ADAPTATION FUND

REGIONAL PROJECT PROPOSAL

PART I: PROJECT/PROGRAMME INFORMATION

Title of Project:	**Integrated climate-resilient transboundary flood risk management in the Drin River basin in the Western Balkans**
Countries:	Albania, the Former Yugoslav Republic of Macedonia, Montenegro
Thematic Focal Area[1]:	Disaster risk reduction and early warning systems
Type of Implementing Entity:	Multilateral Implementing Entity (MIE)
Implementing Entity:	UNDP
Executing Entities:	UNDP, Global Water Partnership
Amount of Financing Requested:	US$9,927,750 (in U.S Dollars Equivalent)

Project / Programme Background and Context:

1. The Drin River Basin (DRB) is a transboundary river basin, which is home to 1.6 Million people and extends across Albania (30% of basin area, 27% of total country area, 37% of basin population), Kosovo[2] (23% of basin area, 42% of total country area, and 35% of basin population), the Former Yugoslav Republic Macedonia (17% of basin area, 13% of total country area, and 11% of basin population), Montenegro (22% of basin area, 32% of total country area, and 17% of basin population) and Greece.

2. Climate change and climate variability have been increasing the frequency, intensity and impact of flooding in the basin[3]. Historical flood data from the Western Balkans suggests a more frequent occurrence of flood events, attributed to an uneven distribution of precipitation and torrential rain, particularly over the last decade. More and larger areas and, therefore, a greater population numbers are being affected by flooding with a strong impact on national economies. Future climate scenarios project a further increase in the likelihood of floods as well as in their destructive nature. The proposed project will enhance resilience of the DRB countries and communities to climate-induced flood risks.

Geographical and Development Context - Regional and Country Perspective:

3. The Drin River a transboundary river in Southeastern Balkan peninsula which is inhabited by over 1.6 million people, living in 1,453 settlements, and encompasses several complex eco-systems that provide unique habitats for many indigenous species important from both European and global conservation perspectives. Besides the three big natural lakes – Prespa, Ohrid and Skadar/Shkodër – the basin includes several large water reservoir cascades along the Black Drin River in FYR Macedonia and the Drin River in Albania.

4. The Drin River, 335 km long, runs through mountainous areas (highest peaks on the Dinaric Alps of over 2,500 masl) in the south-western Balkans towards the Adriatic Sea, draining a topographic area of 20,311 km^2 and providing the third greatest river discharge into the European Mediterranean. The Drin River has two distributaries one discharging into the Adriatic Sea and the other one into the Buna River. The basin has four main sub-basins and several lakes (Figure 1).

[1] Thematic areas are: Food security; Disaster risk reduction and early warning systems; Transboundary water management; Innovation in adaptation finance.
[2] References to Kosovo shall be understood to be in the context of Security Council Resolution 1244 (1999)
[3] FLOOD PREVENTION AND MANAGEMENT: Gap analysis and needs assessment in the context of implementing the EU Floods Directive, September 2015, European Commission

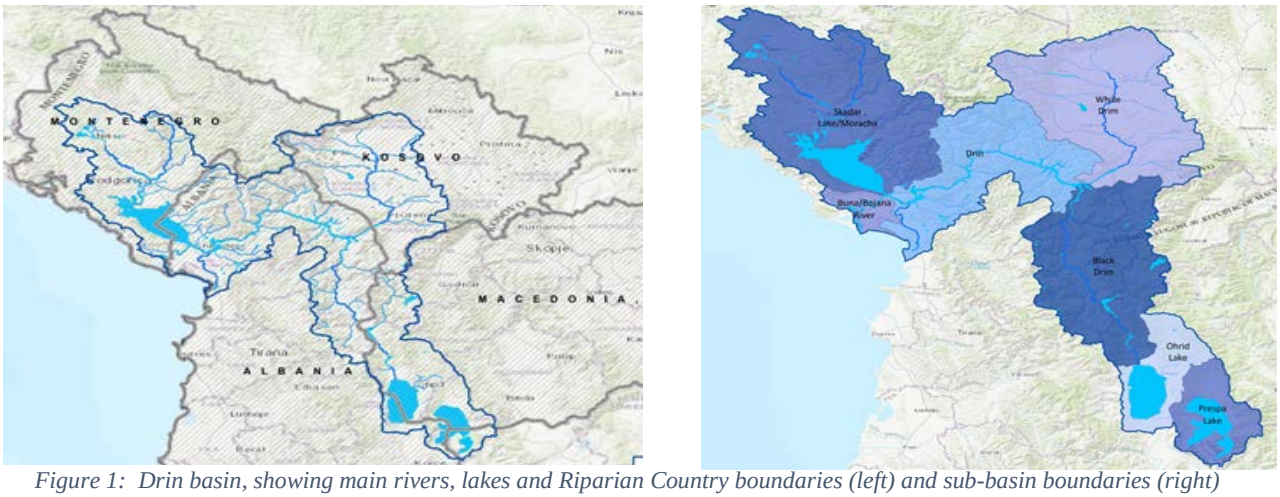


Figure 1: Drin basin, showing main rivers, lakes and Riparian Country boundaries (left) and sub-basin boundaries (right)

5. The **Black Drin** (Crn Drim/Crn Drini) outflows from Lake Ohrid (controlled outflow since 1962), in FYR Macedonia, and flows north through Albania, draining the eastern, mainly mountainous, region of Albania. The total area of the Black Drin basin is 4,472 km^2 (3,295 km^2 of which is in FYR Macedonia) or 22.4% of the DRB. It has an annual discharge of 1,502 million m^3. Two large reservoirs (Globochica and Spilje) have been constructed in this river basin on FYROM side, another 4 dams and 3 reservoirs (Fierze, Komani and Vau I Deje) at the lower Drim in Albania – all with the main purpose of hydroelectric power (providing over 90% of Albanian electricity). The Black Drin crosses near Debar the border to Albania.

6. The **White Drin** surfaces in Kosovo and flows into Albania where it meets the Black Drin at the town of Kukës to form the Drin River. The White Drin drains a karstic region of nearly 3,780 km^2 in Kosovo and 522 km^2 in Albania, resulting in total area of the sub-basin of 4,292 km^2, or 21.5% of the DRB. The Kosovo flow of the White Drin River receives many relatively long tributaries. In the Albanian section of the river there are practically no settlements.

7. **Drin River** flows from Kukës in Albania westward (in the initial section) and southward through northern Albania. The total area of the Drin River equals 4,237 km^2, or 21.2 % of the DRB area. The Gjadri and Kiri rivers join the Drin downstream of the Vau i Dejës dam. Further downstream the river splits into two arms, one which flows directly to the Adriatic Sea southwest of the town of Lezhë (at the Bay of Drin), and the other which flows into the **Buna/Bojana River** downstream of the Skadar/Shkodër Lake. The Drini-Buna River Basin is characterized by groundwater appearances. A number of aquifers exist, often with complex groundwater-surface-water interaction and interdependency. The channel of Drin that flows directly to the Adriatic carries only a relatively small discharge, while most of the Drin flow joins Buna/Bojana River. The Drin Delta which is a complex of relatively intact coastal lakes, marshes and forests, has been recognized as an Important Bird Area of international importance by designation under the BirdLife International Convention[4].

8. The **Lake Prespa** sub-basin comprises the two lakes of Small Prespa and Prespa that are linked together through a channel. A large part of Small Prespa[5] is in Greece, while Prespa Lake[6] is shared between FYR Macedonia and Albania. Lake Prespa drains into Lake Ohrid through underground karst cavities of Galichica and Mali I Thatë mountains. The area of the sub-basin is 1,410 km^2 (not including Small Prespa) or 7% of the total DRB area. Prespa Lakes are the highest tectonic lakes in the Balkans. The area is especially important for water birds, notably the largest breeding colony of Dalmatian pelicans in the world and they are also part of Ramsar List of Wetlands of International Importance.

9. **Shkodra Lake**, a Ramsar site, is the largest lake in the Balkan Peninsula with a surface area varying between 370 km^2 and 530 km^2. It is one of the largest bird reserves in Europe, having 270 bird species, among which are some of the last pelicans in Europe.

[4] http://datazone.birdlife.org/site/factsheet/drini-delta-iba-albania
[5] Limni Mikri Prespa (Greek); Prespa e Vogël (Albanian); Malo Prespansko Ezero (Macedonian).
[6] Also called Great Prespa Lake: Prespansko Ezero (Macedonian); Liqeni i Prespës (Albanian); Megáli Préspa (Greek).

10. **Lake Ohrid**[7] is one of Europe's deepest and oldest lakes and the largest by water volume in South-East Europe, with estimated volume of 55,500 million m^3. It is the deepest lake of the Balkans, with maximum measured depth of 288 m (mean depth 155 m). The lake is shared between FYR Macedonia (272.8 km^2) and Albania (84 km^2). The total area of the Ohrid Lake sub-basin is 919 km^2, or 4.6% of the entire DRB. The lake preserves a unique aquatic ecosystem with more than 200 endemic species. Because of this importance, in 1979 it was declared a World Heritage site by UNESCO.

Development Outlook

11. All of the Riparian countries of the Drin basin are developing middle-income economies[8]. Kosovo*, FYR Macedonia, and Montenegro are successor states of the former Yugoslavia, declaring their independence in 2008, 1991 and 2006[9] respectively. Since the early 1990-ties, all Riparian countries have gone through successful transition from centralized economies to market-based economies[10] and have Human Development Indices of 0.785 for Albania (Rank 68), 0.814 (rank 50) for Montenegro and 0.757 (Rank 80) for FYR Macedonia. Despite this, public debt in Albania and Montenegro remains high (71 and 68% GDP respectively), while in FYR Macedonia it is at 38.70% of GDP, relatively low compared to its Western Balkan neighbors and the rest of Europe. Unemployment remains high (14% in Albania, 17% in Montenegro and 21.6% in FYR Macedonia) as does the percentage of population living below the poverty line - 14% to 9% and 21% Albania, Montenegro and FYR of Macedonia respectively. The percentage of rural population is 40% in Albania and FYR Macedonia and 33% in Montenegro with urbanization rates of 1.69%, 0.45% and 0.54% respectively. Socio-economic outlook of the Drin Riparian Countries is presented in the Annex 2.

Land Use[11]

12. Forests accounts for 32.83%, scrub and open spaces for 35.58% and arable land accounts for 21.25% of the total area of the Drin basin. Inland waters which include natural lakes, rivers, water reservoirs and wetlands, accounts for 6.4% of the area. Urban fabric and Pastures account for 1.9% and 1.8% respectively.

Country	Urban fabric	Arable land*	Forests	Pastures	Inland waters***	Scrub and open spaces**
Albania	1.43%	17.19%	28.78%	1.50%	5.37%	45.59%
Kosovo	2.41%	41.71%	32.71%	1.54%	0.41%	21.39%
Greece	1.10%	9.83%	25.69%	0.40%	24.52%	38.47%
FYR Macedonia	1.09%	15.43%	38.07%	1.22%	14.93%	29.19%
Montenegro	2.68%	12.37%	36.72%	2.98%	7.86%	37.32%
Total	**1.86%**	**21.25%**	**32.83%**	**1.76%**	**6.67%**	**35.58%**
**** Includes: Arable land; Heterogenous agricultural areas; Permanent crops***						
***** Includes: Scrub and/or herbaceous vegetation; Open spaces w/ little or no vegetation; Mine, dur***						
****** Includes natural Lakes Ohrid, Prespa and Skadar/Shkodra***						

13. The interconnected watershed bodies and the ecosystems and communities of the Drin Basin deliver a steady stream of benefits to its residents. All Drin riparian countries rely on the extended Drin River Basin waters and use of its resources for agriculture, energy, water supply and sanitation, mining and industry, environment, fisheries, and tourism[12].

[7] Ohridsko Ezero (Macedonian); Liqeni I Ohrit (Albanian).

[8] With the exception of Greece which is a developed country, but not included in this proposal.

[9] When the Socialist Federal Republic of Yugoslavia dissolved in 1992, Montenegro joined with Serbia, creating the Federal Republic of Yugoslavia and, after 2003, shifted to a looser State Union of Serbia and Montenegro. In June 2006, Montenegro formally restored its independence from Serbia

[10] See Annex 1 for Socio-economic profile of the Riparian countries

[11] Based on the analysis done in "GEF Project "Enabling Transboundary Cooperation and Integrated Water Resources Management in the Extended Drin River Basin - Thematic Report on Socio-Economics of the Extended Drin River Basin" which uses European Environment Agency (EEA), CORINE (Coordination of information on the environment) from 2012.

[12] Trans-Boundary Waters and Integrated Water Resource Management in the Western Balkans Region, 2007

Climate Change and Flood Risk Context:

14. Climate change is already having an impact and is likely to intensify in the future. According to the national communications to UNFCCC from Albania, Montenegro and the Former Yugoslav Republic of Macedonia, as well as to the report 'The state of water in Kosovo', climate change will 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.

15. 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. According to long-term projections, the average annual temperature will increase by 2° C to 3° C by 2050 and precipitation will decrease in the summer, resulting in longer dry periods followed by more sudden heavy rainfalls. This combination increases the likelihood of floods as well as their destructive nature.

16. Historical flood data from the Western Balkans suggests a more frequent occurrence of flood events, characterized by more extreme and more rapid increase in water levels, attributed to an uneven distribution of precipitation and torrential rain, particularly over the last decade. More and larger areas and, therefore, a greater population numbers are being affected by flooding with a strong impact on national economies.

17. In ***Albania***, climate change projections indicate the intensification of heavy precipitation and an increase in the frequency of heavy rains with longer duration, causing flooding and economic damages. There is already evidence of increasing frequency of high intensity rainfall, which is increasing pluvial or flash flooding which inundates the floodplain in a matter of hours. In winter, longer duration rainfall causes flooding which lasts for several weeks during the winter period while long-duration spring rainfall combines with snowmelt to cause flooding. Flood risk is a combination of river flooding and coastal flooding due to sea water inundation (storm surges), both of which are increasing with climate change.

18. According to available climate change projections for ***Montenegro***, there will be a sharp increase in variability of river flow, characterized by increased frequency and intensity of flooding and hydrological drought. In addition, coastal flooding and storm surges will also significantly increase. During this period the area of low air pressure develops in the coastal region of Montenegro and has a wide impact causing maximum precipitation in the southern areas. In the karst areas, during spring, there are periodic floods due to longer periods of precipitation, melting snow and high groundwater levels. Such floods have impacted the Cetinje plain several times and have caused severe damage to the buildings there.

19. The First and Second National Communications on Climate Change for ***FYR Macedonia*** outlined a number of scenarios related to water resources. The findings included a projection of a 15% reduction in rainfall by 2050, with a drastic decrease in runoff in all river basins. Although the long-term projection is for increased temperatures and a decrease in sums of precipitation, the past period studied shows significant climate variability with increased precipitation. The proportion of winter precipitation received as rain instead of snow is increasing. Such shifts in the form and timing of precipitation and runoff are of concern to flood risk.

Flood risk and underlying vulnerability in the individual Drin Basin countries

20. Flood risk in riparian countries of the Drin Basin have been an important disaster factor since 2010, as can be seen in Table 1, 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.

Date	Affected areas, municipalities	Extent of Damage
Albania		
Jan-10	Shkodra, Ledhe and Durries	10,000 hectares flooded, over 5,000 people evacuated, 2,200 homes damaged
Nov-Dec 10	Drini and Mati River Deltas, Ulza and Shkopeti reservoirs	15,000 people evacuated, 6,000 km^2 land flooded, 4,800 houses flooded
Nov-14	Tirana, Lezhe, Shkoder and Fier	11,000 people evacuated, 3 people dead, 7500 houses damages
Feb-15	Vlora and Fier, Berat, Elbasan and Gjirokaster Rivers Vjosa, Devoll, Osu, Seman	42,000 people affected
Nov-15	Kukës, Dibër, Durrës, Shkodër, the southern county of Gjirokastër, and around the capital in Tirana district, in central Albania	1 death, 30,000 were left without power, and many without drinking water including residents in the Tirana area.
Jan-16	Tirana, Dibër, Durrës, Shkodër and Lezhë	700 people evacuated, roads blocked after several minor landfalls; homes evacuated because of landslides
Oct-16	Laç, Kurbin municipality Lezhë County and Mirditë, also in Lezhë County; Dibër, Tirana and Korçë	1 death has been reported in the north west town of Laç, Kurbin municipality, Lezhë County. 100 homes looded. At least six families displaced as a result. Crops and livestock damaged.
Nov-16	Dibër county, Durres county, Lezhë county, Kukës county	3 deaths, 80 families evacuated from their homes in Tirana county; Several roads have been closed, including the Tirana-Durres highway, landslides blocked roads, a bridge collapsed near Ujmisht village.
Dec-17	Marikaj and Laknas in Tirana County, Fushë-Krujë in Durrës County and also in Bardhaj, Shkodër County	and schools closed. Over 70,000 homes left without electricity. 5,000 households have suffered flood damage, 600 families forced to evacuate. Over 100 road sections and dozens of bridges damaged, along with infrastructure such as power and water supply stations. Approx. 15,000 hectares was under water. Emergency services have evacuated 200 people after they were trapped inside a flooded shopping centre in Kashar, Tirana County.
Mar-18	Shkodër, Diber, Kukes, Durrës and Elbasan Counties	2,285 hectares of land were under water, 800 inhabitants isolated, Landslides, blocked roads
Former Yugoslav Republic of Macedonia		
Feb-13	River Kojnarka Kumanovo, Stip, Sveti Nikole, Strumica, Valandovo, Ohrid, Probstip, and Kocani	Approximately 6,000 people affected
Jan-Feb-15	Eastern region: River Crna - Region of Bitola Municipalities of Moglia, Novaci and Bitola	Over 100,000 people affected
Feb-15	Southern and central parts of the country	100,000 people affected, Agricultural land, electrical infrastructure, roads, and a large number of homes have been severely affected
Mar-15	municipalities of Kavadarci, Prilep and Kumanovo	farm land
Aug-15	Polog Region of north-western Macedonia	6 deaths (including 3 childern) and 12 injured, Roads and buildings have been damaged, particularly in Shipkovica (damage to buildings due to landslides from the Šar Mountain) and Golema Rechica, lost road access because of mudslides, while the storm had also cause a bridge collapse and the overnight closure of the road to neighboring Kosovo, hundreds of homes and key infrastructure suffered severe damage. Mudslides engulfed local roads and cut off a number of mountain villages.
Aug-16	City of Skopje and suburbs	22 dead and state of emergency declared;major damage to buildings and the road network, including parts of the city's ring road; cars swept away by flood water for hundreds of metres; 70 vehicles had been trapped by flooding in the Stajkovci area; major damage property, including some homes which have been destroyed
Montenegro		
Dec-10	Whole of Montenegro to various extents Rivers Lim, Tara, Moraca, Drina tributaries and Bojana; Lakes Skadar, Piva and Niksic area	21 municiplaities affected, 1.49% of GDP equalling 43 Million Euros in losses
Aug-14		Flooding and torrential rain has also caused landslide in Montenegro. Many towns along the Adriatic coast
Nov-16	Municiplaities of Berane, Rožaje and Petnjica	400 people evacuated from their homes

Table 1: Recorded flood events in the Riparian countries of the Drin Basin since 2010

21. According to DEsinventar Disaster database, floods and flashfloods in ***Albania*** account for 15% of deaths and 25% of damage and destruction of houses from disasters in Albania. The years with highest

recorded incidents of hydro-meteorological disaster are 1995, 1996, 2003, 2004, 2005, 2006, 2007, 2010, 2012, 2013 and 2014. In Albania, flooding affects 130 000 hectares of land and is generally pluvial in origin, occurring in the period of November – March, when the country receives about 80-85 % of annual precipitation. The largest floods have occurred in the low western area of the country but small rivers and the torrents cause flash flooding and causes high economic damages. As the urban development of the floodplain increased, the damage caused by flooding also increased. Following the devastating floods of 1962-63, flood defenses were built to the 1% return period in some rivers, but such standards of protection are decreasing due to climate change. In January and December 2010, floods caused major damage and disruption over a wide area. The flooding of January 2010 in the district of Shkodra was at the time considered the biggest emergency event which inundated 10,400 ha of land and about 2500 houses and 4800 people were evacuated. As a result of increasing rainfall, the Drin river flow rapidly increased the water level in three hydropower reservoirs, which were forced to release water, increasing discharge to 2450 cubic meters per second into the Buna River which has a maximum capacity of only 1700 cubic meters per second. The Albanian government declared the flood a "natural disaster" and deployed the army and police forces to help evacuate people.

22. The socio-economic vulnerability to climate change in Albania is centered on 4 sectors: agriculture, water, population and tourism. In the 2010 flood which is the largest on recent record, losses reached nearly 0.15 % of the GDP of the country. The average expected losses per year is estimated to be around 370 million of LeK (3.2 million USD), with a maximum of 4 billion LeK (35.2 million USD) arising from the Shkodra flood in 2010. Hydropower is the main source of electricity in Albania, with supply growing by 45.2% in 2015-2016, mainly due to an increase by about 43.4% of hydropower production, from construction and the operation of several small hydropower plants. The country is therefore heavily dependent on hydrological conditions. The Drin is the longest and largest river in Albania and the dams constructed along its way in the Albanian territory, produce hydropower contributing to around 90% of the total electric capacity in the country. Climate change and the increases in risk of both floods and droughts will impact the hydropower sector in Albania.

23. The Third National Communication (TNC) makes the following recommendations for enhanced management of climate-induced flood risk in Albania: maintain efficiency of water evacuation systems; deepen and manage Drin, Mat and Ishëm river flow so that their waters run to the sea; clean, deepen and maintain primary, secondary and tertiary collectors (canals) and draining systems; install and maintain hydrovores during the entire rainfall season; install high power and efficiency pumps for the evacuation of waters from particularly important structures; continuously monitor canals and pipes for the evacuation of communal and industrial waters; plant fast-growing trees to protect river embankments and to mitigate flood risk and soil degradation, and to contribute to climate change mitigation; increase professionalism and efficiency of rescue units (training of existing and new staff); strengthen the role of regional emergency and civil protection units.

24. Historic data on flooding in **Montenegro** shows that in the period 1979-1997 there were 5 major flooding events; but in the six years, 2004-2010, floods occurred 6 times (and twice in 2010-January and November - December). Floods are the most frequent natural hazard. Intensive precipitation and snow melting in the northern part of Moraca basin, combined with high tide in Buna/Bojana river due to the strong south wind and high discharge of Drin resulted in the increase of the water level in Shkoder/Skadar Lake (10.44 m a.s.l.) in December 2010. The December 2010 flood resulted in unprecedented water levels, extent of flooded areas and damages. Total country-wide damages and losses exceeded € 40 million (1.3% of GDP), impacting largely rural areas. Transport routes, electricity supply and communication lines between the northern region and the rest of the country were obstructed for a certain period of time and 1.5% of the population had to be evacuated. Flood damages in areas Golubovci and Tuzi to the north of Shkoder/Skadar Lake reached an amount of ~2.14 million euros (1.462.500 euros on construction objects and 682,800 euros in agricultural crops). An assessment undertaken by FAO of the 2010 floods, estimated that around 30 000 hectares of agricultural land was flooded. The most severely affected was the area around the Zeta river valley and the area around Lake Skadar, specifically the territory of Golubovci, where most of the national vegetable production occurs. Total damages and losses were estimated at over € 13 million, of which over € 6 million in damages and over € 7 million in losses.

25. Given the geo-morphological characteristics of the territory of Montenegro, floods could jeopardize settlements, agricultural areas, forests and other land and transport routes in river plains and valleys.

Vulnerability to flooding in Montenegro is due to the location of many towns and settlements on large river banks which makes them potentially more vulnerable to the overflow of water from watercourses. Around Skadar Lake and the Bojana River, as well as on the Cetinje and Nikšić plains the large areas of agricultural land, assets and urban zones are susceptible to flooding from all sources, including groundwater. Over 60% of Montenegro's territory is comprised of carbonate rock. One of the problems facing karst terrains in Montenegro is frequent flooding in karst fields and in the plains of the Zeta Valley, the area surrounding Skadar Lake, and along the courses of the Bojana and Lim Rivers. Extreme floods were registered in late 2010 in the Zeta Valley and along the course of the Bojana River, with maximum levels in Skadar Lake of 10.44m. The floods were exacerbated by reservoirs in Albania (Vaus Deis, Kumana, Fierza), that released approximately 3,000 m^3/s of water into the Bojana River which has a capacity of around 1,700 m^3/s, while the overall flow from the Skadar Lake Basin was around 7,000 m^3/s.

26. Since 2002 storms and flash floods have become more frequent in ***The Former Yugoslav Republic of Macedonia*** and are causing considerable damage. The severe flooding that hit much of the country in January and February 2015 caused widespread damage and economic losses in 44 municipalities. Frequent floods occur in the Ohrid coastal zone (Crn Drim basin) that, because of the importance of the region from ecological and tourism points of view, is considered significant. For managing the water level fluctuation and controlling the flooding of coastal area, a regulating gate has been established at the Crn Drim river outflow in Struga.

27. The two National Communications proposed the following priority measures for adaptation to climate change in the water resources sector and flood risk management: modernization of the hydro-meteorological network; improvement of data availability and the establishment of data monitoring and processing; rehabilitation and reconstruction of existing hydropower and water management structures and systems; development and implementation of effective water management plan; implementation of priority measures related to water supply and irrigation systems, flood and drought control, as well as protection strategies for controlling erosion and sedimentation; restriction of urban development in flood-risk zones; measures aimed at maintaining dam safety, afforestation and other structural and non-structural measures to avoid mudflows; construction of dikes; adjusting operation of reservoirs and lakes (e.g. multiple use of reservoirs to include flood alleviation); land use management; implementation of retention areas; improve drainage; structural measures such as temporary dams, building resilient housing and modifying transport infrastructure; migration of people away from high-risk areas.

