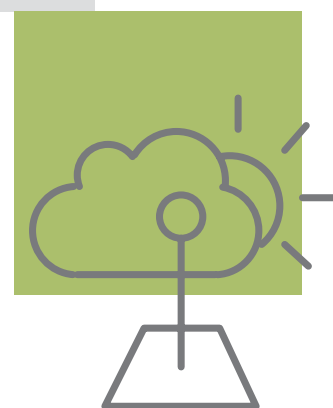
**HEREBY AGREE AS FOLLOWS:**

# 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:

<b>Confidential data and information</b>	Refers to the data and information that is typically classified as restricted. This term can be used interchangeably with sensitive data and information.
<b>Data</b>	Representations of facts, expressed as measurements or statistics, suitable for communication, interpretation, or processing.
<b>Emergency situation</b>	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 Cubango-Okavango River Basin or to a Member State.
<b>Environmental Data</b>	Data related to the conditions and functioning of natural and physical resources, e.g. ecosystems and their constituent parts.
<b>Government Institutions</b>	Institutions mandated by statutory law as part of a Member State's government structure, e.g. ministries, departments, parastatals
<b>Hydrological Data</b>	Data that concerns the water cycle including surface water and groundwater.
<b>Information</b>	Data interpreted, processed, and refined, and then displayed by the competent authorities having ownership or possession thereof.
<b>Knowledge products</b>	This concerns documents, reports, photos, and other information not being time-series or spatial data.
<b>Member States</b>	Countries who are Parties to the OKACOM-Agreement.
<b>Meteorological Data</b>	Data which describes the weather and atmosphere, including temperature, pressure, wind, air density, and other parameters.
<b>Multinational Organisations</b>	Organisations collecting information relevant for the OKACOM DSS and not controlled/managed by a single Member State.
<b>National Data Focal Institution</b>	Government Institution designated by a Member State as focal point for that country to engage with OKACOM on all matters related to data and information sharing in terms of these Rules and Procedures.
<b>OKACOM Organs</b>	OKACOM Organs as defined in the OKACOM Agreement.
<b>Originally supplied data</b>	Data as supplied by the source institution (and not yet applied by OKASEC).



<b>Planning instruments</b>	Government instruments relevant for water resources management and development planning, such as policies, legal instruments, strategies, programmes, and master plans etc. strategies, programmes, and master plans etc.
<b>Readily available data</b>	Data that are collected as part of the ongoing routine national monitoring programmes.
<b>Spatial Data</b>	Data 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.
<b>Restricted data and Information</b>	Refers to data and information that may not be disclosed to the public and its use is limited to persons or organisations that are authorised to view and use such data and information.
<b>Socio-economic Data</b>	Data related to social and economic conditions and activities
<b>Source institution</b>	The organisation originally collecting and/ or producing the data
<b>Time series Data</b>	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.
<b>Unrestricted Data and Information</b>	Means the system of hydrologically active surface and groundwater as well as associated land cover and land use of the Cubango-Okavango River Basin located in the Member States and as defined in the Transboundary Diagnostic Analysis (TDA) and in the OKACOM Basin Development and Management Framework (BDMF).
<b>Water Quality Data</b>	Data which describes the physical, chemical, and biological properties of the water.
<b>Cubango-Okavango River Basin (CORB)</b>	Means the system of hydrologically active surface and groundwater as well as associated land cover and land use of the Cubango-Okavango River Basin located in the Member States and as defined in the Transboundary Diagnostic Analysis (TDA) and in the OKACOM Basin Development and Management Framework (BDMF).
<b>OKACOM-Agreement</b>	Agreement on the Establishment of a Permanent Okavango River Basin Water Commission (OKACOM) of 1994.



## Article 2: Objectives of the Rules and Procedures

1. The overall objective of these Rules and Procedures is to ensure that relevant and quality assured data and information are shared in a timely manner between the Member States in order to enable the Member States – either individually, or jointly through OKACOM - to take informed decisions in relation to the planning, management and sustainable development of the shared water resources in the CORB
2. The specific objectives of these Rules and Procedures are to specify:
  - a) The types of data and information to be shared, as well as the source, frequency, format, standards, quality assurance, and method of transfer;
  - b) Time frames for supplying the agreed data and information;
  - c) Ownership and access rights to shared data and information; and
  - d) Roles and responsibilities of involved institutions.

## Article 3: Scope and Structure of the Rules and Procedures

1. These Rules and Procedures shall apply to the sharing of data and information, from whatever source, relevant to the equitable and reasonable utilisation, management and sustainable development of the CORB.
2. These Rules and Procedures shall apply to the sharing of all data and information generated by Member States that is relevant to the equitable and reasonable utilisation, management and sustainable development of the CORB.
3. These Rules and Procedures shall apply to the sharing of all data and information generated by International Cooperating Partners (ICP) funded programmes in support of OKACOM, which will be shared in accordance with the provisions of these Rules and Procedures, unless otherwise agreed in writing between OKACOM and the ICP.
4. These Rules and Procedures shall not apply to data and information sharing in emergency situations.
5. These Rules and Procedures consist of:
  - a) The Rules for Sharing of Data and Information, which set out the agreed rules for data sharing, cost sharing<sup>1</sup>, roles of institutions<sup>2</sup>; and
  - b) The Technical Procedures and Specifications (Annex 1), specifying the data to be shared, technical standards and procedures of data and information exchange.
6. The ‘Rules for Sharing of Data and Information’ and the ‘Technical Procedures and Specifications’ are inter-related components of these Rules and Procedures, as each part is valid only in conjunction with the respective other part, and the procedure for amendment of each part is set out in Article 11 of these Rules and Procedures.

## Article 4: Legal Framework

These Rules and Procedures are based on, and facilitate the implementation of, the relevant provisions on data sharing and information exchange of the OKACOM-Agreement, the Agreement on the Organisational Structure of OKACOM, and the Revised SADC Protocol on Shared Watercourses.

<sup>1</sup> Reference is made to Article 10: Costs Implications

<sup>2</sup> Reference is made to Article 9: Roles and Responsibilities

## Article 5: Data and Information Sharing

1. The Member States agree to share all relevant environmental, hydrological and socio-economic data and information relevant for the planning, management and sustainable development of the CORB, as specified in the Technical Procedures and Specifications (Annex 1).
2. The data and information to be shared between the Member States shall consist of all relevant and readily available past and present data and information needed to describe and understand the actual situation of the watercourse, as well as causes for possible change.
3. The precise relevant data and information to be shared shall be reviewed and determined by Okavango Basin Steering Committee (OBSC) as needed, in accordance with Article 11 of these Rules and Procedures, and as listed in the Technical Procedures and Specifications (Annex 1). The latter also describe the access level, frequency, format, source, quality assurance and method of transfer.
4. The Member States agree that in addition to the above-mentioned data and information to be provided by the respective Member States, already publicly available data and information related to the CORB will also regularly be integrated into the OKACOM Decision Support System (DSS) to serve the OKACOM objectives.
5. In addition to the data to be shared in accordance with Annex 1, OKASEC can, through the National Data Focal Institutions, request additional sets of data or information from one or more Member States if that is required for a specific purpose. When making such request OKASEC will provide a reason for the request which specifies for which purpose the requested data or information is required.
6. Any Member States can request additional sets of data or information from one or more Member States if that is required for a specific purpose. Such request shall be made by the National Data Focal Institution, through OKASEC. When making such request the Member States will provide a reason for the request which specifies for which purpose the requested data or information is required. It is the responsibility of OKASEC to ensure that all Member States are informed of the request.

