



**Convention of the Protection and Use of  
Transboundary Watercourses and International Lakes  
Fifth meeting of the Global network of basins working on climate change adaptation  
Friday 26th February 2021**

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**Progress report of the Global network of basins working on climate change adaptation as of February 2021**

The global network of basins working on climate change adaptation was created by the secretariat of the Convention on the Protection and Use of Transboundary Watercourses and International Lakes (Water Convention), serviced by the United Nations Economic Commission for Europe (UNECE), in cooperation with the International Network of Basin Organizations (INBO) in 2013. It aims to promote cooperation on adaptation in transboundary basins, to compare different methodologies and approaches for adapting to climate change and to promote a shared vision between the participating basins.

The network includes on the one hand several pilot basins where UNECE, INBO and their partners implement activities and, on the other hand, additional basins which primarily work on their adaptation activities themselves in accordance with the agreed decisions of their governing bodies or with the terms of reference of international projects. The network allows for the exchange of experience, learning from each other, establishing contacts between basins and their experts, discussing challenges and lessons learnt etc. The network activities include regular meetings of all basins, larger workshops, trainings and development of guidance, for example, the co-publication by the World Bank, in partnership with UNECE, INBO and the African Development Bank of a handbook on “Financing Climate Change Adaptation in Transboundary Basins: Preparing Bankable Projects” in January 2019.

The following basins are included into the global network:

1. The Chu Talas river basin, shared by Kazakhstan and Kyrgyzstan<sup>1</sup>, activities implemented by the Chu Talas Water Management Commission, United Nations Development Programme (UNDP) and UNECE.
2. The Congo river basin, shared by Angola, Cameroon, Central African Republic, Gabon, Democratic Republic of the Congo and Republic of the Congo, activities implemented by the International Commission of the Congo-Oubangui-Sangha Bassin (CICOS).
3. The Danube river basin, shared by Austria, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Germany, Hungary, Republic of Moldova, Montenegro, Romania, Serbia, Slovenia, Slovak Republic and Ukraine, activities implemented by the International Commission for the Protection of the Danube River (ICPDR).
4. The Rivers and Wetlands of Dauria Steppes (Upper Amur, Ulz-Torey, Selenge-Baikal basins), shared by China, Mongolia and the Russian Federation, with the activities implemented by WWF Russian Federation, Daursky Biosphere Reserve and Rivers without Boundaries International Coalition.
5. The Dniester river basin, shared by the Republic of Moldova and Ukraine, activities implemented by the Commission on Sustainable Use and Protection of the Dniester River Basin, UNDP/GEF, Organization for Security and Cooperation in Europe (OSCE) and UNECE.
6. The Drin river basin, shared by Albania, the Republic of North Macedonia, Kosovo<sup>2</sup> and Montenegro and Greece, activities implemented by the Global Water Partnership Mediterranean, on behalf of the Drin Core Group.
7. The Lower Mekong River Basin, shared by Cambodia, Laos, Thailand and Vietnam, activities implemented by the Mekong River Commission.

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<sup>1</sup> The listed countries include only the members of the river basin organisations in all basins where they are established.

<sup>2</sup> United Nations administered territory under Security Council Resolution 1244 (1999).

8. The Meuse river basin, shared by Belgium, France, Germany, Luxembourg and the Netherlands, activities implemented by the International Meuse Commission.
9. The Neman river basin, shared by Belarus, Lithuania and the Russian Federation, activities implemented by UNDP, United Nations Educational, Scientific and Cultural Organization (UNESCO) and UNECE.
10. The Niger river basin, shared by Benin, Burkina Faso, Cameroon, Chad, Côte d'Ivoire, Guinea, Mali, Niger and Nigeria, activities implemented by the Niger Basin Authority.
11. The North Western Sahara Aquifer System (NWSAS), shared by Algeria, Libya, Tunisia, activities implemented by the Sahara and Sahel Observatory (OSS).
12. The Rhine basin, shared by France, Germany, Luxemburg, the Netherlands and Switzerland, activities implemented by the International Commission for the Protection of the Rhine (ICPR).
13. The Sava river basin, shared by Bosnia and Herzegovina, Croatia, Montenegro, Serbia and Slovenia, activities implemented by the Sava River Basin Commission.
14. The Senegal river basin, shared by Guinea, Mali, Mauritania and Senegal, activities implemented by the Senegal River Basin Development Authority.
15. The Sixaola river basin, shared by Costa Rica and Panama, activities implemented by the Binational Commission of the Sixaola River Basin.
16. Lake Victoria basin, shared by Burundi, Kenya, Rwanda, Tanzania, and Uganda, activities implemented by the Lake Victoria Basin Commission.
17. The Volta river basin, shared by Benin, Burkina Faso, Côte d'Ivoire, Ghana, Mali and Togo, activities implemented by the Volta Basin Authority.

More information about the activities and progress of the pilots and basins 1-17 is provided below<sup>3</sup>.

<sup>3</sup> Updates provided by the basins; the UNECE secretariat is not responsible for the correctness of the information.

## 1. ACTIVITIES ON TRANSBOUNDARY WATER MANAGEMENT AND CLIMATE CHANGE ADAPTATION IN THE CHU TALAS BASIN

### 1. Which climate change impacts are you already experiencing or expecting in your basin (impacts on health & sanitation and water quality, floods, droughts, other types of disasters, etc.)?

In their review of the situation in the Chu-Talas basin, specialists of Kazakhstan and Kyrgyzstan named the overall increase in aridity, combined with lower availability of water resources, among the most likely and severe climate change impacts in the basin. These changes are expected against the backdrop of significant growth in water demand projected by the middle of the century as a result of the economic development and the population growth. The melting of glaciers will continue and, in case of a strong rise in temperatures by 2100, they may be completely depleted. Under the worst case scenario, the runoff of rivers is expected to decrease to 25-45% of the current level by the end of the century. At the same time, the demand for water for irrigation, industry and water supply will continue growing, exacerbating the water scarcity in the region and potentially complicating relations between the states. Sudden floods on the Talas River in 2016 exposed the difficulties experienced by the countries of the basin. Similarly, the water crisis in 2014 highlighted the need for greater use of water-saving technologies, such as drip irrigation, especially in Kyrgyzstan. The climate change is also expected to adversely affect the health of people in the basins of these rivers.

### 2. What are the concrete results achieved in 2019-2020 with regards to climate change adaptation in your basin?

The process of adaptation to climate change in the Talas river basins began in 2010 with the development of common climate scenarios and modelling of potential changes in the water runoff. Those efforts were followed by a joint review of the vulnerability of individual sectors and regions to climate change and the development of a set of potential adaptation measures and related activities that were to be implemented in the context of the work of the Commission on the Use of Water Management Facilities of Intergovernmental Status on the Chu and Talas Rivers.

In 2015-2018, further work on adaptation to climate change was facilitated by the project “Enhancing climate resilience and adaptive capacity in the transboundary Chu-Talas basin” funded by the Ministry of Foreign Affairs of Finland under the FinWaterWei II initiative. Finland also provided substantial support to the international project “Promoting Cooperation to Adapt to Climate Change in the Chu and Talas Transboundary Basin” funded by the Global Environment Facility, implemented in 2015-2018 by the UNDP and UNECE, and aimed at analysing common management problems in these transboundary basins and seeking joint solutions for them. Within the framework of the UNECE project “Enhancing climate resilience and adaptive capacity in the transboundary Chu-Talas basin”, the implemented measures included the conservation and restoration of the natural flood plain of rivers in the most densely populated and developed middle part of the Chu and Talas basins – Chu forestry (near the town of Tokmak), along the Krasnaya River in the Kyrgyz state hunting farm “Kyrgool”; a demonstration of the economic and environmental benefits of the application of advanced irrigation technologies – a specialised workshop on the introduction of modern water-saving irrigation methods (Bishkek), a press tour for central and local media in Chu oblast, the development of outreach materials on adaptation to climate change and their wide dissemination; and support for the establishment of a safety monitoring system for the Kirov reservoir dam on the Talas River.

**3. Name and short description of the flagship adaptation activity your organisation wishes to highlight**

1. Research, monitoring, pilot projects on climate change and resource conservation in the region
2. Raising awareness of climate change and integration of relevant issues into the plans and activities of the Chu Talas Water Management Commission and the countries
3. Reducing the damage caused by extreme floods, water scarcity (droughts) and other hydrometeorological hazards
4. Intergovernmental engagement and cooperation on climate change adaptation and resilience
5. Improving the efficiency of water resource use in agriculture
6. Protection of aquatic ecosystems, the basin catchment and maintenance of the water quality
7. Agrotechnical adaptation measures
8. Long-term investments in climate change resilience in densely populated areas of the Chu-Talas Basin.

**4. Which major challenges did you face with regards to transboundary cooperation and climate change adaptation? How did you overcome them?**

As such, there were no difficulties in the process of cross-border cooperation and adaptation to climate change, as both countries understood the importance of cooperation in this area. At the same time, it should be noted that there were some difficulties in financing climate change adaptation activities; there were also difficulties related to the situation concerning the spread of COVID-19; difficulties arose due to the fragile political situation in Kyrgyzstan, which delayed many of the activities under the Strategic Programme of Actions for the Chu-Talas River Basins developed by the Working Group on Adaptation to Climate Change and Long-Term Programmes of Actions

**5. Which lessons learned would you like to share with other basins?**

The main lesson learned and the accomplishment that we would like to share with other basins is the establishment of an *ad hoc* Working Group on Adaptation to Climate Change and Long-Term Programmes of Actions under the Secretariat of the Chu-Talas Water Management Commission (established in accordance with the decision of the 22<sup>nd</sup> ChTWC meeting, held on 30 November 2016 in Bishkek). The main objective of this Working Group is to develop the Strategic Programme of Actions for the Chu-Talas River Basins, taking into account the findings of the transboundary diagnostic analysis (TDA) in terms of the adaptation of the Chu-Talas transboundary basin to climate change.

**6. What is the status of your basin climate change adaptation strategy and plan? Are they already developed, financed and implemented?**

As a result of organising regular discussions, meetings, specialists of the Working Group on Adaptation to Climate Change and Long-Term Programmes of Actions under the ChTWC Secretariat have developed separate National Programmes of Actions for the KR and the RK and a Joint Programme of Actions for the Chu-Talas River Basins, which include actions related to climate change: reducing the risk of negative impacts of climate change on the population, economy and ecosystems through the application of a set of adaptation measures. The funding for these activities was expected to come after the approval of the JPA/NPAs by the countries. In the KR, the endorsement of the JPA/NPA was included in the agenda of the National Water Council. But due to the spread of the pandemic, the political transformation in the KR, the approval of the document has been postponed.

**7. How do you finance your climate change activities? How do you plan to finance implementation of measures?**

Funding for climate change activities was included in the JPA/NPA documents. Financing of climate change measures is also included in state sectoral programmes of the Ministry of Emergency Situations, the Ministry of Agriculture, Water Management and Development of Regions of the Kyrgyz Republic, etc.

**8. How did you link transboundary climate change adaptation to adaptation activities at other levels, such as the national level?**

The linking is performed by improving the information framework, sharing data and experience to make effective decisions to mitigate negative impacts of climate change; developing and implementing policies and platforms for the regular exchange of hydrometeorological and climate information, including seasonal hydrometeorological forecasts and forecasts of hydrometeorological hazards; using GIS technologies to create a data base of natural conditions, infrastructure and environment in the basin; developing and implementing a unified system of assessment of the current and expected climate changes, including periodic updates; improving the human capacity on climate change adaptation.

**9. Do you include water, health and sanitation (WASH) issues into your transboundary climate change adaptation strategies and plans? Are you supporting transboundary cooperation related to WASH in the framework of climate change adaptation and how?**

Full funding of water, sanitation and hygiene is a crucial prerequisite for providing and maintaining sustainable services needed by the population of Kyrgyzstan. To develop and implement these policies, the TrackFin initiative in the WASH sector has been launched. The aim of this initiative is to develop and, over time, begin to implement a unified methodology for tracking funds allocated to the sector. An interdepartmental working group on WASH accounts is created and holds regular working meetings with stakeholder participation. TrackFin is being developed in parallel with the deployment of the system of environmental and economic accounts for water. Kyrgyzstan implements WHO strategies to achieve universal healthcare coverage and strengthen the health system, health security, control over infectious and non-communicable diseases.

**10. Future planned activities:**

- Improve the information framework, exchange of data and sharing experience to make efficient decisions to mitigate negative climate change impacts;
- Improve the awareness (knowledge) of a wide range of stakeholders about climate change adaptation and resilience building measures;
- Build the capacity of human resources in climate change adaptation;
- Improve sectoral, regional and local planning mechanisms by integrating climate change adaptation measures into socio-economic development plans.