28. The Third National Communication highlights the need for the country to continue accumulating experience to cope with droughts and floods and make best use of existing technologies in water supply and irrigation used in the country. To coordinate these measures more effectively, the report recommends steps be taken to enhance the role of the National Climate Change Committee. The TNC also emphasizes the need for transboundary cooperation to increase the resilience of water resources shared with other countries. Such cooperation will further create opportunities for sharing knowledge and experience and will allow for the exploration of more cost-effective measures. Legislative, regulatory and economic measures can all benefit from a joint transboundary approach.

Indicative flood hazard of the Drin Basin

29. As part of the project preparation, very crude 2D flood hydraulic modelling has been undertaken for the Drin basin using the ALOS Dem for the basin and routing floods of different sizes through the basin sub-catchments. The maps below show the indicative flood map for the 2,500, 3,000 and 7,000 cumecs floods routed through the basin. The indicative maps show that there is extensive flooding on the White Drin in Kosovo*, extensive flooding in the Struga area around Lake Ohrid in Macedonia, and high risk areas all along the valley of the black Drin affecting several settlements in the relatively narrow floodplains there. In the downstream part of the basin, in the Lake Skadar area, there is extensive flooding, which affects the concentration of settlements there, in both Albania and Montenegro. The difference in depth of flooding in the middle and upper parts of the basin is 2- 6m between the 3,000 and 7,000 cumecs floods while in the downstream the extent of flooding (hence numbers affected) is significantly different between flood events, and the difference in flood depths at any given location could vary by up to 4m. These indicative maps do not include other sources of flooding such as groundwater, torrential, pluvial and coastal flooding which will also need to be taken into account in flood hazard and risk modelling and mapping during implementation. It has not been possible to calculate the numbers or people affected by floods of different sizes, as the

population data for settlements is missing. This and other receptor information will need to be addressed by the project.

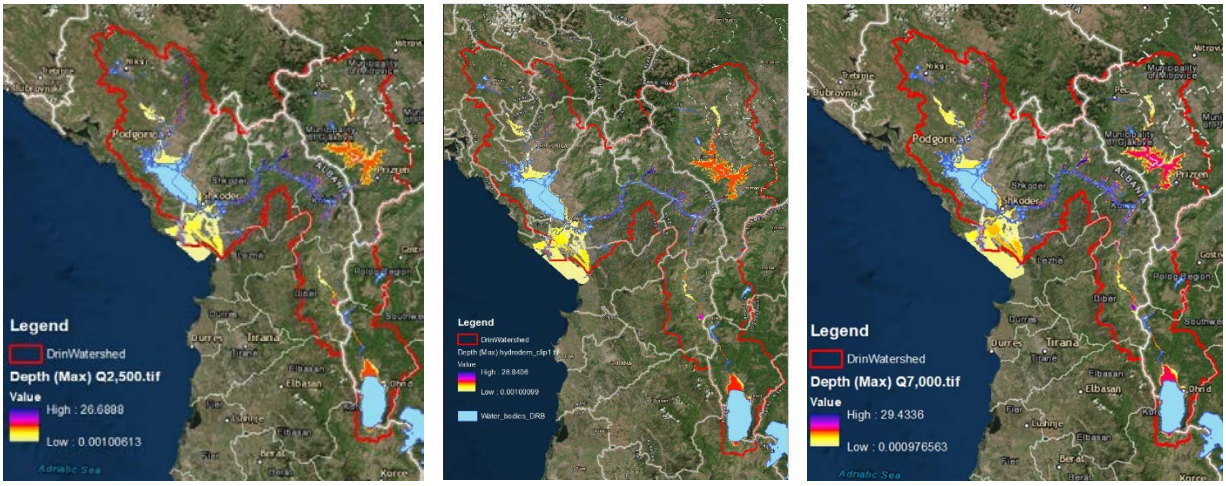


Figure 2: Indicative flood map of the Drin for 3000 cumecs maximum discharge

30. In addition, the GIZ project has produced Preliminary flood Risk maps for the basin which is largely based on areas that have experienced flooding in the past. It does not include climate change, or any other possible futures.

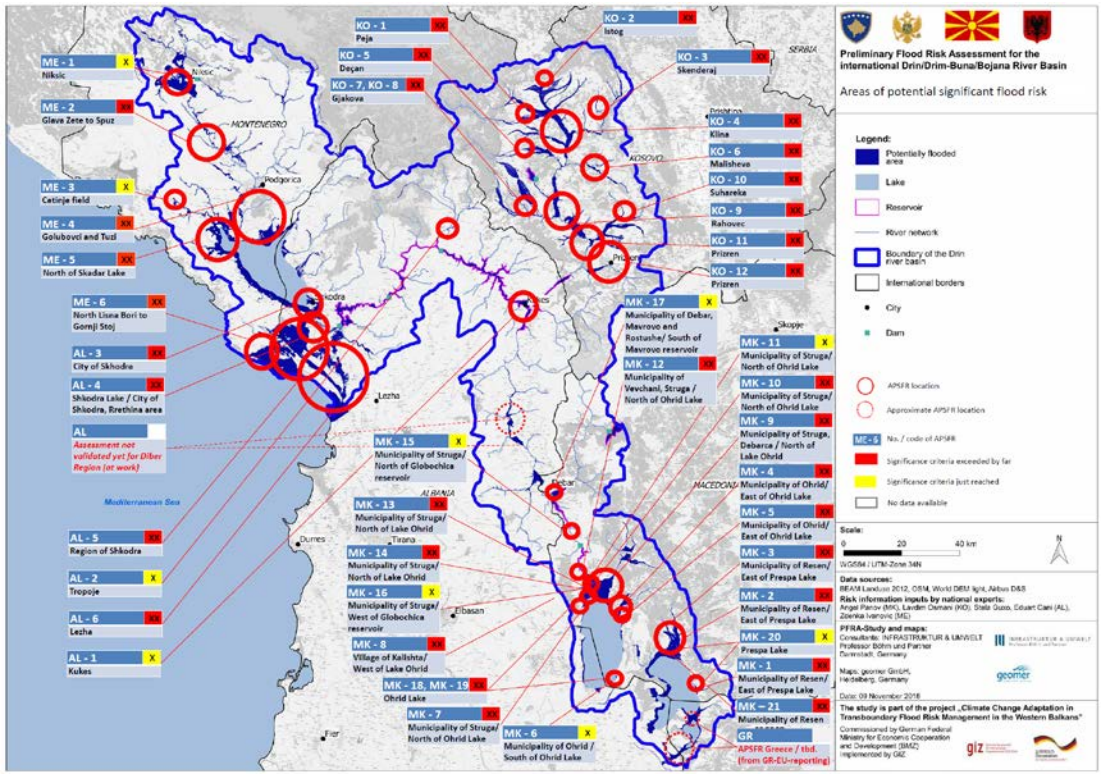


Figure 3: PFRA map of Drin Basin – showing areas of potential significant flood risk

Non-climate drivers of vulnerability

31. The impacts of climate-induced flooding are exacerbated by the anthropogenic pressures including rapid urbanization and unplanned development in the floodplain; deforestation; poor solid waste management; unsustainable use of land and water resources; intensive agriculture, forestry and mining activities; unsustainable tourism. Diverse and often conflicting uses and unsustainable management

approaches applied in the Drin Basin exert severe pressures on the Basin's ecosystems leading to their degradation. Some of these key pressures are: solid waste & marine litter; wastewater; unsustainable use of water resources; hydro-morphological interventions including the construction of dams; extraction of minerals/mining; intensive agriculture and forestry; uncontrolled and often illegal fishing and hunting; erratic land use and urban development; unsustainable tourism; increasing climate variability. These pressures lead to a wide range of impacts such as: deforestation, pollution of surface and ground waters, accelerated soil erosion; salinization and salt water intrusion; loss of valuable ecosystems and biodiversity; greater exposure to floods; increasing health risks, and increased flood risk. These non-climate factors are being analyzed and addressed in the sub-region through a regional GEF supported project "Enabling Transboundary Cooperation and Integrated Water Resources Management in the Extended Drin River Basin" (GEF Drin Project) implemented by UNDP that supports the implementation of the Drin MoU for the coordinated management of the Drin Basin. However, the GEF-supported project and the on-going baseline sub-regional initiatives cannot comprehensively address climate change adaptation needs of the riparian countries and establish a comprehensive basin level climate risk and flood risk management, which needs to include: (1) exchange of flood risk knowledge and climate information; (2) basin level climate change adaptation and flood risk management strategy and plans; (3) combination of structural and non-structural flood risk reduction interventions; (4) institutional capacity.

32. Some of the key drivers are discussed in more detail below.

Erosion and Sedimentation

33. Erosion is an important and complicated issue in the Drin River Basin, which contributes significantly to increased flood risk. Among the causes of erosion and sedimentation are over-grazing, logging, forest fires, unsustainable agricultural practices including inappropriate irrigation methods and agriculture in steep slopes, changes in flow regimes (e.g. due to dams, see below) and gravel extraction along the rivers and their tributaries. Soil erosion is resulting in significant sediment loads transported into the lake of the Hydro-Power Stations of the Drin which could reduce their storage capacities. Increased sediment loads entering both Lakes Micro and Macro Prespa, has resulted from deforestation and overgrazing in both Albania and The Former Yugoslav Republic of Macedonia, and unsustainable agricultural practices in The Former Yugoslav Republic of Macedonia.

34. The main problem in terms of excessive sediment loads entering the Lake Ohrid lies mostly with the diversion of the Sateska River to the Lake in The Former Yugoslav Republic of Macedonia, deforestation in the watershed of Sateska, which has resulted in erosion of the riverbed, and illegal extraction of sand and gravel from the riverbed which has changed flow regimes and caused the increase of sediment loads entering the Lake. Overall, the load of silt entering the Lake Ohrid is large. A delta including a small island has been formed into the lake at the river mouth. Increased sediment loads into the Black Drin River in The Former Yugoslav Republic of Macedonia, is a result of uncontrolled grazing and logging. Illegal gravel extraction from rivers in the Black Drin catchment lead to disturbance of the sediment and the habitats and has an effect on the river flow patterns causing erosion of the adjacent land. The changes of the shape of the river channel undermine infrastructure, bridges and roads, and productive land.

35. In parts of the Buna/Bojana Delta the progression of the sea along some parts of the coast at the Buna/Bojana mouth has been about 500 m since 1936 and about 50 m the past 20 years. The morphology of the Buna/Bojana deltaic complex is believed to be affected by a combination of factors. Alteration of the water flow regime in the Drin–Shkoder/Skadar–Buna/Bojana system due to the construction of the cascade of dams on Drin, entrapment of sediment in the upper part of the watershed by the dams, reduction of the sediment transport capacity of the Drin in combination with the natural low gradient of the channel of Buna/Bojana River resulting in the deposition of alluvium (coming from erosion in the tributaries of Buna/Bojana and Drin) preventing this from reaching the Buna/Bojana mouth at the Adriatic Sea. The sediment deposition in Buna/Bojana River causes reduction of the speed of water and hence deposition of sediment, variability of the wave activity and sea level in combination with short-term events (storm waves and tides) and long-term processes (sea transgressions).

Unsustainable forestry management and deforestation

36. Illegal and indiscriminate lodging for commercial purposes, extensive collection of firewood, uncontrolled grazing coupled with poor forest management, has resulted in the deterioration of forests in most parts of the Drin Basin including the Ohrid sub-basin.

37. In Prespa it is estimated that 50% of the forests are significantly degraded and in some cases the natural regeneration capacity of the forest has been lost. The declining trend of livestock is a positive development with regard to pressures related to grazing. The sub-sequent erosion has been a contributing factor for the destruction of the wetlands in Micro Prespa Lake. Nowadays, the remaining high forest habitats and undisturbed grassland in the Prespa National Park are very limited. Important habitats of several animal species (e.g. Lynx lynx, Rupicapra rupicapra) have been fragmented and degraded.

38. In Lake Ohrid sub-basin habitat fragmentation and loss constitute a threat to mammals, some of which are either threatened with extinction or are classified as vulnerable.

39. In the Black Drin, damages are more severe in the Lura National Park and Luzni-Bullaci Reserve. Habitat fragmentation and loss is an issue across the drainage basin. The Diber, Kukes, Puke and Malesia e Madhe Regions in the Drin watershed host the largest areas of forest in Albania and they play a critical role in flow regulation and prevention of erosion. In addition, poor management practices (e.g. intensive timber production and firewood, over-harvesting of rare medicinal plants, with only limited attention to ecosystem management) have led to direct impacts on biodiversity depending in woodland habitats and increased erosion.

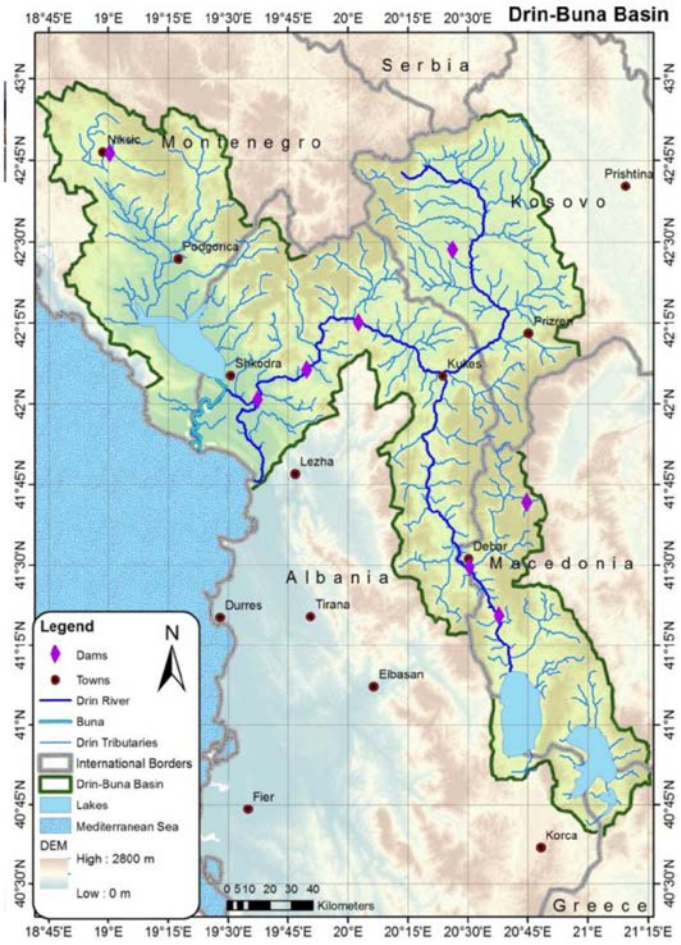
40. In the Lake Shkoder/Skadar Basin on the Montenegrin side, in addition to indiscriminate logging, frequent seasonal fires contribute to deforestation.

41. Alterations in land use also affect directly forests. For instance in Buna/Bojana the natural forests along the seashore are threatened or already damaged by constructions. In The Former Yugoslav Republic of Macedonia forests have been managed more successfully; although still focused on resource production, timber and firewood. Ecosystem values and watershed management considerations are not incorporated as major management objectives. There are on-going efforts to alter this approach e.g. in the Galicica Park in the Prespa sub-basin. In Ohrid and the Black Drin cutting is regulated and reforestation is practiced; there has been some concern with regard to the species used in this regard. Reforestation has significantly reduced erosion; nevertheless, there are still areas that require attention, especially in the Sateska watershed.

Dams on the Drin

42. There are more than 110 irrigation reservoirs in Drin River Basin. There are five big operational hydropower plants on Drin River: Globocica and Shpilje with a total installed capacity of 126 MW, Hydropower Plant (HPP) “Fierza” HPP “Koman” and HPP “Vau i Dejës” with a total in-stalled capacity of 1350 MW. Furthermore, a concessionary contract has been concluded for “Ashta” hydropower plant on Drin river with an installed capacity of 48.2 MW. There are currently 22 small Hydro-power Plants (SHPPs) in operation. The dams have changed the hydrological, hydraulic and sediment regime of the river considerably.

43. Due to the retained volume of the dams the overall hydrological regime changed for low flow and small flood events (1-10 years). Small flood events are particularly important to maintain the dynamic braided river zones and its specifically adapted flora and fauna. There is no evidence that the dams change extreme flood events, however the magnitude of impact can be more dangerous further downstream after releasing large flood waves. Due to the retention volume it is estimated that floods of about 5,000 m³/s can be reduced to about 2,000 m³/s downstream of the last dam (if the dams are not filled with water). The sediment regime is also considerably impacted by the presence of the dams due to the retention of coarse substrate, mostly gravel and bedload in the reservoirs although there is no data on this effect. Typically, dams on gravel reaches can show decrease of bedload transport after construction of dams of up to 90% with only suspended load being transported during flood through the dams. This results in significantly reduced coarse sediment transport and limits the erosion forces of the channels, which is further exacerbated by missing small flood events (1-10 years). This lack of sediment in the Bojana-Buna delta over time is increasing coastal erosion and salt water intrusion.



44. The Hydropower dams in the Drin basin and their reservoirs are of great importance to the economy of the riparian countries. They are the main sources of electricity in Albania and contribute to electricity production in the Former Yugoslav Republic of Macedonia. Albania's internal electricity generation capacity of about 2,100 megawatt (MW) is entirely dependent on hydropower. There are three power plants in the Drin River cascade: Fierza, Komani and Vau Dejes with total installed capacity 1,350 MW, generating about 70 percent of total supply. In an average hydrological year, the Drin Cascade generates about 4 billion kilowatt hours of hydroelectricity. The Drin Cascade, plays an important role in Albania's objectives to increase regional power connectivity, decrease future dependence on thermal power supply and create a Regional Power Market in South Eastern Europe. Hence, extension of the operating life of the three HPPs along the Drin cascade is not only a safety concern, but also a potential revenue management source for the Government in the future[13]. In the Former Yugoslav Republic of Macedonia the two dams on the Black Drin River represents 20% of the total installed hydropower capacity (accounts for 16% of the overall energy production). A considerable number of small HP plants in the Black Drin watershed in The Former Yugoslav Republic of Macedonia, are either planned or are in the "pipeline", one of which involves the diversion of a part of the flow of Radika River to the Vardar River (that flows in the Aegean Sea). This has raised concerns on the Albanian side.

45. Hydropower production is also linked to oscillations of the water level in the lakes Ohrid and Shkoder/Skadar, that impacts their ecological, economic and cultural/recreational value. Variations in the water level in Lake Ohrid is linked with the operation of the Spilje and Globocica dams and the associated HP production stations downstream in The Former Yugoslav Republic of Macedonia, and with extreme precipitation incidents. Hence, floods in the Ohrid Lake sub-basin are closely associated with Lake Ohrid oscillations. Permanent decrease or significant oscillations in the water level may lead to the shift of littoral

[13] Additional Financing to Energy Community of South East Europe APL Program APL 5 for Albania Dam Safety http://documents.worldbank.org/curated/en/426051527478225166/pdf/Albania-Dam-Safety-PP-05082018.pdf

zone habitats and/or deterioration or even elimination of the wetlands hence, deterioration of biodiversity. Commercial fishing will also be negatively affected since these habitats provide the spawning grounds for four commercial species, including the endemic Ohrid trout (Salmo letnica) – currently under protection in The Former Yugoslav Republic of Macedonia - and the smaller size Belvica species (Salmo ohridana). A lack of close coordination between Albania and The Former Yugoslav Republic of Macedonia with regard to the management of the outflow from the dams in both countries is an additional factor which has contributed to flood risk in the past.

46. During 2010, the reduction of the flow of water from Ohrid to Black Drin in The Former Yugoslav Republic of Macedonia was used as a measure to mitigate floods in the northern part of Albania -in the Shkoder/Skadar Lake sub-basin- which led to increased water level in the Lake Ohrid which in turn negatively affected the sewage system and natural environment. Furthermore groundwater flooding was observed in settlements near the Ohrid Lake and Black Drin River. Changes in the flow regime both upstream and downstream of the dams affects the habitats in the Black Drin River and changes in the erosion patterns in the river bed and banks. Deforestation in the Jablanica Mountain in FYR of Macedonia is also increasing flows and exacerbating flooding downstream. Some floods that have been observed in Albania on the border with The Former Yugoslav Republic of Macedonia are attributed to the increase of the discharge from the last dam in The Former Yugoslav Republic of Macedonia.

47. The outflow of the Lake Shkoder/Skadar through Buna/Bojana River is occasionally impeded due to increased flow of the Drin River, caused by water releases from the HPP reservoirs upstream. Depending on the releases from the upstream HPP (Vau Dejes), which depends on both precipitation and electricity demand. Changes in oscillation of the water level of Lake Shkoder/Skadar exert pressures on the ecosystems and the microclimate as well as on the agriculture around the lake.

48. Climate change and variability leading to the increase of the frequency of extreme precipitation events, as well as the operation of the Drin dams under changing climatic conditions, need to be taken into consideration when examining the changes in the flooding regime of the Drin Bain, and its important lakes, in order to understand and mitigate risks to flooding, biodiversity, habitat, economic damages and cultural/amenity impacts on the natural lakes.

49. Dams, by their very nature, create risks, which may increase substantially under climate change. Poor maintenance could lead to reservoir sedimentation which would reduce flood storage and change channel morphology and can thus exacerbate flooding. Poor maintenance or catastrophic hydrometeorological events could ultimately lead to catastrophic failure or breaching of dams, and this risk will increase with climate change.

50. If properly operated and managed within a climate risk informed basin-wide flood risk management framework, the reservoirs and dams of the Drin basin could be used for seasonal and long-term regulation of river flow and can have a positive effect on managing river flooding. The Hydropower sector will therefore be an important stakeholder as well as beneficiary of the climate risk information and basin level climate risk management that the project will implement. The operation of hydropower dams and reservoirs within the basin will be included in the flood risk assessment, modelling and mapping. Based on climate risk information, the project will assess the current and long-term ability to operate dams in a flood alleviation role. This will require the involvement of dam owners and operators in the development and eventual implementation of the overall flood management plan for DRB, and the development of individual operating rules for each dam during floods, which enhances the dam safety requirements, and which also fits into the DRB basin flood management plan. This will therefore involve optimization of the dam operations for multiple uses including power generation, flood alleviation and dam safety. At the very least, it should be ensured that dams are operated in a manner which avoids exacerbation of the flood risk, and which takes account of the increasing risks they pose due to climate change.

51. The engagement of the dam owners and operators will be sought actively at the project preparation phase and then later during the project with the aim to have them closely and extensively engaged in all activities to which they can contribute. A stakeholder analysis will lead to the development of a stakeholder engagement and communication plan during the project implementation. The engagement and communications plan will highlight to the hydropower companies the potential benefits from their participation in the activities towards enhanced flood risk management supported under the project e.g.

optimization of dams' operation taking into consideration climate change as well as the operation of cascade of dams in neighboring Riparians. As the hydropower companies are among the most important stakeholders, the project will strive to include them in the consultations and discussions with national authorities towards the empowerment of the institutional arrangement through the Expert Working Group on Floods which has been established in the framework of the Drin Core Group, for effective flood risk management. In addition, in developing risk financing mechanisms the project will seek to engage the private sector including the hydropower sector and will conduct willingness-to-pay surveys and detailed consultation, to better understand how the hydropower (and other sectors) can contribute to and benefit from, comprehensive basin FRM.

Existing legislative and institutional framework and technical capacities for flood risk management in Drin Riparian countries

52. A recent review[14] of the institutional and legal framework for water management in the DRB found that national legislation is not fully aligned with the EU Acquis; there is high fragmentation of competencies, overlapping/conflicting responsibilities of institutions; no basin management plans addressing climate risks; limited monitoring; non-reliable, non-harmonized and limited sharing of data among institutions within and between countries; no basin water cadaster; water management investment was not supported by robust analysis, no investment plans and no comprehensive financial risk transfer mechanisms. The report recommends: (i) alignment of the national legislation with the EU Acquis, especially EUFD; (ii) clear assignment of responsibilities among institutions; (iii) strengthened mandates of local government; (iv) drafting and implementing river basin management plans (RBMPs) and flood management plans based on flood risk maps; and (v) cooperation among DRB countries on FRM preventing and responding to floods through co-development of flood management plans based on comprehensive flood risk maps.

53. There is currently no formal basin level flood risk management in place for the Drin basin but the current practices in each Riparian country which constitute the baseline for FRM for the Drin Basin has been elaborated. In addition, there are bilateral agreements between Riparians which include cooperation on water management, as well as informal arrangements, which are described below.

Albania

54. Water Management falls under the responsibility of the National Water Council, chaired by the Prime Minister, as the highest authority for water policy-making. In its effort to ensure a comprehensive cross sectorial water resources management the Government established in January 2018 the Agency for Water Resources Management with central and local presence. The councils for basin management are turned into offices for basins management.

55. ***National Hydrometeorological Service*** in Albania was set up in 1949 with a limited number of the stations mainly comprising water level monitoring of the country's main rivers. The network was gradually expanded over time and in 1962, the Hydrometeorological Service became the Hydrometeorological Institute and in 1972 it became part of the Academy of Sciences of Albania. By the 1990's the Institute had more than 90 staff including more than 20 technicians dealing with this activity and observation data processing. After 1990 the NHMS was seriously damaged and the number of the stations was reduced. In 2008, within the framework of the reform of science merges and reduction in the number of the research institutions occurred and the former Hydrometeorological Institute now Institute of Geoscience, Energy, Water and Environment is placed under the Polytechnic University of Tirana and IGEWE was significantly reduced in all aspects. Currently it has 12 personnel and no technical staff (for maintenance, monitoring and data processing). The last hydrological yearbook dates in 1987. The number of existing hydrological stations located in the Drin Basin (River Drin and tributaries) in Albania is about 52. Nine of them are located in the Buna catchment. A former World Bank project supported digitization of 10-year meteorological and 20-year of hydrological observations (paper) data the identified missing data sets are being digitalized by the EU supported project. Currently there are 76 meteorological and precipitation stations existing in the

[14] Flood Prevention and Management – Gap analyses and needs assessment in the context of implementing the EU Floods Directive", September 2015, funded by the Wester Balkans Facility Infrastructure Project, Technical Assistance 4 (IPF 4)

Drin Basin. IGEWE produces a general forecast for 24 hours, and a 3-, 5- and 10-day outlook. IGEWE`s operational forecasting is based on use of printed analysis and forecast products from international forecasting centers and from the Montenegrin National Meteorological and Hydrological Service (NMHS). KESH[15] have set up its own monitoring network, which is not accessed by the NHMS.