## 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 and/or analysis by or on behalf of OKACOM shall be with the Member States collectively. OKASEC will acknowledge the original source(s) institution when producing processed information. Such acknowledgement shall be visible along with the processed product(s).

### Categorisation of access levels:

3. The data and information provided by Member States will be categorised into one of the following three categories:
  - a) unrestricted: e.g. environmental, hydrological, meteorological etc. data and information;
  - b) restricted: e.g. socio-economic data and information, zonal maps, action plans, development plans, maps of Member States;
  - c) confidential: e.g. endangered species data or locations (that could influence species exploitation), sediment related geological data with minerals indication;

4. a) To determine the respective access categories, OKASEC will prepare a list of datasets and documents and propose an access category for each for consideration by the Commission. The Commission shall agree in principle on the access category. For datasets that are received on a regular basis, e.g. time-series data, such categorisation shall apply generically to all datasets under that category.
- b) Notwithstanding the agreed in-principle categorisation, it remains the autonomous right of each Member States to decide that certain data or information be categorised differently from that agreed by the Commission. Such decision shall be communicated to the Commission, who may request a reason for the decision.

### Use of data and information:

5. Data and information categorised as ‘unrestricted’ may at any time be made available to the general public.
6. Data and information categorised as ‘restricted’ may be made available by OKACOM to:
  - a) Member States through the National Data Focal Institution in each Member State, for internal use by government institutions.
  - b) Recognised partners of OKACOM, subject to approval by the Commission, who may attach conditions to the use of the data and information.
  - c) Any other entity or individual, subject to approval by the Commission, who may attach conditions to the use of the data and information.
7. Data and information categorised as ‘confidential’ can be made available only to officially appointed members of OKACOM organs, senior OKACOM Secretariat staff as determined by the Executive Secretary (ES), and – on request and approval – to OKACOM partners with a demonstrated need for the information contained in the document.

### Article 7: Data Security

1. Once the data and information have been provided to OKASEC and incorporated into the OKACOM DSS, it is the responsibility of OKASEC to make sure that the data and information shared as ‘restricted’ or ‘confidential’ will only be shared with the intended institutions/organisations in accordance with Article 6 (6) and 6 (7). To this end, OKASEC will ensure that the OKACOM DSS is constructed in such a way that only users with permission to access ‘restricted’ or ‘confidential’ data and information will be able to do so.
2. Organizations and institutions other than Government Institutions in the Member States, as well as individuals, who want to make use of data and information categorised as ‘restricted’ for national or transboundary purposes, are, in the case of national data, requested to contact the source institution in the respective Member State to get permission to use the data. OKACOM may facilitate such a process, if it is for transboundary purposes.
3. Any consultant engaged by OKACOM who needs to have access to data and information categorised as ‘restricted’, shall sign an agreement stating that they will only use these data and information for this specific purpose and that they commit to delete/destroy the received data and information upon completion of their service.
- 4.4. While every effort has been made by OKACOM, through its Member States and OKASEC, to share accurate, quality-controlled data and information through the OKACOM DSS, in accordance with the provisions of applicable Agreements and these Rules and Procedures, OKACOM and its

Member States cannot guarantee in any way whatsoever the correctness nor accuracy of the data and information provided.

**Disclaimer:**

5. Use and application of the OKACOM DSS data and information is fully at the responsibility and discretion of any user and neither OKACOM 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, as well as the source institution, monitoring frequency, data formats, transfer frequency and transfer method, are specified in the Technical Procedures and Specifications (Annex 1) of these Rules and Procedures.
2. Prior to submission of data and information to OKACOM, the National Data Focal Institutions shall ensure that all data and information provided to OKACOM has been quality assured at national level and meets the quality standards agreed at OKACOM level.
3. The Member States agree that harmonised quality standards will be developed if and when required. OKACOM will facilitate such harmonisation
4. Unless otherwise agreed, the method of transferring data and information will be by means of direct upload of electronic files to the OKACOM DSS where all received data will be stored. Regular backup procedures will ensure that received data are not lost in the case of Information Technology (IT) breakdown.

**Article 9: Roles and Responsibilities**

**National Data Focal Institutions**

1. Each Member State shall appoint a National Data 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 Data Focal Institutions is to ensure that all agreed data and information are provided to OKASEC in a timely manner and to the agreed standards. The National Data Focal Institutions will appoint a national contact person(s), who will facilitate the data exchange between the Member State and OKASEC.
2. The National Data Focal Institution will liaise with the Government Institutions in the respective Member State when such Institutions are requesting data and information available in the OKACOM DSS.
3. The appointment of and/or change of any National Data Focal Institution, and of the appointed contact person within that institution, shall be communicated to OKASEC in writing by the respective Member State in a timely manner.
4. Member States shall communicate to OKASEC in a timely manner through their National Data Focal Institution any changes to their IT infrastructure that could potentially affect the data and information sharing mechanisms in place.

**Okavango Basin Steering Committee (OBSC)**

5. The role of the OBSC is to review the relevance of the data and information sharing requirements as specified in the Technical Procedures and Specifications (Annex 1). On the basis of such review, it will formulate proposals on changes to the types of data and information to be shared, in order to ensure

the continued relevance of the shared data and information. OBSC will also support the appointed National Data Focal Institutions in their task of making sure that agreed data and information is shared in a timely manner with OKASEC, in accordance with these Rules and Procedures.

### OKACOM Secretariat (OKASEC):

6. OKASEC should at all times maintain an updated record of the National Data Focal Institutions as well as the contact details of the appointed contact person within that institution.
7. OKASEC is responsible for the operation of the OKACOM DSS and, in this role, will monitor the actual uploading/receipt of data and information from the Member States.
8. OKASEC may, in accordance with OKACOM procedural rules, enter into an MoU with relevant multi-national organisations in order to facilitate direct data and information transfer between these organisations and OKACOM.
9. Further, OKASEC will:
  - a) Implement and maintain an appropriate data security system for the OKACOM DSS 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 OBSC 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.
10. In relation to the National Data Focal Institutions, OKASEC will:
  - a) Confirm to the National Data Focal Institutions when data and information is well received
  - b) Inform the National Data Focal Institutions when their received data and information have been incorporated into the DSS databases.
  - c) Remind respective National Data Focal Institutions when receipt of data and information is delayed
  - d) Assist the National Data Focal Institutions with technical backstopping, 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 have or will be used.