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**2. ACTIVITIES ON TRANSBOUNDARY WATER MANAGEMENT AND CLIMATE CHANGE  
IN THE CONGO BASIN**

**1. Which climate change impacts are you already experiencing or expecting in your basin (impacts on health & sanitation and water quality, floods, droughts, other types of disasters, etc.)?**

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**2. What are the concrete results achieved in 2019-2020 with regards to climate change adaptation in your basin?**

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**3. Name and short description of the flagship adaptation activity your organization wishes to highlight.**

<p>The International Commission of the Congo-Oubangui-Sangha Basin (CICOS) requested from the French Development Agency (AFD) and French Global Environment Facility (FFEM) the provision of a grant intended for the co-financing of the project entitled <b>“Spatial hydrology and derivative applications for an Integrated Management of Water Resources (IWRM) of the Congo Basin taking into account adaptation to climate change (IWRM-SAT-CONGO).</b></p> <p>The overall objective of the project is to improve resilience and adaptation to climate change through strengthening of knowledge on water resources and its operational application in the Congo River basin. It thus aims to increase the quantity and quality of data and information produced on water, to better organize access to data, and to share of information and applications related to water, uses and ecosystems that depend on it. This improvement is sought by the combination of traditional techniques (in situ hydrometeorological stations) and innovative technologies (spatial altimetry of inland waters, satellite data, digital models, etc.).</p> <p>The specific objectives of the project are to:</p> <ul style="list-style-type: none"> <li>-Strengthen the "water resources" component of the CICOS Information System (SIBCO) and its operational access by member countries;</li> <li>-Strengthen the applications based on and making the most of water information systems for the needs of inland navigation, monitoring climate change and preserving biodiversity;</li> <li>- Strengthen national capacities for the sustainable management of data and information at the service of decision-makers and users, within the framework of open and coordinated governance of information between States;</li> <li>-Capitalize and launch a regional dynamic for the development of water information systems at the national level in CICOS member countries and more generally in African transboundary basins.</li> </ul> <p>The content of the project is structured around three main components:</p> <p><b>Component 1</b>-Strengthening of the water information systems of CICOS and its member countries</p> <p><b>Component 2</b>-Strengthening of applications based on and making the most water information systems for the needs of inland navigation, monitoring climate change and preservation of biodiversity</p> <p><b>Component 3</b>-Strengthening national capacities and regional capitalization of sustainable management of information at the service of decision-makers and users</p>
<p><b>4. Which major challenges did you face with regards to transboundary cooperation and climate change adaptation? How did you overcome them?</b> Field left blank.</p>
<p><b>5. Which lessons learned would you like to share with other basins?</b> Field left blank.</p>
<p><b>6. What is the status of your basin climate change adaptation strategy and plan? Are they already developed, financed and implemented?</b> Field left blank.</p>
<p><b>7. How do you finance your climate change activities? How do you plan to finance implementation of measures?</b> Field left blank.</p>
<p><b>8. How did you link transboundary climate change adaptation to adaptation activities at other levels, such as the national level?</b> Field left blank.</p>
<p><b>9. Do you include water, health and sanitation (WASH) issues into your transboundary climate change adaptation strategies and plans? Are you supporting transboundary cooperation related to WASH in the framework of climate change adaptation and how?</b> Field left blank.</p>
<p><b>10. Future planned activities</b> Within the framework of the 3 components of the project, the following activities are planned:</p> <ul style="list-style-type: none"> <li>10.1 / Strengthening hydrometric data</li> <li>10.2 / Strengthening of hydrometric data processing and sharing capacities</li> <li>10.3 / Strengthening hydrological knowledge of the Congo Basin</li> <li>2.1 / Development of pilot applications and downstream services of the Hydrological Information System (HIS)</li> </ul>

- 2.2 / Reinforcement of environmental monitoring for the preservation of biodiversity
- 2.3 / Applications of the allocation model taking into account the impacts of climate change and different development scenarios
- 2.4 / Development of micro-hydropower systems
- 3.1 / Strengthening national capacities
- 3.2 / Regional capitalization and dissemination of project results

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### 3. ACTIVITIES ON TRANSBOUNDARY WATER MANAGEMENT AND CLIMATE CHANGE ADAPTATION IN THE DANUBE BASIN

#### 1. Which climate change impacts are you already experiencing or expecting in your basin (impacts on health & sanitation and water quality, floods, droughts, other types of disasters, etc.)?

Due to the expected changes in climatic conditions, water availability is likely to decrease in the southern and eastern parts of the Danube River Basin, whereas it will remain unchanged or even increase in the northern and western part. Changes in water availability can highly differ locally and regionally. Nevertheless, a north-westward shift of regions affected by water stress is expected until the end of the 21st century. Runoff is projected to significantly decrease until the end of the 21st century, whereas only little change is projected in the next decades. According to precipitation, changes in runoff seasonality are expected. The assessment of future extreme hydrological events like floods and droughts includes high uncertainty. However, there is consensus that extreme hydrological events will occur more often and be more intense. Following the future increase in air temperature, water temperature will most likely increase in the Danube River Basin.

Due to changes to all temperature-dependent chemical and biological processes, as well as increasing flood and drought events, the pressure on water quality in rivers and lakes will increase. An intensification of extreme events, such as floods and droughts, leads to high impacts for agriculture, forestry and industry, as well as built-up areas and infrastructure. As a consequence of decreasing water availability, a shortage in water supply is expected in some areas. There will not be enough water to meet the requirements for irrigation in agriculture and the vegetation period will shorten in large areas in the south of the Danube River Basin. In contrast, in the northern parts there will be enough water for productive farming. A shift in species distribution and an increasing risk of invasive species is expected due to changing climatic conditions. An increase in air and water temperature, combined with changes in precipitation, water availability, water quality and increasing extreme events, such as floods, low flows and droughts, may lead to changes in ecosystems, life cycles, and biodiversity in the Danube River Basin in the long-term.

#### 2. What are the concrete results achieved in 2019-2020 with regards to climate change adaptation in your basin?

The ICPDR Strategy on Adaptation to Climate Change finalized in 2018 describes the approach of the ICPDR to integrate the issue of climate change adaptation into its activities, in particular in the Danube River Basin Management Plan and the Flood Risk Management Plan. The relevance of the Danube basin wide Climate Change Adaptation Strategy for Danube countries – in addition to national



and regional strategies – is in particular seen in the context of promoting action in a multilateral and transboundary context as outlined as one of the key priorities of the EU Strategy on Adaptation to Climate Change. The ICPDR Climate Change Adaptation Strategy serves as a reference document influencing national strategies and activities in general and more specifically providing input for national RBMPs and FRMPs on possible adaptation measures of relevance for the Danube River Basin.

Additionally, end of 2019, the ICPDR adopted the “Effects of climate change (drought, water scarcity, extreme hydrological phenomena and other impacts)” as additional Significant Water Management Issue (SWMI) in the Danube River Basin. In the preparation of the Danube River Basin Management Plan Update (DRBMP) 2021, a related vision and operational management objectives have been agreed in 2020 to guide the Danube countries in the next 6 years WFD implementation cycle (2021-2027). The vision is outlined as follows: *“The ICPDR’s basin-wide vision to deal with adaptation to and mitigation of water related effects of climate change (drought, water scarcity, extreme hydrological phenomena and other impacts) is to make full use of our wealth of knowledge on River Basin Management to meet the challenges posed by climate change, to achieve resilience and ultimately sustain the inherent ecological and cultural value of the aquatic environment for the Danube River Basin. Preventive measures will be taken to mitigate impacts of climate change, to adapt to it and to minimise the related damages, thus reducing the vulnerability of aquatic ecosystems and water related ecosystems to climate change.”*

The cross-cutting character of this SWMI, vis-à-vis the other SWMIs (organic, nutrient and hazardous substances pollution as well as hydromorphological alterations) identified for the Danube River Basin but also in the wider context of European Water Policy, is reflected in the necessity for mitigation of and resilience to extreme hydrological phenomena at both ends of the spectrum (i.e. flooding and drought). The main aim is therefore to ensure that measures taken in the context of other, pressure specific SWMIs (e.g. focussed on particular issues relating to pollution or hydromorphology) are “climate proof”. This means that the respective measures must achieve the desired results without negative and unintentional side effects even under changed climate conditions. This will be ensured by integrating climate change into the approaches adopted within recognised SWMIs as well as via coordinated implementation of the Water Framework Directive and Floods Directive and other environmental Directives in the Danube River Basin.

**3. Name and short description of the flagship adaptation activity your organization wishes to highlight**

Next to the new SWMI on “Effects of climate change (drought, water scarcity, extreme hydrological phenomena and other impacts)” and its integration in the DRBMP Update 2021 (see answer to question 2), further ICPDR activities such as the ICPDR Transnational Monitoring Network (TNMN) and the planned Danube Hydrological Information System (HIS), expanded knowledge and exchange of information on water scarcity and droughts as well as other ICPDR activities such as the planned Guidance document on sustainable agriculture in the Danube River Basin covering climate change aspects can be mentioned.

**4. Which major challenges did you face with regards to transboundary cooperation and climate change adaptation? How did you overcome them?**

Climate change is a cross-cutting issue, causing impacts to different sectors on a transboundary scale. The quality of water and its availability are very much at the heart of the expected changes and therefore require coordinated action in an integrative way. Due to the transboundary character of water and its relevance for various issues and water-related sectors such as its role for biodiversity and the ecosystem, energy, transport, agriculture, floods and droughts, integrated river basin management is key for the ICPDR’s approach to climate change adaptation. Building on this basic rationale, work on climate change adaptation is anchored in existing ICPDR structures and planning instruments as well as the corresponding national institutions and structures.

**5. Which lessons learned would you like to share with other basins?**

The ICPDR approach for integrating climate change adaptation in ICPDR activities includes a joint understanding of scenarios, impacts and adaptation measures and does not include a separate programme of measures, but relevant action is incorporated in the Danube River Basin Management Plan and Flood Risk Management Plan.

The ICPDR Climate Change Adaptation Strategy focuses on issues relevant at the Danube basin-wide level (level A) and needs to be complemented with further detailed planning for adaptation at sub-basin, national and/or sub-unit levels. Consultation on competing uses and priorities to prevent potential conflicts is needed to take into account potential target conflicts and competition between different water-related users and sectors such as agriculture, navigation, water supply, energy, industry, tourism, environment and nature protection. The communication, coordination and stakeholder involvement on climate change adaptation issues between different levels of management in the Danube River Basin is ensured at the national level through the ICPDR and also through different projects. Building resilience against climate change impacts on water resources through capacity building, transboundary cooperation and benefit-sharing is a key priority to address climate change in the Danube River Basin.

**6. What is the status of your basin climate change adaptation strategy and plan? Are they already developed, financed and implemented?**

The ICPDR Strategy on Adaptation to Climate Change finalized in 2018 describes the approach of the ICPDR to integrate the issue of climate change adaptation into its activities, in particular in the Danube River Basin Management Plan and the Flood Risk Management Plan.

The Danube River Basin Management Plan and Flood Risk Management Plan Updates 2021 are currently being finalised for a 6 months public consultation period from 31<sup>st</sup> March to 30<sup>th</sup> September 2021. In December 2021, both updated plans will be adopted by the ICPDR and endorsed in a Ministerial Meeting beginning of 2022.

**7. How do you finance your climate change activities? How do you plan to finance implementation of measures?**

The ICPDR approach for integrating climate change adaptation in ICPDR activities does not include a separate programme of measures, but relevant action is incorporated in the Danube River Basin Management Plan and Flood Risk Management Plan. Financing of implementation of measures is within the discretion of ICPDR contracting parties.

**8. How did you link transboundary climate change adaptation to adaptation activities at other levels, such as the national level?**

The ICPDR Climate Change Adaptation Strategy focuses on issues relevant at the Danube basin-wide level (level A) and needs to be complemented with further detailed planning for adaptation at sub-basin, national and/or sub-unit levels.

**9. Do you include water, health and sanitation (WASH) issues into your transboundary climate change adaptation strategies and plans? Are you supporting transboundary cooperation related to WASH in the framework of climate change adaptation and how?**

Climate change may affect all types of land use. As a consequence of decreasing water availability, a shortage in water supply is expected. An increased risk of conflicts over water use can occur in the event that no adequate adaptation measures are taken. Possible consequences are difficulties in water supply with an increased risk of water shortages and an over-exploitation of aquifers in the

future. An assumed general increase in water demand for households, industry and agriculture, together with pronounced water scarcity during summer in the Lower and Middle Danube Basin and in some areas of the UDRB, is likely to lead to high water stress. Due to a warmer climate, increased water demand by, and water withdrawal for, agriculture, industry, energy and human consumption is probable, especially in the southeast DRB and in the hot season. This includes increased water use, for example, for garden watering and field irrigation, household showers and cooling water for industrial plants.

#### 10. Future planned activities

Awareness of ongoing adaptation processes is created and an exchange takes place between experts working on adaptation at different levels, such as national, sub-basin or international levels. This will be guaranteed through the involvement of national experts in the international working groups of the ICPDR, respectively via existing coordination approaches between the basin-wide and the sub-basin level within the Danube River Basin (Sava, Tisza, Danube Delta, Prut). The ICPDR Strategy on Adaptation to Climate Change is fully taken into account during the next steps of the implementation of the Water Framework Directive and Floods Directive in the Danube River Basin. Closing of knowledge gaps and identification of further research requirements will be constantly aimed for.

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### 4. ACTIVITIES ON TRANSBOUNDARY WATER MANAGEMENT AND CLIMATE CHANGE ADAPTATION IN THE DAURIA STEPPES RIVERS AND WETLANDS OF (UPPER AMUR, ULZ-TOREY, SELENGE-BAIKAL BASINS)

#### 1. Which climate change impacts are you already experiencing or expecting in your basin (impacts on health & sanitation and water quality, floods, droughts, other types of disasters, etc.)?

Extreme droughts and floods are more and more pronounced in the region.

In the Ulz River and Selenge Baikal basins the 2001-2017 has been extremely dry period during which habitats available to wetland species shrank, competition between nature and humans for water was very pronounced, and agriculture was affected by aridization of huge expanses of grasslands caused primarily by climatic changes/fluctuations on Mongolian territory in 1998-2017.

In addition, as part of measures to adapt to climate change impacts, Mongolian Government made unilateral decision to build several large reservoirs in the Selenge, Kherlen, Onon and Ulz river basin, which are intended for water storage, electricity generation and inter-basin water transfers (All those part of nation-wide "Blue horse" Programme with plans to build 33 reservoirs on 13 rivers. According to UNESCO World Heritage Committee and IUCN such water infrastructure may threaten Lake Baikal and "Landscapes of Dauria").

Since 2013 Mongolia actively promotes construction of Egiin Hydro on large tributary of the Selenge River which is poorly adapted to climate fluctuations; that may have negative impacts on critical river habitats, Selenge Delta Ramsar wetlands and Lake Baikal World Heritage site (See World Heritage Committee decisions on lake Baikal 2015-2018).

In the Ulz River basin drought was particularly severe and prolonged with terminal Torey Lakes remaining dry due to absence of inflow caused largely by natural reasons and complemented by increasing water intake by mining industry and agriculture. However in 2020 the dry phase of climate

cycle finally ended, and huge flood from Ulz and Duch rivers started filling Torey Lakes. Such alternating phases of climate cycle were described in a book on adaptation to climate change in Dauria developed and published with UNECE support.

Despite well-developed scientific evidence that wet climate phase is starting, the Mongolian Government in July 2020 started construction of a reservoir on transboundary Ulz River as "measure for adaptation to climate change", without proper consultations with other riparian country and in absence of valid assessment of environmental and social impacts on Lower Ulz basin (which since 2017 is designated as bilateral World Heritage property "Landscape of Dauria").