56. ***Disaster Risk Management and EWS*** in Albania was supported by the EU ProNews project, implemented until the end of 2017, which has been working with the Ministry of Defence, Directorate for Civil Protection (CP) and Prefectures. Prefectures are responsible for civil protection at local level and responsible for Emergency Planning. ProNews project financed the improvements in the EWS for flood prevention. Under Component 1 - Emergency Planning and Improvement of civil protection and EWS FRM legal frameworks – the project worked at local and national levels, unified all emergency plans taking into account national and international legislation. Under Component 2 the project developed flood hazard maps for areas potentially susceptible to flood risk, based on the flood susceptibility index. The work didn't include modelling or climate change. The hotspots for future hazard mapping were identified. Under Component 3 the hydrometric stations were installed, and data management systems for EWS were established. Forecasts are based on EFAS[16], ECMWF[17], WMO[18] partners. Digitization of historical data was also undertaken. World Bank project (2011-13) upgraded the hydrometric network and data management, installing 40 stations across Albania. Stations have not been maintained since installation. WMO with IGEWE conducted assessments of all stations and identified needs for civil works, additional sensors, etc. The 40 stations are owned by CP (not IGEWE) although CP has no legal mandate to own the stations. IGEWE uses the data but do not have capacities to maintain them and cannot legally do maintenance.

57. The first ***EWS and forecasting*** platform was created for Albania in 2010. It included radar for now casting and established a database for historical losses and damages (in 2013 DesInventar was implemented and is maintained by CP). Awareness raising programmes for cities (Shkodra, Tirana and Vlora) have been established and FLOODIS[19] App for EW developed, which allows users to send pictures and reports of flooding to CP which can be used with Google Earth layers and in EWS platform. Legal improvements of CP law were completed in March 2018 and are currently under consultation. A National law on EWS is being developed.

58. The former Technical Water Secretariat now the Agency for Water Resources Management has developed a costed national action plan for water management which includes the following goals relevant to flood risk management:

a. Goal 11 - Reducing the risk of flooding for the loss of life threatening residents, damage to economic assets, public works, cultural assets and environmental values of people, businesses and communities
b. Goal 12 – Dam rehabilitation and maintenance in accordance with technical requirements, according to International Commission on Large Dams (ICOLD)'s recommendations aiming at increasing safety and reducing the possible effects caused by their injury.

59. The ***Flood Risk Management Plan*** for Shkodra region 2012-2018[20] aims at improving Flood Risk Management (FRM) focusing on non-infrastructure measures, such as warning systems, preparedness and spatial planning. This includes consideration of all types of measures for preparation, disaster management

[15] The Albanian Power Corporation (Albanian: Korporata Elektroenergjitike Shqiptare - KESH) is the largest electricity producing company in Albania. KESH operates the most important electricity generating plants in the country. They include: The Drin River Cascade hydropower plants (Fierza HPP, Komani HPP and Vau i Dejës HPP), with an installed power capacity of 1,350 MW, and the Vlora TPP, with an installed power capacity of 98 MW. The cascade, built on the Drin River, is the largest in the Balkan region by installed capacity, as well as by the size of the hydropower plants.
[16] European Flood Awareness System
[17] European Centre for Medium-range Weather Forecasts
[18] World Meteorological Organisation
[19] More detail is provided here: http://www.bedrin.eu/be-drin-blog/59-floodis-application-in-shkodra-the-be-drin-synergy-with-unesco
[20] Developed in the frame of the project "Climate Change Adaptation in Western Balkans" Implemented by GIZ

and recovery phases, as well as the development of a regional flood risk management framework that includes local flood risk management plans. The plan does not include climate change considerations.

60. ***Climate Change Adaptation:*** Recognizing that reducing Albania's vulnerabilities to climate change requires greater investments and greater integration of Climate Change Adaptation (CCA) and Disaster Risk Reduction (DRR) into on-going development programs, the Government took strides to start to coordinate climate adaptation efforts at the national level. The Council of Ministers decision no. 155 (2014) called for the establishment of an Inter-Ministerial Working Group on Climate Change (IMWGCC). This body led the finalization of the Third National Communication to the UNFCCC. This body is chaired by the Deputy Minister of Environment and includes representations from all line ministries. This body has the mandate to draft policies related to climate change, promote institutional coordination across ministries, and contribute to UNFCCC processes on behalf of Albania. The role of the IMWGCC was further reinforced through the official launch of the National Adaptation Process in 2015. In its effort to ensure a comprehensive cross sectorial water resources management the Government established in January 2018 the Agency for Integrated Water Resources Management with central and local presence.

Montenegro

61. In Montenegro the Ministry of Agriculture and Rural Development (MARD) and its Directorate for Water Management is in charge of operations related to water management policy, water supply and exploitation, protection of water against pollution, planning of water and water courses and protection from the flood effects. The Ministry is responsible for transposition, implementation and enforcement of all water-related EU Directives in the country. The Water Administration is a body with executive powers under the MARD, responsible for the implementation of water legislation. There is also a Water Council, which has an advisory role to the MARD. Other institutions devolved with responsibilities in the water sector in the country include: Ministry of Sustainable Development and Tourism; Agency for Nature Protection and Environment; Ministry of Health; Ministry of Interior; Ministry of Economy; etc.

62. Protection from water related hazards and disasters in Montenegro is the responsibility of the Ministry of Agriculture and Rural Development (Directorate for Water Management) and Water Administration in cooperation with the Directorate for Emergency Situations of the Ministry of Interior, the Institute of Hydrometeorology and Seismology, the Agency for Nature and Environmental Protection, municipalities and other legal entities entrusted with, or in charge of maintaining the facilities for protection against water related disasters. Reports on the hydrological situation, warnings and forecasts produced by the Institute of Hydrometeorology and Seismology are communicated to the Head of Department for protection from water related hazards.

63. The ***legislative and policy framework*** for flood risk management is comprised of a number of sectoral laws, policies and strategies including the following:

(i) *The Law on water*, which requires the Directorate for Water Management and the Ministry of Agriculture and Rural Development, to develop an annual operational plan for the protection against water related hazards, which includes preventive works and measures in the period of high waters for protection from floods and erosion; method of institutional organization of protection; duties and responsibilities of the manager for protection; method for monitoring and recording data; method for early warning.

(ii) The laws on "Hydro meteorological services" and on "hydrographic services" define the tasks of the Institute for Hydrometeorology and Seismology of Montenegro of Montenegro (IHMS).

(iii) *The Law on protection and rescue* establishes the legal framework for the development and strengthening of national capacities to combat the harmful effects of natural and other disasters, the role of regional and international cooperation with regard to prevention and mitigation activities, and the rights and obligations of municipalities in the area of protection and rescue. It also includes the collection and consolidation of data on potential risk, the establishment of information and early warning systems and the implementation of preventative activities, such as risk assessments as well as the development of protection and rescue plans.

(iv) The Water Management Strategy for the period 2016-2035, which emphasizes the importance of risk assessment as part of the management of flood risks and flood control measures and the need to include climate change and its impacts on water flows, surface and groundwater that contribute

to flood risk. It includes various goals to reduce the risks of floods and its adverse impacts including effective and coordinated action for flood protection, efficient and continuous monitoring and forecasting of floods, regular maintenance and control of watercourses, drainage, anti-erosion protection and soil conservation.

(v) *The Strategy for Disaster Risk Reduction (DRR) with Action Plan for the period 2018-2023* is aimed at reducing the disaster risks and their main causal factors, proper land management and environmental protection, lowering exposure to hazards as well as vulnerability of people and property and improving overall preparedness for disasters.

64. Montenegro recently signed a bilateral agreement with Albania - *Framework Agreement between the Council of Ministers of the Republic of Albania and the Government of Montenegro on cooperation in the field of Transboundary Water Management*, to develop direct and long-term cooperation in the field of water management. The agreement relates to waters of common interest, interventions in facilitating the management of water facilities (of which the hydroelectric power plant and plans for the management of the Skadar Lake, the rivers Drim, Bojana and Morača rivers are of particular importance), activities and events that have or can, from the water management point of view, have an impact on water, water facilities and water use devices, in particular: 1) water balance; 2) protection against water related hazards and disasters; 3) water treatment and maintenance; 4) protection of transboundary waters against pollution; 5) use and management of common water facilities; 6) use of all waters of common interest (of which the waters of Skadar Lake, the rivers Drim, Bojana, Moraca, Grncar and Cijevne are of particular importance); 7) research into the impact of interventions on water management activities on the environment; 8) exchange of opinions, information, consultation and exchange of experiences and cooperation at regional and other levels of organization and networking in the area of water.

65. The Institute of Hydrometeorology and Seismology ***(IHMS)*** in Montenegro is under the Ministry of Sustainable Development and Tourism. It consists of six different sectors which are subdivided into departments. The IHMS has clearly defined organizational structures and responsibilities. About 12 hydrological stations are located in the Drin Basin in Montenegro. The main parameters measured are water level and water discharge, in some of them water temperature as well. Analysis of water quality is done according to the Water Law by IHMS / Sector for Analysis of water and air quality. Analyses are done every year on all water bodies in Montenegro (rivers, lakes and sea), following the Annual programme prepared by Water Administration. Altogether nine stations are actually in operation, all of them are online stations with automatic data transmission. The IHMS has a responsibility to produce non-scheduled meteorological and hydrological information and warnings in situation before disasters; organize emergency observation and measurement of the hydrological stations profiles and provision of emergency information; monitor weather and waters; collect and analyze data; prepare forecast; inform and alert responsible agencies. The Institute for Hydrometeorology and Seismology of Montenegro issues information on status and weather forecasting, climate and water in the text form, in writing, in the form of tables, charts and graphs through networks of electronic or postal traffic, or in the print and electronic media in the form of regular press releases. The hydrometric network of Montenegro is well developed and is receiving further upgrade and rehabilitation from various projects. Funding is already secured for the installation of 20 new meteorological and hydrological stations which will increase the network from 30 to 50 stations across the country, i.e. in Adriatic and Black Sea basins. While this will nearly complete the required network, some additional stations are required, particularly in the Drin sub-basin. In addition, the O&M plan including the O&M financing plan is not developed for the new stations and needs to be addressed.

66. The IHMS has been involved in the basin-wide ***flood forecasting and early warning system*** (FFEWS) being developed by GIZ and has been trained in the use of the system. Further training in the use of the hydrological, hydraulic and flood forecasting and early warning modelling and decision support systems as well as upgrades to computer equipment for running models are needed. During the AF project consultations, the Montenegrin Hydrometeorological Services (IHMS) identified the needs for the development of modelling capacity within the department and for a better cooperation and coordination of HMS activities. Currently coordination among HMSs in the Riparian countries is being undertaken through informal (person to person) contacts, relying on interpersonal relationships as well as new formal bi-lateral arrangements. There are difficulties in coordination due to different statuses of National Hydrometeorological Services (NHMS) in the different Riparian countries. For example, the Albanian NHMS is currently part of a university department with limited resourcing capacity, as well as functional capacity

for effective national HMS activities. Development of a coordinating structure for cooperation on flood risk management in the Drin Basin will be important. There is a need for smooth data exchange and prioritized cooperation on data sharing. Dams management in Albania also needs to be addressed as operation of dams in Albania posed potential risks to flooding in Montenegro.

67. Local preparedness plans for communes in Shkodra and Lezha in Albania have been developed by GIZ, as well as in Montenegro but the plans need to be updated using the new climate risk information to be developed through the modelling and in case of Albania the new territorial administrative reform has reduced the number of local government units from 375 to 61 affecting the existing plans.

68. The Directorate for Emergency Management (DfEM) within the Ministry of Interior is responsible for ***Disaster Risk Reduction*** and for implementation of the Sendai framework in Montenegro. It has elaborated the DRR strategy for Montenegro in line with Sendai Framework. DfEM prepared the plan for protection and rescue for floods. An important requirement for implementation of the plans is risk assessment which is currently missing as there is no hazard and risk mapping for any of the hazards in Montenegro. In addition, there is no Loss and Damage database for Montenegro and no harmonized methodology for collecting loss and damage information at the national level. Municipalities have local commissions for damage and loss data collection, but there is no mechanism for providing or using the information centrally. There is no centralized damage and losses database. In accordance with Sendai, Montenegro needs a standardized damages and losses assessment methodology at local and central levels and a centralized disaster database. 112 Centre is established in Montenegro with the Operation Centre (OC) housed in the Directorate for Emergency Management. At the local level, there is no EWS established for any hazards and no equipment such as sirens. GIZ project established local plans and undertook awareness raising campaigns. There is good communication between IHMS and DfEM. Structural and non-structural measures have been identified by DfEM which has established a catalogue of measures.

69. In Montenegro SNC recommendations for addressing climate-induced flood risks include:
    (i) strengthening the hydro-meteorological network;
    (ii) better coordination between the government, the Agency for Nature and Environment Protection and the Institute for Hydrometeorology and Seismology (IHMS) on hydrometric data archiving, establishment of a water information system;
    (iii) enhanced data sharing;
    (iv) harmonization of data set standards;
    (v) clarification of roles, responsibilities and “ownership” of hydrometric data;
    (vi) improvements in flood forecasts;
    (vii) regular maintenance and reconstruction of constructed flood protection structures;
    (viii) mapping and updating a cadaster of hydrogeological phenomena and speleological units;
    (ix) restoring, modernizing and expanding the network of water-measurement stations on karst watercourses;
    (x) mapping surfaces endangered by high waters, analyzing options enabling the IHSM and the relevant municipal services monitoring priority watercourses;
    (xi) defining erosion potential of watercourses.
    (xii) implementing regional projects on the regulation of Skadar Lake, Drim and Bojana Rivers and on the establishment of an appropriate operation regime for hydro-power plants on the Drim River and in the Niksic Field in order to prevent frequent flooding in the territories of Montenegro and Albania (Zeta Valley, Skadar Valley, valleys along the Bojana River, etc.)[21]. The proposed project would also assist the government of Montenegro to implement priorities defined by the Strategy for Disaster Risk Reduction for the period 2018-2023 and its associated Activity Plan including local level resilience building measures.

70. UNDP supported the Directorate for Emergency Management and municipalities in the creation of a GIS based platform for flood hazard mapping for 12 of the flood prone municipalities of Montenegro following the extensive floods in 2010. These maps are based on recorded flooding and not on the flood modelling, so they do not consider floods of various return periods, and do not take climate change into

[21] Projects for this purpose have already been designed to implement emergency measures including the cleaning of the Bojana River bed and the building of an embankment along the watercourse bed, SNC

account. However, it is a starting point and a base for further consolidation of data, to the extent it is recorded and available, from past floods.

Former Yugoslav Republic of Macedonia

71. The Macedonian Law on Waters defines waters as a common good (property of the state) and sets water management and protection rights and obligations. The direct obligations for water management, lies with several governmental institutions with the competencies shared among the following six ministries: Ministry of Environment and Physical Planning; Ministry of Agriculture, Forestry and Water Economy; Ministry of Transport and Communications; Ministry of Health; Ministry of Economy; and Ministry of Education and Science. In addition, the Hydrometeorology Directorate and the Public Health Institute, as separate Governmental institutions, are also included.

72. The ***institutional framework for FRM*** in FYR Macedonia suffers from a lack of clearly defined responsibilities, competency and authorization to enforce legislation relevant to flood hazard and risk management, national legislation which is not fully aligned with the EU Acquis (EU WFD, EUFD). In addition, there is limited, fragmented and overlapping technical and financial institutional capacities including limited monitoring, non-reliable, non-harmonized and limited sharing of data among institutions, no basin water cadaster; and flood risk financing and investment is not supported by robust assessment of benefit and costs, no investment plans and no comprehensive financial risk transfer mechanisms for dealing with the losses and damages from flooding.

73. The ***legislative framework for flood management*** in the Republic of Macedonia is comprised of several sector laws focusing on various aspects related to flood management. The system encompasses elements of prevention of damage caused by floods, protection by taking measures to reduce the likelihood of floods, information system about flood risks and in event of a flood, as well as emergency response and mitigation of the impacts on the affected population. The key pieces of legislation are:

(i) the *Law on Waters* which incorporates Flood Risk Management as part of the basin district management principles and includes provisions for the development of a programme of protection';
(ii) *Law on Crisis Management* governs the crisis management system which includes gathering of information, assessment, situation analysis, objectives and tasks determination, development and implementation of the necessary actions for prevention, early warning and handling of crises;
(iii) *The Law on hydro-meteorological activities* which governs the functioning of the National Hydro-meteorological Service in the Republic of Macedonia and responsibilities of the Service and establishes a single meteorological and hydrological observation system and also sets obligations for warning and notice of extreme weather conditions;
(iv) *The law on local self-government which* regulates inter alia the competencies of the municipalities which have responsibility for execution, preparations and undertaking of activities for protection and rescuing of citizens and goods against war destruction, natural and other disasters as well as against the consequences caused by them;
(v) *The law on water management enterprises* which regulates the management, utilization, operation and maintenance of hydro-systems and irrigation and drainage systems;
(vi) *The Law on Spatial and Urban Planning* which regulates the issues on planning of the space, defining the types and contents of various plans.
(vii) *The Law on Protection and Rescue* regulated the responsibilities and organization of the protection and response to disasters in the country, including floods.

74. The ***Hydrometeorological Service*** is a part of the Ministry of Agriculture, Forestry and Water Economy and is responsible for issuing weather forecasts, meteorological, climatological and hydrological data and warnings of extra ordinary weather phenomena in the country. The National Hydrometeorological Service of FYR Macedonia has 3 manual and 6 automatic functioning hydrological monitoring stations (water level) out of a total of 25 stations, and 6 functioning meteorological stations out of 20 in the Crn Drim (Black Drin) sub-basin (See Map 1 in Annex 2). Some of the available time series of daily discharge exhibit considerable gaps. A number of stations stopped operation since about 2003. Besides the HMS, additional stations near dams are operated by dam agencies. In the case of Drini River, hydrological and meteorological data is available with the national power production company, ELEM. Data from manual rain gauge stations are sent to WMO Global Telecommunications System (GTS) every month, while the last 3 hours of data from automatic rain gauge stations are available on the web at any given time. The National HMS is currently

way under capacity with only 3 hydrologists/engineers to perform all technical tasks nationally. Current skills are limited in the use of modern modelling methods and tools. There are limited budgets for operations and maintenance of the hydrometric network, which limits the ability to replace spare parts for automatic stations and devices for old (40-50 years old) manual stations for which devices are obsolete. A significant monitoring gap exists at high elevations which precludes the ability to systematically monitor snow fall and melt, which are becoming more variable with climate change, and which are important flood risk variables for the basin. Even without expected climate change impacts, there is a need to rehabilitate and extend the hydrometric observation network, to enable effective monitoring, management, forecasting and early warning of hydro-meteorological events at the appropriate spatial and temporal scale. There is also a need to upgrade the observation network with increased automation. Climate change is increasing the need for a modern, fully functioning, denser network supported by modern technology and skilled practitioners.

75. ***Flood Hazard and Risk Mapping*** is fairly advanced but incomplete in Macedonia. In 2009 UNDP Macedonia developed "Guidelines for Development of Methodologies for Assessment of Risks and Hazards and their Implications" which provides general guidance on approaches to assessing all types of hazards in Macedonia. It does not provide detailed specification for floods and makes no mention of the EU flood directive or its underlying methodologies. National guidelines in line with the EUFD for flood hazard and risk modelling and mapping is needed for harmonized flood risk assessment in all basins. More recently, UNDP Macedonia has undertaken flood hazard and risk modelling and mapping for its major river basins (Strumica and Vardar) and sub-basins (Crna, Polog), but not for the Crn Drim. A baseline assessment of hazard and risk mapping in Macedonia identified the following needs: 1) To support the improvement of a data sharing policy framework among national and international institutions; 2) to promote cooperation among the various institutions involved in risk mapping, also with the scientific support of academic excellence in this field; 3) To support the improvement of standards for geospatial data in compliance with the INSPIRE Directive and for hazard-related standards (e.g. for floods these standards should also be in line with the Water Information System for Europe (WISE) system); 4) To promote the development of hazard-related studies and risk maps in line with EU guidelines and directives; 5) To promote the connection among existing DRR platforms and geoportals and to favor the link with the National Spatial Data Infrastructure NSDI and participation in the IMPLUS project.

76. ***Damage and loss accounting*** for floods is still done manually and records are in paper format and not accessible or useable in detailed damage and loss assessment. The existing disaster loss data system is being expanded to include floods and already contains a large dataset on exposure and vulnerabilities that will enable the assessment and modelling of flood risk, vulnerability and damages in the future. IPA (2017) identified the need to support the upgrade of existing legislation on Disaster Loss Data collection and to harmonize existing methodology; and to support the clarification of roles and responsibilities of different institutions and information flow from local to national level and to identify a coordinating institution that will establish a unique national database accessible to all relevant institutions.

Cooperation over water resources management in the Drin Basin

77. Drin Coordinated Action was established through a Shared Vision for the sustainable management of the Basin and the related MoU (Tirana, 2011) signed by the Ministers of the water and environment of the Drin Riparians: Albania, the Former Yugoslav Republic of Macedonia, Greece, Kosovo and Montenegro. The main objective of the Drin MoU is to promote joint action for the coordinated integrated management of the shared water resources in the basin. The Drin MoU provides the political framework for cooperation among the riparian's and identifies short-, medium- and long-term actions to address problems affecting sustainable development in the DRB. Integrated DRB Management Plan is the long-term objective.

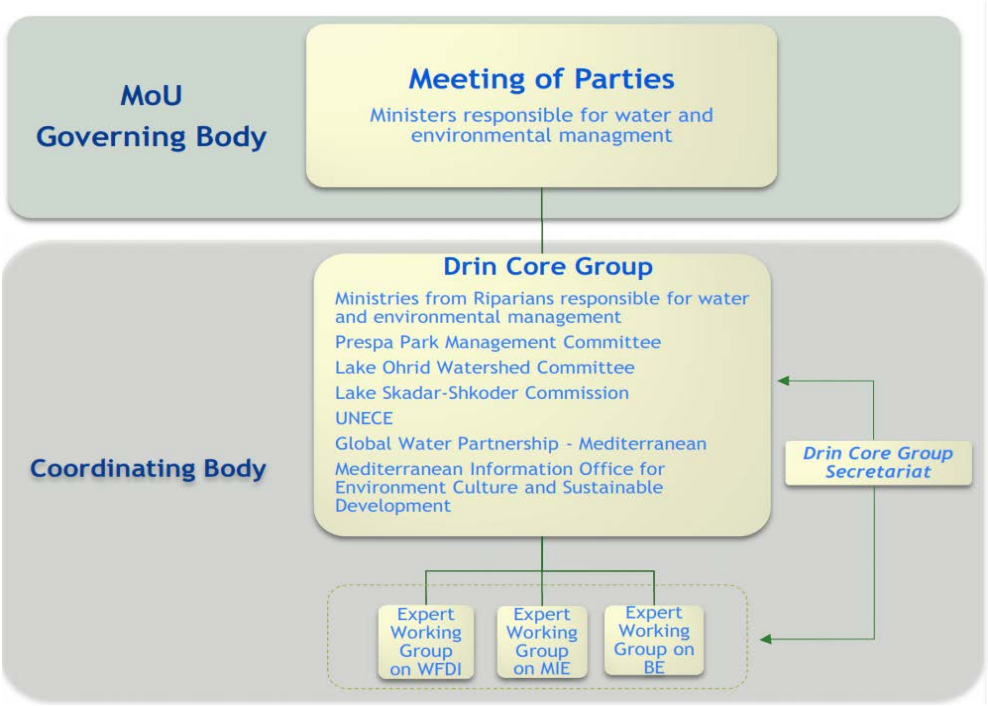


Figure 4: Institutional Framework for the management of the Drin Basin established under the Drin MoU

78. The following institutional set up supports the Drin Coordinated Action (Annex 1, fig. 3): (i) The Meeting of the Parties; (ii) The Drin Core Group (DCG) coordinates implementation of the MoU; (iii) Expert Working Groups (EWGs), an EWG on Floods is being established; (iv) DCG Secretariat hosted by the Global Water Partnership–Mediterranean (GWP-Med). The UNDP/GEF Drin Project[22] executed by GWP-Med assists in building consensus among countries on key transboundary concerns and drivers of change, including climate variability and change, and in reaching an agreement on priority actions.

79. There are also existing bi-lateral agreements between pairs of Riparian countries, such as the newly signed agreement between Montenegro and Albania on water management, including flood management.

Flood forecasting and early warning in the Drin Basin

80. An essential FRM tool is a fully-integrated FFEWS for the basin, which integrates regional, national and community-based systems and provides last-mile flood forecasts, based on EUFD standards and in line with WMO standards.

81. The GIZ-funded project "Climate change adaptation in the Western Balkans"[23] (2012-2018) has been providing advisory services and support to Albania, Kosovo*, the Former Yugoslav Republic of Macedonia and Montenegro for enhanced flood and drought risk management in DRB focusing on five key areas: (i) establishing a regional flood EWS; (ii) drafting CC adaptation strategies; (iii) local flood and drought management plans; (iv) transboundary water resource management concepts; (v) integrating CCA into urban planning for Tirana, Podgorica and Belgrade. In Albania and Montenegro FRM plans have been drawn for 31 municipalities and local implementation capacities were enhanced. The rain and stream gauging networks have been extended for flood forecasting with 33 water level and rainfall stations rehabilitated and upgraded. A DRB hydrological model has been developed.