## Article 10: Costs Implications

1. The Member States shall provide readily available data and information to OKACOM without financial compensation.
2. The Member States shall bear the costs related to the sharing of data and information in that Member State in accordance with these Rules and Procedures.
3. In the case that OKACOM or another Member State requests data or information that is not readily available or obtainable, the Member State requested to provide such data or information may request reasonable financial compensation for the cost of providing such data or information.



### Article 11: Amendment of the Rules and Procedures

1. All proposed amendments to the Rules and Procedures for Sharing of Data and Information as defined in Article 2 (2) of these Rules and Procedures, shall be submitted in writing to OKACOM and shall require mutual agreement by all Member States. Such agreement shall be expressed through a decision of the Commission in accordance with applicable OKACOM decision-making procedures.
2. The Technical Procedures and Specifications (Annex 1) of these Rules and Procedures shall be reviewed and updated as and when necessary. By adopting these Rules and Procedures, The Commission delegates the authority and responsibility for their review and update to the OBSC and the technical committees, to be carried out in accordance with applicable OKACOM decision-making procedures.

### Article 12: Dispute Resolution

Any dispute arising amongst Member States regarding the interpretation and application of these Rules and Procedures shall be resolved in accordance with the applicable OKACOM procedures.

### Article 13: Rules and Procedures Languages

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

These Rules and Procedures shall enter into force thirty (30) days after their adoption by the Commission. With the entry into force of these Rules and Procedures the OKACOM Protocol on Hydrological Data Sharing for the Okavango River Basin (of 2010) shall be deemed repealed in its entirety.



# Annex 1: Technical Procedures and Specifications for Data and Information sharing

## Section 1: Introduction

This Annex 1 to the Rules and Procedures complements the Rules for Sharing of Data and Information. As such this Annex 1 forms the technical component of the Rules and Procedures and aims at providing clear technical guidance to the practitioners in OKASEC and the Member States in charge of data and information sharing and maintaining the OKACOM DSS.

Annex 1 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 Data Focal Institutions) for data and information exchange and the procedures for review and update of this Annex 1.

## Section 2: OKACOM DSS

The OKACOM Decision Support System (DSS) in its entirety is a multi-component system comprised of people (various experts in OKASEC, Member State institutions and in the different Technical Committees), monitoring systems (e.g. HYDSTRA, OKASS/SASS/ZASS monitoring results), various models and basin planning tools (hydrological: e.g. Pitman Model; ecological: e.g. DRIFT etc.), different software applications (e.g. Geographic Information System (GIS), knowledge management software and internet based information management and sharing tools) as well as hardware. This system aims to collect and manage relevant data and information and to convert such data and information into knowledge products so as to provide knowledge-based decision support to OKACOM and to Member States.

Such data and information are collected from:

- Member States,
- Academic and research institutions,
- CORB focussed projects and,
- Any other relevant sources.

In technical terms, the OKACOM DSS is the centre-point of data and information sharing and exchange between Member States in the CORB and the system includes various software tools used for the actual exchange and sharing of data and information. The OKACOM DSS will facilitate the use of the shared data and information for strategic planning and utilisation of the water resources in the basin.

Some of the key technical elements of the OKACOM DSS are given below

**Table 1:** OKACOM DSS – selected key technical elements

Models	Locally Accessed Software and Database Applications	Software Accessible Online
Pitman Hydrological Model		OKACOM website incorporating the OKACOM DSS portal allowing access to: <ul style="list-style-type: none"> <li>• Dashboard that provide basin data overview</li> <li>• Opensource web mapping applications to view and interact with some of the key spatial data</li> <li>• Metadata feature that enables consideration of spatial data that may exist at the OKASEC GIS office but not available online</li> <li>• Functions to view and query data noted in this Annex</li> </ul>

Okavango Research Institute (ORI) Inundation model	HYDSTRA time series data management system with licenses and local customisation in each Member State and at OKASEC
DRIFT Ecological Model incorporating both DRIFT-WET and DRIFT-LAND	GIS incorporating a basin geodatabase, including Remote Sensing (RS) data, at OKASEC GIS office.
Any other models that are deemed useful and available by OKACOM	

### 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 Member States where data will be shared.

#### 3.1 Time-series data sharing frequency

The frequency of data and information transfer shall be as follows:

##### 1) Daily:

- a) Data required for Flood Early Warning Systems (FEWS) purposes, including rainfall and flow that is available via near-real-time systems and General Packet Radio System (GPRS) transfer, would be shared as daily averages, from Member States to OKASEC, on a daily basis.
- b) This data should be noted at all times to not have been verified and that it may therefore not be accurate. When the FEWS is in place, it should clearly note that the flow levels can only indicate the potential for flooding and cannot be depended upon as accurate.
- c) This data may not be used for modelling purposes

##### 2) Quarterly:

- a) For time series data types, for agreed-to critical transboundary automated gauging stations, flow data, water quality data and other parameters that are collected through near-real-time equipment and transferred through GPRS to the Member States, the Member States will process/verify the data and, on a quarterly basis<sup>3</sup>, provide OKASEC with data from the preceding quarter.
- b) These data may for example be used for modelling and long-term planning.

##### 3) Bi-annual:

For water quality data generated ex-situ (where laboratory analysis is required), the Member States will, on a biannual basis<sup>4</sup> (twice every year), provide OKASEC with new data from the preceding half-year (six months).

#### 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 2 below. However, it is recognised that the monitoring and sharing of all parameters listed in the subsequent tables will have to be gradually implemented, given the resource constraints in the Member States. The tables in this document therefore only describe what the Member States eventually strive for. The parameters to be measured and shared in practice are at any given time those that have been determined by OBSC and its technical committees in a separate working document.

Initially the focus is on the sharing of near-real time data that is collected through means of automated gauging and meteorological stations, including for example water levels, discharge and rainfall data. The eventual aim is to include all the hydro-meteorological, sediment, groundwater, environmental and other variables listed in Table 2.