In Lake Baikal basin we observe the same trend in climate fluctuation. Since 2018 water inflow into Lake Baikal is increasing and dry phase has changed into a period of extreme water abundance to which old infrastructure of Irkutsk hydropower dam which controls the outflow is not fully adapted. Dam's ability to release floodwaters is constrained by sprawl into floodplain of the Irkutsk City suburbs downstream of Irkutskaya Hydro and in 2020 this resulted in extreme flooding of Baikal lakeshores due to artificially high levels raised by the dam.

**2. What are the concrete results achieved in 2019-2020 with regards to climate change adaptation in your basin?**

- Several important wetlands were declared as provincial-level protected areas in Eastern Mongolia, which will help to protect climate refugia in different phases of climate cycle, especially in dry phase.
- World Bank has completed and closed MINIS Project, in course of which it cancelled development of feasibility studies on dams in most sensitive stretches of Selenge River due to possible irreversible transboundary impacts in Lake Baikal Basin.
- Held in October 2019 International Shapkhaev Hearings in Buryatia Republic dedicated to solutions to environmental problems and specifically to climate adaptation issues in Lake Baikal Basin.
- Significant progress achieved in taking under protection most important freshwater refugia along the Borzya river, which is planned for inclusion into the Daurisky Zapovednik (awaits approval from the government)

**3. Name and short description of the flagship adaptation activity your organization wishes to highlight**

The Dauria International Protected Area with support of UNECE developed impressive wetland monitoring network expanding from boreal forests to semi-deserts of Eastern Mongolia, which has been in use for last 11 years and allows monitoring interdependence between climatic and hydrological phenomena and response/adaptations of biological communities and species.

**4. Which major challenges did you face with regards to transboundary cooperation and climate change adaptation? How did you overcome them?**

-Despite long-term research on conservation and adaptation under natural climate cycles undertaken by DIPA, the decision-makers in economic and water management agencies completely ignore it, when planning "adaptation measures", which mostly include large dams and water transfers, in case of Mongolia.

-Competition for water between Mongolia and Russia exacerbated by climate change makes bilateral negotiations difficult both in the Ulz River and Lake Baikal basins. ;

-Severe lack of ecosystem monitoring data for Lake Baikal despite its World Heritage status makes development of valid water resources management regulations very difficult;

**5. Which lessons learned would you like to share with other basins?**

-The greatest environmental impacts may come not from climate change per se, but from infrastructure development for "climate adaptation/mitigation" which in a long run turn to be maladaptation.

-Adaptation plans to be environmentally sound should first of all include monitoring of ecosystem biological response to hydrological changes;

-Ecosystem-based adaptation has several decisive advantages over excessive infrastructure measures: providing more options for adaptation for the future, sustaining resilience of natural systems,

<p>avoiding conflicts, saving money and synergy with biodiversity preservation.</p>
<p><b>6. What is the status of your basin climate change adaptation strategy and plan? Are they already developed, financed and implemented?</b></p> <p>So far in our basins there has been only one precedent of water-related adaptation plan. With support of the Adaptation Fund and UNDP, under the name “ecosystem-based adaptation project” a River Basin Management Plan was developed for Ulz River, which included construction of large reservoir and a water transfer from Onon to Ulz River. The plan for transboundary river was developed without any interaction with Russian side and fully ignoring results of previous joint research. This illustrates an extremely worrying tendency to use support from international programs and funds for development of environmentally damaging counter-productive adaptation measures, which may result in long-lasting negative transboundary impacts and decline in shared biodiversity.</p>
<p><b>7. How do you finance your climate change activities? How do you plan to finance implementation of measures?</b></p> <p>Presently we do not have specific long term funds for adaptation projects. In DIPA till 2017 sufficient amount of work covered by UNDP Project. Since it ended there is lack of funding. In 2021 some assessments in Ulz basin will be supported by Russian Ministry of Natural Resources.</p>
<p><b>8. How did you link transboundary climate change adaptation to adaptation activities at other levels, such as the national level?</b></p> <p>In our region the only legal framework within which planning of transboundary climate change adaptation may be required is World Heritage Convention. However so far it does not happen. Example of an “adaptation” dam on Ulz River being planned and built immediately after establishment of bi-lateral “Landscapes of Dauria” World Heritage property is nominated shows severe gap between national and transboundary planning and actions. Presently we are demanding that the dam construction should be stopped and full international EIA, which includes analysis of climate adaptation options in the region with peculiar natural climate cycle.</p>
<p><b>9. Do you include water, health and sanitation (WASH) issues into your transboundary climate change adaptation strategies and plans? Are you supporting transboundary cooperation related to WASH in the framework of climate change adaptation and how?</b></p> <p><b>NO</b></p>
<p><b>10. Future planned activities</b></p> <ul style="list-style-type: none"> <li>- work on preservation of natural hydrological regime in the Ulz river basin facing challenges from mining and agriculture; Undertaking international EIA of damming project, which includes analysis of climate adaptation options in the region with peculiar natural climate cycle.</li> <li>- continue activities on monitoring climate fluctuation impacts on biodiversity in Torey Lakes basin and developing recommendations for future transboundary river basin management plan;</li> <li>- prepare recommendations on flow release regimes of the Middle Amur reservoirs (on the Zeya and Bureya rivers) to adjust to the conditions of recurrent floods and reduce impact on ecosystems;</li> <li>- organize public participation and control in ESIA for hydropower projects and reservoir regulation rules;</li> <li>- assist introduction of climate adaptation and biodiversity conservation considerations into national policies of Russia and Mongolia and into the ESG commitments of publicly listed hydropower companies;</li> <li>- mobilize domestic and international support for protection of the Lake Baikal in the face of climate change and growing human impacts through awareness raising;</li> </ul>
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## 5. ACTIVITIES ON TRANSBOUNDARY WATER MANAGEMENT AND CLIMATE CHANGE ADAPTATION IN THE DNIESTER BASIN

### 1. Which climate change impacts are you already experiencing or expecting in your basin (impacts on health & sanitation and water quality, floods, droughts, other types of disasters, etc.)?

Over the recent years, the hydrometeorological conditions have been those typical of low water periods. Temperature records of the past 100 years have been broken. The heterogeneity of precipitation in terms of time and geography served as a vivid manifestation of the climate change. The Lower Dniester (Odessa oblast) suffers from droughts, while the Upper Dniester – from flash floods.

In the esturine part of the Dniester basin (Odessa oblast, Ukraine), 2020 was characterised by very low water content in rivers and lack of precipitation, which led to drought, loss of moisture in soil and, thus, a fall in crop yields in non-irrigated areas.

However, heavy rainfalls in the upper part of the basin in 2020 caused a flood that destroyed social engineering infrastructure facilities and resulted in material damage and significant impacts for the population and the economy of the region.

### 2. What are the concrete results achieved in 2019-2020 with regards to climate change adaptation in your basin?

The main results are the coordination and approval of the operating regime of the Dniester reservoir, which will cover the needs of the population and sectors of the economy for water resources.

A system of the automated water balance for the Dniester River basin has been developed:  
<https://dniester-commission.com/en/news/water-balance-of-the-dniester-river-basin/>.

The efforts to update climate change scenarios in the Dniester River basin until 2050 are close to completion.

Some adaptation measures are included in the strategic documents of the Odessa oblast—the Lower Dniester, which, according to the current scenarios, will suffer most from the impacts of climate change.

In addition, the pilot project of the renaturalisation of the Yagorlyk River supported by the Global Environment Facility is under way. The aim of the project is to restore the Yagorlyk River to its natural state to the maximum possible extent, taking into account adaptation to climate change and support for transboundary cooperation in the Dniester River basin.

The project involves strong cooperation between the local authorities, businesses, communities, scientists, regional environmental and water authorities, water users, polluters, etc. The project provides for close cooperation between representatives of Moldova (including the Transnistrian

region of the Republic of Moldova) and Ukraine. The implementation of this project is fully consistent with the widespread European practice of basin-wide integrated water resources management and the requirements of the Water Framework Directive. The project will have a significant positive effect on the formation of water policies of the basin, which will help restore the natural state of small rivers in the Dniester River basin. In addition, the project will identify negative aspects of economic activities in small river basins that are economically unreasonable and can be eliminated through organisational and policy interventions (a ban on the use of water protection belts, which is contrary to the current legislation, free access to water resources for local residents, etc.). Since the project is proposed to be pioneered in Ukraine, it can launch the restoration of small rivers.

In order to adapt to climate change in the Dniester River basin, European methods of surface water monitoring have also been implemented. That has enabled taking measurements of pollutants to assess the chemical condition of surface water masses (bodies). Surface water screening has been performed, with the most vulnerable areas of the basin identified.

**3. Name and short description of the flagship adaptation activity your organisation wishes to highlight**

Development of a section on adaptation to climate change within the framework of the River Basin Management Plan.

Strengthening the capacity of organisations to protect against the harmful effects of flood waters.

Regional plans must take into account climate change adaptation activities. In Ukraine, new territorial units (*gromadas*) have been formed and they must mainstream climate change and vulnerabilities of different industries into their planning.

**4. Which major challenges did you face with regards to transboundary cooperation and climate change adaptation? How did you overcome them?**

The main difficulties in adapting to climate change in the Dniester River basin are the heterogeneity of the climate and, thus, of the hydrometeorological conditions. The upper part of the river basin is rather affected by excess water and the lower part – by droughts. The planning of climate change adaptation measures should, therefore, take into account the regional dimensions.

Difficulties in cross-border cooperation are also associated with frequent institutional changes in the executive branch.

**5. Which lessons learned would you like to share with other basins?**

Synchronised cooperation at the transboundary, national and local levels is essential. Everyone should feel involved in the process and in the performance of their function. Regardless of changes in government structures, it is important to maintain contacts with stakeholders.

More powers [should be delegated] to local levels, as the outcomes and the lack thereof will be primarily felt at the local level.

The support and authority of international partners and donors should also be used in the implementation of basin activities and communication practices in the negotiation process.

**6. What is the status of your basin climate change adaptation strategy and plan? Are they already developed, financed and implemented?**

The Dniester River Basin Climate Change Adaptation Plan has been developed with support provided under an international project. At the national level, it is agreed by the relevant ministries of Ukraine and the Republic of Moldova.

Adaptation to climate change is an integral part of river basin management plans.

The Cabinet of Ministers of Ukraine has approved a plan of measures to implement the Conceptual

<p>Framework for the Implementation of Government Policies on Climate Change for the period up to 2030.</p> <p>At the moment, the Strategy for Environmental Safety and Adaptation to Climate Change of Ukraine for the period up to 2030 is under preparation. There are discussions held within the working group at this stage.</p>
<p><b>7. How do you finance your climate change activities? How do you plan to finance implementation of measures?</b></p> <p>Individual activities of the plan are financed and implemented within the framework of the National Water Management Development Programme of Ukraine. Such activities include: monitoring of water quality; establishment of and monitoring of compliance with the operating regimes of reservoirs and water management systems; operation of flood protection facilities, irrigation and drainage systems; pilot projects on river restoration; outreach activities.</p>
<p><b>8. How did you link transboundary climate change adaptation to adaptation activities at other levels, such as the national level?</b></p> <p>According to the Conceptual Framework for the Implementation of Government Policies on Climate Change for the period up to 2030, river basin management plans should include measures to adapt to climate change. These plans are subject to the strategic environmental assessment and public consultations. In addition, the management plans are coordinated by basin councils, the Dniester River Basin Council is actively operating in the Dniester Basin.</p> <p>In addition, the Dniester Commission has been created. It is the governing body in the Dniester basin. The Commission is composed of representatives of both Ukraine and Moldova. Adaptation to climate change in the transboundary Dniester River basin is integrated at the national level through the Dniester Commission, including the working groups that operate under its aegis. Adaptation to climate change is addressed by several working groups.</p>
<p><b>9. Do you include water, health and sanitation (WASH) issues into your transboundary climate change adaptation strategies and plans? Are you supporting transboundary cooperation related to WASH in the framework of climate change adaptation and how?</b></p> <p>Water, health and sanitation issues are prominent in adaptation planning because these are water resources that are most vulnerable to the climate change in the Dniester River basin.</p>
<p><b>10. Future planned activities</b></p> <p>Strategic activities for the water sector include the implementation of the EU Water Framework Directive and the EU Flood Directive and the preparation and approval of the river basin management plan and flood risk management plan respectively. These plans will include appropriate programmes of activities to achieve the objectives of the directives.</p> <p>Priority activities also cover:</p> <ul style="list-style-type: none"> <li>- Support by the Dniester Commission of the developed joint action plan;</li> <li>- Further implementation of climate change adaptation activities at the national level;</li> <li>- Improvement of transboundary cooperation in the Dniester River basin.</li> </ul>
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## 6. ACTIVITIES ON TRANSBOUNDARY WATER MANAGEMENT AND CLIMATE CHANGE ADAPTATION IN THE DRIN BASIN

### 1. Which climate change impacts are you already experiencing or expecting in your basin (impacts on health & sanitation and water quality, floods, droughts, other types of disasters, etc.)?

The Drin River Basin (DRB) is a transboundary river basin, which extends across Albania, Kosovo<sup>3</sup>, North Macedonia, Montenegro and Greece.

The DRB countries are increasingly exposed to the impact of climate change. They are experiencing increased periods of extreme heat in the summer months and increased rainfall during the cooler seasons.

Flood risk in riparian countries of the Drin Basin have been an important disaster factor since 2010, the frequency of floods has been observed to be increasing over time. The socio-economic vulnerability is high due to the high (9-21%) poverty rate of the Riparian countries. Poverty and unemployment are particularly widespread in rural and mountainous areas of the basin. Vulnerability factors also include poor urban planning, unsustainable water management and agricultural practices, deforestation, industrial pollution and poor waste management in areas highly exposed to flooding

According to the National Communications to UNFCCC from Albania, Montenegro and the Republic of North Macedonia, climate change will continue to have serious negative impacts in the Drin river basin including increased frequency and intensity of floods and droughts, increased water scarcity, intensified erosion and sedimentation, increased intensity of snow melt, sea level rise, and damage to water quality and ecosystems. Moreover, climate change impacts on water resources will have cascading effects on human health and many parts of the economy and society, as various sectors directly depend on water such as agriculture, energy and hydropower, navigation, health, tourism as does the environment.