[22] "Enabling transboundary cooperation and integrated water resources management in the extended Drin River Basin" approved by the GEF in 2014. The GEF Drin project includes five components: (1) Consolidating a common knowledge base; (2) Building the foundation for multi-country cooperation; (3) Institutional strengthening for Integrated River Basin Management (IRBM); (4) Demonstration of technologies and practices for IWRM and ecosystem management; (5) Stakeholder Involvement, Gender Mainstreaming and Communication Strategies.

[23] https://giz.de/en/worldwide/29000.html

82. The project “South-East European Multi-Hazard Early Warning Advisory System” – USAID/OFDA is aiming to develop a regional multi-hazard early warning advisory system – consisting of information and tools for forecasters at National Meteorological and Hydrological Services (NMHSs) and harmonized national early warning systems. The project is being implemented in the whole of SE Europe including the DRB countries.

83. Hence, through donor and government funded projects there has been gradual modernization of the hydrometric network in the DRB and under an MoU between the national hydrometeorological institutions there is cooperation and data exchange for flood warning. Warnings are currently based on regional forecasts, European Flood Awareness System (EFAS) and Flash Flood Guidance (SEE FFG). GIZ has recently implemented an EWS for the DRB which is now operational in the Riparian countries.

Adaptation alternative – Preferred Solution

84. The AF project will build resilience of communities and livelihoods in the Drin Basin to climate-induced floods by catalyzing a shift to a holistic basin-wide climate-responsive flood risk management and adaptation approaches based on enhanced climate information, risk knowledge, and community structural and non-structural adaptation measures.

85. The proposed integrated approach to climate resilient flood risk management will encompass:

a. increased technical, human and financial capacities of relevant institutions within each Riparian country, with responsibility for flood risk monitoring, forecasting and management to enable implementation of climate resilient Integrated Flood Risk Management (IFRM). This would include strengthening of the hydrometric monitoring network, risk mapping, flood hazard and risk modelling capacity;
b. an enhanced policy and risk financing framework for flood risk management based on enhanced understanding of climate risks;
c. climate-proof and cost-effective investment into flood protection through enhanced capacities to design and implement structural and non-structural flood risk management measures, and to provide effective flood risk reduction measures to the population;
d. enhanced awareness, response and adaptation capacity of the population; engaging private sector into climate information management and risk reduction investment.

Barriers to Basin Level integrated flood risk management:

86. The increasing risk posed by climate change coupled with anthropogenic activities are leading to increased vulnerability of the populations of the Drin River Basin which calls for increased international collaboration in river basin flood management and sound adaptation measures as a focus area of sustainable water management. However, there is a number of barriers to effective basin-level flood risk management which need to be addressed to ensure effective integrated flood risk management for the basin.

1. Lack of financial, technical and human capacities within the national Hydrometeorological Services, insufficient technologies, equipment, data and tools for flood hazard, risk and vulnerability assessments:

87. Gaps remain in the hydrometric observation network of all Riparian countries of the Drin, despite several projects and initiatives that have attempted to rehabilitate and upgrade national networks in the past, as well as projects that have taken a basin view of hydrometric needs.

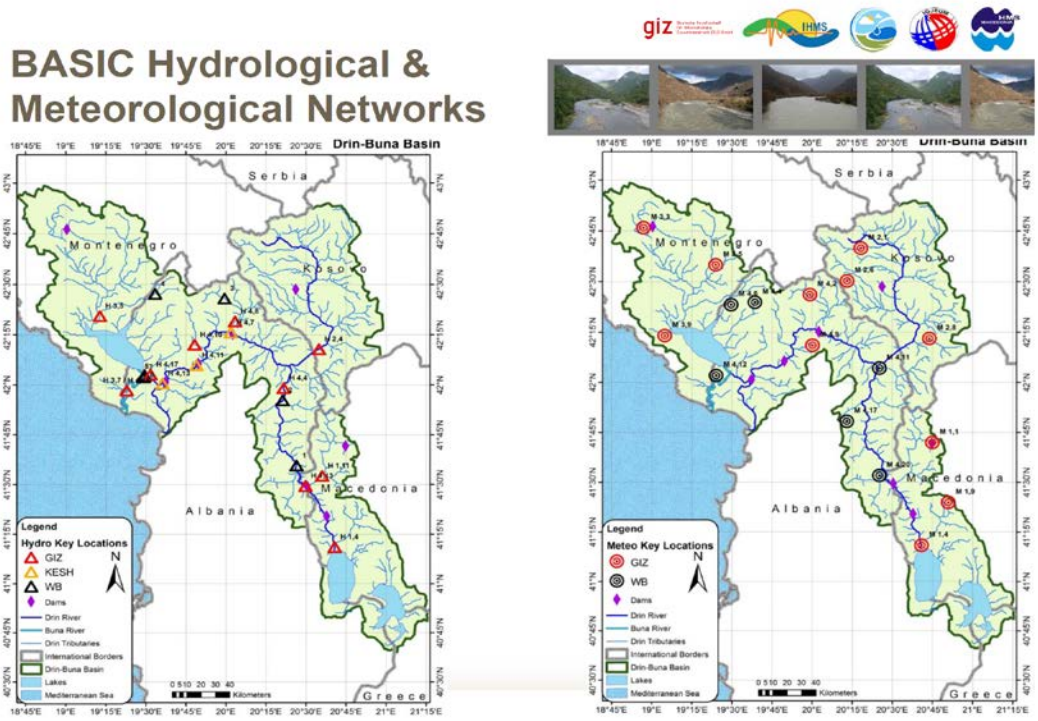


Figure 5: Hydrometric Network of the Drin Basin

88. For example, there are gaps in the hydrometric network at high elevations, which limits the ability to provide sufficient lead times for flood forecasting, and also limits the ability to include snow fall and melt monitoring. It is important to be able to monitor these variables at high elevations, given their increasing variability with climate change. Existing equipment suffers from lack of financing for operations and maintenance, leading to a large number of existing installed stations being non-functional. Financial, human and technical capacities for operations and maintenance differ for each riparian country but remains inadequate, leading to hydrometric stations falling into dis-repair even within a few years of installation. Previous projects which have rehabilitated or installed new equipment have not addressed sustainability of the equipment, nor have riparian governments.

89. Digitization, archiving and systematization of historical data remains *ad hoc* and project-based despite national and basin level attempts to address this issue. Hydrometric networks under private ownership are largely disconnected from the formal centralized hydrometric networks nationally and at basin level due to missing strategies, protocols and mechanisms for data sharing. Human capacities are a major challenge in at least two of the riparian countries. In Albania, the mandate and functional capacity of the NHMS is limited by its status of a severely understaffed and underbudgeted department within a Polytechnic University. It therefore lacks the capacity to execute the necessary functions of an NHMS. In FYR Macedonia, there are only 3 hydrologists in the Hydrometeorological Service for the entire national network and budgets, equipment and technical capacities are limited.

90. These severe gaps in National Hydrometric Service Capacities results in a lack of comprehensive and readily available data for flood hazard risk and vulnerability modelling and mapping, for effective basin-wide flood forecasting and for strategic basin-wide flood risk management initiatives. The newly developed basin FFEWS system is incomplete in terms of the stations for which digitized historical data is provided which limits the underlying model calibration and the accuracy of forecasts that are provided. Missing high elevation stations also do not allow for snowfall and snowmelt to be sufficiently factored into forecasts.

91. There is, as yet, no definitive flood hazard, risk or vulnerability mapping for the Drin basin and the technical and financial capacity to undertake such mapping is lacking. Furthermore, there is a lack of relevant capacities for risk, damages, losses, exposure and vulnerability assessments. The socio-economic information required to assess climate induced flood damages, losses, exposure and vulnerability is not currently available and is not collected systematically. Existing methodologies and procedures for collection

of damages and losses information currently carried out by the municipalities and/or dedicated commissions, varies in approach and quality of data from one municipality to the next and between Riparian countries. This represents a barrier to effective flood hazard and disaster risk management in the basin and needs to be addressed in order to enable risk-informed decision-making on which the socioeconomic future of Riparian countries depend, and to reduce the risk to acceptable levels.

92. Climate-induced flood risk information is not being systematically used to inform national, sectoral and local planning, mainly due to the lack of comprehensive and definitive national hazard and risk mapping. Hence activities within key sectors in Riparian countries such as water management, energy, transport, agriculture, forestry, spatial planning, are not risk-informed and do not take account of climate change. There is limited technical capacity and risk knowledge in flood hazard and risk assessment, due to a lack of standardized hazard, and risk assessment, modelling and mapping methods and technologies for such assessments. To date, only limited, small-scale site-specific modelling and mapping has been undertaken at discrete locations in the basin, which have not taken a river basin perspective, to include the hydrological and hydrological linkage of upstream conditions and processes to downstream, nor have they included climate change. There is therefore no single source of definitive climate-induced hazard mapping of the appropriate technical specification, which includes the whole basin at an appropriate level of detail for all users, to provide the basis for risk-informed decisions and risk-informed activities such as spatial planning, floodplain management policy and emergency response for the basin. Furthermore, there is limited technical capacity and experience of responsible Riparian institutions to produce such. Importantly, previous risk assessments have not explicitly included the dams of the DRB or the effect of their operations on flood risk and water management at the basin scale. There are no platforms for the coordination and dissemination of climate-risk information across all sectors such as a centralized flood risk information system to enable systematic use of climate-risk information in decision making and importantly, in the management and reduction of climate-induced flood risks across all sectors in Riparian countries. At present, strategic planning for flood risk management is not climate-risk informed and do not take a river basin perspective.

2. Limited capacities and insufficient policy framework for basin-level coordination, cooperation and joint basin-level strategic action on flood risk management

93. There is currently limited basin-level coordination and cooperation on flood risk management. Under an MoU between the national hydrometeorological institutions there is cooperation and data exchange for flood warning, based on regional forecasts, European Flood Awareness System (EFAS) and Flash Flood Guidance (SEE FFG).

94. As discussed above, the Drin Coordinated Action was established to promote joint action for the coordinated integrated management of the shared water resources in the basin, based on the political framework for cooperation provided for in the Drin MoU. While the MoU has identified actions to address problems affecting sustainable development in the DRB, it does not currently specifically address joint actions required for cooperation on flood risk management. The Integrated DRB Management Plan which is currently being developed, will also not specifically include a basin flood risk management strategy or plan.

95. As part of the institutional set up which supports the Drin Coordinated Action an expert working group on floods has been recently established, which will support technical consultations related to basin-wide flood risk management. However, institutional capacities at the regional, national and sub-national level across the basin are insufficient to secure climate-resilient FRM.

96. The existing coordination and bilateral agreements are insufficient for a truly transboundary river basin approach to flood risk management. What is missing is a basin-level integrated climate change adaptation and flood risk management strategy and plan and a multi-lateral Framework Agreement for the DRB in the field of flood risk management in which all Riparian countries are Party and which establishes the institutional and legal basis for cooperation, with the international legal capacity, necessary for exercising its functions and clear roles and responsibility for decision-making, cooperation or coordination. Decision making of this nature requires a legal basis and processes and procedures to enable adoption of recommendations and decisions that are of binding character for all the Parties. Such a framework

agreement also needs to provide conditions for effective FRM and conditions for financing basin-level FRM activities.

3. Flood risk reduction, including flood protection measures, do not adequately integrate climate risk information, ecosystem-based and non-structural approaches to climate resilience

97. A significant gap to be addressed for any effective FFEWS is related to the "last mile" communication and delivery of the warnings to the local communities and an enhanced community-based risk reduction. There is currently no comprehensive community-based EWS, where these might be more appropriate than sole reliance on a centralized EWS, this is particularly important where warning times are short. Additionally, the system does not currently include a comprehensive treatment of flash flood forecasting, particularly important for upstream communities. Key sectors at risk from flooding in Riparian countries currently lack the sector resilience and preparedness plans which would enable them to manage hazards and minimize the impacts to people, critical infrastructure, and normal economic activity within the sectors. Seasonal forecasts are not systematically provided to important sectors such as energy, water management, forestry and agriculture. Strategic planning for flood preparedness and response are not climate-risk informed and do not take a river basin perspective. It is understood that these existing limitations in the flood forecasting and early warning system will be addressed in the next phase of the GIZ project which will start in 2019.

98. While the flood forecasting and early warning system provides preparedness for floods, many of the communities of the Drin Basin remain highly exposed to flooding and require preventative and protection measures to further minimize the impacts of flooding. In the Riparian countries of the DRB, flood defense and flood risk management are done in a reactive manner and as budgets allow. Relevant institutions have limited annual budgets to address urgent issues like structural defense needs, and currently do not take a climate risk-informed strategic approach (e.g. river basin approach) to flood risk management interventions. During the Socialist era, flood management relied on flood defense construction almost exclusively, but many defenses have exceeded their design life and have not been upgraded or maintained and are therefore now largely ineffective. In the modern era, flood risk management should be a mixed approach, which combines both structural and non-structural measures. Non-structural measures include, early warning systems, agro-forestry, climate proofing, watershed management etc. There is limited use of modern eco-system-based flood risk management approaches and approaches which combine both structural and non-structural measures as part of FRM, due to a lack of knowledge and application of non-structural measures and ecosystem-based approaches (EbA) to flood risk management. There is also limited knowledge and capacities among local communities on climate resilient livelihoods for coping with climate-induced hazards.

Project / Programme Objectives:

99. 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 DRB to climate-induced floods. The countries will benefit from a basin-wide transboundary flood risk management (FRM) framework based on: improved climate risk knowledge and information; improved transboundary cooperation arrangements and policy framework for FRM and; concrete FRM interventions.

100. As a result, the Adaptation Fund project will improve the resilience of 1.6 million people living in the DRB (direct and indirect beneficiaries).

101. The project will contribute to the strengthening of the current **flood forecasting and early warning system** by increasing the density of the hydrometric network, and by digitizing historical data for stations not currently in the existing forecasting model. The project will develop and implement ***transboundary integrated FRM strategies*** providing the national authorities with robust and innovative solutions for FRM, DRR and climate adaptation, including ecosystem-based gender sensitive participatory approaches. In addition, the project will develop the underlying ***capacity of national and regional institutions*** to ensure sustainability and to scale up the results. It will support stakeholders by providing guidance, sharing climate information, knowledge and best practices. The project will also invest in the ***priority structural and***

community-based non-structural measures. Importantly, the project is aligned with and will support the implementation of the EU Floods Directive (EUFD) in DRB countries.

102. The AF project will build upon experience of Regional UNDP/GEF Drin project (see baseline initiatives section above) and other projects[24,25] in the region and will include the following ***innovations***: 1) introduction of international best practice in flood hazard and risk assessment, modelling and mapping in line with EUFD; 2) innovative mix of structural and non-structural interventions based on climate risk-informed design; 3) agro-forestry measures and community-based flood resilience schemes. The ***socio-economic benefits*** include reduced damages and losses and improved food production (through protection of agricultural land). This will have direct and indirect livelihood protection and potential income generation benefits. Climate risk informed planning of the hydropower sector is important to enhance hydropower operations to include transboundary climate-induced flood risk management, thus ensuring the continued sustainable development of the hydropower sector which will help continue the shift to clean energy in the region. Climate risk information will also safeguard critical infrastructure assets such as transportation (roads and bridges) which are critical to the economic development and functioning of communities. ***Environmental benefits*** include improved ecosystem functions through better spatial planning and non-structural measures such as agro-forestry, which will provide water retention functions, regulation of hydrological flows (buffer runoff, soil infiltration, groundwater recharge, maintenance of base flows), natural hazard mitigation (e.g. flood prevention, peak flow reduction, soil erosion and landslide control), increased riverbed stabilization resulting in decreased erosion, habitat preservation, and reforestation. This project will directly benefit the most vulnerable parts of the population and will have significant **gender co-benefits** which will be ensured through close collaboration with a gender expert dedicated to ensuring that gender considerations are a key part of any consultation or activity planning process. Flooding and disasters in general, impact women disproportionately and the project will ensure that these differential impacts are taken account in all project interventions.

Project / Programme Components and Financing:

Project/Programme Components	Expected Outcomes	Expected Outputs	Countries	Amount (US$)
1. Component 1 Hazard and Risk Knowledge Management Tools	Improved climate and risk informed decision-making, availability and use of climate risk information	Output 1.1. Strengthened hydrometric monitoring networks in the riparian countries based on a unified optimized basin-scale assessment of monitoring needs	Albania, the former Yugoslav Republic of Macedonia, Montenegro	2,379,244
		Output 1.2. Improved knowledge of CC-induced flood risk and risk knowledge sharing through the introduction of river basin modelling tools and technologies for strategic flood risk assessment based on EUFD and development of basin flood hazard maps		
		Output 1.3. GIS-based vulnerability, loss and damages assessment tools and database established to record, analyse and predict flood events and associated losses		
2. Component 2 Transboundary institutional, legislative and policy	Improved institutional arrangements, legislative and policy framework for climate-resilient FRM, and	Output 2.1. Drin River Basin FRM Policy Framework and improved long-term cooperation on FRM	Albania, the former Yugoslav Republic of Macedonia, Montenegro	1,120,756
		Output 2.2. Regional, national and sub-national institutions (including meteorological and hydrological sectors) are trained in climate-resilient FRM,		

[24] AF-funded, UNDP Implemented project, "Developing climate resilient flood and flash flood management practices to protect vulnerable communities of Georgia"
[25] GEF-funded, UNDP Implemented project, "Technology transfer for climate resilient flood management in Vrbas River Basin" in BiH

framework for FRM	development of CCA and FRM strategy and plans at the basin, sub-basin, national and sub-national levels	responsibilities clarified and coordination strengthened		
		Output 2.3. Drin River basin Integrated CCA and FRM Strategy and Plan developed		
3. Component 3 Community-based climate change adaptation and FRM interventions	Strengthened community resilience through improved flood management, through implementation of structural and non-structural measures and enhanced local capacity for CCA and FRM	Output 3.1. Introduction of appraisal-led design for structural and non-structural measures using climate risk information and cost-benefit appraisal methods and application of methods to the detailed design of prioritised structural and non-structural measures for three riparian countries	Albania, the former Yugoslav Republic of Macedonia, Montenegro	5,000,000
		Output 3.2. Construction of structural risk reduction measures in prioritized areas		
		Output 3.3. Strengthened community resilience to flooding through the participatory design and implementation of non-structural community-based resilience, adaptation and awareness measures		
4. Project/Programme Execution cost				650,000
5. Total Project/Programme Cost				9,150,000
6. Project/Programme Cycle Management Fee charged by the Implementing Entity (if applicable)				777,750

Projected Calendar:

Indicate the dates of the following milestones for the proposed project/programme

Milestones	Expected Dates
Start of Project/Programme Implementation	September 2019
Mid-term Review (if planned)	September 2022
Project/Programme Closing	December 2024
Terminal Evaluation	Sept 2024

PART II: PROJECT / PROGRAMME JUSTIFICATION

A. Describe the project / programme components, particularly focusing on the concrete adaptation activities, how these activities would contribute to climate resilience, and how they would build added value through the regional approach, compared to implementing similar activities in each country individually. For the case of a programme, show how the combination of individual projects would contribute to the overall increase in resilience.

Component 1 – Hazard and risk knowledge management tools
Outcome 1: Improved climate and risk informed decision-making, availability and use of climate risk information

103. Key to the strategic management of climate-induced flood risk is to have appropriate density and frequency of monitoring of important hydrometeorological variables. Given the importance of accurate historical hydrometeorological records in the assessment of flood risk, it would be important to ensure that

the hydrometric network is spatially optimized and centrally managed, and that data is made available to all flood management practitioners. The DRB is characterized by large spatial and temporal variability in rainfall and flow and it is therefore necessary to have sufficient spatial coverage (number and distribution of rain and flow gauges) to provide accurate flood forecasts and long lead-times to respond to flooding.

Output 1.1 – Strengthened hydrometric monitoring networks in the riparian countries based on a unified optimized basin-scale assessment of monitoring needs.

104. Based on a review of the status and adequacy of existing monitoring networks in riparian countries, the optimized network required for basin-scale flood risk monitoring and management will be identified, based on which, the project will design, purchase and implement new/rehabilitated monitoring network throughout the basin. The hydrometric network design[26] document will be prepared covering network design, prioritized station list, condition of those stations, equipment options, rehabilitation / new installation plan, institutional assessment, operation and maintenance procedures and preliminary costing for rehabilitation and O&M. As part of the project development and in consultation with the NHMS in each Riparian, the numbers and location of required hydrometric monitoring stations required within the Drin basin has been identified and the indicative list is provided in Annex 12. These will be confirmed and prioritized as part of the hydrometric network optimization exercise during implementation.

105. The project will develop a basin operational plan for the optimized hydrometric network as well as an Institutional capacity development plan for hydrometric network O&M, based on which training of hydrometric specialists with responsibility for operation and maintenance of the hydrometric network in all riparian countries, will be undertaken. The project will establish a unified basin-scale hydrometric database and data sharing protocols across all riparian countries[27]. To ensure sustainability of the rehabilitated hydrometric network, the project will develop financing mechanisms, establishing and safeguarding riparian government long-term commitment of network maintenance, national capacity building for design, installation and maintenance of monitoring networks, linkages to basin and regional monitoring networks, community-managed gauging stations. This will also include the development of innovative financing mechanisms that would seek to engage the private sector (hydropower, tourism, agriculture) for which willingness-to-pay surveys will be conducted during project inception, and local government and beneficiary communities (e.g. through engaging local people to assist in maintenance of stations), where possible, to complement government financing. Willingness to pay surveys will identify key private sector players and conduct market assessment to determine their interest in sector-specific climate risk information products that would enhance their operations and their resilience to floods, determine their interest in paying for tailored products and services that will be used in their operations, their willingness to support or partially support the O&M of hydrometric monitoring and early warning systems, equipment and information products and services for themselves and the communities within which they operate.

Output 1.1 – Indicative Activities

a) Detailed review of the existing coverage, physical condition and data collection procedure including the quality of data. Collect data from the relevant Riparian Institutions to get the current station coverage, equipment installed, data period and data collection procedure.
b) Undertake an assessment of the monitoring network requirements for effective monitoring for strategic flood risk management, flood forecasting and early warning in the future and optimize the stations coverage.
c) Undertake an assessment of the existing telecommunications infrastructure to support the telemetered and automated stations.
d) Digitize all relevant historical paper format data for DRB and systematize and store within the hydrometric database. Establish guidelines, procedures, data sharing protocols and user's manuals for the new hydrometric database.
e) Assess the institutional arrangements and capacity for the operation and maintenance of the hydrometric network and develop Institutional capacity development plan for hydrometric network O&M detailing manpower and financial requirements, and training needs, for the efficient O&M of

[26] River water level and flow stations, meteorological station, associated telecommunications equipment.
[27] Note, the GEF project has designed and will implement a basing Information system which should be appropriate for this purpose

all the stations in each Riparian country. Assess existing roles and responsibilities and the capacity of staff responsible for operating and maintaining the hydrometric network. Assess the existing protocols for the collection, transmission, sharing, storage, management and use of the observed data.

f) Establish mechanisms for population and maintenance of centralized basin hydrometric database
g) Prepare an operational plan for the hydrometric network including transmission of data, data management, data analysis and reporting procedures. The maintenance plan will cover manpower, technical capacity, material and finance requirements.
h) Provide detailed specification and design including costs of all equipment and each component of the hydrometric network specified including the detailed design and bid document for the stations for future rehabilitation / new installation.
i) Provide technical and financial assistance to improve hydrometric monitoring network (undertake procurement and installation of equipment).
j) Review existing financing of hydrometric network O&M in each riparian country. Identify resourcing, and training needs as well as institutional arrangements for the management of the proposed new hydrometric network.
k) Develop and implement O&M financing mechanisms for the hydrometric network.

Output 1.2 - Improved 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.

106. The project will assess current level of implementation of the EUFD in each riparian country and review data availability for the detailed strategic basin-wide flood hazard and risk modelling and mapping. Under the new GIZ project, it is noted the EUFD detailed flood modelling and mapping is planned for the Lake Shkoder/Skadar and Bojana-Buna area. The AF project will undertake detailed modelling of the rest of the basin upstream of Lake Shkoder/Skadar and Bojana-Buna area and will incorporate the GIZ model into the basin wide model. The project will commission/purchase essential datasets and surveys to enable flood risk mapping of the basin upstream of the Lake Shkoder/Skadar and Bojana-Buna area including detailed topographic surveys of the river channel through high risk areas upstream of Lake Shkoder/Skadar and Bojana-Buna area, including major infrastructure across the river (e.g. bridges, dams etc.) and along river banks (e.g. flood walls, levees etc.). A unified basin approach to flood hazard modelling based on EUFD will be established by the Riparian countries under the GIZ project and implemented across all modelling projects in the basin. Using the agreed unified flood hazard modelling techniques, the AF project will establish and/or amend existing numerical hydrological and hydraulic models of the basin based on detailed surveys of the physical characteristics of the river basin and produce high resolution flood hazard inundation maps in line with the EUFD, suitable for use in land use planning, development zoning, flood risk mitigation design, establishment of flood insurance criteria, raising public awareness, and emergency planning[28]. These definitive basin hazard maps will be produced for a number of different return periods and for a range of climate change scenarios and will be the basis of climate risk information for use on climate risk management of the basin. Climate information sharing platforms, protocols and dissemination mechanisms will be strengthened across member countries.