<sup>3</sup> End March, June, September, and December

<sup>4</sup> End March and September



**Table 2: Type of time series data, which eventually is aimed to be shared between the Member States.**

Type of data	Monitoring Frequency	Units	Transfer Frequency	Transfer Method
Water levels	Sub-Daily	m	Quarterly	Exchange files
Discharge	Sub-Daily	m <sup>3</sup> /s	Quarterly	Exchange files
Groundwater Piezometric Level <sup>1</sup>	Quarterly	mbg	Quarterly	Exchange files
Rainfall	Sub-Daily	mm/day	Quarterly	Exchange files
Evaporation <sup>1</sup>	Daily	mm/day	Quarterly	Exchange files
Temperature <sup>1</sup>	Daily	°C	Quarterly	Exchange files
Surface Water Quality <sup>1</sup>	As per Table 3			
Sediment Transport <sup>1</sup>	As per the Environmental Monitoring Framework			
Groundwater Quality <sup>1</sup>	As per Table 4			
Bio-monitoring <sup>1</sup>	As per Environmental Monitoring Framework			

**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.

**Table 3: Surface Water Quality parameter data to be shared by Member States**

Parameter	Units	In-Situ / Ex-Situ	Transfer Frequency	Transfer Method
Electrical Conductivity (EC)	mS/m	In-Situ	Quarterly <sup>2</sup>	CSV Exchange Files
Temperature	°C	In-Situ	Quarterly <sup>2</sup>	CSV Exchange Files
Acidity (pH)	mg/l	In-Situ	Quarterly <sup>2</sup>	CSV Exchange Files
Dissolved Oxygen	pH units	In-Situ	Quarterly <sup>2</sup>	CSV Exchange Files
Total Phosphate (TP)	µg/l	Ex-Situ	Bi-Annual	CSV Exchange Files
Total Nitrogen	mg/l	Ex-Situ	Bi-Annual	CSV Exchange Files
Total Hardness	mg/l (CaCO <sub>3</sub> )	Ex-Situ	Bi-Annual	CSV Exchange Files
Faecal Coliforms	CFU	Ex-Situ	Bi-Annual	CSV Exchange Files
Turbidity	NFU	Ex-Situ	Bi-Annual	CSV Exchange Files
Trace Elements	µg/l	Ex-Situ	Bi-Annual	CSV Exchange Files
Total Dissolved Solids (TDS)	mg/l	Ex-Situ	Bi-Annual	CSV Exchange Files
Total Suspended Solids (TSS)	mg/l	Ex-Situ	Bi-Annual	CSV Exchange Files
Chlorophyll a.	µg/l	Ex-Situ	Bi-Annual	CSV Exchange Files

**Note: 2)** Quarterly transfer frequency applies to those monitoring points where telemetric equipment is installed. It is not clear at this point as to whether all four of these parameters will be measured by logging equipment.

**Table 4: Groundwater quality parameter data to be shared by Member States**

Parameter	Units	In-Situ / Ex-Situ	Transfer Frequency	Transfer Method
Electrical Conductivity	mS/m	Ex-Situ	Bi-Annual	CSV Exchange Files
pH	mg/l	Ex-Situ	Bi-Annual	CSV Exchange Files
Sulphate	mg/l	Ex-Situ	Bi-Annual	CSV Exchange Files
Sodium	mg/l	Ex-Situ	Bi-Annual	CSV Exchange Files
Magnesium	mg/l	Ex-Situ	Bi-Annual	CSV Exchange Files
Fluoride	mg/l	Ex-Situ	Bi-Annual	CSV Exchange Files
Calcium	mg/l	Ex-Situ	Bi-Annual	CSV Exchange Files

### 3.3 The procedures for data exchange

#### Quarterly exchange of time series data

Time series data should be stored and maintained by Member States in a Time Series Data Management System. All Member States and OKACOM presently utilise HYDSTRA or are in the process of acquiring it, including customisation and training. This is the only recommended software.

It is important to keep the databases at the National Data Focal Institutions and at OKASEC synchronized to ensure that OKASEC 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 organizational workflow required to keep the databases synchronized is the following:

- 1) During the course of each quarter, Member States should ensure that the data received via near-real-time means are verified.
- 2) After the end of each quarter, the National Data Focal Institutions will ensure that their time series database is updated with the time series to be shared and which are readily available.
- 3) The National Focal Institutions will then after the end of each quarter ensure that an exchange file is exported from HYDSTRA in Comma Separated Value (CSV) format with changes that have occurred in their database and will ensure that this file is transferred to OKASEC via a File Transfer Protocol (FTP) or similar online connection
- 4) OKASEC will receive the exchange files from the three Member States and import these into their time series database
- 5) OKASEC will, based on a schedule, export an exchange file in CSV format with changes that have occurred in their database and disseminate that exchange file to the National Data Focal Institutions in the three Member States via an FTP or similar internet connection for importing into their databases.
- 6) All data exports, transfers and imports may be programmed to occur automatically, however it is the responsibility of Member States and OKASEC technicians to ensure that their relevant exports, transfers and imports occur at the scheduled time.

This procedure will ensure that changes in a database at any National Data Focal Institution will be propagated to OKASEC and from there further to all the other National Data Focal Institutions.

#### Exchange and sharing of near real-time data

The near real-time flow monitoring stations should be configured to transmit data to the relevant Member State's designated server. Designated technicians must then ensure that the data is correctly received and uploaded to their time series data management system. It is the responsibility of the National Data Focal Institutions to ensure that the stations are working correctly and are transmitting the data to the intended receivers. The Member States, through the National Data Focal Institution will send the data agreed to be shared daily for FEWS purpose to OKASEC. All other data, i.e. those agreed to be shared on a quarterly or bi-annually, needs to be quality controlled at national level and subsequently sent to OKASEC at the agreed sharing frequency.

### 3.4 Quality assurance

The time series data to be provided by the Member States shall be the officially processed and quality assured data.

The quality assurance is to be carried out by the source institution, which will either be the National Data Focal Institution or another source institution. When OKASEC receives the data, it may carry out an additional quality check. However, if any possible errors are detected, OKASEC cannot change/correct the data itself, but will have to refer back to the source institutions through the National Data Focal Institution and request for the data to be corrected (as needed) and re-submitted.

### 3.5 List of gauging and meteorological monitoring stations

The near real-time monitoring stations (gauging and meteorological stations) for which flow and climate time series data shall be provided by Member States and shared are listed in the following tables. Once this document has entered into force (cf. Article 14), the Member States shall provide the historical data

from the listed stations. Some of the stations are presently not operational, which is indicated in the status column. This can be amended at any time in the future as and when the status changes, without requiring a new approval process by Member States. Thus, the daily and quarterly sharing of time series data will 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 as per the daily/ quarterly indication.

**Table 5: List of Flow gauging stations in the Cubango Okavango River Basin, for which mean daily discharge (m3/s) shall be shared between the three Member States on a basis as stipulated in the table.** 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.