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<sup>3</sup> United Nations administered territory under Security Council Resolution 1244 (1999).

**2. What are the concrete results achieved in 2019-2020 with regards to climate change adaptation in your basin?**

New funding for the Drini River Basin was mobilized from the Adaptation Fund amounting USD 9,927,750.00. The project “Integrated Climate-Resilient Transboundary Flood Risk Management in the Drin River Basin in the Western Balkans” (Drin FRM Project) was signed in the last quarter of 2019. The project is implemented by UNDP in close collaboration with the relevant national institutions from the three participating countries.

The objective of the project is to assist the riparian countries in the implementation of an integrated climate-resilient river basin flood risk management approach in order to improve their existing capacity to manage flood risk at regional, national and local levels and to enhance resilience of vulnerable communities in the Drin River Basin (ORB) to climate-induced floods. The following results shall be achieved: (i) Improved climate and risk informed decision-making , availability and use of climate risk information;(ii) Improved institutional arrangements, legislative and policy framework for climate-resilient flood risk management, and development of Climate Change Adaptation (CCA) and Flood Risk Management(FRM) Strategy and plans at the basin, sub-basin, national and sub-national levels; (iii) Strengthened community resilience through improved flood management, through implementation of structural and non- structural measures and enhanced local capacity for CCA and FRM.

The COVID 19 outbreak seriously affected the planned dynamic of the project implementation. During the inception phase of the project, the effective project governance structure was established with the Drin Core Group (DCG) in the role of the Regional Project Board holding two sessions during the inception phase on 30 and 31 January 2020 in Tirana, Albania and online one on 9 July 2020. Country Teams in Montenegro, Albania and North Macedonia were established by

recruitment of the National Coordinators and Project Assistants and lastly the Regional Project Management Unit (PMU) took shape by recruitment of the Regional Project Manager (PM) and Chief Technical Advisor (CTA).

In the course of 2020, the capacities of the HydroMet Service in N. Macedonia have been strengthened through the support provided for the extension of the national network of hydrological and meteorological stations by purchasing of 14 stations in the Drini River Basin. Also, latest version of CLIDATA climatological database/software was provided to HydroMet along with new IT equipment (funded through another UNDP climate change projects implemented with the Ministry of Environment and Physical Planning). Close consultations and collaboration with the HydroMet Service for the expansion of the hydro-meteorological monitoring network in the Drini River Basin ensured that the equipment purchased with the project funding is compatible with the other equipment used by the HydroMet. This will provide for collection of data and information which will be reliable, accurate and comparable, and will help the establishment of appropriate, custom-built early warning systems for this region. UNDP has signed a Memorandum of Understanding with UHMR which is institutionalizing the cooperation, as UHMR is a beneficiary of two other UNDP implemented projects which support the expansion of the national network of hydrological and meteorological stations, and establishment of early warning systems in two other region in the country.

The floor risk in the urban part of the City of Struga were decreased through the clean-up of the sediment from the outlet of Drini River from the Ohrid Lake and from the riverbed of Drini River in the central part of the city.

With the support from GIZ, flood hazard maps and flood risk maps (FHRM) were prepared, as pilot experiences in the partner countries, according to the EU Flood Directive. Also, members of the FHRM Technical Working were trained on modelling & use of maps in the urban planning. Moreover, the flood forecasting model PantaRhei that is used by HydroMet, was fine-tuned, and the technical staff of the 4 HydroMet Services of riparian countries were trained by the Technical University of Braunschweig on troubleshooting, data flow, routine application and fine calibration.

**3. Name and short description of the flagship adaptation activity your organization wishes to highlight**

The implementation of the structural measures for flood prevention in the Municipality of Struga (MKD) were jointly funded by the Adaptation Fund, EU and UNDP. The implementation of structural measure for flood risk prevention in the Municipality of Struga could not have been realized without the close collaboration and partnership with the central and local governments and ECM (Power plants of North Macedonia). The cleaning and sediment removal of the outlet of the Drini River from the Ohrid Lake and of the urban part of Drin Riverbed in length of 765 meters required coordinated actions of all involved parties. The Ministry of Environment and Physical Planning and the municipality ensured timely issuance of relevant permits and managed the relations with the local stakeholders, while ECM closed the outlet of the river for three weeks to ensure better onsite conditions for carrying out the operation for removal of the sediment. More than 35t of sediment has been taken out and deposited to the local waste landfill. This intervention decreased the risk of flooding in the City of Struga and it was very much welcomed by the citizens because the riverbed was not cleaned in the last 40years.

**4. Which major challenges did you face with regards to transboundary cooperation and climate change adaptation? How did you overcome them?**

Establishing a shared vision for the management of the Drin Basin, was the objective of the Drin Memorandum of Understanding (Drin MoU, Tirana, 25 November 2011), which is itself an outcome of the Drin Dialogue, a multi-stakeholders process that comprised numerous consultations with a broad range of stakeholders. As a continuation of the above, the Drin Core

<p>Group takes action to sustain the active engagement of the stakeholders in the process for the management of the Drin Basin through the Drin MoU implementation. There is also an ongoing and regular process of multi stakeholder meetings, which take place in a rotational manner in the implicated countries. Theriparian countries are also main beneficiary of the UNDP GEF Project 'Enabling transboundary cooperation and integrated water resources management in the extended Drin River Basin' whose objective is to promote joint management of the shared water resources of the extended transboundary Drin River Basin, including coordination mechanisms among the various sub-basin commissions and committees (Lakes Prespa, Ohrid and Shkoder/Skadar).</p> <p>The main challenge of the transboundary cooperation is ensuring funding for regular meetings of the established coordination bodies, which is still project based and donor supported.</p> <p>Another challenge is exchange of information and data among the HydroMet Services and Hydropower Plants in the respective countries.</p>
<p><b>5. Which lessons learned would you like to share with other basins?</b></p> <p>Successful collaboration on trans-boundary level requires dedication, open mind, willingness to compromise, and it takes time. Presence of external entities which support and facilitate the process is beneficial and welcomed, as well as partnerships which should be build on all levels, local, regional and central.</p>
<p><b>6. What is the status of your basin climate change adaptation strategy and plan? Are they already developed, financed and implemented?</b></p> <p>There is no Drini River Basin climate adaptation strategy and plan but the Drin Flood Risk Management project shall develop a Climate Change Adaptation and Flood Risk Management Strategy and Plans at the basin, sub-basin, national and sub-national levels.</p>
<p><b>7. How do you finance your climate change activities? How do you plan to finance implementation of measures?</b></p> <p>The funding for climate change activities comes from the state budget, and the budgets of the local governments within the Drini River Basin. Also, there is significant donor funding.</p>
<p><b>8. How did you link transboundary climate change adaptation to adaptation activities at other levels, such as the national level?</b></p> <p>The Drini Flood Risk Management project consists of activities that will be implemented both on national and trans-boundary levels, and they are complementary to each other. National activities are designed to address the identified needs for adaptation to climate change in relevant national documents, e.g. National Communications to Climate Change, while the transboundary activities aim to promote an integrated climate-resilient river basin flood risk management approach in order to improve the existing capacity to manage flood risk at regional level, and to enhance resilience of vulnerable communities in the entire Drin River Basin to climate-induced floods.</p>
<p><b>9. Do you include water, health and sanitation (WASH) issues into your transboundary climate change adaptation strategies and plans? Are you supporting transboundary cooperation related to WASH in the framework of climate change adaptation and how?</b></p> <p>N/A</p>
<p><b>10. Future planned activities</b></p> <ul style="list-style-type: none"> <li>➤ Improving climate and risk informed decision-making, availability and use of climate risk information</li> <li>➤ Strengthening hydrometric monitoring networks in the riparian countries based on a unified</li> </ul>

- optimized basin-scale assessment of monitoring needs
- Improving knowledge of climate change induced flood risk, and risk knowledge sharing through the introduction of modelling tools and technologies for the strategic flood risk assessment based on EUFD and development of basin flood hazard maps
- Establishing GIS-based vulnerability, loss and damages assessment tool and database to record, analyze, predict and assess flood events and associated losses.
- Improving institutional arrangements, legislative and policy framework for FRM, and development of climate change adaptation and flood risk management strategy and plans at the basin, sub-basin, national and sub-national levels
- Strengthening Drin River Basin FRM Policy Framework and long-term cooperation on flood risk management.
- Training for regional, national and sub-national institutions (including meteorological and hydrological sectors) in flood risk management, roles and responsibilities clarified and coordination mechanisms strengthened for effective climate-resilient FRM
- Developing Drin River Basin Integrated Climate Change Adaptation and Flood Risk Management Strategy and Plan
- Implementation of priority community-based climate change adaptation and flood risk reduction interventions

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## **7. ACTIVITIES ON TRANSBOUNDARY WATER MANAGEMENT AND CLIMATE CHANGE ADAPTATION IN THE LAKE VICTORIA BASIN**

### **1. Name and short description of the project and basin Which climate change impacts are you already experiencing or expecting in your basin (impacts on health & sanitation and water quality, floods, droughts, other types of disasters, etc.)?**

Increased variability in rainfall patterns, Mean Annual temperature has increased by approx. 1.0C between 1950 and 2005, extreme climate and weather driven events such as droughts, prolonged dry periods, erratic rainfall and strong winds are more common across the basin nowadays, increased deaths of fishers due to bad weather driven accidents in the lake. Crop failures, water scarcity and livestock deaths due to drought are already common events in some areas in the Basin. Rainfall seasons and number of rainy days has greatly changed and declined, affecting economic, social, environment and peoples' livelihoods. Communities are experiencing failures of their traditional livelihood systems with no replacement or alternatives. Many future climate-change impacts are predicted to accelerate multiple challenges across the basin. These impacts are expected to include profound changes in water availability, temperature stresses to human, livestock and crops, changes in farming practices, incomes and food security, ecological disruption, and human health related impacts such as changes in disease vectors and rangelands, spatial expansion of malaria and water borne diseases. Predicted increase in the frequency of intense rainfall events indicates that, flooding is expected to occur, particularly in low-lying areas across the basin. The frequency of droughts is also predicted to increase.

<p><b>2. What are the concrete results achieved in 2019-2020 with regards to climate change adaptation in your basin?</b></p> <p>In responding to observed and future climate change impacts LVB has developed climate change strategy and action plan which provides a range of adaptation options and strategies to address vulnerabilities to the impacts of climate change. LVB has developed a pilot and flagship regional project to implement the strategy and action. The project aims to increase climate resilience in the LVB at regional, national and local levels. Supports concrete adaptation interventions, pilot both EbA and CbA adaptation technologies in selected climate hotspots in the LVB.</p>
<p><b>3. Name and short description of the flagship adaptation activity your organization wishes to highlight</b></p> <p>Piloting adaptation technologies in the LVB countries (Rwanda, Burundi, Tanzania, Kenya and Uganda), and support community-based adaptation technologies in Kenya, Rwanda, Burundi, Tanzania, Kenya and Uganda</p>
<p><b>4. Which major challenges did you face with regards to transboundary cooperation and climate change adaptation? How did you overcome them?</b></p> <p>Some major challenges are related to policy issues and governance structures especially differences of fiscal year/calendars.</p>
<p><b>5. Which lessons learned would you like to share with other basins?</b></p> <p>There is a huge funding gap related to climate changes issues in the LVB. Governments and communities have necessary implementation arrangements to support implementation of LVB's concrete actions.</p>
<p><b>6. What is the status of your basin climate change adaptation strategy and plan? Are they already developed, financed and implemented?</b></p> <p>LVB's climate change adaptation strategy and plan (2018-2023) were developed, slightly financed and partially implemented.</p>
<p><b>7. How do you finance your climate change activities? How do you plan to finance implementation of measures?</b></p> <p>Largely, climate change activities are financed through projects and programs. The plan is to continue developing projects and programs and seek climate fining globally.</p>
<p><b>8. How did you link transboundary climate change adaptation to adaptation activities at other levels, such as the national level?</b></p> <p>Through policy and institutional mandates and arrangements.</p>
<p><b>9. Do you include water, health and sanitation (WASH) issues into your transboundary climate change adaptation strategies and plans? Are you supporting transboundary cooperation related to WASH in the framework of climate change adaptation and how?</b></p> <p>Climate change adaptation through WASH (water, Health and Sanitation), is among the key thematic areas included in the LVB transboundary adaptation strategies and action plan. WASH areas such as strengthen and institutionalize surveillance, early warning, and communications systems on climate-sensitive diseases; Strengthen research and interventions (prevention, preparedness, response) that address climate-sensitive sanitation and diseases.; Use climate-appropriate technologies for water supply, health and sanitation infrastructure are key areas which need urgent attention and implementation.</p>
<p><b>10. Future planned activities</b></p> <p>Continue implementation of the ACC-LVB project and funding mobilization through projects and</p>

programs.

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### 8. ACTIVITIES ON TRANSBOUNDARY WATER MANAGEMENT AND CLIMATE CHANGE ADAPTATION IN THE LOWER MEKONG BASIN

#### 1. Which climate change impacts are you already experiencing or expecting in your basin (impacts on health & sanitation and water quality, floods, droughts, other types of disasters, etc.)?

MRC's Climate Change Adaptation Initiative (CCAI) conducted a series of basin wide assessments of climate change impacts on water and water-related resources under several climate change and development scenarios: in hydrology, flood & drought patterns, hydropower production, ecosystem & biodiversity, food security and socio-economics. Specific and unique methodologies have been developed for each of these assessments, mostly based on numerical modelling tools. To illustrate some of these findings: regarding food production, for example, the projected impacts of climate change on crop yields are negative for both rice and maize with greater impacts on rice. Projected impacts on fisheries are positive or negative depending on the scenario. The flood zone habitats are likely to experience greater changes than rice paddy habitats. In term of ecosystem, substantial changes in bioclimatic conditions are projected across the LMB's ecoregions. By 2060, up to 100% of some ecoregions may experience completely novel bioclimatic conditions. Species are highly vulnerable to climate change with large numbers of fish particularly at risk due to their sensitivity to hydrological cues. The range of possible changes in hydrology is enormous. The largest ranges of predicted impact at one specific location (Kratie) associated with climate change and 2060 development scenarios are: the range of annual river flow change is estimated as -38% to +28%; flood season peak flow -30% to +43%; minimum 1-day flow -21% to +79%. Without adaptation there will be significant deterioration of the flood conditions with more losses and people affected. The Mekong delta is impacted by both upstream increases in flow and sea level rise, affecting the largest number of people in the region. Basin development will interact with the impacts from climate change, in some cases exacerbating the change and in some cases mitigating against it. The projected impact of climate change on floods depends in large part on the model applied. Under both the wetter overall model and the increased seasonal variability model the flooded area is projected to increase for floods of all return intervals in a range of 4,6% to 27.3% increase. The biggest proportional changes are projected to occur for the smaller floods with return intervals of 1 in 2 years and 1 in 5 years: under the highest emissions scenario for the wetter overall model, the change projected to 2060 is an increase in flooded area of 38% for a 1 in 2 years flood and of 28% for a 1 in 5 years flood. Under the medium emissions scenario and wetter overall model, the flooded area is projected to increase 27% for a 1 in 2 years flood and 20% for a 1 in 5 years flood.