Output 1.2 – Indicative Activities:

a) Establish Spatial Data Initiative[29] and data management system for project
b) Undertake detailed topographic surveys of the river channel through high risk areas including all major infrastructure across the river (e.g. bridges, dams etc.) and along river banks (e.g. flood walls, levees etc.) for the Crn Drim in Macedonia.
c) Acquire/purchase/commission high resolution topographic data for the floodplain areas through high risk areas of the Crn Drim in Macedonia. Aerial photographs or LiDAR sources would be recommended in order to obtain a high-resolution DEM covering the whole basin. Coarser DEM and topographic data will be used for the rest of the basin for basin wide modelling

[28] See Annex 3 for Outline of the key elements of the modelling approach which the project would look at agree with GIZ project and Riparian countries

[29] A data repository which will provide a structured environment to enforce data integrity and support data auditing, versioning and data quality. Audit trails, as well as structured and categorized schemas, will make data collation, manipulation and analysis more manageable throughout the project

d) Using the most appropriate modelling techniques, establish numerical high-level basin wider hydrological and hydraulic models of the DRB. Undertake detailed hydrological and hydraulic modelling for the Crn Drim in Macedonia in line with EUFD and produce high resolution flood hazard inundation maps suitable for use in land use planning, development zoning, flood risk mitigation design, establishment of flood insurance criteria, raising public awareness, and emergency planning for the Crn Drim in Macedonia. Maps will be produced for a number of different return periods and for a range of climate change scenarios. Flood modelling and mapping will cover all relevant flooding mechanisms within the basin.
e) Integrate detailed hydrological and hydraulic modelling for other Areas for further assessment (AFAs) being modelled by GIZ and riparian governments into the high-level river basin model, as and when they become available
f) Undertake capacity assessment of relevant institutions for flood risk assessment and modelling and develop a long-term capacity development plan and training needs.

Output 1.3 - GIS-based vulnerability, loss and damages assessment tool and database established to record, analyze, predict and assess flood events and associated losses

107. The project will fully map the socio-economic conditions within the basin, including locations of marginalized communities (Roma community) and those populations most vulnerable to flood impacts, which will contribute to a body of data on which vulnerability and risk assessment will be based. Methods, tools and protocols will be established and implemented for the strategic collection of socio-economic data, for the systematic long-term updating of socio-economic flood receptor information (property, land use, economic data, socio-economics information etc.) and community-based risk mapping for the basin. The project will develop and implement a GIS-based basin-wide socio-economic risk model which integrates various spatial socio-economic data with the flood hazard maps, performs vulnerability assessment, and produces high-resolution vulnerability maps for the whole basin which will include damages losses, and loss of life estimates for floods of different return period. The model will enable damage and loss modelling, impact-based flood forecasting, cost-benefit analysis and the appraisal of FRM interventions based on cost-benefit analysis, and development of financing mechanisms for long-term FRM. Using the GIS-based risk model, the project will complete a cost-benefit options analysis for the Drin basin, to identify options that maximize benefits.

108. To complement the GIS-based risk model the project will develop tools, methods, guidelines and procedures for recording flood events, undertaking post-event surveys and assessing vulnerability to flooding as well as assessing the effectiveness of flood mitigation measures in reducing vulnerability and damages. The project will establish a basin-wide damage and loss database for recording historical flood damage information (systematic collection of flood depth, damage and loss data, collection, storage and systematization of historical flood reports across all riparian countries). DisInventar database is currently implemented in Albania, and Kosovo. The project intends to implement the same in FYR Macedonia and Montenegro, both of which have expressed an interest in having this as the standard centralized D&L data base.

Output 1.3. Indicative Activities

a) Develop and codify methods and tools for undertaking socio-economic surveys to collect necessary information to fully map the socio-economic conditions of within the basin.
b) Undertake socio-economic and vulnerability assessment to fully map existing vulnerability within the DRB, in order to identify the most appropriate adaptation options to reduce vulnerability within the s basin.
c) Develop a GIS-based flood risk model which integrates various spatial socio-economic data with the flood hazard maps, calculates flood risk, performs vulnerability assessment, produce vulnerability maps which will include damages and loss of life estimates and to test flood management options.
d) Implement the DisInventar database in Riparian countries for the systematic recording of damage and loss.
e) Develop harmonized methods, guidelines and procedures in line with Sendai Framework, for recording flood events, undertaking post-event surveys and assessing vulnerability to flooding as

well as assessing the effectiveness of flood mitigation measures in reducing vulnerability and damages.

f) Undertake cost-benefit options analysis using the vulnerability loss and damages model to identify options that maximize benefits as the basis for the development of the Integrated FRM strategy and plan for the basin

Component 2 – Transboundary FRM institutional, legislative and policy framework
Outcome 2: Improved 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

109. Institutional and legal framework for flood risk management in the Riparian countries of the DRB are highly fragmented in terms of competencies and suffer from overlapping/conflicting responsibilities of institutions. Mandates need to be clarified at national and sub-national levels, with clear assignment of responsibilities among institutions. The AF project will consolidate and extend current flood risk management efforts by DRB countries through the establishment of a dedicated coordination mechanism on flood risk management with the necessary political support and resourcing from the Riparian countries to comprehensively address missing formalized and effective cooperation on FRM.

110. The project will engage the hydropower and other relevant sectors in flood risk management of the DRB, in order to account for strategic water releases as well as issues of sufficient hydrological flows to wetlands to maintain ecosystem function. The project will also develop policies for basin-wide climate responsive flood risk management, which also integrate environmental and socio-economic requirements (harmonized with protected area management plans and the requirements of marginalized groups and vulnerable farmers).

Output 2.1 – Drin River Basin FRM Policy Framework and improved long-term cooperation on flood risk management

111. The Drin Core Group will be given responsibility for the coordination of the flood management at the Drin Basin level as part of its overall mandate to coordinate the Riparians for the management of the Basin along with the other bilateral cooperation arrangements. In this regard, the project will support the operation of the DCG Expert Working on Floods (Drin EWG Floods) during project implementation and will help identify and establish the long-term financing mechanism of the working group as part of the Drin Core Group operation. The Drin Core Group will be the Steering Committee of the project activities of regional nature and will assist in the coordination among countries for the activities of transboundary importance to be implemented at national level. The Drin Core Group with the assistance of the Drin EWG Floods will coordinate the implementation of joint periodic surveys, conferences, workshops, co-working activities.

112. The project will review existing FM policy and enabling environments in each riparian country and develop basin FRM policies for the implementation of FRM legislative and policy framework in line with relevant EU directives. A key policy to be implemented will be basin wide floodplain zoning/development policy based on detailed hazard and risk maps. In addition, the project will explore and recommend a basin-wide policy for risk financing and transfer mechanisms. The project will establish harmonized basin wide sector FRM policies for priority sectors (e.g., agriculture, energy, forest, water management, natural resource use, catchment management).

Output 2.1 Indicative Activities

a) Review existing FM policy and enabling environments in each riparian country and develop basin FRM policies for the implementation of FRM legislative and policy framework in line with relevant EU directives.

b) Development of risk financing and risk transfer mechanisms strategy to include private sector engagement strategy for long-term implementation of risk financing and risk transfer mechanisms for national-level flood risk financing and resilience strategy. Also, to include identification or public-sector risk financing mechanisms for flood risk management. Risk financing and transfer mechanisms products and tools will be identified (if existing) and/or developed based on detailed

socio-economic risk, damages and losses assessment (to be undertaken in Output 1.3). The project will undertake feasibility studies for the identified and shortlisted risk financing mechanisms.

c) Sector FRM policies (at least 2 – energy, agriculture) - Undertake detailed technical studies (including modelling) on climate change impacts on the identified sectors (energy and agriculture) in the DRB. Consult with national sector leaders and relevant stakeholders on findings of study and invite comments on recommendations through the floods working group. Develop and codify detailed methodologies for incorporating climate-change responsive flood risk considerations into risk assessments, strategies, policies and plans for the energy and agriculture sectors. Develop and finalize robust sector FRM policies and any necessary enabling guidelines and/or tools for effective implementation of new policies.

Output 2.2 – Regional, national and sub-national institutions (including meteorological and hydrological sectors) are trained in flood risk management, roles and responsibilities clarified and coordination mechanisms strengthened for effective climate-resilient FRM

113. The project will develop a DRB Stakeholders Analysis and the Governance Analysis focusing on Flood management based on the Stakeholders Analysis and the Governance Analysis done as part of the GEF Drin Project. This will include the following: (i) define all institutions at basin, national, sub-national level involved in water and flood risk management or institutions with activities that impact on flood risk (e.g. forestry, mining, town and country planning, mining, dam owners, and community organizations), including the role of NGOs/CBOs, donors, private sector, women's organizations; (ii) conduct functional analysis of the institutions; (iii) analyze existing resources (staffing and budgetary) including sufficiency of staffing levels, existing capacity and tools; (iv) analyze existing policies, procedures and protocols, national guidance documents or codes of practice; (v) analyze interaction between institutions (e.g. information sharing, cooperation on functional activities, reporting between institutions); (vi) assess access to data and risk knowledge sharing among decision makers, practitioners, government, private sector and civil society, (vii) assess coordination mechanisms and implementation arrangements organized at basin, national and sub-national levels.

114. Based on the analysis, the effectiveness of institutional arrangements in individual riparian countries towards basin-scale flood risk management will be analyzed and if necessary, the ToR of the Drin EWG Floods will be revisited in terms of mandate, membership, resource requirements, technical capacity and technical enabling environment; data sharing and data access and technical means and tools for coordination. In consultation with riparian countries and the DCG a strategy and a five-year work program of the Drin EWG Floods will be developed and implemented. It will describe above all: DRB institutional capacity development plan including, plans for individual riparian countries, the resources, tools, technology, technical guidelines, procedures, protocols and codes of practice for comprehensive basin-scale FRM, the role of the DCG and the EWG in the preparation and implementation of the Drin River Basin Integrated CCA and FRM Strategy.

Output 2.2 - Indicative Activities

a) Institutional mapping to identify the current relevant national and sub-national government departments with functions in flood risk management in each Riparian country.
b) Institutional capacity assessment and gap analysis to include functional, resourcing, technical and financial capacity assessment. Development of long-term Institutional capacity development plan addressing resourcing, technical, and financial needs in each Riparian. Develop training programme for climate risk management and flood risk management and embed in relevant national/regional institutions to improve the technical capacity and knowledge base for climate risk management and a long-term adaptation planning for flood risk management.
c) The ToR of the Drin EWG Floods will be revisited in terms of mandate, membership, resource requirements, technical capacity and technical enabling environment; data sharing and data access and technical means and tools for coordination. In consultation with riparian countries and the DCG a strategy and a five-year work program of the Drin EWG Floods will be developed and implemented.
d) Deliver prioritized training to practitioners, decision-makers and communities to include the following:

i. Flood hazard and risk modelling and mapping methods (hydrological and hydraulic modelling). During the basin flood model development, training will be provided (to custodians, users and managers of the flood model and who will undertake the modelling in each Riparian country) in all aspects of flood risk modelling.

ii. Hydrometric network design and O&M to include the planning, design, establishment and upgrade of monitoring stations to meet a range of needs, optimisation of the hydrometric and integration of monitoring networks of different agencies (such as HPP networks) where possible to ensure network complementarity and that regular data exchange; training of sub-national staff in equipment maintenance.

iii. Flood risk assessment: Training in conducting post-event flood damages and losses assessment and Post-Disaster-Needs-Assessment (PDNA) surveys based on the harmonised PDNA methodology to be developed in Output 1.3.

iv. Training of communities (in a gender-responsive manner) in FRM adaptation methods based on the community-based adaptation interventions identified in the basin and sub-basin FRM strategy and national plans

v. Training of practitioners and communities in the development of inclusive community-based early warning systems to enable the communities and practitioners to jointly develop early warning systems, elaborating the components of a system, how they can be set up, options for response to an early warning, and ways to disseminate information to underserved populations (marginalized groups, elderly, disabled) etc.

vi. Design of climate-resilient structural and non-structural flood protection measures.

e) The project's Knowledge Management strategy will be embedded under this Output (along with Output 3.3) and the KM tools and strategies will be developed and applied to fully embed capacity development in key institutions.

Output 2.3 – Drin River Basin Integrated CCA and FRM Strategy and Plan Developed

115. The Drin River basin FRM strategy (FRMS) and plan (FRMP) will be developed for the long-term management of flood risk in the basin. The strategy will outline the high-level basin wide policies for the long-term climate resilient management of flood risk and will be based on detailed strategic climate and flood risk assessment. FRMP will outline the detailed actions that will be taken to address flood risk at the basin scale and within each riparian country, which will be detailed in national FRMPs. It will include a combination of structural and non-structural approaches which will best address flood risk at the basin scale and will involve developing an inclusive list of potential options for alleviating flood risk. The project will seek opportunities to attain the right balance between structural (or hard-engineering) and non-structural (or soft-engineering) flood risk management options.

Output 2.3 – Indicative Activities

1) Development of an integrated basin flood risk management plan for the DRB with participation of all relevant stakeholders. The plan will take a bottom-up, multi-stakeholder, consensus-based approach. This activity will be mainstreamed into the national on-going work on the development of the river basin management plans through the relevant national authorities. From the basin plan, and sub-national plans will be developed. Development of the basin level plan will follow these steps:

Component 3 – Priority community-based climate change adaptation and FRM interventions

Outcome 3: Strengthened resilience of local communities through improved flood forecasting and early warning, implementation of structural and non-structural measures and the strengthened capacity for CCA and FRM at the local level

Output 3.1 – Introduction of appraisal-led design for structural and non-structural measures using climate risk information and cost-benefit appraisal methods and application of methods to the detailed design of prioritised structural and non-structural measures for three riparian countries

Output 3.1 - Indicative Activities

1) Undertake optioneering for long-term FRM measures for DRB including feasibility, outline design and indicative costing. As part of the development of the Drin River basin FRM strategy (FRMS) and plan (FRMP) in Output 2.3, a long list of options will be examined and qualitatively assessed in terms of the socio-economic, environmental, engineering and hydrological impacts of the options, and will form the basis of the short-listing process to be carried out in consultation with stakeholders. An initial appraisal of the short-listed options will be carried out to determine technical performance in terms of flood damages reduction in the basin. Changes in flood levels against the baseline scenario will also be investigated and the effects of such changes assessed. The reduction in damages resulting from an option (as compared to the baseline) represents the option benefits. A range of options will be directly compared and ranked in order to identify the most economically advantageous options or the economically preferred option(s) for the basin. The project will undertake feasibility, outline design and indicative costing of structural options for long-term FRM for the basin as key input to the development of the Drin River basin FRM strategy (FRMS) and plan (FRMP) in Output 2.3. The project will assess the requirement for new structural measures such as the provision of flood storage, the provision of new embankments and walls, local land raising to elevate development areas above the extreme flood level, local improvements to channel capacity and stability, flow control structures, increased maintenance and improvements to channels. The activity will meet relevant national technical standards, where applicable, such as standards for environmental assessment, building codes, etc., and comply with the Environmental and Social Policy of the Adaptation Fund.

2) Undertake detailed design for structural measures to be implemented by the project. The project will undertake detailed design for implementation of structural options identified as priority measures during project development. The measures to be implemented are described under Output 3.2 and described in more detail in Annex 5. The approach for detailed design will be as follows:

(i) **Field Surveys**

a. *Inspection of works location and stakeholder consultation*. Inspection will allow the arrangement of existing features to be confirmed, and a high-level assessment of the condition of any existing structures to be made. The inspection will be documented using photographs and standardized record sheets, which will be held for use during the remainder of the project.

b. *Topographic Survey*. Following the initial site inspections and review of available data the design team will scope, specify, supervise and review the survey. Standardized survey specifications and requirements will be used. Typical topographic surveys are likely to include: (i) establishment of a control network, including permanent ground markers, referenced to the same datum as the DEM data and suitable for use during construction/implementation of the infrastructure units; (ii) recording position and level of all features of significance; (iii) recording ground levels between features at an appropriate grid spacing.\; (iv) recording river/stream channel cross sections above and below water level at specified intervals.

c. *Ground Investigation*. The scope, specification, supervision and requirements for geotechnical investigations will be defined to provide engineering properties of native ground and any existing earth structures and the necessary surveys undertaken. Where appropriate to the works required, ground investigations will comprise boreholes or, where appropriate, trial pits. Samples will be collected for laboratory testing and Standard Penetration Tests carried out to allow soil properties to be estimated. Where appropriate to the works required, sediment samples may also be collected from nearby river beds, channel bars, and banks, and analyzed for particle size distribution in order to assist with the design of any dredging and scour protection works. Where sources of borrow material can be identified samples of possible fill material will be collected for laboratory testing to

determine the soils' suitability for use in earthworks. Results of field observations and geotechnical testing will be used to determine the typical geotechnical properties for use in design.

(ii) **Detailed Design:** Detailed designs will incorporate ancillary features to ensure the sustainable operation of the works. The use of appropriate vegetative surface and scour protection (indigenous grasses etc.) to control erosion of earthworks and minimize future maintenance requirements will be specified. All designs will be prepared to appropriate national and international standards and guidance and based on the use of locally available materials. The designs will take into account the long-term objective of operation and maintenance by the municipality and local community. Durability and robustness together with ease of operation and maintenance using the local community will be emphasized.

(iii) Development of procurement strategy and plan: the proposed programme of works identified at proposal phase will be reviewed and recommendations made on an appropriate procurement strategy, including consideration of packaging of works to provide economies of scale in implementation.

(iv) Preparation of Tender Documents: where necessary tender packs will be prepared using Standard Bidding Documents approved by the UNDP. The project will also develop and embed a suitable standard technical specification which will become the standard bidding documents. Other elements of the bidding documents, including bills of quantities, will be standardized across packages as far as possible.

(v) Contract supervision: Typical construction contracts (e.g. under FIDIC conditions) require an organisation to take role of the Engineer, and a Resident Engineer. It is assumed that such roles will be undertaken by personnel from the competent government departments who will provide fulltime engineers for construction supervision to supervise the implementation of the works. UNDP will provide the Chief Resident Engineer (CRE) who will be centrally-based and will oversee the administration of the full programme of works throughout the implementation of structural measures in all riparian countries. He/she will be supported by a team of Resident Engineers and Clerks of Works from each Riparian. The CRE will review all contractor submissions including method statements, programmes, progress reports, applications for payment and claims. The CRE would check and approve as built records provided by the Contractors and prepare Operation and Maintenance manuals for the specific works – generally based on a standardized template. Training in the operation and maintenance of the works will be provided to municipality and local communities who will be involved in the operation and maintenance in the future.

Output 3.2 – Construction of structural risk reduction measures in prioritized areas.

116. During proposal development Riparian countries provided structural measures that have already been prioritised for implementation. The AF project will undertake the detailed design of these structures during project implementation (Output 3.1), and take account of the full river basin impact of the intervention measures. It will undertake detailed climate-risk based assessment (using models and methods developed in output 1 of the project) to appraise all options and develop the detailed design of the proposed interventions. The outline descriptions of the proposed structural interventions are provided below (and detailed in Annex 5).

Structural Measures to be implemented

The Former Yugoslav Republic of Macedonia - Sateska River and Crn Drim River

117. Sateska River is located in the south-west of the Republic of Macedonia. Currently a tributary of Lake Ohrid, it originally flowed directly into the River Black Drim but was re-routed in 1961/2. It now accounts for 39.36% of the Lake Ohrid watershed and is consequently one of its most important tributaries. The 1961/2 Sateska river redirection from its natural flow in the River Crn Drim to the Lake Ohrid, is between the towns of Struga and Ohrid and was motivated by three main reasons:

- To decrease the sediment load on the artificial reservoir Globocica and the hydropower plant Globocica;
- To ensure the hydro potential of the hydropower plants on the River Crn Drim;
- To drain the Struga wetland/marshland.

118. The diversion of Sateska River caused a huge sediment load of approx. 120, 000m^3 annually to Lake Ohrid which is negatively affecting the habitats and the entire ecosystem in the littoral part of the Ohrid Lake. Moreover, Sateska River brings 39% of phosphorus load to the Lake Ohrid which on a long run will increase the eutrophication of the Lake. The sediment that Sateska is bringing is significantly increasing the river bed level and decreasing the storage and conveyance capacity of the river especially during extreme weather events and/or intensive rainfalls.

119. The Black Drim (Crni Drim) River Basin is identified as one of the flood-prone regions in the country. Major identified past floods are the ones in 1962, 1975, 1995 and the most recent one in 2010 and 2015. There are number of different sources of flooding in the Crni Drim Basin, including:

- Fluvial flooding from major rivers when run-off from the surrounding area exceeds the flow capacity of the rivers, streams or the artificial drainage system (Crni Drim, Sateska River)
- Torrential foods: combination of high water discharge and mass movement through the channels of the streams, leading to the transport of large volumes of sediment and debris (Sushicka, Kalishka, Shum, Dzepinka and other torrential rivers).
- Coastal Flooding, in coastal areas of the towns Ohrid and Struga, which is happening during extreme weather events and high tides that are causing a rise in lake levels and coastal flooding.
- Groundwater floods especially in the region of Struga (Struga is built on a former wetland/marshland and has high level of underground waters)
- Flooding in urban areas (due to intensive rainfalls)

120. In 2018, UNDP commissioned a preliminary flood risk assessment for Sateska river and Crn Drim River from the outlet of the Ohrid Lake to Gobocia artificial accumulation, using a model that was used for preliminary flood risk assessment in almost all other river basins and sub-basins in the country and calibrated for the local conditions. It identifies the areas that are prone to flooding, critical infrastructure exposed to floods, the areas of agricultural and arable land, population that will be exposed to floods (maps are provided in Annex 5). The study showed that floods with medium probability of occurrence in this region can cause damage in the range of over 35 million euros.

- Area affected: 3,550 ha
- Potentially indirectly affected population: 70,000
- Potentially directly affected population: 6,500
- Houses: 2,500
- Road network: more than 40 km
- Hotspots: Landfill site in Stuga, and in perspective, the regional landfill in the Municipality of Debarca
- Other objects at risk: possible flooding of central Waste Water Treatment Plant in Vranishta that treats the wastewater from the municipality of Struga and Ohrid, possible flooding of Ohrid international airport, flooding of schools, churches, monuments
- Industrial objects: 40

121. During the 1960s and 1970s several infrastructure facilities were built to reduce the risk of flooding. To protect against fluvial (surface water) flooding, part of the riverbeds of Sateska and Black Drim Rivers have been regulated in the length of approximately 18 km. To protect the town of Struga from flooding especially from the ground water, drainage channel network with a length of over 37 km was built. Also, to reduce the erosion processes of the critical torrential watercourses in the Sateska River Basin, several small check dams and water reservoirs were built.

122. In the period September – November 2018, UNDP commissioned a geodetic survey of the old riverbed of Sateska, and the River Crn Drim from the outlet of Lake Ohrid to Globocica artificial reservoir which determined the most critical sections of both rivers that can cause flooding because of insufficient discharge capacity, as well as poor maintenance of regulated watercourses and natural river streams, modifications in the entire river basin, and recommendations for actions and measure. Taking into consideration the problem caused by the sediment that Sateska is bringing to the river Crni Drim, the Government financed the preparation of technical documentation/construction design and Bill of Quantities

for the regulation of the old and current riverbed of Sateska, as well as afforestation/reforestation study. However, due to the high estimated costs, the project has not been implemented yet.

Proposed solution:

123. Based on the modelling work, field visits, semi-structured interviews, report from previous flood events, previous project documentation and geodesy surveying, the following solutions are proposed to be implemented under the AF project.

Structural measures	
Measure	**Result/Use**
Construction of natural based sediment retention structures at fan apex or on fan (on 2 locations)	Reducing future potential damages caused by sediment transport and disposal
Improvement of hydraulic capacity of Crni Drim River with in urban zone	Effective control of water levels in Ohrid lake and protection from coastal flooding
Reconstruction and increasing the capacity of banks on Crni Drim in rural part in total length of up to 10 km	Increasing the flow capacity, Reducing future potential damages caused by flooding
Improvement of existing drainage system in Struga municipality for underground flood protection	Control on the level of groundwater
Reconstruction of existing diversion structure on Sateska River near Volino	Sediment control and reduction of maximal discharges
Artificial shaping of Sateska river natural bed on critical parts	Reducing future potential damages caused by flooding
Non-structural measures, at watershed level	
Data and Modelling[30]	
Conducting high resolution LIDAR (light detection and ranging) mapping/surveys along the riverbeds with a buffer zone and merge the LIDAR results with the existing DTM models	Modelling of floods (open terrain), flows, landslides or rock fall
Develop flood hazard and flood risk maps (modeling)	priority setting of flood reduction measures (planning and design)
Development of reservoir management models based on daily measurement	Optimal management of the reservoirs based on economic principles, introducing flood control volume in to the existing reservoirs
Improvement of the existing hydro-meteorological monitoring system and weather forecast system	Effective real-time weather forecast
Afforestation and management of bare lands (sparsely vegetated) affected with high erosion in the Sateska River Basin in total area of up to 100 hectares	Reducing the force of the high wave with water retention on a basin level

[30] Costs for Data and Modelling come under Output 1.2, but are included here for completion

124. The proposed solution will benefit over 70,000 people from Municipalities of Struga and Debrca.

Montenegro - Establishment of full-scale embankment system on Bojana River in Montenegro Municipality: Ulcinj

125. According to the 2011 census, total of 20,265 inhabitants live in the Ulcinj Municipality, in 39 settlements, 3.21% of the population of Montenegro. In Ulcinj Municipality, Montenegro, large areas of land and private buildings along the Bojana River are at risk from floods. Floods along the Bojana River primarily threaten the settlements of Sukobin, Lisna-Bori and Fraskanjel, and to a lesser extent the settlements of Sveti Djordje, Rec, Donji Stoj and Gornji Stoj.