Type		Country	Sub-basin	River	Station ID	Station Name	Status (Operational / Rehab needed / Upgrade Required / To be constructed)	To be publicly shared (Yes/No)	Sharing Frequency
Key - Transboundary Importance	1	Angola	Cuito	Cuito		Cuito	Upgrade required	No	Quarterly
	2	Angola	Cuito	Cuito		Dirico	Upgrade required	No	Quarterly
	3	Angola	Cuebe (Cubango)	Cuebe		Menongue	Upgrade required	No	Quarterly
	4	Angola	Cubango	Cubango		Mucundi	To be constructed	No	Quarterly
	5	Namibia	Cubango	Cubango/ Kavango		Nkurenkuru	Operational / Upgrade required	No	Quarterly
	6	Namibia	Cubango	Cubango/ Kavango		Rundu	Operational / Upgrade required	No	Quarterly
	7	Botswana	Okavango	Okavango		Mohembo	Operational / Upgrade required	No	Quarterly
	8	Botswana	Delta	Thamal-akane		Maun Bridge	Operational / Upgrade required	No	Quarterly
National Importance	9	Angola	Cuchi	Cuchi		Cuchi	Upgrade required	No	Quarterly
	10	Angola	Cutato	Cutato		Cutato	Upgrade required	No	Quarterly
	11	Angola				Caiundo	Upgrade required	No	Quarterly
	12	Angola	Upper Cubango	Cubango		Kuvango	To be constructed	No	Quarterly
	12	Angola	Cuebe (Cubango)	Cuebe		Capico	Rehabilitation needed	No	Quarterly
	14	Angola	Cubango	Cubango		Katwitwi	To be constructed	No	Quarterly
	15	Angola	Cuito	Longa		Longa	To be constructed	No	Quarterly
	16	Namibia	Okavango (Cuito + Cubango)	Okavango		Mukwe	Operational / Upgrade required	No	Quarterly
	17	Botswana	Delta	Delta		Khwai	Operational / Upgrade required	No	Quarterly
	18	Botswana	Delta	Delta		Lower Boro	To be constructed	No	Quarterly
	19	Botswana	Delta	Delta		Samedupi	Operational / Upgrade required	No	Quarterly
	20	Botswana	Delta	Delta		Lower Kunyere	To be constructed	No	Quarterly
	21	Botswana	Delta	Delta		Lower Thaoge	To be constructed	No	Quarterly

**Table 6: List of stations in the Okavango Delta, for which daily WL (m) shall be shared between the three Member States on a quarterly basis. Note that this is the total list of stations 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.

Type	No	Country	Sub-basin	River	Station ID	Station Name	Status (Operational / Rehab needed / Upgrade Required / To be constructed)	To be publicly shared (Yes/No)	Sharing Frequency
National Importance	1	Botswana	Delta	Delta		Selinda	To be constructed	No	Quarterly
	2	Botswana	Delta	Delta		Mau-nichira	To be constructed	No	Quarterly
	3	Botswana	Delta	Delta		Upper Boro	To be constructed	No	Quarterly
	4	Botswana	Delta	Delta		Upper Kunyere	To be constructed	No	Quarterly
	5	Botswana	Delta	Delta		Thaoge	To be constructed	No	Quarterly
	6	Botswana	Delta	Delta			To be constructed	No	Quarterly

**Table 7: List of rainfall stations (presently mainly SADC-HYCOS stations) in the Cubango Okavango River 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.

Type	No	Country	Sub-basin	Station ID	Station Name	Status (Operational / Rehab needed / Upgrade Required / To be constructed)	To be publicly shared (Yes/No)	Sharing Frequency <sup>5</sup>
Key - Transboundary Importance	1	Angola	Middle Cubango		Caiundo	Historical site; to be re-constructed	No	Quarterly
	2	Angola	Cuito		Cuito	To be constructed	No	Quarterly
	3	Angola	Cuito		Dirico	To be constructed	No	Quarterly
	4	Angola	Cuebe (Cubango)		Menongue	To be constructed	No	Quarterly
	5	Angola	Cubango		Mucundi	To be constructed	No	Quarterly
	6	Namibia	Cubango		Nkurenkuru	Operational / Upgrade required	No	Quarterly
	7	Namibia	Cubango		Rundu	Operational / Upgrade required	No	Quarterly
	8	Namibia	Okavango		Divundu	Operational (NGOWP)	No	Quarterly
	9	Botswana	Okavango		Mohembo	Operational	No	Quarterly
	10	Botswana	Delta		Maun Bridge	Operational	No	Quarterly

<sup>5</sup> Date agreed to be needed for FEWS purposes will be shared on a daily basis.to Article 9: Roles and Responsibilities

National Importance	11	Angola	Cubango	Katwitwi	To be constructed (NGOWP)	No	Quarterly
	12	Angola	Okavango (Cuito + Cubango)	Longa	To be constructed	No	Quarterly
	13	Botswana	Delta	Khwai	Operational / Upgrade required	No	Quarterly
	14	Botswana	Delta	Lower Boro	To be constructed	No	Quarterly
	15	Botswana	Delta	Samedupi	Operational / Upgrade required	No	Quarterly
	16	Botswana	Delta	Lower Kunyere	To be constructed	No	Quarterly
	17	Botswana	Delta	Lower Thaoge	To be constructed	No	Quarterly
	18	Botswana	Delta	Lower Kunyere	To be constructed	No	Quarterly
	19	Botswana	Delta	Selinda	To be constructed	No	Quarterly
	20	Botswana	Delta	Maunichira	To be constructed	No	Quarterly
	21	Botswana	Delta	Upper Boro	To be constructed	No	Quarterly
	22	Botswana	Delta	Upper Kunyere	To be constructed	No	Quarterly
	23	Botswana	Delta	Thaoge	To be constructed	No	Quarterly
	24	Botswana	Delta	Thamache	To be constructed	No	Quarterly

**Table 8: List of weather stations in the Cubango Okavango River Basin, for which rainfall, wind, temperature, air pressure and humidity data 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, none of the stations had been installed at the time of the latest review (reflected in the list), 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.

No	Country	Area	Station ID	Station Name	Status (Operational / Rehab needed / Upgrade Required / To be constructed)	To be publicly shared (Yes/No)	Sharing Frequency
1	Angola	Chinguar		Chinguar	To be constructed	No	Quarterly
2	Angola	Chitembo		Chitembo	To be constructed	No	Quarterly
3	Angola	Cutato		Cutato	To be constructed	No	Quarterly
4	Angola	Cuito		Cuito	To be constructed	No	Quarterly
5	Angola	Caiundo		Caiundo	To be constructed	No	Quarterly
6	Angola	Katuitui		Katuitui	To be constructed	No	Quarterly
7	Namibia	Rundu		Rundu	To be constructed	No	Quarterly
8	Namibia	Divundu		Divundu/ Popa Falls	To be constructed	No	Quarterly
9	Botswana	Mohembo		Mohembo	To be constructed	No	Quarterly
10	Botswana	Maun		Maun	To be constructed	No	Quarterly
11	Botswana	Western Delta		Gumare	To be constructed	No	Quarterly
12	Botswana	Central Delta		Chiefs Island	To be constructed	No	Quarterly
13	Botswana	Eastern Delta		Xakanaka	To be constructed	No	Quarterly

## Section 4: Sharing of non-time series data

### 4.1 Type of non-time series data to be shared

Data which is not collected repeatedly on a frequent and regular basis is considered non-time series data. Data types of this nature include, but are not limited to, the following:

1. Census data
  - a. Number households per enumerator area (EA) or similar measurement equivalent
  - b. Average size of households per EA
  - c. Household income per EA
  - d. Average and/ or total livestock numbers per EA
2. Ecological data

### 4.2 The procedures for data exchange

Where available, this data should be shared on an ad-hoc basis as and when it becomes available, or in response to a request by a Member State (Art. 5 (6)) or by OKASEC (Art 5 (6)). Member States are encouraged to make OKASEC and fellow Member States aware of such data as and when it becomes available.