#### 2. What are the concrete results achieved in 2019-2020 with regards to climate change adaptation in your basin?

During 2019-2020, there are following results achieved in regard with climate change adaptation in the Lower Mekong Basin:

- Complete the operationalization of monitoring and reporting system on climate change and

<p>adaptation</p> <ul style="list-style-type: none"> <li>• The regional climate change adaptation mainstreaming into several national actions and activities have been done</li> <li>• The mainstreaming of Mekong Climate Change Adaptation Strategy and Action Plan perspective into Basin Development Strategy (BDS) 2021 -2030 and Strategic Plan (SP) 2021 – 2025 have been completed</li> <li>• The regional climate change adaptation mainstreaming into basin-wide flood management strategy and action plan of fishery management strategy have been carried out</li> <li>• The MRC gap assessment against with adaptation fund and GCF requirements for accreditation process and development of a work plan have been done</li> <li>• The four condensed proposals of transboundary adaptation projects have been developed and consulted.</li> </ul>
<p><b>3. Name and short description of the flagship adaptation activity your organization wishes to highlight</b> The regional climate change adaptation mainstreaming into BDS 2021 – 2030, SP 2021 – 2025, basin wide flood management strategy and action plan of fishery management strategy.</p>
<p><b>4. Which major challenges did you face with regards to transboundary cooperation and climate change adaptation? How did you overcome them?</b></p> <p><b>Challenges:</b></p> <ul style="list-style-type: none"> <li>• Different level of climate change impacts and adaptation priorities of each Member Country</li> <li>• Data monitoring and sharing</li> <li>• Seeking fund for the transboundary adaptation projects</li> </ul> <p><b>Overcomes:</b></p> <ul style="list-style-type: none"> <li>• Enhance regional and international cooperation and partnership on adaptation;</li> <li>• Support access to adaptation finance;</li> <li>• Enhance monitoring, data collection and sharing;</li> <li>• Strengthen capacity on development of climate change adaptation strategies and plans; and</li> <li>• Improve outreach of the MRC products on climate change and adaptation</li> </ul>
<p><b>5. Which lessons learned would you like to share with other basins?</b></p> <ul style="list-style-type: none"> <li>• Strong leadership to address climate impact at regional level</li> <li>• Inclusion consultation process with both internal and external stakeholders</li> <li>• Challenge of defining what transboundary adaptation is and of identifying relevant and feasible actions</li> <li>• Challenge of convincing countries about the added value of the regional level, on top of existing national levels</li> <li>• Multiplicity of initiatives and actors in the field of climate change adaptation</li> </ul>
<p><b>6. What is the status of your basin climate change adaptation strategy and plan? Are they already developed, financed and implemented?</b> The Mekong Climate Change Adaptation Strategy and Action Plan (MASAP) has been developed. The MASAP is on implementation process.</p>
<p><b>7. How do you finance your climate change activities? How do you plan to finance implementation of measures?</b> The CCAI project has been received financial support from development partners: Australia, Denmark, Finland, Luxembourg, Germany, Sweden and EU. Currently the MASAP is being implemented by using MRC’s basket fund – from different development partners. As a strategic priority, access to climate funds such as adaptation fund and GCF is important for mobilizing fund for the transboundary adaptation projects.</p>
<p><b>8. How did you link transboundary climate change adaptation to adaptation activities at other levels, such as the national level?</b></p>



<p>The regional adaptation strategy and actions are mainstreamed into relevant national strategies, policies and plans. The methodologies and tools that have been developed at the transboundary level can be replicated and/or downscaled at national/local level. The capacity building program targeted the national levels.</p>
<p><b>9. Do you include water, health and sanitation (WASH) issues into your transboundary climate change adaptation strategies and plans? Are you supporting transboundary cooperation related to WASH in the framework of climate change adaptation and how?</b></p> <p>The water issues are considered in the MASAP, especially drought and flood. The transboundary cooperation related to water issues have been supported in the framework of climate change adaptation. The support is facilitated by implementation of the activities of the MASAP.</p>
<p><b>10. Future planned activities</b></p> <ul style="list-style-type: none"> <li>• Support mainstreaming of climate change adaptation to increased climate risks, floods and droughts into regional and national strategies, plans and projects</li> <li>• Coordinate enhanced access to international climate finance through climate fund accreditation for the Mekong River Commission</li> <li>• Further identify and facilitate implementation of transboundary projects on climate change adaptation and water resources management</li> <li>• Operate and maintain integrated databases, information, systems and tools at regional and national levels for climate change adaptation.</li> </ul>
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**9. ACTIVITIES ON TRANSBOUNDARY WATER MANAGEMENT AND CLIMATE CHANGE ADAPTATION IN THE MEUSE BASIN**

<p><b>1. Which climate change impacts are you already experiencing or expecting in your basin (impacts on health &amp; sanitation and water quality, floods, droughts, other types of disasters, etc.)?</b></p> <p>In the Meuse basin, climate change can be described as increasingly frequent and severe low-water periods. Though 1976 remains the record in terms of heat and drought, the years from 2017 to 2020 have been a time of continuous low-water periods with flows considered very rare (return period of 20 years), if not exceptional (return period of 50 years) for several weeks of each of the last four years.</p> <p>Various hydrological and climate models show a reduction in flow during low-water periods is to be expected in the future, including in the most optimistic scenarios involving lower greenhouse gas emissions.</p> <p>These low-water periods have also had an impact on the quality of aquatic environments and biodiversity, with lowered oxygen, warming water, slowed runoff or stratification of the water</p>
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<p>column. The concentration of certain pollutants might also increase, either due to the slower flow, or due to heavy rain following a prolonged drought (a sudden influx of pollution).</p> <p>Most human activities are affected, sometimes with major economic consequences: navigation, drinking water supply, agriculture, industry and leisure activities.</p>
<p><b>2. What are the concrete results achieved in 2019-2020 with regards to climate change adaptation in your basin?</b></p> <p>The 11 December 2020 plenary assembly approved the publication of a plan of approach for exceptional low-water periods, drafted in 2019 and 2020.</p>
<p><b>3. Name and short description of the flagship adaptation activity your organization wishes to highlight</b></p> <p>The plan of approach for exceptional low-water periods aims to better anticipate extreme low-water situations and shortages of water flowing into the Meuse drainage basin, and to limit the ensuing damage as much as possible. It makes it possible to respond to the three following questions:</p> <ul style="list-style-type: none"> <li>- what is an exceptional low-water period in the Meuse basin?</li> <li>- what are the tangible consequences of such a period?</li> <li>- how can we react to such a situation?</li> </ul>
<p><b>4. Which major challenges did you face with regards to transboundary cooperation and climate change adaptation? How did you overcome them?</b></p> <p>The low-water periods do not have the same socioeconomic and environmental impacts, depending on whether one is located upstream or downstream in the Meuse basin. Challenges increase moving downstream, while population density is growing, and economic activities are also increasing. As part of this framework, the States and Regions situated downstream in the basin, which are most affected by the consequences of the low-water periods, have a more voluntary approach within the International Meuse Commission (CIM), and wish to carry out ambitious activities and objectives. On the other hand, Parties located upstream, which do not feel the same consequences of low-water periods, have adopted a more nuanced approach advocating for limitations on projects stemming from European Directives requirements. The role of the CIM is to bring all Parties together and reach consensus in order to establish a work programme that can be acceptable for all.</p>
<p><b>5. Which lessons learned would you like to share with other basins?</b></p> <p>Unfortunately, there are no interesting lessons to share.</p>
<p><b>6. What is the status of your basin climate change adaptation strategy and plan? Are they already developed, financed and implemented?</b></p> <p>There is no climate change adaptation plan or strategy for the International Meuse Hydrographic District. Each State/Region has drafted its own plan. Nonetheless, the CIM secretariat is taking part in a European project on climate change in the international Meuse basin: the "Mosan Initiative for Climate Change Actions".</p>
<p><b>7. How do you finance your climate change activities? How do you plan to finance implementation of measures?</b></p> <p>The CIM does not provide any financing for this issue.</p>
<p><b>8. How did you link transboundary climate change adaptation to adaptation activities at other levels, such as the national level?</b></p> <p>In the plan of approach for exceptional low-water periods and in the umbrella plans for the European Directives, information is exchanged on strategies and studies carried out by various delegations.</p>
<p><b>9. Do you include water, health and sanitation (WASH) issues into your transboundary climate change adaptation strategies and plans? Are you supporting transboundary cooperation related to WASH in the framework of climate change adaptation and how?</b></p>

The CIM secretariat supports the European project “Mosan Initiative for Climate Change Actions” and has participated at every meeting organized since the project was launched in 2019. The secretariat provides the necessary data and creates a link between various working groups in order to contribute expertise and information to the project leaders. Water is at the heart of every effort, both qualitatively as part of the European Union Water Framework Directive and quantitatively on the issue of low-water periods and flooding.

#### **10. Future planned activities**

The CIM secretariat will publish a brochure on the plan of approach for exceptional low-water periods underway in 2021 and various working groups will present a draft of a Phase 2 for this document, which will deepen certain areas.

#### **11. Contact details**

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### **10. ACTIVITIES ON TRANSBOUNDARY WATER MANAGEMENT AND CLIMATE CHANGE ADAPTATION IN THE NEMAN BASIN**

#### **1. Which climate change impacts are you already experiencing or expecting in your basin (impacts on health & sanitation and water quality, floods, droughts, other types of disasters, etc.)?**

In recent years, the forecasts, prepared under the UNECE pilot project on river basin management and climate change adaptation in the Neman river basin (hereinafter referred to as the pilot project), foreseeing lower river runoff in the Neman River basin (especially during the spring and summer months) in the territory of Belarus, have proved correct. In 2015, 2016, and 2020 the decrease in the river runoff was particularly large, which led to low-water and extremely low-water conditions. Fish kills were observed in parts of the Neman River and its tributaries.

#### **2. What are the concrete results achieved in 2019-2020 with regards to climate change adaptation in your basin?**

The pilot project promoted the development of the National Water Management Strategy in the context of climate change for the period up to 2030. The Strategy has successfully passed the Strategic Environmental Assessment (SEA) procedure. It is planned to get the Strategy approved by end-2021.

On 7 February 2020, the Government of the Republic of Belarus and the Government of the Republic of Poland signed an agreement on cooperation in the area of protection and management of transboundary waters. The agreement was ratified in Poland and Belarus and came into force on 26 November 2020.

In 2019-2020, the development of a full-scale project proposal “Fostering Multi-country Cooperation over Conjunctive Surface and Groundwater Management in the Bug and Neman Transboundary River Basins and the Underlying Aquifer Systems” using GEF funding (Belarus-Ukraine with the participation of Poland and Lithuania) was completed. This project is aimed at helping Belarus and Ukraine join forces with Poland and Lithuania to achieve common understanding on the available water resources and current problems. The project will contribute to improving the climate variability with a view to joint planning and management of the basin, taking into account the priority components of the Neman River Basin Transboundary Management Plan developed with support of the UNECE in 2016-2018. In 2020, the documents required for the approval of this GEF project by the Government of the Republic of Belarus were drafted, including the project data sheet, the project registration application, a background note on parity (Belarus-Ukraine) formation of the project budget.

In 2020, a project proposal related to fish kill risk assessment for the early warning system in the Neman River basin was prepared, including the development of a package of measures to prevent fish kills and subsequent installation of automatic hydrochemical stations.

<p><b>3. Name and short description of the flagship adaptation activity your organisation wishes to highlight</b>  Justification of the placement of water retaining and other structures in the Neman River basin for additional river water supply augmentation in low-water and extremely low-water periods in order to adapt water resources to climate change and mitigate the negative impact of this change on water resources.  Development of a package of measures to prevent fish kills in the Neman River basin on the basis of justified threshold values of hydrological and hydrochemical indicators safe for fish, taking into account hydrobiological indicators.</p>
<p><b>4. Which major challenges did you face with regards to transboundary cooperation and climate change adaptation? How did you overcome them?</b>  There were no particular difficulties in the process of transboundary cooperation and adaptation to climate change. Basically, a compromise was reached on all issues, as evidenced by the agreed proposal for the future GEF-supported project on the Neman and Western Bug river basins.</p>
<p><b>5. Which lessons learned would you like to share with other basins?</b>  The experience of forecasting the runoff and assessing the vulnerability of the Neman River basin to climate change, as well as the joint (Belarus-Lithuania) Strategic Framework for Adaptation to Climate Change in the Neman River Basin</p>
<p><b>6. What is the status of your basin climate change adaptation strategy and plan? Are they already developed, financed and implemented?</b>  Under the pilot project, the UNECE supported the development of the Strategic Framework for Adaptation to Climate Change in the Neman River Basin.  Some of the measures proposed in the Strategic Framework for Adaptation are being implemented. For example, such measures include higher coverage of centralised and local household sanitation systems in small settlements and in rural areas with treatment facilities, rehabilitation of absorption fields,  reduction of discharge of insufficiently treated effluents into water bodies, reconstruction of municipal treatment facilities.</p>
<p><b>7. How do you finance your climate change activities? How do you plan to finance implementation of measures?</b>  Climate change activities are funded from the budget under Government programmes. In addition, there are loan agreements in the water sector signed with the European Bank for Reconstruction and Development (EBRD) in 2019.</p>
<p><b>8. How did you link transboundary climate change adaptation to adaptation activities at other levels, such as the national level?</b>  It is planned to develop and approve the Neman River Basin Management Plan, which will include both activities aimed at addressing transboundary problems and those aimed at solving problems at the local level.</p>
<p><b>9. Do you include water, health and sanitation (WASH) issues into your transboundary climate change adaptation strategies and plans? Are you supporting transboundary cooperation related to WASH in the framework of climate change adaptation and how?</b>  Water, health and sanitation issues are covered by the National Water Management Strategy in the context of climate change for the period up to 2030.  Transboundary cooperation related to WASH in the framework of climate change adaptation is supported in the part of joint harmonised assessment of hydrobiological, hydrochemical, hydromorphological, sanitary, and microbiological indicators for water bodies, and definition of transboundary problems on the basis of this assessment and measures to address the problems.</p>
<p><b>10. Future planned activities</b>  It is planned to implement the project “Fostering Multi-country Cooperation over Conjunctive Surface and Groundwater Management in the Bug and Neman Transboundary River Basins and the Underlying Aquifer Systems” using GEF funding.  A project related to fish kill risk assessment for the early warning system in the Neman River basin, including the development of a package of measures to prevent fish kills and subsequent installation</p>

of automatic hydrochemical stations, is planned for implementation in 2021-2022 using the financing provided from the state budget of the Republic of Belarus. It is planned to implement the project under the subprogramme “Sustainable use of natural resources and environmental protection in the context of climate change” of the programme “Green resource use and eco-security technologies” for 2021-2025.