126. Several embankments were built in the threatened area, and the longest are Sutjel-Sveti Djordje (1,455 m) and Sveti Nikola-Rec (6,377 m). However, the condition of existing embankments is unsatisfactory because of insufficient and inadequate prevention and no safe protection is provided in the event of major floods. In the Sukobin, Lisna- Bori and Fraskanjel area extending along the Bojana River, between the boundary to Bar Municipality and Briska gora, there are 7 families in Sukobin, 17 families in Lisna-Bori and 5 families in Fraskanjel who are directly threatened. During heavy rainfall, the flooded area merges with Sasko Lake, flooding vast agricultural areas in these villages (Sasko Lake 315 ha, the fields of Fraskanjel and Klezansko covering 500 ha). In Gornji Stoj area along the embankment Sveti Nikola-Rec, seven private buildings are regularly flooded. In the event of a breach of the protective embankments, the number of flooded buildings and agricultural areas would be very high. These include thousands of private houses in the settlements of Gornji Stoj and Donji Stoj (5.237 households) and further towards Ulcinj. The salt works "Bajo Sekulic" covering 14.5 km² are also at risk. These settlements are very densely populated, which is why the potential damages are high, as shown in the table below:

Table 2: Overview of the number of inhabitants, households and residential buildings in the settlements threatened

No.	Settlement	Number of Inhabitants	Number of Households	Residential Buildings
1.	Lisna Bore	175	41	45
2.	Fraskanjel	57	12	18
3.	Sveti Djordje	69	14	24
4.	Rec	63	23	24
5.	Donji Stoj	1,176	434	4.690
6.	Gornji Stoj	111	24	547

127. At the mouth of the Bojana river, there is a large complex of 390 structures (fishing houses, weekend houses and restaurants), as well as the famous Ada tourist center (440ha), with a significant number of bungalows and associated facilities. During major floods, these settlements are flooded and there is water penetration in almost all structures along the Bojana riverbank. In addition, approximately 2,400 hectares of fertile land, representing a significant percentage of total agricultural land in the coastal zone of Montenegro is at risk from the Bojana. The entire area along the Bojana River is endangered by the flood waters of the Bojana River itself and the mountainous watercourses.

128. In November and December 2010, record-breaking precipitation resulted in record water levels in Lake Skadar and record water levels in the Bojana River and other river flows. In the Lake Skadar water level reached a record high of 10.44 asl. The most severe damages were suffered by flooded residential houses in the settlements of Lisna Bori, Sukobin, Fraskanjel and Sas, downstream cottages and catering facilities to the river delta and buildings of the company “Ulcinjska rivijera” at Ada Bojana. In total, approximately 7.4% of Ulcinj Municipality's territory was flooded, where agricultural land, agricultural equipment, plantations (greenhouses) and tangerine plantations were most affected.

129. The embankments of Sveti Djordje-Sutjel and Rec-Sveti Nikola were important defensive infrastructural facilities that were partially damaged, and then suffered even more damage during the January floods. There was an immediate intervention on those embankments using construction machines at the most critical points and works on the embankment of Sveti Djordje. However, after the January floods

in 2010, 900 m remained unfinished so that, in early November-December floods, despite an urgent intervention to the most vulnerable parts of the embankment, when the Bojana River water level reached its maximum, on 4 December 2010, the Rec-Sveti Nikola embankment, partly used as a paved road to the village of Rec, was flooded. The water level was approximately 40 cm above the road.

Proposed solution:

130. The project will implement upgrading and reinforcement of the protective embankment along the Bojana River and develop a long-term maintenance plan for the protective embankment.

131. It should be noted that there is no up-to-date hydrological or hydraulic assessments of the Bojana River or Lake Skhoder/Skadar, that would permit detailed design of the proposed intervention. Past remedial works also haven't taken climate change into consideration and have largely repaired the embankment to original condition as necessary. Hence, AF project will undertake detailed design and implementation of climate resilient rehabilitation of the Bojana embankment. It will utilize detailed modelling to be produced by GIZ which will include up-to-date hydrology and hydraulic modelling and climate change and would enable options modelling in the identification and development of the most appropriate design.

132. The following activities will be carried out by the AF project:

- Detail technical documentation for full scale embankment system on Bojana River in Montenegro, including all necessary assessments, field examinations and mapping (Output 3.1);
- Detail Bill of Quantities for rehabilitation and construction of embankments; (Output 3.2)
- Construction and restoration of priority embankments (Output 3.2);
- Creating a database for all facilities and populations in the affected area (Output 1.3).

133. Structural measures in Ulcinj municipality will benefit 20,000 people (population of the municipality), including 2,000 people living in six most vulnerable villages. In addition these measures will protect approximately 30,000 tourists visiting the Ulcinj municipality every year during summer season (source FRM Plan for Ulcinj Municipality, 2013).

Albania - Construction/reconstruction of flood protection infrastructure in the downstream of Drini, Buna

Area at risk - the Lower Drini-Buna River Basin in North-West Albania

134. The land of the Lower Drini–Buna River basin is at a very high risk of flooding. This is a result of geological changes some 150 years ago which diverted the flow of the Drini to join the Buna at Bahcallek. The capacity of the Buna River, particularly the reach from the Drini-Buna confluence to Shirqi Village, is insufficient to prevent frequent overtopping of the river banks and consequent flooding. The most recent major flood events occurred in January 2010 and again in December 2010 causing major hardship to the local population. The flooding of January 2010 in the district of Shkodra was at the time considered the biggest emergency event to have arisen in the area: 14,100 ha were flooded, 4600 houses were inundated, and 12,150 people evacuated. The direct economic loss to Albania has been estimated as ALL 2.5 billion (EUR 18 million) from the December 2010 event alone, rising to ALL 4.4 billion (EUR 37 million) when indirect losses are accounted for. A World Bank study shows that out-of-bank flow occurs from the Buna on average once every two years, and direct damages caused by flooding rise from ALL 135 million for a 50% likelihood event, up to ALL 5830 million for the 0.1% likelihood event.

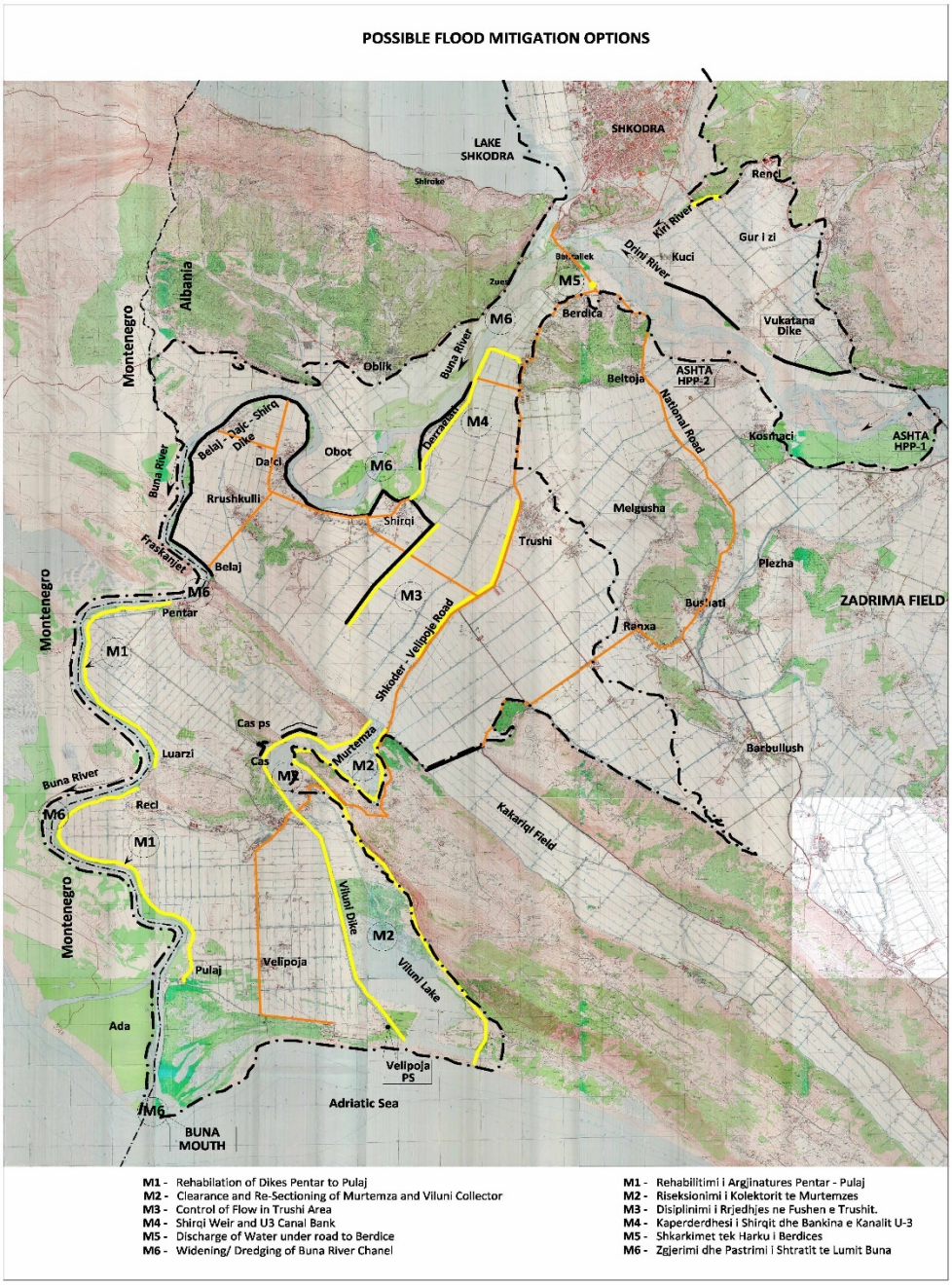
135. From the 1960s a system of flood protection dikes has been developed on the downstream reaches of the Buna River and downstream part of the Drini River between Vau Dejes and Bahcellek, to protect against flooding over the left bank into developed residential and settled agricultural areas. These dikes have been partially effective in protecting land from flooding, however in the most serious events breaches have occurred in the dikes, particularly in the reach between Shirqi and Belaj. Over the upper reach of the

Buna River, from Bahcallek to Shirqi there are no existing flood protection dikes. The reason for this is that it is feared that construction of dikes in this reach would result in increased flood levels in Shkodra Lake, with consequent increase in flood risk to the City of Shkodra and surrounding area.

Proposed solution:

The project will implement rehabilitation/enhancement of dikes/embankments, flow control measures and clearance of vegetation. Three options for structural measures have been shortlisted at the project development phase with the Government of Albania. These options will be further assessed and detailed design will be completed for one of them during the project implementation:

- Improvements to existing river dikes – option Pentari to Pulaj. If implemented this measure will benefit villagers, their homes, livestock, agricultural land and other assets in the villages of Luarzi, Reci, Reci i ri, Pentari, Velipoja and Pulaj, as flooding will be reduced in extent, depth and duration
- Clearance of vegetation and widening of drainage channels Murtemza-Viluni. Access for clearance of vegetation and excavation will be limited by weather conditions and any overland flooding.
- Reinforcement of Canal Embankment and Renewal of Shirqi Weir, plus control of overland flow from Shirqi to Murtemza. These components should be undertaken after works at Murtemza and before any dredging to increase the capacity of the Upper Buna.



136. The proposed structural measures will be supported with the non-structural measures (Output 3.3) as follows: (i) protection of river bank areas (planting of hydrophilic vegetation e.g. willows, acacias along the riverside to protect soil from erosion), (ii) prevention of constructions and land use (Buna River in the area of Zue village (1 km); Drin River (3,5 km) in the area of Ganjola-Vukatanë-Kuç; Kir River (1,5 km) Bardhaj-Bleran and in the area of Kuci village); (iii) enforcing planning controls to prevent further development in the flood route through Berdica, and in other 'at-risk' areas such as the low-lying land between the Drini and Buna at their confluence.

Beneficiary communities:

Area	Population	Number of Households	Area (ha)

Shkodra Municipality	114,219	34,898	1646
Vau I Dejes Municipality	12,520	3,385	3060
Ana e Malit	5,859	1,690	4180
Berdicë	9,172	2,556	3102
Guri i Zi	11,619	3,072	8170
Rethina	23,418	5,668	4705
Velipojë	8,718	2,255	7240
Total	185,525	53,524	32103

Output 3.3 - Strengthened local community resilience to flooding through the participatory design and implementation of non-structural community-based resilience, adaptation and awareness measures

137. In order to ensure participatory and long-term sustainable community resilience the project will provide training to selected municipalities/communities on maintenance of non-structural intervention measures. Some non-structural measures have already been identified as part of the structural measures (e.g. for Macedonia), but it is envisaged that, during the development of the basin FRM strategy, additional non-structural measures will be identified. Non-structural options will include a suit of measures for management of hillslope and floodplain vegetation to enable greater rainfall infiltration and transmission and reduce erosion. This may include reforestation (with diverse, native species) and the use of seasonal cropping, agroforestry, the use of vegetative bundles to build flood defenses etc., floodplain agro-forestry systems and bio-engineering measures. Flood risk management measures will promote the re-establishment of natural floodplain functionality including: floodplain reconnection; selective bed raising / riffle creation; wash lands/wetland creation; re-meandering straightened rivers; land and soil management activities to retain/delay surface flows; creation or re-instatement of a ditch network to promote infiltration (swales, interception ditches, etc.); In-channel vegetation management growth to maximize channel roughness. Income generating ecosystem-based adaptation and FRM measures (e.g. agro-forestry) will be implemented in priority areas throughout the basin. These schemes will form part of the non-structural interventions to be implemented and will be subjected to the same assessment and appraisals as structural interventions as described above. National standards for the non-structural measures will be reviewed and the project will aim to harmonize standards for the basin. This will be done through the development of guidance documents associated with each type of intervention.

138. The project will develop local government response capacity, training first and second responders for flood emergencies through drills and role play exercises. Training will be provided for communities on roles and responsibilities during flood emergency procedures. Community-based resilience and adaptation will be built using participatory methods of risk assessment and community resilience planning. Community-based response roles and responsibilities will be defined and training of local communities undertaken. Community-managed flood forums will be established.

139. Training will be undertaken in a gender-sensitive manner on the operation and maintenance of non-structural measures to increase capacity of local communities in the maintenance of non-structural intervention measures, utilizing the project KM tools and strategies. Information dissemination to reach all beneficiaries will be established, awareness raising and education, and gender mainstreaming approaches established.

B. Describe how the project /programme would promote new and innovative solutions to climate change adaptation, such as new approaches, technologies and mechanisms.

140. To date, flood risk management in the DRB has been dealt with in an *ad hoc* and reactive manner, relying on measures such as hard structural protection measures which are not designed using climate

risk-formed flood hazard information and are therefore not climate proofed; post-disaster emergency response, with limited reliance on forecast of the event or satisfactory prior warning of the population and post event compensation to victims. Furthermore, FRM within the DRB has been largely undertaken unilaterally by each Riparian country without consideration of the wider basin perspective.

141. The AF project being developed will address the barriers to establishing and implementing a fully integrated basin flood risk management approach aimed at supporting the commitment of the Riparian governments to avoid losses of lives and to reduce economic and infrastructure losses caused by climate-induced flooding.

142. With the AF project, there will be strengthened technical, institutional and financial capacities to implement and maintain a fully integrated basin FRM, clear institutional arrangements and responsibilities for key national institutions, comprehensive and definitive flood risk maps and information as well as strengthened legislative and policy framework to address existing weak land use, spatial planning and sectoral flood resilience and risk management, leading to reduced exposure of communities to damages, losses and loss of lives. In addition, institutional and financial capacities and introduction of modern methodologies and technologies will enable the design of climate risk informed flood mitigation measures. The basin-level approach to the identification of flood risk management intervention measures will ensure that the most vulnerable communities at risk from flooding will have the coping capacities and adaptation strategies at community and individual level to adapt to climate change and to manage and minimize their exposure and resilience.

143. Specifically, the project will introduce the following innovations and technologies:

- Improved accuracy and representative measurement of hydro meteorological variables through improving the observation density of the monitoring to capture the large spatial and temporal variability in hydro meteorological processes.
- Implement flood hazard and risk assessment, modelling and mapping methods and technologies and building of long-term institutional capacity for such assessments. Importantly, it will help establish the comprehensive single source of definitive flood and risk hazard mapping of the appropriate technical specification and level of detail for all uses.
- support the development of platforms for regional coordination and cooperation on flood risk management and the dissemination and sharing of flood risk information using existing information systems.
- the project will address the lack of socio-economic data and relevant capacities for risk, damages, losses, exposure and vulnerability assessments by developing and harmonizing methodologies and technologies for the systematic collection of socioeconomic information required to assess climate induced hazard damages, losses, exposure and vulnerability. It will address the lack/absence of methods and tools for at municipal and community levels by introducing and standardizing methods of damage and loss assessment and PDNA assessment.
- the project will address the limited capacity and resources to implement cost-effective climate-induced strategic flood risk reduction and adaptation activities by strengthening national capacities for developing and implementing FRM plans, based on hazard and risk information and through the detailed design and implementation of priority risk reduction structural measures. Thus, directly increasing resilience in targeted areas, and will enable long-term FRM investment planning of intervention measures.

C. Describe how the project / programme would provide economic, social and environmental benefits, with particular reference to the most vulnerable communities, and vulnerable groups within communities, including gender considerations. Describe how the project / programme would avoid or mitigate negative impacts, in compliance with the Environmental and Social Policy of the Adaptation Fund.

144. The project is a direct response to the priorities that have emerged from the National Communications of the Riparian Countries and the priorities identified in light of recent significant flooding in the basin, as identified by a range of stakeholders, including community representatives and members affected by flooding. The project is designed to respond to the flood risks to the most vulnerable communities in the Drin river basin (including marginalized groups such as the Roma community), by transferring best available technologies for climate resilient flood risk management. In so doing it will directly benefit at least 250,000 people estimated to be at risk from extreme floods in the Riparian countries. Indirectly the project will also benefit all of the 1.6 people living in the DRB by improved basin-level flood risk reduction and consequent social, economic and environmental benefits.

145. The project will improve the knowledge base on flood risk through fully developed modelling and flood mapping, which also improved the understanding of required hydrological flows to wetlands in order to maintain ecosystems services. This, as well as the efforts to increase institutional capacity, will lead to improved strategic management of flood risk and improved flood forecasting and warning. In particular, the population of the DRB will benefit from improved lead warning times to flood events (disseminated in an inclusive manner, accounting the needs of a range of stakeholders) due to improvements in the hydrometric monitoring network which underpins the forecasting and early warning systems. Implementation of spatial planning policies, which include zoning of economic activities and development away from high flood risk areas, will lead to reduced exposure of the target population in the DRB. Overall vulnerability of communities in DRB to flooding will be reduced due to increased awareness and direct engagement of local communities in flood risk management. Adaptation of climate resilient land use practices by communities will increase their adaptive capacity and reduce exposure and safeguard their assets. Targeted training in FRM functions will further increase adaptive capacities within municipalities.

146. The project will have sustainable development co-benefits including ecosystem services protection, rural income generation, livelihood enhancement and job creation, improved access to education and training opportunities, which account for gender and social inclusion considerations, and improved resilience of physical assets of communities. The main ***economic co-benefits*** from the project investment are derived from the avoided socio-economic losses from flood disasters. Under climate change, economic losses are expected to increase, which could significantly impact and reverse socio-economic development gains of the Riparian countries. Avoided losses to sectors such as hydropower could be significant. Climate flood risk informed sectoral planning will help build national and regional resilience. Climate risk information will also safeguard assets such as transportation networks which are critical to the economic development and functioning of communities. Economic co-benefits will also be realized in all productive sectors within Riparian countries due to prevention of losses.

The project will avoid reinforcing existing gender equalities in the region and have significant gender co-benefits and will embed nationally appropriate gender consideration in each Riparian country. The project will therefore safeguard local communities and their assets from flood disasters with particular attention to women and other vulnerable groups (marginalized, elderly, disabled). ***Environmental co-benefits*** mainly relate to strategies which will provide water retention functions; regulation of hydrological flows (buffer runoff, soil infiltration, groundwater recharge, maintenance of base flows, adequate water availability to wetlands); natural hazard mitigation (e.g. flood prevention, peak flow reduction, soil erosion and landslide control); increased streambed stabilization resulting in decreased erosion, habitat preservation, and reforestation which will be derived mainly from non-structural measures to be implemented.

D. Describe or provide an analysis of the cost-effectiveness of the proposed project / programme and explain how the regional approach would support cost-effectiveness.

147. The proposed project builds upon lessons learned and success of the past and on-going interventions, existing data/information, institutional and management frameworks and capacities and, communications and coordination mechanisms being built under the GEF Drin project and Drin MOU instrument.

148. Comparable efforts (EWs, climate information, and community-based DRM) have shown effective impact related to saving of lives, assets, and livelihoods. In Nepal, the community based EWS directly

benefit over 80,000 people in communities around river basin systems[31]. Advanced EWS systems are estimated to be 100% effective in reducing loss of life by cyclones, 60% effective for floods, and 20% effective in case of drought. (Teisberg and Weiher (2009)). In Bhutan, EWS project has enhanced capacities of district and local level authorities and communities in disaster risk and climate risk management[32].

149. The project offers a cost-effective alternative to conventional/baseline reactive approaches to risk management that builds around ad-hoc recovery investment and compensations, predominance of large scale hard defense infrastructure and limited community engagement. The AF project will catalyze shift to more cost-effective and efficient approaches to resilience building. The new approach is based on enhanced risk knowledge that allows proactive action to reduce exposure of people and economic assets to hazardous events, enhanced design of risk reduction investments, a combination of structural and non-structural measures, enhancing adaptive capacities of local communities. The regional cooperation and coordination on flood risk management and climate risk information management is another factor of the AF project efficiency.

E. Describe how the project / programme is consistent with national or sub-national sustainable development strategies, including, where appropriate, national or sub-national development plans, poverty reduction strategies, national communications, or national adaptation programs of action, or other relevant instruments, where they exist. If applicable, please refer to relevant regional plans and strategies where they exist.

150. The project is consistent with the climate change adaptation priorities outlined in the National Communications of Albania, FYR Macedonia and Montenegro. All three beneficiary countries launched their National Adaptation Planning (NAP) processes recognizing above all climate risks and vulnerability of their economies and communities to climate-induced floods.

151. The National Strategy for Development and Integration (NSDI) ***of Albania*** for the period from 2014 – 2020 presents both the government's vision for national goals for the social and economic development of Albania, as well as sector-specific plans for achieving this vision over the period. Most of the sector strategies under the NSDI include acknowledgement of the impacts of climate change. The Environment cross-cutting strategy under the NSDI, fully integrates climate change and highlights the lack of institutional and individual capacities to evaluate climate change impacts and need for adaptation action particularly in coastal zones and river basins, where tourism is a large economic driver and urban and transportation infrastructure and agriculture land is especially at risk from climate impacts such as flooding. The proposed AF project will support Albania's newly established Agency of Integrated Water Resources Management and the Ministry of Tourism and Environment to ensure a comprehensive watershed management in Drini River that accounts for the growing renewable energy industry, land use planning as well as road, urban, and other infrastructure.

152. The National Adaptation Process was launched in Albania in 2015 with the support of GIZ and UNDP. A preliminary roadmap for NAP implementation was formulated and validated by representatives. The Government of Albania will be developing a detailed NAP strategy action plan with the support of the Green Climate Fund and UNDP. Vulnerability to climate induced flood risks and the needs to increase the resilience to floods is recognized in the NAP documents and process.

153. The Former Yugoslav Republic of **Macedonia** priorities and development needs are reflected in the Government Programme 2017-2020. The project will contribute to the implementation of the Government priorities from the abovementioned programme, particularly the goals set for the following sectors: protection of the environment and nature, agriculture, forestry and water economy, as well as foreign affairs and European integration. More specifically the Strategy for environment protection and climate change

[31] https://practicalaction.org/docs/region_nepal/early-warning-saving-lives.pdf

[32]]http://cfapp2.undp.org/gef/documents/1/g3722/g2_16676/Final%20Technical%20Review%20and%20Social%20IMpact%20Assessment%2EGLOF%20FSP%2Epdf).

2014-2020 prepared by the Ministry of Environment and Physical Planning in 2015 will be an important instrument for the future vision on integrated river basin management plan.

154. The project will support the intention of the Government to introduce an integrated system of water management, including establishment of a database for all water resources. Also, the project will directly contribute the Government's idea to initiate the development of operational plans for flood protection and public educational campaign for flood risk protection country wide. The clearest contribution of the project will be linked to the support of the Government efforts for the development of a contemporary hydro-meteorological system, particularly in the agricultural regions, and establishment and operationalization of an early warning system on the whole territory of the country. Strengthening of the water monitoring systems, and implementation of the EU Water Framework Directive and the EU Flood Directive are one of the priorities of the Strategy for environment protection and climate change 2014-2020. This Strategy also calls for an integrated river basin management and establishment of a system for flood risk assessment, and flood risk management.

155. The first Nationally Determined Contribution (NDC) under the Paris Agreement ***of Montenegro*** states that "The region of South East Europe, including Montenegro, is highly vulnerable to the impacts of climate change thus avoiding dangerous climate change is of paramount importance for the country."

156. The Montenegrin National Strategy of Sustainable Development until 2030 (NSSD) established a comprehensive framework addressing challenges the country is facing on its path towards sustainable development by 2030, while considering the EU accession requirements. In this context, the NSSD also sets the platform for translating Agenda for sustainable development into the national framework. The management of natural resources (including waters) and corresponding sectorial strategies and financial frameworks have to be aligned with the NSSD 2030.

157. The Water Management Strategy defines long-term directions of water management and includes the assessment of the current situation in water management, goals and guidelines for water management, measures to achieve the established objectives and the projection of the development of water management. The overall objective of the Strategy is to achieve a uniform and fully harmonized water regime of Montenegro both in Adriatic and Danube basin.

158. The National Strategy with Action Plan for transposition, implementation and enforcement of the EU acquis on Environment and Climate Change (NEAS) 2016-2020 was adopted to achieve gradual and complete transposition of the entire EU acquis for Chapter 27-Environment and Climate Change into the legal system of Montenegro. In November 2013 based on the Screening Report presented by the EC, Council decided that Montenegro needs to fulfill the opening benchmark to open the negotiations with the EU for Chapter 27 (Environment and Climate Change).