## Section 5: Sharing of Spatial data

Spatial data consists of traditional GIS data (vector and raster data sets) as well as RS data. Obtaining, processing and uploading of most of the GIS and RS data to the OKACOM DSS will be the responsibility of OKASEC, while the provision of national GIS data mainly will be the responsibility of the Member States, through the National Data Focal Institutions.

Metadata should be provided for all shared data including information concerning the origin of the data, the custodian of the data, the date of capture, the coordinate system used and any restrictions or advisory considerations for use.

The coordinate system used for shared spatial data should preferably be geographic decimal degrees (WGS84). If any other coordinate system must be utilised for a good reason, this must be identified in metadata provided with the dataset.

The roles and responsibilities of OKASEC and the National Data Focal Institutions, respectively, are briefly described below.

### 5.1 Spatial data to be provided by the Member States

The National Data Focal Institution, will, following the review and update of Annex 1 of this document, ensure that the spatial station layers reflecting the locations of monitoring stations for all type of time series data listed in Table 2 are updated and will provide the updated layers to OKASEC.

The Member States shall generate relevant national GIS data as and when needed and share this data, through the National Data Focal Institution, with OKASEC when appropriate.

### 5.2 Sharing of spatial data through OKASEC

**OKASEC is responsible for:**

1. Uploading of all relevant spatial data to the OKACOM DSS, including data provided by the Member States, as well as data which OKASEC has required from third parties, both GIS and RS data. This is done to ensure data consistency and uniformity.
2. Obtaining relevant GIS, and in particular RS data from third parties, processing the data and uploading them to the OKACOM DSS. Routines can be established so this process is to a large degree automated to save resources, but it is the responsibility of OKASEC to maintain these procedures.
3. Ensuring that relevant and available GIS and RS data generated during transboundary projects are compiled and uploaded to the OKACOM DSS.
4. Requesting, during the review of Annex 1 of this document, the updated station layers from the Member States to ensure that the OKACOM DSS GIS module contains up-to-date station location layers for all type of time series data listed in Annex 1. OKASEC shall thereafter ensure that the basin-wide station layers in the OKACOM DSS are updated as and when any spatial location details or station information relevant to the GIS layer changes.

## Section 6: 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 Data Focal Institution
- 2) Sharing of transboundary, regional and international documents, which is the responsibility of OKASEC
- 3) Sharing of related documents such as journal articles, and published information regarding the basin but that is not the direct responsibility/ownership of the Member States or OKACOM.

### 6.1 Sharing and updating the OKACOM DSS with national documents

It is the responsibility of the National Data Focal Institution to acquire new national documents relevant for the management of the CORB. This will mainly, but not exclusively, include knowledge products related to the water, and other relevant sectors, e.g. land management, planning, energy, agriculture, fisheries, environment, tourism and transport/navigation. Without being an exhaustive list, knowledge products in this context as a minimum include documents such as:

- 1) Various Member States 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; Land Development Plans in the basin; and
- 4) Documents related to major water development projects, such as major irrigation and hydropower projects.

Three months prior to the review of the Technical Procedures and Specifications, OKASEC shall request from the Member States, via the National Data Focal Institutions, any new, relevant national knowledge products. The National Data Focal Institution will forward new documents to OKASEC. This shall wherever possible be done in digital format, with mail or other methods only being used when digital transmission is not technically possible.

OKASEC will review the received document and if found relevant in the transboundary context OKASEC will upload the document to the OKACOM DSS.

The knowledge products to be shared are in some cases already official and publicly available publications. Thus, unless otherwise indicated, the documents forwarded by the National Data Focal Institutions to OKASEC, are considered to be publicly shared data.

### 6.2 Sharing of transboundary, regional and international documents

It is the responsibility of OKASEC to identify and acquire new transboundary, regional and international documents relevant for the management of the CORB. 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. OKASEC will review the documents and, if found relevant in the transboundary context, they will be uploaded and shared through the OKACOM DSS. OKASEC, through the National Data Focal Institutions, will inform the Member States of new uploads on a quarterly basis.

## Section 7: National Data Focal Institutions in the Member States

The main roles and responsibilities of the National Data Focal Institution are described in Article 9 of the Rules for Sharing of Data and Information.

Each National Data Focal Institution has appointed a contact person (and an alternate), who is the key person through whom OKASEC will communicate with the National Data Focal Institution. A list of the National Data Focal Institutions, and the details of the contact persons are given in Tables 9 and 10. It is the responsibility of the contact person to inform OKASEC in case of any changes in the table, and the table will also be reviewed as part of the review of Annex 1.

**Table 9: List of National Data Focal Institutions in the Member States, including the responsible contact person and his/her contact details**

Country	Name and Address of National Data Focal Institution	Name and designation of contact person	Phone of contact person	E-mail of contact person
Angola				
Botswana				
Namibia				

**Table 10: List of OKACOM DSS contact details at OKASEC**

	Name and designation of contact person	Phone of contact person	E-mail of contact person	
1				
2				
3				

**Note:** email communication to OKASEC related to the OKACOM DSS should be addressed to the DSS Specialist with copy to Administrative Assistant.

## Section 8: Technical Procedures and Specifications review process

The objective of the review of Technical Procedures and Specifications, in accordance with Article 11 (2) of the Rules for Sharing of Data and Information, is to ensure a dynamic and up-to-date 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 sources 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 Annex 1 shall be carried out in accordance with Article 11 (2) of these Rules and Procedures in conjunction with the relevant OKACOM decision-making procedures.

The review (and possible update) of the actual data and information to be shared in accordance with this Annex 1 is to be carried out and agreed at the annual ordinary OBSC meeting. For OBSC to be in a position to take a decision at the ordinary meeting, the technical review and preparation process at country and OKASEC 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 timelines (cf.):

### Step 1: Technical review at national and OKASEC 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 Annex 1 are serving their intended purposes and make proposal for amendment if found necessary.

At the same time, the technical personnel within OKASEC, using the OKACOM DSS and in charge of maintaining and running it, shall carry out a review of the overall functionality of the system and propose amendments regarded as necessary from their perspective.