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**11. ACTIVITIES ON TRANSBOUNDARY WATER MANAGEMENT AND CLIMATE CHANGE ADAPTATION IN THE NIGER BASIN**

**1. Which climate change impacts are you already experiencing or expecting in your basin (impacts on health & sanitation and water quality, floods, droughts, other types of disasters, etc.)?**

In the Niger basin, the last decade has been marked by a series of alternating extreme phenomena, including droughts and flooding.  
 Dry years: 2011, 2014, 2017.  
 Very wet years (flooding): 2010, 2012, 2013, 2018, 2019 and 2020.  
 Serious flooding was observed during the wet years, while water stress was very pronounced during the dry years.  
 Though the ABN’s tools predicted 2012’s serious flooding with 10 days’ notice, the resulting damage was serious in terms of both human lives and material losses.  
 Since 2014, the ABN has been creating a regional EWS in order to improve national EWSs. Though the flooding in 2018, 2019 and 2020 was severe, the negative impacts were mitigated thanks to improved communication processes in certain countries.

**2. What are the concrete results achieved in 2019-2020 with regards to climate change adaptation in your basin?**

- Strengthen the hydrological observation system
- Build States’ capacities in terms of forecasting and communication in flooding and severe drought situations
- Rehabilitate small irrigated perimeters in Niger

**3. Name and short description of the flagship adaptation activity your organization wishes to highlight**

1. Early Warning Systems (EWS): producing and communicating information
2. Restoring degraded land with a view toward mobilizing and preserving water resources

**4. Which major challenges did you face with regards to transboundary cooperation and climate change adaptation? How did you overcome them?**

- Lack of synergy between various countries’ activities
- Harmonizing resources management laws (Water Code, Environmental Code)

**5. Which lessons learned would you like to share with other basins?**

Strategic basin management studies: Strategic Plan (PS), Operational Plan (PO) and Climate Investment Plan (PIC)

**6. What is the status of your basin climate change adaptation strategy and plan? Are they already developed, financed and implemented?**

The ABN’s Climate Investment Plan (PIC) with initial funding (PIDACC, ITTAS)

FRACC preparation underway
<p><b>7. How do you finance your climate change activities? How do you plan to finance implementation of measures?</b></p> <p>Through projects and programmes financed by financial partners. Measures will be financed through the FRACC.</p>
<p><b>8. How did you link transboundary climate change adaptation to adaptation activities at other levels, such as the national level?</b></p> <p>By harmonizing laws, sharing best practices, strengthening capacities</p>
<p><b>9. Do you include water, health and sanitation (WASH) issues into your transboundary climate change adaptation strategies and plans? Are you supporting transboundary cooperation related to WASH in the framework of climate change adaptation and how?</b></p> <p>Yes. Annex 3 of the ABN Water Charter on notifying about planned measures.</p>
<p><b>10. Future planned activities</b></p> <p>Institutional strengthening  Strengthening the EWS  Implementing the FRACC  Mobilizing and preserving water resources for needs</p>
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## 12. ACTIVITIES ON TRANSBOUNDARY WATER MANAGEMENT AND CLIMATE CHANGE ADAPTATION IN THE NORTHERN WESTERN SAHARA AQUIFER SYSTEM

<p><b>1. Which climate change impacts are you already experiencing or expecting in your basin (impacts on health &amp; sanitation and water quality, floods, droughts, other types of disasters, etc.)?</b></p> <p>Changes have been observed in the Sahel rainfall pattern since 1994, characterized by strong alternation between dry and wet years, with a direct effect on groundwater recharged by direct rainfall and runoff from the Niger River. In some places, a single year of excess rainfall makes it possible to make up for low levels linked to several years of deficit in zones with a significant recharge. Indirectly, in some locations, during prolonged periods of drought, using groundwater degrades groundwater quality by accessing deeper, more mineralized water. In the NWSAS, the impact of climate change is seen by decreased recharge (almost 30%) essentially comprised of precipitation from the Atlas, which leads to overuse of groundwater resources (three times the average recharge). This is reflected in major drops in groundwater levels and degraded water quality.</p>
<p><b>2. What are the concrete results achieved in 2019-2020 with regards to climate change adaptation in your basin?</b></p> <p>Activities aimed at strengthening capacities have been organized in order to provide technical staff at Ministries responsible for water in concerned countries with management tools (database, SIG, model, ADT/PAS) and climate change impact forecasting/simulations in order to better adapt (forecast models) and update their adaptation strategy (ADT/PAS) in a timely fashion. The NWSAS Concertation Mechanism aims to, among other things, regularly update these management tools. All of these activities contribute to drafting and providing a scientific foundation for monitoring and</p>

<p>analysing data and information on climate change in the basin, as well as the development of adaptation means for the populations.</p>
<p><b>3. Name and short description of the flagship adaptation activity your organization wishes to highlight</b></p> <p>In the ITTAS basin, we plan on implementing pilot sites for demonstrating conjunctive water resource management in the aquifer system basin in 2022. Developing climate change adaptation capacities is a priority action within these demonstration pilots.</p> <p>In the NWSAS, flagship activities are related to the development of water-saving techniques (demineralizing brackish water, drip irrigation, buried irrigation channels, etc.) in agricultural perimeters measuring several hundred hectares, optimization (via automation) of the monitoring network, updating and strengthening the management system.</p>
<p><b>4. Which major challenges did you face with regards to transboundary cooperation and climate change adaptation? How did you overcome them?</b></p> <p>The main challenge was convincing the ministers of the seven countries of the ITTAS to adopt a concerted management approach for the shared resource, and to sign the agreement protocol. Thanks to the results we achieved, we were able to organize a ministerial meeting in March 2014 in Abuja (Nigeria), with the participation of two ministers from Nigeria (the Minister of Water Resources and the Minister of the Environment) and representatives of ministers from Benin, Burkina Faso, Mali, Mauritania and Niger. At this occasion, four countries signed the agreement protocol.</p>
<p><b>5. Which lessons learned would you like to share with other basins?</b></p> <ul style="list-style-type: none"> <li>- <i>Lesson 1:</i> Implementation of a mechanism for concertation, a transboundary groundwater management framework to bring the “riparian” countries that use them to cooperate prior to implementing their national water resource management programmes.</li> <li>- <i>Lesson 2:</i> Raise stakeholders’ awareness of the vulnerability of these strategic resources, which play a “buffer” or alternative role during periods of prolonged drought, in order to take appropriate measures to protect and mobilize those resources, so as to boost populations’ and ecosystems’ climate change resilience.</li> </ul>
<p><b>6. What is the status of your basin climate change adaptation strategy and plan? Are they already developed, financed and implemented?</b></p> <p>There is currently no specific strategy or adaptation plan for the ITTAS aquifer groundwater. We are currently developing an ADT/PAS for groundwater, in order to provide a useful scientific foundation for the implementation of an appropriate climate change strategy and adaptation plan at the sub-regional level of the shared aquifer system.</p>
<p><b>7. How do you finance your climate change activities? How do you plan to finance implementation of measures?</b></p> <p>In perfect concertation with affected countries that requested its support, among other partners, the OSS is drafting bankable projects (on behalf of those countries) to be submitted to financial partners, particularly those dedicated to climate financing (Adaptation Funds, the Green Climate Fund). The concerned countries are responsible for effectively carrying out these activities to fight climate change.</p>
<p><b>8. How did you link transboundary climate change adaptation to adaptation activities at other levels, such as the national level?</b></p> <p>Given the transboundary nature of groundwater resources, each country will adapt shared climate change adaptation solutions in its national strategy. These solutions were agreed upon at the ITTAS aquifer system level, based on results obtained from these management tools.</p>
<p><b>9. Do you include water, health and sanitation (WASH) issues into your transboundary climate change adaptation strategies and plans? Are you supporting transboundary cooperation related to WASH in</b></p>

### **the framework of climate change adaptation and how?**

We essentially integrated issues related to water, health and sanitation in our transboundary climate change adaptation strategies. The OSS vision of water resources, as part of its 2030 Strategy, will be aimed at “concerted water management as a key element to ensuring water security and food security in a context of climate change, and consolidating regional cooperation for sustainable development”. As part of this, the OSS will work within the AMCOW 2018-2030 Strategy and pursue and expand its privileged partnership with the RIOB, RAOB and regional basin authorities and agencies in order to implement activities planned as part of this focus area.

Currently, with the support of the AFD, the OSS supports strengthening political dialogue in the countries of North Africa in order to mobilize and benefit from unconventional waters. This strengthens water demand management, while also contributing to ensuring better sanitation and health among the local populations.

### **10. Future planned activities**

We are planning on:

- ⇒ Implementing and operationalizing the ITAS concertation mechanism
- ⇒ Drafting and implementing the Strategic Programme of Action

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## **13. ACTIVITIES ON TRANSBOUNDARY WATER MANAGEMENT AND CLIMATE CHANGE ADAPTATION IN THE RHINE BASIN**

### **1. Which climate change impacts are you already experiencing or expecting in your basin (impacts on health & sanitation and water quality, floods, droughts, other types of disasters, etc.)?**

Detailed impacts were given in previous meetings/workshop reports/templates.

To sum-up:

According to studies, by the middle of the 21st century, up to 20 % higher discharges are to be expected during winters in the Rhine catchment and up to 10 % lower discharges are expected during summers, while regional variations may occur. Thus, effects of climate change modify the discharge pattern of the Rhine and its tributaries. Presumably, periods with floods or low flow will become more frequent and more distinct. A rise in air temperatures leads to higher water temperatures which again – together with low flow – might result in an ecological and chemical modification of water bodies.

### **2. What are the concrete results achieved in 2019-2020 with regards to climate change adaptation in your basin?**

Following improvements and products can be mentioned here:

- In 2019 publication of a new common low water monitoring system based on historical discharge series and threshold values for classifying the low water situation in five levels (from “normal” to “extremely rare low flow”). See <https://www.iksr.org/en/topics/low-water/low-water-monitoring>
- The release of the report on the extreme low-water period of 2018; Start of the cooperation with the European Drought Observatory of the EU Joint Research Center
- More information on the topic of low water: <https://www.iksr.org/en/topics/low-water/>
- The integration of climate change and its adaptation have been reinforced in the draft of the 2nd International Flood Risk Management Plan (final plan planned for the end of 2021) (IFRMP). See



<p><a href="https://www.iksr.org/en/eu-directives/floods-directive/flood-risk-management-plan">https://www.iksr.org/en/eu-directives/floods-directive/flood-risk-management-plan</a>. The same is now also foreseen for the 3<sup>rd</sup> International River Basin Management Plan of the Rhine river basin (IRBMP)</p> <p>- The 16th Rhine Ministerial Conference took place on the 13<sup>th</sup> of February 2020 in Amsterdam. At this occasion, the balance of the Programme Rhine 2020 (2000-2020), including information on CC and adaptation, was published and the new Programme Rhine 2040 entitled “The Rhine and its Catchment: Sustainably Managed and Climate-resilient” was launched. As its name suggests, the sustainable management of the Rhine basin and its resilience to climate change are at the heart of the programme and remains the central objective for 2040. In particular, an update of the ICPR's CC adaptation strategy (dating from 2015) is planned by 2025. Find all information about the new programme as well as the balance of Rhine 2020 here: <a href="https://www.iksr.org/en/icpr/rhine-2040">https://www.iksr.org/en/icpr/rhine-2040</a></p>
<p><b>3. Name and short description of the flagship adaptation activity your organization wishes to highlight</b></p> <p>Launch of the new Programme Rhine 2040 with the objective of having the Rhine river basin climate resilient.</p>
<p><b>4. Which major challenges did you face with regards to transboundary cooperation and climate change adaptation? How did you overcome them?</b></p> <p>Our main challenge was to develop a common, interdisciplinary and transboundary adaptation strategy and to strengthen its integration into the IRBMP and IFRMP as well as the working plan 2016-2021 of the ICPR. Then to incorporate this topic in a strong way in the new Rhine 2040 programme. A major challenge for the future is the implementation of Rhine 2040. We overcome these challenges mainly by making use of the strong experience of cooperation between states in the Rhine basin, which dates back to 1950. In addition to cooperation between states, we can also count on the enriching contribution of observers (NGOs, other river commissions, etc.) and other important players such as the Commission for the Hydrology of the Rhine, the Central Commission for the Navigation of the Rhine (CCNR) and the UN-ECE.</p>
<p><b>5. Which lessons learned would you like to share with other basins?</b></p> <p>There are and will always be some uncertainties about climate change impacts, but the Rhine countries believe the trends to be robust enough to act and implement an (international) adaptation strategy.</p> <p>So far, we have learned that a mix of top-down and bottom-up measures (from the transboundary/international level to the national and regional level and vice-versa) is the best option when developing an adaptation strategy. It is also very important not to reinvent the wheel: try to use available, realized or planned measures, e.g. the ones linked to the WFD and FD implementation or originating from former programmes. Additionally, working on common issues like recent low flow events plays a key role to strengthen exchange, cooperation and mutual understanding between riparian states. And, at least, the topic of CC can be a very good common topic for transboundary cooperation as shown by the decisions taken by the Ministers of the Rhine concerning the launch of the new Rhine 2040.</p>
<p><b>6. What is the status of your basin climate change adaptation strategy and plan? Are they already developed, financed and implemented?</b></p> <p>The CC adaptation strategy of the ICPR was published in 2015, mainstreamed into the work of the ICPR, in particular through river basin and flood risk management plans as well as through the work of the ICPR regarding the effects of CC on water quality, environment/ecology, low water and uses. The programme Rhine 2040 foresees the updating of the strategy by 2025.</p>
<p><b>7. How do you finance your climate change activities? How do you plan to finance implementation of measures?</b></p> <p>The different states within the ICPR are financing the implementation of CC measures concerning their own territories. The budget of the ICPR is used only for the organization/coordination of the ICPR activities. Furthermore, national and municipal activities related to CC are being implemented and financed directly at a national level but benefit the implementation of the ICPR Climate Change Adaptation Strategy.</p>

**8. How did you link transboundary climate change adaptation to adaptation activities at other levels, such as the national level?**

The Climate Change Adaptation Strategy for the Rhine Basin was, amongst others, based on aspects included in the national adaptation strategies of the individual states. On the other hand, the Rhine bordering states can inspire themselves from the ICPR Climate Change Adaptation Strategy. Updates and progress reports are being drafted by the ICPR identifying new national developments or knowledge about CC impacts and mitigation measures/actions. Furthermore, climate change adaptation aspects are being implemented by the countries within their implementation of the IRBMP and IFRMP of the Rhine basin.