159. The Strategy for Disaster Risk Reduction (DRR) with Action Plan for the period 2018-2023 is based on reducing the disaster risks and their main causal factors, proper land management and environmental protection, lowering exposure to hazards as well as vulnerability of people and property and improving overall preparedness for disasters. The DRR strategy highlights that the frequency of the meteorological and hydrological hazards and the damage they have been causing is increasing.

F. Describe how the project / programme meets relevant national technical standards, where applicable, such as standards for environmental assessment, building codes, etc., and complies with the Environmental and Social Policy of the Adaptation Fund.

160. All activities of the AF project, except for activities under the Outputs 3.2 imply implementation of soft, non-structural measures that do not require any government licenses and permits. For hydrometric and other equipment to be procured under the Outcome 1 the project will analyze and choose optimal

locations for the new observation equipment to minimize the risk of damages to the extent possible. Siting of gauging stations will follow international standards which will consider the safety of stations.

161. Flood defense structures that will be constructed/rehabilitated under the Output 3.2 will adhere to all international standards, as well as national technical standards and building codes according to the Environmental Legislation of the three beneficiary countries, including requirements for Environmental and Social Impact Assessment (ESIA). All works will be subject to design and will meet local technical environmental and social laws and standards. Where relevant, local regulations will be followed. The project will ensure the adherence of all construction activities to national standards as well as to the Environmental and Social Policy of the Adaptation Fund and to the UNDP safeguards policies.

162. During the full AF proposal development, UNDP's Social and Environmental Screening Procedure was applied in order to screen all possible environmental and social risks, to maximize co-benefits, as well as to propose management and mitigation measures. The SESP is provided in Annex 6 of the proposal and is accompanied by the Environmental and Social Management Plan (ESMP) provided in Annex 7, which summarized the impacts and approaches to management and mitigation. As complementary documents to the SESP, a Stakeholder Engagement Plan was prepared, which provides consultation record of the discussion which a broad range of primary and secondary stakeholders that were pivotal to project design. Similarly, a Gender Assessment and Action Plan (GAAP) was prepared to understand the project gender context and propose gender-sensitive actions accordingly. The GAAP can be found in Annex 8.

G. Describe if there is duplication of project / programme with other funding sources, if any.

163. During the development of this proposal an analysis of the baseline projects and initiatives relevant to the proposed AF project implementation has been conducted in order to avoid duplication and secure strong synergies and coordination. The following projects and programmes are relevant to the AF initiative.

164. ***Enabling transboundary cooperation and integrated water resources management in the extended Drin River Basin:*** The GEF-funded UNDP Drin Project promotes joint management of the shared water resources of the transboundary Drin River Basin, including coordination mechanisms among the various sub-basin joint commissions and committees. The Project assists to: (i) build consensus among countries on key transboundary concerns and drivers of change, including climate variability and change, reached through joint fact finding; (ii) update the shared vision; (iii) reach an agreement on a program of priority actions deemed necessary to achieve the vision; (iii) strengthening technical and institutional capacities; (iv) operationalize the institutional structure of the Drin Coordinated Action, rendering it capable of undertaking its coordinative and executive role. The Project is implemented by UNDP and executed by the Global Water Partnership-Mediterranean (GWP-Med). The Drin Core Group is the Steering Committee (SC) of the Project.

165. The project has the following expected outcomes:

- Component 1: Consolidating a Common Knowledge Base
    - Outcome 1 - Consensus Among Countries on Key Transboundary Concerns, Including Climate Change and Variability, Reached Through Joint Fact Finding.
- Component 2: Building the Foundation for Multi-Country Cooperation
    - Outcome 2 - Visioning Process Opens the Way for Systematic Cooperation in the Management of the Transboundary Drin River Basin.
    - Outcome 3 - Countries and Donors Commit to Sustain Joint Cooperation Mechanisms and to Undertake Priority Reforms and Investments
- Component 3: Institutional Strengthening for Integrated River Basin Management (IRBM).
    - Outcome 4 - The Operationalization and Strengthening of the Institutional and Legal Frameworks for Transboundary Cooperation will Facilitate Balancing of Water Uses and Sustaining Environmental Quality throughout the Extended Drin Basin.
- Component 4: Demonstration of Technologies and Practices for IWRM and Ecosystem Management.

    - Outcome 5 - Benefits Demonstrated on the Ground by Environmentally Sound Approaches and Technologies New to the Region.
- Component 5: Stakeholder Involvement, Gender Mainstreaming and Communication.
    - Outcome 6 - Public Support and Participation to IWRM and Joint Multi-Country Management Enhanced Through Stakeholder Involvement and Gender Mainstreaming.
    - Outcome 7 - Political Awareness at All Levels and Private Sector Participation Strengthened through Higher Visibility of the Project's Developments and Targeted Outreach Initiatives

166. The proposed AF project will work closely with the existing Drin Project and will benefit from and build upon the outcome of the project including in the following areas: 1) The Monitoring and Information Management System (IMS) being development by the project will form the basis of the flood risk information sharing to be established with the proposed AF project. In effect, a flood component may need to be added to the platform being developed. In addition the Transboundary Diagnostic Analysis (TDA) of the existing project will form the basis of the flood risk-specific analyses to be undertaken by the proposed AF project; 2) The Drin Integrated CCA and FRM Plan to be developed under the proposed AF project (Output 2.3) will be embedded as a sub-plan of the Strategic Action Program (SAP) of the GEF project; 3) Proposed AF project will use the existing Core mechanisms for coordination and cooperation at the basin level through the Drin Core Expert Working Group on Floods; 4) Outcome 4 - output 11 of the GEF project "A program of on the ground pilot demonstrations focusing on: water use efficiency measures, reduction of nutrients, land use planning, groundwater protection, floods and droughts, sustainable tourism and flood risk management" will provide a pilot project to the proposed AF project.

167. ***South-East European Multi-Hazard Early Warning Advisory System*** – USAID/OFDA 565,000.00 CHF. The project includes development of a regional multi-hazard early warning advisory system – consisting of information and tools for forecasters at National Meteorological and Hydrological Services (NMHSs) and harmonized national early warning systems. The first phase of the SEE-MHEWS-A project in 2016-2017 was supported by the U.S. Agency for International Development (USAID), Office of U.S. Foreign Disaster Assistance. SEE-MHEWS-A will provide operational forecasters with effective and tested tools for forecasting hazardous weather events and their possible impacts in order to improve the accuracy of warnings and their relevance to stakeholders and users. On a single virtual platform, the system will collect existing information, products and tools for the provision of accurate forecasts and warnings to support hazard-related decision-making by national authorities. Furthermore, the system will function as a cooperative platform where forecasters from different countries can work together on the identification of potential hazards and their impacts, especially when impending weather hazards may have potential impacts in many countries

168. During the inception phase, a detailed Implementation Plan was developed that provides guidelines for development of the technical part of the system and for all activities necessary to establish advisory system operations by mid-2023. In addition, the plan considers the governance structure and other management aspects of the project implementation. The plan was developed as a joint effort between WMO, NMHSs of the region, and numerous collaborators, including WMO Regional Specialized Meteorological Centers, research institutions, numerical weather prediction consortia, and European and US meteorological and/or hydrological service.

169. During the inception phase, the proposed AF project establish a partnership with this project to ensure cooperation and avoid duplication of effort. This would be particularly important with regards to the information tools to be developed by the South***-East European Multi-Hazard Early Warning Advisory System,*** which are likely to be complimentary to the FA project objectives. The project has already undertaken a number of capacity building activities including a workshop on Common Alerting Protocols (CAP) Implementation, Forecaster's workshop, and a workshop on ICT technology and observational requirements. It would be important to analyze additional training needs to be met which will be important for the capacity building to be undertaken under the proposed AF project, and for the longer-term capacity development plan to be established (Output 2.2).

170. ***IPA DRAM – Programme for Disaster Risk Assessment and Mapping in Western Balkans and Turkey:*** IPA DRAM is addressing the need to further strengthen capacities in the field of civil protection and general risk management in the Western Balkans region, and coordination both within the region and

with sister agencies in EU-countries. The Programme for Disaster Risk Assessment and Mapping (IPA DRAM) further contributes to enhancing the capabilities of the partner countries to strengthen disaster risk management by creating an open platform for the development and improvement of national disaster loss databases, enhancing the coherence among the national systems and methodologies, and consistency with existing EU regulations, guidelines and good practices.

171. The proposed AF project will aim to work closely with the IPA DRAM project which is implementing best practice and harmonizing methodologies, tools and databases for damage and loss. This will be particularly relevant for proposed Output 1.3.

172. GIZ-implemented project "***Climate Change Adaptation in Transboundary Flood Risk Management, Western Balkans***" (CCAWB is working closely with partners and pursuing a multi-level approach, support is provided mainly by means of capacity development, advisory services, and procurement of equipment.

173. The project has achieved the following, according to the Fact Sheet:

- Riparian countries have agreed on data exchange to further improve flood early warning and trans-boundary flood risk management. As a result, an estimated 30.000 people potentially affected by floods can be warned in advance.
- 20 additional sensors are providing online data to the Hydro-meteorological services in the four countries.
- Hydrological flood forecasting model of the whole basin is developed.
- 12 professionals of the four national Hydro-meteorological Services are trained and enabled produce regular flood forecasts.
- More than 50 professionals from local authorities from Albania, Macedonia and Montenegro are trained in the use of GIS software for more effective flood risk management.
- Flood risk areas are defined and mapped at basin level, in line with the EU Flood Directive, and a catalogue of measures for transboundary flood risk management is created for the Basin.
- At least 10 km of drainage channels in Shkodra region are being cleaned up to reduce the risk and severity of floods.
- Civil emergency structures are supported with know-how, tools and equipment to better perform their work.
- Students and teachers of at least 18 schools in the risk areas of Albania and Montenegro will benefit from awareness campaigns on flood preparedness and reaction.
- The National Adaptation Plan and its financing strategy are finalized for Albania.

174. GIZ, under the project "Adaptation to Climate Change in transboundary Flood Risk Management, Western Balkans" is planning to extend its current activities on flood risk management of the Drin basin. The following are excerpts from GIZ stated approach for its third phased of the project:

Building on previous achievements, CCAWB, in its third phase, will consolidate the results in flood forecasting, risk assessments and local preparedness with a view to supporting the four elements of early warning according to the UNISDR definition (see below). In order to achieve this, the project will work in the following fields:

Output 1 – Flood Hazard and Risk Mapping
Strengthening capacities for meaningful (including transboundary) flood risk assessments will provide the information necessary for prioritising technical, financial and policy decisions in the area of flood risk management – thus strengthening adaptive capacities of institutions and the affected population. All activities in this area of work will be conducted in accordance with the EU Flood Directive, focusing on Step 2 of the directive: the development of flood hazard and risk maps (FHRM). The FHRM will provide the basis for the review and development of local Flood Risk Management Plans (FRMP). The actual FHRM will be conducted by the partner institutions themselves. GIZ will support them with technical, methodological expertise and process facilitation, bring in experiences from other European countries, and provide capacity building and training.

Expected results:

*o Hazard and risk maps for **selected risk areas**[33], reflecting user needs, ideally harmonised across borders,*
o Recommendations for risk management,
o Documentation of lessons learned,
o Field-tested and agreed methodology and approach for participatory FHRM, documented in a guideline/ step-by-step manual, incl. policy recommendations,
o Increased capacities of users of maps (e.g. civil protection, spatial planning, etc.),
o Training-of-Trainers concept and national/ regional pool of trainers for FHRM,
o Replication of successful approaches in other risk areas.

Output 2 – Early Warning
CCAWB will work with local authorities and civil society organisations in selected pilot areas to improve local warning and response mechanisms, i.e. the so-called 'last mile'. It will provide technical and organisational advice to NHMS to further improve the forecasting system while strengthening their capacities as warning service providers. Key players in warning dissemination and response, i.e. entities in charge of civil protection and disaster management, will also be strengthened. The concrete work in pilot areas will be used to engage all relevant actors of the national warning chain in the individual countries. CCAWB will bring the different stakeholders of the warning chain together to jointly review and improve, i.a., Standard Operating Procedures (SOPs), warning content and channels, as well as dissemination technology, for meaningful and timely early warning and effective response. While formal early warning falls within the exclusive mandate of a nation-state, regional cooperation and information exchange can benefit national action, and eventually the population at risk. Therefore, the project will encourage transboundary cooperation, e.g. in the border areas of Albania and Montenegro.

Expected results:
o Continuous, improved flood forecasting based on the Panta Rhei model,
o Jointly developed recommendations for warning levels, for flood early warning in the four countries,
o Effective SOPs for early warning applied in selected risk areas, as validated in simulation exercises,
o Step-by-step manual for improving early warning at the local level, incl. policy recommendations,
o Training modules and Training-of-Trainers concept as well as national/ regional pool of trainers.

Output 3 – Institutional development
Sustainably improving flood risk management requires strengthening the institutions that are in charge. The project will support actors at national and local levels, including the authorities in charge of water resources management, the NHMS, disaster risk management and civil protection agencies, as well as local authorities. It will provide organisational and strategic advice for selected stakeholders, strengthening the institutions' capacity for coordination and cooperation, e.g. in the field of early warning. As a cross-cutting issue, Output 3 is closely related to the activities for the other two outputs. Concrete activities depend on further consultation with the partners in the four countries and a joint organisational analysis in the coming months

175. Since GIZ will be undertaking modelling in only selected areas (see footnote 35 above), there will be no overlap with the AF project which will be taking a river basin approach with detailed flood hazard modelling of areas upstream of Lake Shkoder/Skadar and Bojana-Buna area with the intention to incorporate GIZ's Lake Shkoder/Skadar and Bojana-Buna area. It should be noted that the GIZ model of the Lake Shkoder/Skadar and Bojana-Buna area, will be required for the detailed design of the structural measures for both Montenegro and Albania. So close cooperation with GIZ will be established to ensure that the model will be made available and meets to needs for detailed design, the timeframe of GIZ project should be assessed vis a vie the need for the riparian to start the implementation of the measures. In addition as the riparian countries would have developed and agreed the methodology for EUFD modelling, it is expected the modelling by AF and GIZ project will be compatible. In terms of the early warning system

[33] Extensive discussions with GIZ concluded that GIZ will only directly fund the modelling and mapping of the Lake Skhoder/Skadar and Bojan-Buna River area (ASPR codes AL4-6 and ME3-6 in Figure 3 above) but would strengthen capacities of institutions to undertake modelling of other areas they deem as important, at a later date. GIZ also suggested that it would also like to model the area north of Lake Ohrid, however the FYRM has asked that the detailed modelling of this area be undertaken by the AF project as UNDP has already undertaken extensive modelling of the area as discussed in Annex 8 and will continue to do so for the ongoing work in this area.

the AF project will expand the hydrometric network which will enhance the flood forecasting model accuracy, and it will digitize data for existing stations not currently within the forecasting model. These activities are complementary to the GIZ activities and have no areas of overlap. GIZ's Output 3 is focused on institutional capacity development which is complementary to capacity development to be undertaken through the AF project which is development the long-term capacity development plan and implementing training.

176. The AF project will build upon the extensive work already undertaken by GIZ on flood risk management in the Drin basin, and will aim to work closely with GIZ on the Implementation of flood hazard mapping for the Drin Basin under their new project and under proposed AF Output 1.2.

177. **Danube River Basin Hydromorphology and River Restoration (DYNA)" Project**, implemented/executed by WWF/ICPDR which has the objective: To "Strengthen integrated and harmonized approaches for river restoration and aquatic biodiversity conservation in the Danube River Basin (Bosnia-Herzegovina, Moldova, Montenegro, Serbia, and Ukraine)". The project has three technical components:

Component 1 - Regional harmonization: increased regional capacity in the field of hydro morphology and better coordination of non-EU Member States in the Danube river basin will be established resulting in harmonized preparation and implementation of regional river basin and flood risk management plans and measures.

Component 2 - Improved country level planning: focus will be on integrating hydro morphological aspects adequately into country level river basin and flood risk management planning as well as emerging related governmental strategies and programmes such as those on climate change resilience and adaptation. In Montenegro, the focus over the coming years will be on capacity building and training on flood control and integrated water resources management in line with WFD and Flood Directive, with emphasis on hydro morphological assessment and flood control. Support will be requested for data collection and studies for smaller rivers which are causing problems with flash floods.

Component 3 - Implementation of pilot measures: will involve the preparation and/or implementation of at least one transboundary pilot project across two non-EU Member States and one pilot each per non-EU Member State, demonstrating hydro morphological and integrated approaches in river basin and flood risk management planning and implementation

178. **Protection and Sustainable Use of the Dinaric Karst Aquifer System project – DIKTAS Project**, is a regional project aimed at improving the management of karst groundwaters in the Dinaric Karst shared by several countries in South-Eastern Europe (extends from NE Italy through Slovenia, Croatia, Bosnia & Herzegovina, Montenegro to Albania. Karst formations connected with the Dinaric carbonate chain also outcrop in Serbia, FYR Macedonia, and possibly in NW Greece). It is the first ever attempted globally to introduce sustainable integrated management principles in a transboundary karst freshwater aquifer of the magnitude of the Dinaric Karst System and aims at focusing attention on the vulnerable water resources contained in karst aquifers (carbonate rock formations), which are poorly understood. The Dinaric Karst Aquifer System, shared by several countries. and one of the world's largest, has been identified as an ideal opportunity for applying new and integrated management approaches to these unique freshwater resources and ecosystem. At the regional level the project's objectives are to: (1) Facilitate the equitable and sustainable utilization and management of the transboundary water resources of the Dinaric Karst Aquifer System, and (2) Protect from natural and man-made hazards, including climate change, the unique groundwater dependent ecosystems that characterize the Dinaric Karst region of the Balkan Peninsula.

179. These objectives, which aim to contribute to sustainable development of the region, are achieved through a concerted multi-country effort involving improvement in scientific understanding, the building of political consensus around key reforms and new policies, the enhanced coordination among countries, donors, projects and agencies, and the consolidation of national and international support.

180. DIKTAS is a full-size GEF regional project, implemented by UNDP and executed by UNESCO-IHP. The core DIKTAS project partners are four GEF fund-recipient countries of the Dinaric region, namely Albania, Bosnia and Herzegovina, Croatia and Montenegro.

181. The **Western Balkans Investment Framework (WBIF)** is a regional blending facility supporting EU enlargement and socio-economic development in Albania, Bosnia and Herzegovina, Kosovo*, the former Yugoslav Republic of Macedonia, Montenegro, and Serbia. Under the WBIF the project **Gap Analysis/Needs Assessment in the Context of Implementing the EU Floods Directive in the Western Balkans** was undertaken which produced a report on the gaps and needs related to the implementation of the Floods Directive in the Western Balkans and the assessment of the planned projects (non-structural and structural measures) in the WB countries. The outputs are country specific and regional FD implementation plans and prioritized project lists. Under the WBIF, **The Sava river basin flood management Project** is being implemented under this facility in Montenegro, Bosnia and Herzegovina, Serbia. This project aims to address flood risks within the wider Sava river basin by creating a regional flood risk management plan as well as a flood forecasting and warning system. For this purpose, the WBIF has awarded a €2 million grant in June 2014. The project Drina River Basin Water Resources Management is also being implemented through WBIF funding, covering Montenegro, Bosnia and Herzegovina, Serbia. The overall objective of this project is to support more effective water resources management in Drina River Basin with a special focus on flood and drought mitigation, and hydropower and environmental management, based on "good practices" and within the framework of integrated water resource management. This project proposes to give special consideration to plans and strategies in the energy sector in the wider region, in order to determine the most important operational and investment interventions in the basin.

182. While having achieved some discernible change in flood risk management, these baseline initiatives need to be consolidated and built upon in order to achieve transformative change in resilience of, existing and emerging, climate-induced flood risk to the population of the Drin Basin.

183. Given the number of on-going regional initiatives on flood risk management in the Drin basin, the project will look to coordinate activities to avoid duplication and overlap. Consultations are on-going with all key existing and planned project implementors to develop a clear strategy for coordination and cooperation by the full proposal stage. A review will be undertaken of all previous and ongoing relevant national and regional studies to identify lessons learned which this project can build upon. The Ongoing GIZ project in the Drin basin will provide opportunities for coordination of efforts, however, further consultations are needed to ascertain the scope of planned activities to identify synergies and areas for cooperation.

184. The proposed AF project is unique in its scope and provides an opportunity to consolidate and build upon experience to date. It will be the first project to implement a comprehensive integrate flood risk management approach for the Drin basin and will be critical to providing a benchmark for how the Riparian countries undertake flood risk management in other basins. In doing to the project will aim to identify the potentially relevant synergies with relevant regional organizations including the International Commission for the Protection of the Danube River (ICPDR) and International Sava River Basin Commission (ISRBC), including how their inter-regional coordination mechanisms may be leveraged and applied to the Drin. In addition, regional projects with relevant technical themes will be of great importance to ensure harmonized and synergistic approaches to flood risk management in the countries in which these regional projects are being implemented

H. If applicable, describe the learning and knowledge management component to capture and disseminate lessons learned.

185. The knowledge management (KM) of the project will be embedded under Outputs 2.2 and 3.3 and will have the following key aims:

(i) To ensure access to data and information generated by the project as well as long-term access to data on which stakeholders' essential institutional functions rely and/or data and information that can be used for evidence for policy and practice advice (**connecting people to information and knowledge**)

(ii) Connect key stakeholder groups, practitioners and experts to ensure that key learning and experience is shared within and across sectors (**connecting people to people**)

(iii) Ensure staff in the stakeholder institutions know about effective and relevant KM techniques so that knowledge is shared, captured and retained by the institutions and shared within and across the sector (**institutional KM improvement**)

(iv) By developing and promoting KM as a tool for continuous and sustainable improvement and ensuring that KM tools generated by the project will be systematically used and maintained within the stakeholder institutions (**Developing and embedding KM tools and practices**).

Connecting people to Information and knowledge

186. The project will build on the foundation of previous knowledge. New knowledge gained on the project will be captured and stored appropriately for others to access and learn from. The following series of tools and techniques will be employed to enable people to find information and knowledge more effectively throughout the project.

- *Case Study* – At least 5 case studies will be generated per year of the project
- *Rapid Evidence review* – Project inception studies will establish the project baseline which will be updated throughout the project as it progresses and published in various technical and non-technical documents.
- *Knowledge Banks (web databases)* – The project will develop a knowledge and data management website for all project, stakeholder and beneficiary staff

Connecting people to people

187. The following series of tools and techniques describe how knowledge management will enable people to connect to people more effectively.

- *Community of Practice (CoP/Knowledge network/professional network)* – The project will set up a number of technical working groups, riparian countries' interagency working groups as well as regional working groups to enable practitioners (CoP) to interact and share experiences
- *Peer Assist* – The project will engage a range of local and international experts who will provide technical assistance to the project. For long-term peer assist, the project will help establish relationships between institutions and local as well as international universities and research centers
- *Knowledge café* – This will be achieved through the meetings of the technical working groups and through bi-lateral meetings between individual stakeholder organizations
- *Knowledge marketplace* – This will be provided by project experts who will be identifiable by their area of expertise and will provide support to the project and stakeholders. In the long-term, a 'directory' of experts can be developed to fill this need.

Institutional KM improvement

188. Summarizing lessons learnt and experiences and sharing them with others can help build and retain knowledge. The following series of tools and techniques describe how the project knowledge management will enable improvement through impact assessments, evaluations and people management.

- *Gone well/not gone well* - All significant project events/activities will be subject to a debrief to capture good/bad points and lessons learned
- *After Action review (AAR) formative evaluation* - All significant project events/activities will include formal minutes which will be made available on project portal
- *Retrospective review (summaries evaluation)* - A formal project lessons learned document will be available for all project staff to complete (managed by PM) online
- *Knowledge Exchange* - All project staff will have as final deliverable a summary report to include knowledge transfer information and other lessons learned

Developing and embedding KM tools and practices

189. During project formulation and planning, the number and types of Knowledge Management tools that will be developed will be further detailed.

190. As far as possible, all KM tools will be provided as project deliverables and, importantly, through the project it is intended that by using these tools with the stakeholders, the KM practices will be embedded within their organizations in the future.

191. In addition to the above the project will provide many opportunities for formal learning, awareness raisings and capacity building cut across almost all outputs and activities. These sets of measures will catalyze longer-term learning and short-term professional training/retraining programs targeting all stakeholders, including vulnerable communities, local governments, schools and universities and, relevant authorities.

192. All knowledge products, generated within the project including technical reports, methodological guidelines, regulatory and policy, planning and outreach materials will be available on-line, and all project knowledge products and documents will be collected and archived on e-library on multi-hazard disaster risk management.

193. The knowledge from structural and non-structural measures that will be implemented under outcome 3 will be captured and processed to achieve replicability and scalability of successful interventions. The project will develop the Drin basin Integrated FRM plan and will implement some of the structural and non-structural intervention measures in selected high priority areas. These will provide strong technology and knowledge transfer, as well as replicability impact as they will establish the methods, standards and approaches that will work across the Drin basin and other basin of the Riparian countries. The methods, standards, approaches will be defined in guidance, legal and policy documents. The potential for scaling up these approaches is therefore significant.

194. In addition, the AF project will provide critical climate risk information that would enable the Governments of Riparian countries to implement a number of basin-wide and nation-wide transformative policies for reducing exposure and vulnerability of the population, various sectors (e.g. agriculture, tourism, health and rural development sectors) and critical infrastructure (roads, bridges, electricity transmission lines, hydropower, other power facilities, water supply and sanitation systems) to climate-induced hazards. The project will thus c a paradigm shift in the climate-informed basin and national risk reduction and early warning approaches which will catalyse and scale up the use of climate-risk information and approaches across all sectors

I. Describe the consultative process, including the list of stakeholders consulted, undertaken during project / programme preparation, with particular reference to vulnerable groups, including gender considerations, in compliance with the Environmental and Social Policy of the Adaptation Fund.