### Step 2: Submission of review proposals to OKASEC

The review findings and resulting proposals for amendment of the system shall be submitted to OKASEC for consolidation.



### Step 3: Consolidation of proposals and development of draft updated Annex 1 and circulation to Member States

The submitted proposals shall be consolidated by OKASEC into a draft for an updated Annex 1. In consolidating the submitted proposals OKASEC shall have due regard to all appropriate submissions, while at the same time ensuring the technical feasibility of the proposed amendments.

The consolidated draft of updated Annex 1 shall be circulated to the Member States for review.

### Step 4: Review of draft updated Annex 1 and agreement on proposal to OBSC

The Member States, together with OKASEC shall review the proposed draft with a view at agreeing on a joint draft for submission for approval to OBSC. This review could be carried out electronically, but it is proposed that where possible, it is undertaken at a Water Resources Technical Committee (WRTC) meeting, thereby ensuring that all Member States collectively discuss the technical implications and feasibility of the proposed amendments. The relevant technical committees shall agree on a final draft version to be submitted to OBSC.

### Step 5: Circulation of proposal to OBSC members

The consolidated and jointly agreed proposal shall be circulated to OBSC in a timely manner, ensuring compliance with applicable OKACOM procedures.

### Step 6: Review and adoption by OBSC

At their ordinary meeting, OBSC shall review and adopt the updated Annex 1, either as per submitted proposal or subject to any amendments OBSC considers appropriate.

### Step 7: Communication of agreed changes to OKASEC staff and NDFIs

Following adoption of the updated Annex 1 by OBSC, the ES shall communicate the agreed changes to the technical staff within OKASEC and the National Data Focal Institutions, 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 11:** Overview of review process, and timelines

Step	Task	Responsible	Activity period/ deadline
Step 1	Technical review at national and OKASEC level	NDFI, Nat. source institutions; OKASEC	tbd
Step 2	Submission of review proposals to OKASEC	NDFI; OKASEC	
Step 3	Consolidation of proposals and development of draft updated Annex 1; circulation to Member States	OKASEC	
Step 4	Review of draft updated Annex 1 and agreement on proposal to OBSC	Countries (through relevant technical committees)	
Step 5	Circulation of proposal to OBSC Members	OKASEC	
Step 6	Review and adoption by OBSC	OBSC	

Step 7 Communication of agreed changes to OKASEC staff and NDFIs OKASEC

## Appendix: Templates

### A: Review template for Annex 1:

The key elements for the review of Annex 1 are the tables showing the types of data to be shared and the monitoring and transfer frequencies. For ease of application the relevant table are here provided in the form of a quick review template:

**Table 2: Type of time series data, which eventually is aimed to be shared between the Member States.**

Type of data	Monitoring Frequency	Units	Transfer Frequency	Transfer Method
Water levels	Sub-Daily	m	Quarterly	Exchange files
Discharge	Sub-Daily	m <sup>3</sup> /s	Quarterly	Exchange files
Groundwater Piezometric Level <sup>1</sup>	Quarterly	mbg	Quarterly	Exchange files
Rainfall	Sub-Daily	mm/day	Quarterly	Exchange files
Evaporation <sup>1</sup>	Daily	mm/day	Quarterly	Exchange files
Temperature <sup>1</sup>	Daily	oC	Quarterly	Exchange files
Surface Water Quality <sup>1</sup>	As per Table 3			
Groundwater Quality <sup>1</sup>	As per Table 4			
Bio-monitoring <sup>1</sup>	As per Basin Monitoring Programme			

**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.

**Table 3: Surface Water Quality parameter data to be shared by Member States**

Parameter	Units	In-Situ / Ex-Situ	Transfer Frequency	Transfer Method
Electrical Conductivity	mS/m	In-Situ	Quarterly <sup>2</sup>	CSV Exchange Files
Temperature	oC	In-Situ	Quarterly <sup>2</sup>	CSV Exchange Files
pH	mg/l	In-Situ	Quarterly <sup>2</sup>	CSV Exchange Files
Dissolved Oxygen	pH units	In-Situ	Quarterly <sup>2</sup>	CSV Exchange Files
Total Phosphate (TP)	µg/l	Ex-Situ	Bi-Annual	CSV Exchange Files
Total Nitrogen	mg/l	Ex-Situ	Bi-Annual	CSV Exchange Files
Total Hardness	mg/l (CaCO <sub>3</sub> )	Ex-Situ	Bi-Annual	CSV Exchange Files
Faecal Coliforms	CFU	Ex-Situ	Bi-Annual	CSV Exchange Files
Turbidity	NFU	Ex-Situ	Bi-Annual	CSV Exchange Files
Trace Elements	µg/l	Ex-Situ	Bi-Annual	CSV Exchange Files
Total Dissolved Solids (TDS)	mg/l	Ex-Situ	Bi-Annual	CSV Exchange Files
Total Suspended Solids (TSS)	mg/l	Ex-Situ	Bi-Annual	CSV Exchange Files
Chlorophyll a.	µg/l	Ex-Situ	Bi-Annual	CSV Exchange Files

**Note 2)** Quarterly transfer frequency applies to those monitoring points where telemetric equipment is installed. It is not clear at this point as to whether all four of these parameters will be measured by logging equipment.

**Table 4:** Groundwater quality parameter data to be shared by Member States

Parameter	Units	In-Situ / Ex-Situ	Transfer Frequency	Transfer Method
Electrical Conductivity	mS/m	Ex-Situ	Bi-Annual	CSV Exchange Files
pH	mg/l	Ex-Situ	Bi-Annual	CSV Exchange Files
Sulphate	mg/l	Ex-Situ	Bi-Annual	CSV Exchange Files
Sodium	mg/l	Ex-Situ	Bi-Annual	CSV Exchange Files
Magnesium	mg/l	Ex-Situ	Bi-Annual	CSV Exchange Files
Fluoride	mg/l	Ex-Situ	Bi-Annual	CSV Exchange Files
Calcium	mg/l	Ex-Situ	Bi-Annual	CSV Exchange Files

## B: Request for information in terms of Article 5 (5) of the Procedures

### Request for information in terms of Article 5 (5) of the Procedures (OKASEC requesting additional information from another Member State)

**A: Particulars of person requesting the data and/ or information** (could be any OKASEC staff member, but usually will be the DSS officer)

Name and Surname: .....  
 Designation:.....  
 Telephone number: .....  
 E-mail address: .....

**B: Particulars of data or information**

1. Description of record or relevant part of the record:.....  
 .....  
 .....  
 .....  
 .....  
 2. Reference number, if available: .....  
 3. Any further particulars of record: .....  
 .....  
 .....  
 .....

**C. Requested from:** (should be national focal point in National Data Focal Institution of the country the request is made to)

Name and Surname: .....  
 Designation:.....  
 Telephone number: .....  
 E-mail address: .....