**9. Do you include water, health and sanitation (WASH) issues into your transboundary climate change adaptation strategies and plans? Are you supporting transboundary cooperation related to WASH in the framework of climate change adaptation and how?**

Guaranteeing the production of drinking water, improving or maintaining the good quality of water, its treatment, the reduction of pollutants (and more recently micropollutants or even the issue of micro/macroplastics) are historical and in fact central tasks of the ICPR. The improvement of water quality and the aquatic environment, both for humans and nature, are part of the ICPR's CC adaptation strategy and the new Rhine 2040 programme. These aspects will certainly be strengthened in the update of the adaptation strategy by 2025.

**14. ACTIVITIES ON TRANSBOUNDARY WATER MANAGEMENT AND CLIMATE CHANGE ADAPTATION IN THE SAVA BASIN**

**1. Which climate change impacts are you already experiencing or expecting in your basin (impacts on health & sanitation and water quality, floods, droughts, other types of disasters, etc.)?**

The Sava River basin covers a total area of 97,713.2 square kilometres and is the second largest Danube tributary catchment by area size. It encompasses 12% of the Danube basin, draining into the Black Sea. The Sava represents the third longest tributary of the Danube and its largest tributary by discharge. The river basin consists of parts of Slovenia (SI), Croatia (HR), Bosnia and Herzegovina (BA), Serbia (RS) and Montenegro (ME), with a very small part of the catchment area belonging to Albania (AL).

The climate has already changed noticeably and increases in temperatures in all Sava riparian countries are reported. All countries are expecting changes in precipitation, but these changes are very variable. As for many places in Europe it is expected more frequent and more intense extreme weather events will take place more often in the region. There are longer periods of drought and shorter and locally distributed periods of intense precipitation in the future predicted in all countries with an increasing risk of flooding.

Projected impacts of changes in temperature, precipitations and extreme water events are.

- Impact on water resources which lead to major changes in water availability across the Sava Basin with more extreme events occurring.
- Impact on extreme hydrological events. Floods will increase in the future due to climate change, while significant decrease could be expected in the distant future.
- Impacts on water quality.
- Impact on economic sectors (agriculture, forestry, hydropower, navigation, industry and tourism), settlements, disaster risk reduction and nature conservation.

**2. What are the concrete results achieved in 2019-2020 with regards to climate change adaptation in your basin?**

Considering the nature of the International Sava River Basin Commission (ISRBC) the activities are focused to development of plans and programmes covering the whole Sava River Basin. Before the year 2019 the climate change adaptation has been addressed in the 1<sup>st</sup> Sava River Basin Management Plan, 2nd Sava River Basin Analysis Report, Joint Plan of Action (JPA) and the Water and Climate Adaptation Plan for the Sava River Basin (WATCAP). The ISRBC has also established the system for exchange of hydrological and meteorological data (Sava HIS) and the Sava Flood Fore Casting and Warning system. (Sava FFWS). In October 2019 the Flood Risk Management Plan (FRMP) was approved by the Parties to FASRB. In the FRMP the measures of the climate change adaptation have been classified into 3 categories – high/medium/low importance for adaptation. High importance measures are those which include construction of new flood protection systems while applying green infrastructure measures as well as those improving protection of urban areas. Measures of medium importance aim at improving existing infrastructure for flood protection and resilience to new conditions, while measures of low importance regulate maintenance or reconstruction of the existing flood protection structures.

**3. Name and short description of the flagship adaptation activity your organization wishes to highlight**

The ISRBC as a signatory of the Paris Pact on water and climate in cooperation with the International Office for Water developed the *Outline of the Climate Change Adaptation Strategy and priority measures for the Sava River Basin* in the framework of the Global alliance for water and climate incubator platform.

The *Outline* covers climate change scenarios, projected impacts on water resources, extreme hydrological events, water quality, expected impacts on economic sectors, settlements, disaster risk reduction, health, and nature conservation. The development of the *Outline* started in June 2017 and ended in January 2018.

**4. Which major challenges did you face with regards to transboundary cooperation and climate change adaptation? How did you overcome them?**

Climate change poses significant and complex challenges for transboundary water basins worldwide. As climate change increases over the coming decades, transboundary cooperation on adaptation and resilience-building strategies is essential to advancing sustainable development and ensuring social and political stability for basin countries and their people. The impacts of climate change in the transboundary context extend beyond direct and immediate impacts on communities, ecosystems, infrastructure, and local or national economies.

Although only Slovenia and Croatia are already members of the EU, while the other countries are in different stages of the accession process, the EU legislation plays an important role in the adaptation to climate change regarding the water issues. Besides the EU legislation, several national and international activities are as well of relevance for climate adaptation in the Sava River Basin i.e. Paris Agreement, activities of the ICPDR, UNECE and World Bank resulting in specific studies addressing the adaptation efforts.

The major challenges of transboundary cooperation on the climate change adaptation is to demonstrate that the benefits of basin wide approach to adaptation allow the sharing of the costs and benefits of adaptation measures and ensure their optimal location in a river basin and preventing of possible negative effects of unilateral adaptation measures.

**5. Which lessons learned would you like to share with other basins?**

The framework for adaptation in the Sava Countries is quite diverse. Different status of the Sava riparian countries in EU leads to different legal frameworks (even if all non-EU countries are working towards the EU legislation) and to different financial possibilities for adaptation. Adaptation is legally framed in different ways in the countries and mainstreaming has taken place in various degrees.

In the process of development of *Outline* the following gaps have been noticed:

- So far, a number of sectors have not been addressed (e.g. forestry, fishery, aquaculture, spatial and urban planning, infrastructure development, tourism, health)

<ul style="list-style-type: none"> <li>For the sectors that have been considered so far (i.e. water management, flood protection, navigation, hydropower use, agriculture), these measures have to be elaborated into more details for prioritization and implementation of basin relevance measures.</li> </ul> <p>Considering above mentioned gaps the need has been identified to integrate actions and insure full consistency at the basin and national levels.</p>
<p><b>6. What is the status of your basin climate change adaptation strategy and plan? Are they already developed, financed and implemented?</b></p> <p>The <i>Outline of the Climate Change Adaptation Strategy and priority measures for the Sava River Basin</i> finalized in 2018 summarizes the state of knowledge on climate change adaptation efforts in the Sava countries and is based on international and national assessments and discussions. The process was supported by the French Ministry of Ecological and Inclusive Transition and the UNECE. The <i>Outline</i> represents a basis for full strategy for which the funding has not been ensured yet.</p>
<p><b>7. How do you finance your climate change activities? How do you plan to finance implementation of measures?</b></p> <p>Funding of adaptation measures at the national level remains a challenge in the region. For example, in Bosnia and Herzegovina and Serbia only very limited funding are available while in Slovenia and Croatia some EU financing mechanisms are in place like Water Fund and EU Operational Programme beside the fund at national level.</p> <p>At the international level additional funding is foreseen in scope of the <i>Sava and Drina Corridors Integrated Development Programme</i> developed by the World Bank in cooperation with the Sava Countries and ISRBC. In the Programme beside the infrastructure investment which should consider the resilience to climate change, the <i>Climate Change Adaptation Strategy for the Sava River Basin</i> is foreseen to be developed.</p>
<p><b>8. How did you link transboundary climate change adaptation to adaptation activities at other levels, such as the national level?</b></p> <p>The ISRBC cooperates with the national authorities in development of the plans and programs. It serves as a focal point in identification and implementation of project of regional importance. The ISRBC cooperates with the nominated national representatives (ISRBC members) and experts in the permanent expert groups covering navigation, river basin management, accident prevention and control, GIS and hydrological and meteorological issues. In the filed of water management the ISRBC provides recommendations which are passed unanimously by the ISRBC members to the countries.</p>
<p><b>9. Do you include water, health and sanitation (WASH) issues into your transboundary climate change adaptation strategies and plans? Are you supporting transboundary cooperation related to WASH in the framework of climate change adaptation and how?</b></p> <p>The ISRBC has been established to implement the Framework Agreement on the Sava River Basin aiming to establish an international regime of navigation, sustainable water management and to undertake the measures to prevent or limit hazards. The health and sanitation have been addressed in connection with the collection and treatment of waste water from settlement and industry.</p>
<p><b>10. Future planned activities</b></p> <p>Climate change adaptation activities are and will be addressed in all future planning documents and programmes coordinated by the ISRBC. The Sava riparian countries are in the process of development of the 2<sup>nd</sup> Sava River Basin Management Plan where the climate change adaptation measures will be considered in line with the measures ensuring good ecological status of waters.</p>
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## 15. ACTIVITIES ON TRANSBOUNDARY WATER MANAGEMENT AND CLIMATE CHANGE ADAPTATION IN THE SIXAOLA BASIN

### 1. Which climate change impacts are you already experiencing or expecting in your basin (impacts on health & sanitation and water quality, floods, droughts, other types of disasters, etc.)?

The Sixaola River Binational Basin between Costa Rica and Panama is dominated by banana and plantain crops for export, most of which belong to big companies. The main threats in this basin are deforestation and the change of land use, which expose water resources and soil to abnormal effects, especially from rainfall, as well as high erosion and sedimentation.

In addition, there is the problem of illegal banana transshipment through the Sixaola River, causing a growing threat to the phytosanitary and zoonosanitary status with the spread of diseases in the plantations, such as black Sigatoka.

Highlights:

- Heavy winter rains (floods): Impacts on water resources, agriculture, human health, coastal zones
- Rainfall deficit between dry season and winter (drought): Agriculture, human health, coastal zones
- Increase of the minimum winter temperature values: Human health
- Sea level rise (manifesting as waves, swells, surges or groundswells): Coastal zones
- Increase in maximum summer temperature values (heat waves): Coastal zones

### 2. What are the concrete results achieved in 2019-2020 with regards to climate change adaptation in your basin?

The implementation of binational activities within the framework of the Binational Commission for the Sixaola River Basin, such as the General Assembly in September 2019 where issues related to indigenous territories within the Basin, health issues such as communicable diseases, water provision, elimination of mosquito breeding sites and international sanitary regulations were discussed; In addition to the petition for the joint ministerial designation of the Gandoca-Manzanillo Wildlife Refuge and the Wetland of international importance San San – Pond Sak, as a Transboundary Wetland under the Ramsar Convention.

Work is underway to develop sustainable rural community-based tourism projects and to strengthen the Integrated Water Resources Management (IWRM) in the Sixaola River Binational Basin between Costa Rica and Panama.

The Ministry of the Environment is currently collecting best practices regarding adaptation that have been generated by other projects in the area.

The Sixaola River Basin Committee was created for Panama's part of the river, based on the Basin law Law 44 of August 5, 2002. Currently, this Basin Committee is developing the project "Recovery and restoration of the projection zone of the Sibube gorge sub-basin within the Sixaola River Basin".

### 3. Name and short description of the flagship adaptation activity your organization wishes to highlight

The presentation of the update of Panama's nationally determined contribution (CDN1) with the presentation of the communication in adaptation, in December 2020.

### 4. Which major challenges did you face with regards to transboundary cooperation and climate

<p><b>change adaptation? How did you overcome them?</b></p> <p>Despite all the coordination and meeting difficulties arisen and worsened with the pandemic, the Binational Commission for the Sixaola River Basin Costa Rica-Panama, within the framework of the Agreement on Cooperation for the Panama-Costa Rica Border Development, has been able to keep functioning. We are working to achieve changes in the internal regulations to allow virtual assemblies. This Committee is developed in this Basin and one of its purposes is to work together to preserve it, empowering the communities, traditional and government authorities, to have the necessary instruments to promote adaptation to climate change.</p> <p>In the case of the Basin Committee (Panama), regular meetings have been held virtually.</p>
<p><b>5. Which lessons learned would you like to share with other basins?</b></p> <p>The existence of the Agreement on Cooperation for Border Development between Costa Rica and Panama facilitates joint work and has served as a platform for the development of the border area in all areas.</p> <p>The creation of the Basin Committee in Panama has provided human capital for the development of actions for the conservation and restoration of the Basin.</p>
<p><b>6. What is the status of your basin climate change adaptation strategy and plan? Are they already developed, financed and implemented?</b></p> <p>Panama has a National Climate Change Strategy for 2050, but it is not only aimed at the basin in question, but at all sectors of the country.</p> <p>In addition to this, we have the National Water Security Plan, Water for All 2015 - 2050, which incorporates mitigation and adaptation actions to climate change in the 52 basins of the country in its 5 strategic goals.</p>
<p><b>7. How do you finance your climate change activities? How do you plan to finance implementation of measures?</b></p> <p>The activities carried out on climate change are financed by different means such as international financing as well as national funds.</p> <p>In the case of the project that is implemented by the Basin Committee, it is financed through an agreement between the Ministry of Environment and the trust Fundación NATURA. MiAMBIENTE provides the funds, NATURA administers them and a local NGO executes them in coordination with the Basin Committee.</p>
<p><b>8. How did you link transboundary climate change adaptation to adaptation activities at other levels, such as the national level?</b></p> <p>This is a topic to be developed within the national adaptation plans in the integrated Basin management sector.</p> <p>The Panama Basin Committee becomes a strategic ally for the Binational Committee.</p>
<p><b>9. Do you include water, health and sanitation (WASH) issues into your transboundary climate change adaptation strategies and plans? Are you supporting transboundary cooperation related to WASH in the framework of climate change adaptation and how?</b></p> <p>Yes, water and health issues are included within the National Climate Change Strategy 2050 as well as they are included by sector in the Nationally Determined Contributions 2020 Update.</p>
<p><b>10. Future planned activities</b></p>

A joint proposal is being formulated with Costa Rica to present to an international fund to generate adaptation measures in the tourism sector and all the sectors that interact with it.