**D. Request authorisation (Executive Secretary or designated officer)**

.....  
 Name Signature Date

**C: Request for information in terms of Article 5 (6) of the Procedures**

**Request for information in terms of Article 5 (6) of the Procedures  
(A Member State requesting additional information from another Member State,  
through OKASEC)**

**A: Particulars of person requesting the data and/ or information (authorised government official in ministry/ department requesting the information)**

Name and Surname: .....  
Designation:.....  
Postal address: .....  
Fax number:.....  
Telephone number: .....  
E-mail address: .....

**B: Particulars of data or information**

1. Description of record or relevant part of the record:.....  
.....  
.....  
.....  
.....  
2. Reference number, if available: .....  
3. Any further particulars of record: .....  
.....  
.....  
.....

**C: Requested from:** (should be national focal point in National Data Focal Institution of the country the request is made to)

Name and Surname: .....  
Designation:.....  
Telephone number: .....  
E-mail address: .....

**D. Request authorisation by National Data Focal Institution of the requesting Member State**

.....  
Name Signature Date

**D: Request for information in terms of Article 6 (6) (b) & (c); and Article 6 (7) of the Procedures**

**Request for information in terms of Article 6 (6) (b) & (c); and Article 6 (7) of the Procedures  
 (An interested party requesting restricted or confidential information from OKACOM)**

A: Particulars of person requesting the data and/ or information

Name and Surname: .....  
 Designation:.....  
 Postal address: .....  
 Fax number:.....  
 Telephone number: .....  
 E-mail address: .....

**B: Particulars of data or information**

1. Description of record or relevant part of the record:.....  
 .....  
 .....  
 .....  
 2. Reference number, if available: .....  
 3. Reason for request/ intended use of requested data or information:

**C: Approval/ Non-approval of request**

**Requested information falls into category:**

Restricted: .....  
 Confidential: .....

**The request is**

Approved: .....  
 Conditions attached to approval: (e.g. signing of non-disclosure agreement)

Not approved:  
 Reasons for non-approval:  
 .....  
 .....  
 .....

.....  
 Name Signature Date

## E: Non-disclosure Agreement for Data or Information Received from OKACOM

### **Non-disclosure Agreement for Data or Information Received from OKACOM (Art. 6 (6) (b) and (c) and Article 6 (7) of the OKACOM Data and Information Sharing Procedures)**

This agreement is hereby entered into, by and between

The Permanent Okavango River Basin Water Commission (hereinafter referred to as OKACOM), and

the [name institution] (hereinafter referred to as the recipient)

on [insert date].

OKACOM and the recipient mutually agree to the terms of this Agreement whereby OKACOM will provide the following data and information:

[list data provided]

to the recipient for the following purposes:

[list agreed purpose of use]

#### **1. Definition:**

*Covered Data and Information* will include all data and information provided by OKACOM to the recipient specifically for the aforementioned purposes as well as any data and information that the recipient may derive from such data and information.

#### **2. Acknowledgment of Access to Covered Data and Information:**

The recipient acknowledges that the Agreement allows the recipient access to Covered Data and Information, and that Covered Data and Information will be used for the purposes listed above only. While every effort has been made by the OKACOM through its Member States and OKASEC to share accurate, quality-controlled data and information through the OKACOM Decision Support System (DSS) the OKACOM 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 OKACOM DSS data and information is therefore fully at the responsibility and discretion of the recipient and neither OKACOM nor the Member States shall bear any liability for incorrect or inaccurate data and information.

#### **3. Prohibition on Unauthorized Use or Disclosure of Covered Data and Information:**

The recipient agrees to hold the Covered Data and Information in strict confidence. The recipient shall not use or disclose Covered Data and Information received from or on behalf of OKACOM except as permitted or required by the Agreement.

#### **4. Safeguard Standard:**

The recipient agrees that it will protect the Covered Data and Information it receives from or on behalf of OKACOM in accordance with OKACOM requirements. Where the purpose of use as specified in this agreement permits the use of data by a consultant, the recipient shall ensure that a non-disclosure agreement in accordance with OKACOM requirements is concluded with the consultant.

**5. Term and Termination:**

- a) This Agreement shall take effect upon execution.
- a) In addition to the rights of the parties established by the underlying Agreement, if OKACOM reasonably determines in good faith that the recipient has materially breached any of its obligations under this Agreement, OKACOM, in its sole discretion, shall have the right to:
  - i. Exercise any of its rights to reports, access and inspection under this Agreement; and/or
  - ii. Require the recipient to submit to a plan of monitoring and reporting, as OKACOM may determine necessary to maintain compliance with this Agreement; and/or
  - iii. Provide the recipient with a fifteen (15) day period to cure the breach; and/or
  - iv. Terminate the Agreement immediately if the recipient has breached a material term of this Agreement and cure is not possible.
- b. Before exercising any of these options, OKACOM shall provide written notice to the recipient describing the violation and the action it intends to take.

**6. Maintenance of the Security of Electronic Information:**

The recipient shall develop, implement, maintain and use appropriate administrative, technical and physical security measures to preserve the confidentiality, integrity and availability of all electronically maintained or transmitted Covered Data and Information received from, or on behalf of, OKACOM.

**7. Reporting of Unauthorized Disclosures or Misuse of Covered Data and Information:**

The recipient shall report to OKACOM any use or disclosure of Covered Data and Information not authorized by this Agreement or in writing by OKACOM. The recipient shall make the report to OKACOM not less than one (1) business day after the recipient learns of such use or disclosure. The recipient's report shall identify:

- a) The nature of the unauthorized use or disclosure,
- b) The Covered Data and Information used or disclosed,
- c) Who made the unauthorized use or received the unauthorized disclosure,
- d) What the recipient has done or shall do to mitigate any deleterious effect of the unauthorized use or disclosure, and
- e) What corrective action the recipient has taken or shall take to prevent future similar unauthorized use or disclosure.

the recipient shall provide such other information, including a written report, as reasonably requested by OKACOM.

**8. Indemnity.**

The recipient shall defend and hold OKACOM harmless from all claims, liabilities, damages, or judgments involving a third party, including OKACOM's costs and attorney fees, which arise as a result of the recipient's failure to meet any of its obligations under this Agreement.

IN WITNESS WHEREOF, each of the undersigned has caused this Agreement to be duly executed in its name and on its behalf.

PERMANENT OKAVANGO RIVER BASIN  
 WATER COMMISSION

NAME OF INSTITUTION (RECIPIENT)

By:  
 Title:  
 Signature:  
 Date:

By:  
 Title:  
 Signature:  
 Date:



# OKACOM

The Permanent Okavango River Basin Water Commission  
Comissão Permanente das Águas da Bacia Hidrográfica do Rio Okavango



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