#### 11. Contact details

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## 16. ACTIVITIES ON TRANSBOUNDARY WATER MANAGEMENT AND CLIMATE CHANGE ADAPTATION IN THE SENEGAL BASIN

### 1. Which climate change impacts are you already experiencing or expecting in your basin (impacts on health & sanitation and water quality, floods, droughts, other types of disasters, etc.)?

The climate trends in rainfall over the period 2011-2050 seem to confirm a certain stability in rainfall close to that currently observed. However, despite the conservation of rainfall on an annual scale, a change in the monthly distribution of rainfall can be seen in the different climate scenarios studied. Indeed, the monthly totals will be less important in July and August but more important in September and October for all the basins studied, thus reflecting a shift in the rainy season. The modification of the rainfall regime will also have an impact on the hydrological regime of the rivers. Thus, we can consider that the modulus of rivers will remain unchanged between the current period (1990-2010) and the future period up to 2050, but the peak flood will be spread out over time. It will be less pronounced in September and, conversely, flows should be higher in October and November. For evapotranspiration, the climate models agree on an average increase of 2.5% (2000 - 2040) and 6% (between 2000 - 2100), reflecting the increase in temperature.

A resurgence of heavy rains is also observed in areas where rainfall was not important (river valley) leading to flooding, but also to a more rapid drying up of rivers.

The impacts and management prospects for the basin highlight the following observations:

- a) Modern uses (energy, irrigation, river transport) are vulnerable to climate change;
- b) In a context of basin development, traditional uses (flood recession agriculture, fishing) are affected in priority by the decision to maintain or not an artificial flood rather than by climate change;
- c) The results indicate that in 2020 the basin is at a crossroads: – Either the basin becomes an energy-agriculture-transport hub; – Or a balance is found between modern and traditional uses;
- d) Indeed, the control of the still natural tributaries (Falémé and Bakoye) can definitively seal the fate of the basin by destining it to become this energy-agriculture-transport hub. The opportunity cost, i.e. the benefits lost in the economic sectors associated with modern uses, generated by an artificial flood will rapidly become significant, especially if hydrological conditions deteriorate with climate change (30% probability);
- e) The development of hydropower potential should be prioritized on the Bafing upstream of Manantali in order to – minimize the opportunity cost of the artificial flood for the energy sector; – maintain traditional uses that are not very sensitive to climate change, while keeping options for further development and management open. This strategy also offers the opportunity to adapt the basin's facilities (dams and surface area of irrigated perimeters) to hydro-climatic changes as uncertainty about the direction of these changes diminishes.

### 2. What are the concrete results achieved in 2019-2020 with regards to climate change adaptation in your basin?

Much effort is being made by OMVS, at the political and operational levels, to enable member states to cope with the adverse effects of climate change. These actions are carried out at the regional and local levels.

- The study of the warning plan for the implementation of Flood EWS

<ul style="list-style-type: none"> <li>• Nomenclature study of withdrawal and discharge thresholds for rational water resource management</li> <li>• Update of the basin's cartography at 1:50,000 scale for better monitoring of the evolution of the environment</li> <li>• Training of actors on climate change at all levels of governance to enable them to play their full role in adaptation (face-to-face and e-learning)</li> <li>• 13 locally implemented climate change adaptation pilot projects</li> <li>• Drilling of boreholes for the drinking water supply of the population in certain localities of the basin.</li> <li>• Development of a model for resource-need allocation taking into account the implementation of new works and climate change.</li> </ul>
<p><b>3. Name and short description of the flagship adaptation activity your organization wishes to highlight</b>  The updating of the SDAGE 2050 (Framework for the Development and Management of Water) completed by a Climate Investment Plan (CIP), which will mainly address cross-border impacts related to climate change. This revision aims to integrate new developments, greater water needs, the impacts of climate change, the orientation of the new planning documents of the States, the updating of the costs of the recommended measures and the lessons learned from the implementation of the first SDAGE. The study is ongoing and is expected to be completed by the end of 2021.</p>
<p><b>4. Which major challenges did you face with regards to transboundary cooperation and climate change adaptation? How did you overcome them?</b></p> <ul style="list-style-type: none"> <li>• Taking into account the diversity of impacts and the level of organization of countries;</li> <li>• Conducting the process of harmonization of regulations and filling the legal gaps in the 4 States;</li> <li>• Addressing the technical and financial shortcomings of the OMVS system for the implementation of adaptation actions.</li> </ul> <p><b>To overcome them we have:</b>  Raised awareness among actors at all levels, pushed States to identify adaptation actions according to their priorities and urgencies, supported States and given guidance in the process of revising national texts, provided training and financed adaptation actions that take into account the specificities of each country.</p>
<p><b>5. Which lessons learned would you like to share with other basins?</b></p> <ul style="list-style-type: none"> <li>• Capitalize on the expertise and experiences of Member States in the formulation and implementation of adaptation projects;</li> <li>• Set up a monitoring and assessment system and find mechanisms to ensure the sustainability of the achievements;</li> <li>• It is also imperative to strengthen the management of groundwater resources in river basins, which are less vulnerable to climate change and which today constitute an alternative in terms of water control for socio-economic activities;</li> <li>• There is a strong need to work towards a profound change in the behavior of the basin's population on the issues of environmental preservation, water resource management, investment management, etc.</li> </ul>
<p><b>6. What is the status of your basin climate change adaptation strategy and plan? Are they already developed, financed and implemented?</b>  The CIP is under development</p>
<p><b>7. How do you finance your climate change activities? How do you plan to finance implementation of measures?</b>  Through state contributions, loans, grants and bilateral cooperation.</p>
<p><b>8. How did you link transboundary climate change adaptation to adaptation activities at other levels, such as the national level?</b>  In-depth studies have enabled us to capitalize on all the efforts made by countries in terms of adaptation and to identify the adaptation needs and initiatives to be carried out at the transboundary and local levels for each sub-basin. Thus, transboundary actions are carried out at the regional level (capacity building, development of models, hydrometeorological monitoring network, harmonization</p>



of regulations...) and at the local level (adaptation action, reforestation, extension of improved seeds, awareness raising, agricultural development...).
<b>9. Do you include water, health and sanitation (WASH) issues into your transboundary climate change adaptation strategies and plans? Are you supporting transboundary cooperation related to WASH in the framework of climate change adaptation and how?</b>
<b>10. Future planned activities</b> Search for funding for the CIP, popularization of the achievements, training of stakeholders, continued harmonization of texts and regulations to support adaptation, setting up a monitoring system for groundwater in the basin.
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**17. ACTIVITIES ON TRANSBOUNDARY WATER MANAGEMENT AND CLIMATE CHANGE ADAPTATION IN THE VOLTA BASIN**

<p><b>1. Which climate change impacts are you already experiencing or expecting in your basin (impacts on health &amp; sanitation and water quality, floods, droughts, other types of disasters, etc.)?</b></p> <p>The following climate change impacts are being felt in the Volta basin:</p> <ul style="list-style-type: none"> <li>• variations in seasonal flows are manifested by flooding and droughts;</li> <li>• degradation of the state of surface waters in the Volta basin;</li> <li>• coastal erosion downstream from the basin;</li> <li>• invasive aquatic species have multiplied;</li> <li>• sedimentation in the water courses has increased;</li> <li>• loss of plant cover;</li> <li>• water quality has degraded;</li> <li>• the availability of water resources has decreased, water courses are experiencing early drying, insufficient water for ecosystems and agricultural-forestry-grazing activities, a drop in agricultural-forestry-grazing and vegetable production, a decrease in revenue from agricultural-forestry-grazing and vegetable production; agricultural-forestry-grazing and vegetable farming lands have become dry, agricultural-forestry-grazing and vegetable yields have decreased, violent wind, dust and heat have intensified, seasonal illnesses have multiplied, healthcare expenses and needs have risen, savings are being used to satisfy healthcare needs, monetary and food insecurity have increased.</li> </ul>
<p><b>2. What are the concrete results achieved in 2019-2020 with regards to climate change adaptation in your basin?</b></p> <p>The results obtained in climate change adaptation in the Volta basin in 2019-2020 are from the Volta Flooding and Drought Management project, or “integrating flooding and drought management and early alert systems in the Volta basin”. This project was financed by the adaptation fund and implemented by the WMO, GWP/AO and ABV. The 2019-2020 results are:</p> <ul style="list-style-type: none"> <li>• Information in the main zones affected by risk of flooding and drought, data sets on vulnerability, exposure and risk are now available, existing knowledge on hydrometeorological services and the impacts of flooding on the population and socioeconomic sectors have been gathered; early flooding and drought alert system capacities and needs have been assessed in the six Volta basin countries;</li> <li>• environmental and ecosystemic services in support of early alert and climate change adaptation have been evaluated, as have multidimensional vulnerability factors at the community level in 60 sites within the Volta basin.</li> </ul>

<p><b>3. Name and short description of the flagship adaptation activity your organization wishes to highlight</b></p> <p>The flagship activity that the ABV would like to highlight is evaluating national capacities and needs with regard to developing a system for flooding and drought early alert and prediction. After this, comprehensive, adapted and sustainable solutions were drafted at the basin level in order to strengthen resilience to climate change at the local, national and regional levels (Volta Flooding and Drought Management project). The VOLTALARM transboundary system was implemented, as was a platform for exchanging and monitoring early alert and flooding and drought management data. Nature-based solutions for climate change adaptation were implemented, as was a community approach to flooding and drought management in six sites distributed through the six national portions of all six countries sharing the Volta basin.</p>
<p><b>4. Which major challenges did you face with regards to transboundary cooperation and climate change adaptation? How did you overcome them?</b></p> <p>The challenge we faced was that the six countries often have very different realities or approaches, and procedures can vary from one country to another, given that not all of the countries have achieved the same level of climate change adaptation. Some countries have already drafted their national plan, while others have not (i.e. Burkina Faso and Benin already have national climate change adaptation plans). The lack of information and insufficient harmonization of approaches and tools, as well as weak mobilization of local-level actors present other challenges.</p> <p>We were able to overcome these challenges with collaboration from the ABV National Focal Structures (SFNs)</p>
<p><b>5. Which lessons learned would you like to share with other basins?</b></p> <p>You need to develop and strengthen cooperation and collaboration relations with technical and financial partners as well as the technical structures in Member States.</p>
<p><b>6. What is the status of your basin climate change adaptation strategy and plan? Are they already developed, financed and implemented?</b></p> <p>At the basin level, there is a Volta basin Strategic Action Programme (SAP), drafted in 2014, and which considers activities to fight climate change. This programme has been partially financed and implemented. Some of its activities have been taken into consideration in the Sahel Climate Investment Programme.</p> <p>There is no climate change adaptation plan specifically drafted for the Volta basin. However, an initiative to provide the Volta basin with a climate change plan is currently in the planning stage.</p>
<p><b>7. How do you finance your climate change activities? How do you plan to finance implementation of measures?</b></p> <p>The Volta Flooding and Drought Management project or “integrating flooding and drought management and early alert systems in the Volta basin” is financed by the Adaptation Fund. The ABV is working to prepare other projects to be submitted for climate financing, such as the International Climate Initiative (IKI).</p>
<p><b>8. How did you link transboundary climate change adaptation to adaptation activities at other levels, such as the national level?</b></p> <p>Transboundary climate change adaptation is closely linked with national climate change adaptation strategies in each country.</p>
<p><b>9. Do you include water, health and sanitation (WASH) issues into your transboundary climate change adaptation strategies and plans? Are you supporting transboundary cooperation related to WASH in the framework of climate change adaptation and how?</b></p> <p>Yes, the ABV’s work focuses on Integrated Water Resources management. We support transboundary</p>

cooperation through transboundary projects such as the Volta Flooding and Drought Management or “integrating flooding and drought management and early alert systems in the Volta basin”. Other climate change adaptation projects such as REWARD, in collaboration with the UNEP and IUCN, which is currently being finalized, and the PREE Project (ASDI, IUCN), which is currently being implemented.

#### **10. Future planned activities**

The following activities are planned in the framework of the Volta Flooding and Drought Management project:

- implementation of a transboundary VOLTALARM system and a platform for exchanging and monitoring early alert and flooding and drought management data, mapping in line with risk of disaster and drought, implementation of nature-based solutions for climate change adaptation in the basin, development and implementation of a community-based flooding and drought management approach in six sites distributed over the six national portions of the six riparian basin countries;
- Examine programmes, projects or initiatives (terminated, being implemented or in the preparatory phase) linked to the flooding and drought alert and prediction system. Propose an approach for links or complementarity between these initiatives with the future transboundary VoltAlarm hydrometeorological system;
- Collect recommendations and plans of action with various options from national agencies for the design and implementation of a flooding and drought prediction and early alert system for the transboundary Volta basin region, considering the pertinence, efficiency, efficacy, impact and sustainability, as well as any relationship with other available resources;
- Implement recommendations and plans of action stemming from the country assessment report on the needs and capacities for a flooding and drought alert and prediction system and a summary for the entire Volta basin region.

Additionally, the ABV is working to draft projects to be submitted for climate financing.

#### **11. Contact details**

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