195. At Concept development stage, stakeholder consultations in the four Riparians occured. Missions were conducted in each Riparian country to meet with key stakeholders. The aim of the missions was as follows:

1) To gain an understanding of the current status of the institutional frameworks and capacities for FRM in each country
2) To determine requirements within each country to strengthen FRM, particularly within the Drin Basin and identify national priorities
3) To gain an understanding of current regional/basin cooperation on FRM and identify areas for strengthening cooperation in line with the proposed project outcomes.
4) To identify and collect necessary data for the development of the project proposal
5) To understand previous and ongoing initiatives on FRM by institutions and partners, to ensure synergy and avoid duplication/overlap of effort

6) To identify potential co-financing

196. Furthermore, the project idea was presented to the Drin Core Group in June 2018 and the national delegations from the DCG countries supported the further development of the proposed project. Detailing the above, Annex 9 The Stakeholder Engagement Plan provides an overview of stakeholder consultations undertaken in each country including attendees and where available summary of key discussion points which informed the design of the project.

197. During full proposal development, the following consultations were held (please see Annex 9 for the records and reports on the below consultations):

1) Presentation of the Concept at the Drin Core Group meeting in November 2018
2) Mission to all Riparian countries by the UNDP Safeguards and Stakeholder Engagement Consultant.
3) Mission to Macedonia by Project Formulation lead which included Skype call with Drin Core Group
4) A series of consultations with GIZ to discuss coordination and synergy between the two projects and to ensure that any risk of overlap in the project design is avoided.
5) Field consultations with community beneficiaries in all three countries (at the proposed structural risk reduction sites).

J. Provide justification for funding requested, focusing on the full cost of adaptation reasoning.

198. The programme costs are additional to other costs associated with flood risk management activities carried out by the beneficiary countries and other parties. The proposal aims to build on existing platforms to meet the additional costs of adaptation. The project will fund the full costs of adaptation, such as policy and institutional frameworks, technology transfer, capacity development for promoting climate resilient transboundary flood risk management and demonstration of community-based low-cost flood risk reduction. The project is structured to allow a high proportion of funds to flow into capacity building, policy development and institutional activities associated with the promotion of climate resilient flood risk management.

199. As such, the components are expected to result in a significantly higher adaptation benefit than would otherwise be the case under a baseline scenario. A significant share of community vulnerability to climate-induced floods remains structural in nature and requires investment in a combination of structural and non-structural flood protection measures to build awareness of best practice and change behavior both among policy makers and agricultural communities. Further cost of adaptation reasoning is set out below.

Component 1 – Hazard and risk knowledge management tools

Without AF Intervention

200. The existing hydrometric network of the DRB is currently inadequate and in some cases, is owned and operated by disparate agencies/institutions (for example hydropower companies) and data collected is not centrally stored or accessible to the relevant institutions. In addition, not all data is available in electronic format.

201. Currently flood risk management in the Drin basin is being done without climate-risk informed flood hazard and risk maps for the basin, against which to identify risks, vulnerability and appropriate risk reduction, management and adaptation measures. This is due to a lack of experience of hazard, risk and vulnerability modelling and mapping and its application to climate risk-informed integrated Flood Risk Management approaches and points. There is a need for capacity building and financial resources, to enable the effective application of such approaches for adaptive flood risk management among the agencies responsible for flood management in the Riparian countries. Expertise in flood risk assessment using tools such as hydrological models is limited particularly within government organizations and there is limited knowledge of how to integrate climate change considerations into flood risk assessments.

202. Currently, flood management is missing the assessment of vulnerability and the use of appraisal methods to test the effectiveness of adaptation measures evaluate the cost-effectiveness of one measure against another and to prioritize measures. The information required to assess vulnerability is not currently available and is not collected systematically, nor are there up-to-date methodologies for collection of information and assessment of damages. This leads to inefficiencies, ineffectiveness and potential mal-adaptation.

With AF intervention

203. The project will optimize the hydrometric network for all required uses including strategic FRM monitoring, flood forecasting and early warning and procure and install new equipment. The project will also establish the institutional arrangements for operation and maintenance of the optimize network. To ensure sustainability, the project will identify, and implement appropriate O&M financing mechanisms for the hydrometric network.

204. The project will implement an agreed unified basin approach to flood hazard modelling based on EUFD to undertake flood hazard, risk and vulnerability modelling and mapping to develop climate risk flood maps which will be suitable for use in land use planning, development zoning, flood risk mitigation design, establishment of flood insurance criteria, raising public awareness, and emergency planning across the whole basin. Climate information sharing platforms, protocols and dissemination mechanisms will be strengthened across member countries.

205. The project will develop and implement a GIS-based basin-wide socio-economic risk model to provide high-resolution vulnerability maps for the whole basin which will include damages losses, and loss of life estimates for floods of different return period. This will facilitate impact-based flood forecasting, cost-benefit analysis and the appraisal of FRM interventions based on cost-benefit analysis, and development of financing mechanisms for long-term FRM.

Component 2 – Transboundary FRM institutional, legislative and policy framework

Without AF Intervention

206. Institutional and legal framework for flood risk management in the Riparian countries of the DRB are highly fragmented in terms of competencies and suffer from overlapping/conflicting responsibilities of institutions. Mandates need to be clarified at national and sub-national levels, with clear assignment of responsibilities among institutions. Flood risk management in the Riparian countries of the DRB does not currently take a basin-wide strategic approach and as such the national legislative and policy frameworks and sectoral policies and plans do not currently incorporate such approaches, nor do they incorporate climate change considerations in the management of flood risks. Implementation of EU Floods Directive, which should catalyst a shift toward basin strategic flood risk management, is at different stages in each riparian country and national legislation is not yet fully aligned with the EU Acquis.

207. There is no integration of flood risk considerations into national sectoral policies and development programmes. Due to the fragmented nature of the legislative and institutional framework in each Riparian country, national sector policies are failing to adequately include flood risk and climate change considerations in their formulation and as a result, their current formulations perpetuate or exacerbate the risk of climate induced flooding and its consequences and will continue to do so if not addressed. A key example is the Hydropower sector which is important to all Riparian countries of the DRB[34], but which appears to be largely disconnected from the flood risk management both at the national and basin levels.

208. There are is no basin-level assessment of flood risk for the Drin basin and no comprehensive definitive flood hazard maps for the basin aligned with the EUFD. There is also no basin flood risk management strategy or plan addressing climate-induced flood risks. Flood risk management investment

[34] See Annex 5

was not supported by robust climate-risk informed analysis, and there are no investment plans and no comprehensive financial risk transfer mechanisms to address flooding.

209. Weak NHMS are lacking the technical, resourcing and financial capacities to systematic monitor key hydrometeorological variables or generate essential climate risk data and information. There is limited sharing of data among institutions within and between countries and lack of coordinating mechanisms or protocols for such data sharing.

210. Formal coordination and cooperation among the Riparian countries on flood risk management is currently limited in the DRB. Coordination on water management has recently been strengthened through the Drin Coordinated Action which was established by the GEF-funded UNDP but it does not currently specifically address joint actions required for cooperation on flood risk management. The institutional set up which supports the Drin Coordinated Action has recently established an expert working group on floods, which will be key to basin coordination and cooperation on flood risk management. Under an MoU between the national hydrometeorological institutions there is currently cooperation and data exchange for flood warning, based on regional forecasts, European Flood Awareness System (EFAS) and Flash Flood Guidance (SEE FFG). Currently coordination also includes existing bi-lateral agreements between pairs of Riparian countries, such as the newly signed agreement between Montenegro and Albania on water management, including flood management.

211. There is limited to no involvement of the private sector in climate risk financing, despite the large damages that have been and would be incurred to the private sector from flooding, and the significant commercial benefits that a functional integrated flood risk management system would provide to private sector. In addition, private sector (in particular hydropower, forestry and agriculture) has a role in flood risk management and therefore needs to engaged in its financing. Risk transfer mechanisms are not well developed and currently post-event compensation and reliance on external donor recovery funds, are the main approaches to dealing with the economic shocks of flooding disasters.

With AF intervention

212. With AF funds, the current efforts at coordination and cooperation will be consolidated and extended through the establishment of a dedicated coordination mechanism on flood risk management with the necessary political support and resourcing from the Riparian countries to comprehensively address missing formalized and effective cooperation on FRM.

213. The AF project will work to develop a basin level coordination mechanism between various Riparian institutions and authorities in all areas of flood risk management and will provide a policy foundation for flood risk management at basin level, including the mechanisms and coordination lines. The project will also support integration of FRM into national sectoral policies and development programmes ranging from the local communities to the state level. Through the coordination platform, the project will facilitate a shift in focus flood risk reduction through policy actions and the development of a priority sector plan.

214. An aim of the project will be to engage the hydropower and other relevant sectors in flood risk management of the DRB. Key to this will be to include HPP companies in the basin Floods EWG. A long-term aim will be to fully include HPPs in FRM through agreement on operations of their systems during flood events.

215. Another aim of the project will be to develop the basin policies for basin-wide climate responsive flood risk-informed flood risk management. This will include policies on land use and spatial planning (including flood zoning and development control), which will ensure that land use and development decisions within each Riparian country take account of basin-wide flood risks (using established basin flood management tools and procedures), flood protection measures identification, prioritization, co-design and co-financing (particularly important where cross-border measures are needed), hydrometric services cooperation (strengthening existing agreements as necessary) and joint monitoring, data sharing and exchange, cooperation on civil protection, the operation of flood control structures the role of private sector in flood risk management and flood risk financing.

Component 3 – Priority community-based climate change adaptation and FRM interventions

Without AF Intervention (baseline)

216. The GIZ-funded project "Climate change adaptation in the Western Balkans" (2012-2018) has been providing advisory services and support to Albania, Kosovo, the Former Yugoslav Republic of Macedonia and Montenegro for enhanced flood and drought risk management in DRB focusing on five key areas: (i) establishing a regional flood EWS; (ii) drafting CC adaptation strategies; (iii) local flood and drought management plans; (iv) transboundary water resource management concepts; (v) integrating CCA into urban planning for Tirana, Podgorica and Belgrade. In Albania and Montenegro FRM plans have been drawn for 31 municipalities and local implementation capacities were enhanced. The rain and stream gauging networks have been extended for flood forecasting with 33 water level and rainfall stations rehabilitated and upgraded. A DRB hydrological model has been developed for all sub-basins and hydraulic models have been developed and included in the model. The Drin flood EWS is currently functioning and sits within the NHMS in each Riparian country, for generating national early warnings. Practitioners in all Riparian countries have received training on the EWS.

217. Without AF intervention, the Riparian countries of the DRB, will continue to be limited to expensive flood defenses as budgets allow. Such defenses will fail to address catchment management issues which are also contributing to and exacerbating flood risk and will not provide the long-term sustainability due to the likely need to build more defenses with increasing capital and maintenance costs.

With AF intervention

218. The project will support the further development of the existing FFEWS with complementary activities, to enhance the density of the observation network on which the forecasts rely. It will also digitize the historical data for priority existing stations not yet included in the FFEWS.

219. The project will identify, prioritise and undertake outline design of a series of structural and non-structural measures for future long-term investments such as the provision of flood storage, the provision of new embankments and walls, local land raising to elevate development areas above the extreme flood level, local improvements to channel capacity and stability, flow control structures, increased maintenance and improvements to channels for the long-term management of floods as part of the river basin FRM strategy.

220. The project will undertake detailed design and implementation of specific prioritized structural measures in three Riparian countries.

221. In addition to priority structural measures, the project will also implement non-structural measures to include hillslope and floodplain vegetation, reforestation and the use of seasonal cropping, agroforestry, the use of vegetative bundles to build flood defenses etc., floodplain agro-forestry systems. Flood risk management measures will promote the re-establishment of natural floodplain functionality including: floodplain reconnection; selective bed raising / riffle creation; wash lands/wetland creation; re-meandering straightened rivers; land and soil management activities to retain/delay surface flows; creation or re-instatement of a ditch network to promote infiltration (swales, interception ditches, etc.); In-channel vegetation management growth to maximize channel roughness. Income generating ecosystem-based adaptation and FRM measures (e.g. agro-forestry) will be implemented in priority areas throughout the basin.

222. The project will develop local government response capacity, training first and second responders for flood emergencies through drills and role play exercises. Training will be provided for communities on roles and responsibilities during flood emergency procedures. Community-based resilience and adaptation will be built using participatory methods of risk assessment and community resilience planning. Community-based response roles and responsibilities will be defined and training of local communities undertaken. Community-managed flood forums will be established.

223. Training will be undertaken in the operation and maintenance of non-structural measures to increase capacity of local communities in the maintenance of non-structural intervention measures, utilizing

the project KM tools and strategies. Information dissemination to reach all beneficiaries will be established, awareness raising and education, and gender mainstreaming approaches established.

K. Describe how the sustainability of the project / programme outcomes has been taken into account when designing the project / programme.

224. Investment in **human resources and institutions**: the project is focused on developing the institutions that have skilled human resources, information, tools and technologies to effectively pursue their mandate in flood risk management. The project investments will improve availability of risk information and create effective response mechanisms. The establishment of methods and tools for developing basin flood risk management strategies and plans, the introduction of risk assessment methods, standards and tools within relevant institutions, backed by the definition of these in guidance, legal and policy documents, makes this project highly replicable in other basins within the Riparian countries. Regional cooperation and intended partnership with ongoing projects make this project highly complementary. As detailed above, this project plans to attract private sector involvement and investment in FRM.

225. **Investment in natural capital**: To achieve long-term resilience and safeguard investments and communities against climate induced flood disasters, functional and protected river basin eco-systems are essential. Creating stable and well-managed natural capital is an investment in long term sustainability of social and economic assets that the project will create in the face of climate change.

226. Operational and financial sustainability (**Operations and Maintenance**): In order to ensure sustainable O&M of the hydrological monitoring equipment and EWS, under the Outcome 1 the project will assess the institutional arrangements and capacity for the operation and maintenance of the hydrometric network and develop Institutional capacity development plan for hydrometric network O&M detailing manpower and financial requirements, and training needs, for the efficient O&M of all the stations in each Riparian country. The project will assess existing roles and responsibilities and the capacity of staff responsible for operating and maintaining the hydrometric network, establish mechanisms for population and maintenance of centralized basin hydrometric database and prepare an operational plan for the hydrometric network including transmission of data, data management, data analysis and reporting procedures. The maintenance plan will cover manpower, technical capacity, material and finance requirements. The project will also review existing financing of hydrometric network O&M in each riparian country, identify resourcing, and training needs as well as institutional arrangements for the management of the proposed new hydrometric network, and develop and implement O&M financing mechanisms for the hydrometric network. The operation & maintenance plan will also account for the maintenance of all structural measures built by the project, by the relevant local government authorities. Furthermore, Output 1.1 is aiming to develop the relevant long-term financing mechanisms and design and implement long-term sustainable programs for operations and maintenance of expanded observation system and will assist relevant institutions (HMIs) to produce climate/weather products that may bring about additional revenues for these agencies. The lack of budget allocation for operations and maintenance has been identified by all HMIs in the Riparian countries, as the main barrier to an effective hydrometeorological monitoring system for the basin and the project is aiming to address this.

227. The sustainability of structural and non-structural measures will be ensured through the project intervention in developing long-term financing mechanisms for the operation and maintenance of the interventions. The project will obtain commitment from local governments as well as relevant central government institutions to cover O&M costs of engineering structures to be built in their respective municipalities from their local budgets/transfers and/or from central government (co-financing letters will be obtained to that effect).

228. With regard to non-structural measures to be implemented at the community level, local contribution (either in-kind, for example through locally organised and financed maintenance, or cash e.g. through payment of maintenance fees) will be leveraged from target communities to implement on-the-ground activities and to gain greater ownership from their side. In addition, significant capacity development

and awareness raising programmes will be designed and implemented in target communities that will ensure the institutional sustainability of results to be achieved at community level (Output 3.3).

229. The project will help all relevant authorities develop and implement a comprehensive short to long-term learning and training programs at all levels including community, municipality and state levels. All these programmes will be integrated in existing education and training systems where possible and will be regularly applied after the end of the project. The system-level sustainability of institutional capacities created will be ensured by the development and adoption of relevant legal-regulatory and policy/planning frameworks as well as standards, protocols and guidelines for all aspects of flood risk management that the project is developing. The methods, standards, approaches will be defined in guidance, legal and policy documents. The potential for scaling up these approaches is therefore significant.

230. Common support, understanding and effective cooperation of various players will be achieved by establishing the coordinating platform, where issues of various project components will be discussed and solved by the consent of all parties. Furthermore, planning processes at regional, municipal and community levels will apply a participatory approach, where key stakeholders will be engaged from the beginning to the end of each process.

L. Provide an overview of the environmental and social impacts and risks identified as being relevant to the project / programme.

231. The project envisages implementation of small scale structural and non-structural flood protection measures. The project is expected to have moderate environmental and social impacts, as described in detail in the project SESP (Annex 6). Based on the scope, severity and number of potential risks, the project is considered Category B, and mitigation/management measures have been proposed for each of the identified project risks.

232. In reference to project activities, the direct environmental and social risks associated with capacity building or training activities are minimal although there is a risk of gender bias in training due to a lack of access, gender equity and women empowerment in training provided. To mitigate this and other gender risks, a Gender Assessment and Action Plan was prepared which proposes additional analysis of the Gender context (e.g. the collections of gender –disaggregated data), as well as other gender mainstreaming actions (tailoring capacity building and training activities, and making the EWS gender-sensitive by ensure equitable knowledge dissemination). Furthermore a Gender Expert will be employed during project developed and implementation to design and embed gender sensitive participatory approaches. Legislative support, particularly the introduction of basin zoning policies, has a small risk of restricting access to certain types of land use in the high-risk areas. The non-structural interventions combined with expansion of existing hydrometeorological network are unlikely to have medium risk impacts. The project will ensure that all the equipment purchased meets international environmental, safety and technical standards.

233. Other adverse environmental impacts relate to investments in small-scale structural flood protection measures under the Outcome 3. These have been subject to environmental safeguards review during the full project development phase and all related risks and mitigation measures and presented in the project SESP (Annex 6). The moderate environmental and social impacts are likely only as a result of the structural interventions, all structural intervention considered in the concept phase, or proposed that have highly significant adverse impacts (such as creation of channels which may impact basin hydrology and ecology in unpredictable ways) have been eliminated. Some dredging activities have been allowed, in areas of excessive sediment deposit, identified through hydraulic modelling. All activities such as dredging, are subject to an Environmental and Social Impact Assessment, which will ensure that that dredging activities take into account bio-physical characteristics of the river, including avoiding areas critical for fish spawning, and will be subject to a construction management plan, to mitigate the impacts of any heavy machinery. The activities related to Environmental Assessment and Management have been included in the project budget. Furthermore, an Environmental and Social Safeguards expert will provide additional backstopping to country teams during the implementation of all structural activities. The non-structural community resilience measures, including agroforestry and floodplain/watershed restoration will have limited environmental and social impact, but regardless have been designed in a way to maximize environmental co-benefits (the planting of diverse native tree species and regulatory support to local governments on

deforestation). The project will carefully assess and select plant species during the design phase in terms of their conservation and economic values that are of local provenance and have high survival rate, etc. Overall, community resilience measures will create temporary jobs for local community members, including women that can be considered as a short-term positive social impact.

234. The construction of some structural interventions will require the use of heavy machinery. These activities may create such environmental and social impacts which may result in deleterious short term and spatially restricted impacts including dust, traffic and noise, pollution of land, water and air from vehicle exhausts, used oils, excavated soil, river bank and bed erosion and spatially limited degradation of floodplain vegetation and landscapes. Structural measures of a certain scale will be subject to Environmental and Social Impact Assessment according to national laws, that will include measures that will be implement to control adverse impacts, such as sediment control and monitoring plans, and flora and fauna monitoring plans. The ESMPs developed as part of the ESIA as required will also require the contractors to undertake all activities and adhere to environmentally sound site management practices, by planning and implementing activities in a way to reduce traffic, keep strongly the site boundaries/limits, not carry out earth and construction works during rainy days, install soil erosion control structures (embankments, collectors, etc.). Further, where necessary site rehabilitation measures will be implemented, including re-vegetation at some sites after completion of construction works. Necessary measures have to be taken to avoid over-surface runoff and drainage of soil and turbid water into natural water bodies by stabilizing the soil piles and by avoiding construction works during rainy days. Major wastes that would be generated during construction phase would be unused soil and leftover concrete and boulder. Where possible, this material should have a beneficial reuse option, including using good material for agricultural purposes. Where this is not possible, any materials should be disposed on specially allocated land plots, pre-agreed with local authorities or could be distributed among local farmers for various beneficial uses.

235. Negative social impacts during construction phase may arise from work place injuries as well as during transporting construction materials or construction crew. Traffic and workplace safety precautions should be taken by construction crew, including all construction staff wearing PPE and complying with national laws, technical norms and standard while dealing with machinery and equipment. The necessary ESMPs, depending on the design of the final structural measures, will envisage for crews to always have the medical kits on-site as well as to assign wardens among them in order to contact relevant rescue and medical teams in case of emergencies. The project will avoid all physical and economic displacement.

236. During construction phase temporary jobs for locals can be created as a short-term positive impact. However, the long-term sustainable positive social and environmental impacts of the project and in particular, flood defense structures will be avoided losses in human lives, assets, agricultural lands and ecosystems.

237. A grievance redress mechanism will be set up for the project according to the UNDP and AF safeguards policies. In case stakeholder concerns and complaints are detected during monitoring/inspection visits or otherwise communicated to the project or project partners, these concerns should be addressed properly in a writing form within to the grievance redress mechanism.

238. Detailed screening of environmental and social impacts and risks has been provided as part of the SESP (Annex 6)

Checklist of environmental and social principles	No further assessment required for compliance	Potential impacts and risks – further assessment and management required for compliance
Compliance with the Law		V*
Access and Equity	V	
Marginalized and Vulnerable Groups		V
Human Rights	V	

Gender Equity and Women's Empowerment		V
Core Labour Rights	V	
Indigenous Peoples	V	
Involuntary Resettlement	V	
Protection of Natural Habitats		V
Conservation of Biological Diversity		V
Climate Change		V
Pollution Prevention and Resource Efficiency		V
Public Health	V	
Physical and Cultural Heritage	V	
Lands and Soil Conservation		V

** Structural measures are subject to National ESIA regulations as per the final design specifications*

PART III: IMPLEMENTATION ARRANGEMENTS

A. Describe the arrangements for project / programme management at the regional and national level, including coordination arrangements within countries and among them. Describe how the potential to partner with national institutions, and when possible, national implementing entities (NIEs), has been considered, and included in the management arrangements.

239. At the request of the Governments of Albania, the former Yugoslav Republic of Macedonia and Montenegro, UNDP is the Multilateral Implementing Entity (MIE). As a Multilateral Implementing Entity, UNDP is responsible for providing a number of key oversight and specialized technical support services. These services are provided through UNDP's global network of country, regional and headquarters offices and units and include assistance in: project formulation and appraisal; determination of execution modality and local capacity assessment; briefing and de-briefing of staff and consultants; general oversight and monitoring, including participation in reviews; receipt, allocation and reporting to the donor of financial resources; thematic and technical backstopping; provision of systems, IT infrastructure, branding, and knowledge transfer; research and development; participation in policy negotiations; policy advisory services; programme identification and development; identifying, accessing, combining and sequencing financing; troubleshooting; identification and consolidation of learning; and training and capacity building.

240. As outlined in UNDP's application to the Adaptation Fund Board for accreditation as a Multilateral Implementing Entity, UNDP employs a number of execution modalities determined on country demand, the specificities of an intervention, and a country context. The project will be executed by the **UNDP Istanbul Regional Hub (IRH)** under the UNDP Direct Implementation Modality (DIM) in line with UNDP's Programme and Operations Policies and Procedures and IRH Standard Operating Procedures for Regional Programme Management. UNDP Istanbul Regional Hub will be responsible for overall management, ensuring project coherence, the preparation and implementation of work plans and annual audit plans; preparation and operation of budgets and budget revisions; disbursement and administration of funds; recruitment of national and international consultants and personnel; financial and progress reporting; and monitoring and evaluation.

241. For the delivery of specific regional activities the IRH will engage the **Global Water Partnership – Mediterranean (GWP-Med) as a Responsible Party** for the Project. GWP-Med is the Mediterranean Regional Water Partnership of the inter-governmental organisation Global Water Partnership. GWP-Med is the Executing Agency of the UNDP/GEF regional project "Enabling transboundary cooperation and integrated water resources management in the extended Drin River Basin". GWP-Med also serves as a Secretariat of the Drin Core Group (DCG). In the capacity of the Responsible Party of the UNDP/AF project, the GWP-Med will implement specific regional activities of the project and will also provide links with the GEF-funded transboundary project in the Drin River basin as well as the potential SAP implementation activities in the basin. UNDP Albania CO already serves as the Principal project Representative for the GEF Transboundary Drini Project and has an ongoing Project Cooperation Agreement with GWP. National/country-based activities under the Adaptation Fund project will be delivered through the UNDP Country Offices in beneficiary countries (Albania, the former Yugoslav Republic of Macedonia and Montenegro).

242. A **Regional Project Board (RPB)** or the **Regional Steering Committee (RSC)** will serve as the project's coordination and decision-making body. The existing **Drin Core Group (DCG)** will serve as the Regional Steering Committee of the Adaptation Fund project. The DCG is a body with the mandate to coordinate actions for the implementation of the Shared Vision for the sustainable management of the Drin Basin and the related Memorandum of Understanding (MOU) signed by the ministries of the water and environment management of the Drin Riparians. In its capacity of the RSC of the Adaptation Fund project the DCG will ensure synergy of the AF-funded interventions with a broader sustainable transboundary water management work in the Drin River Basin, including implementation of the on-going GEF-funded project and potential follow-up initiatives to implement the DRB SAP. In addition, the

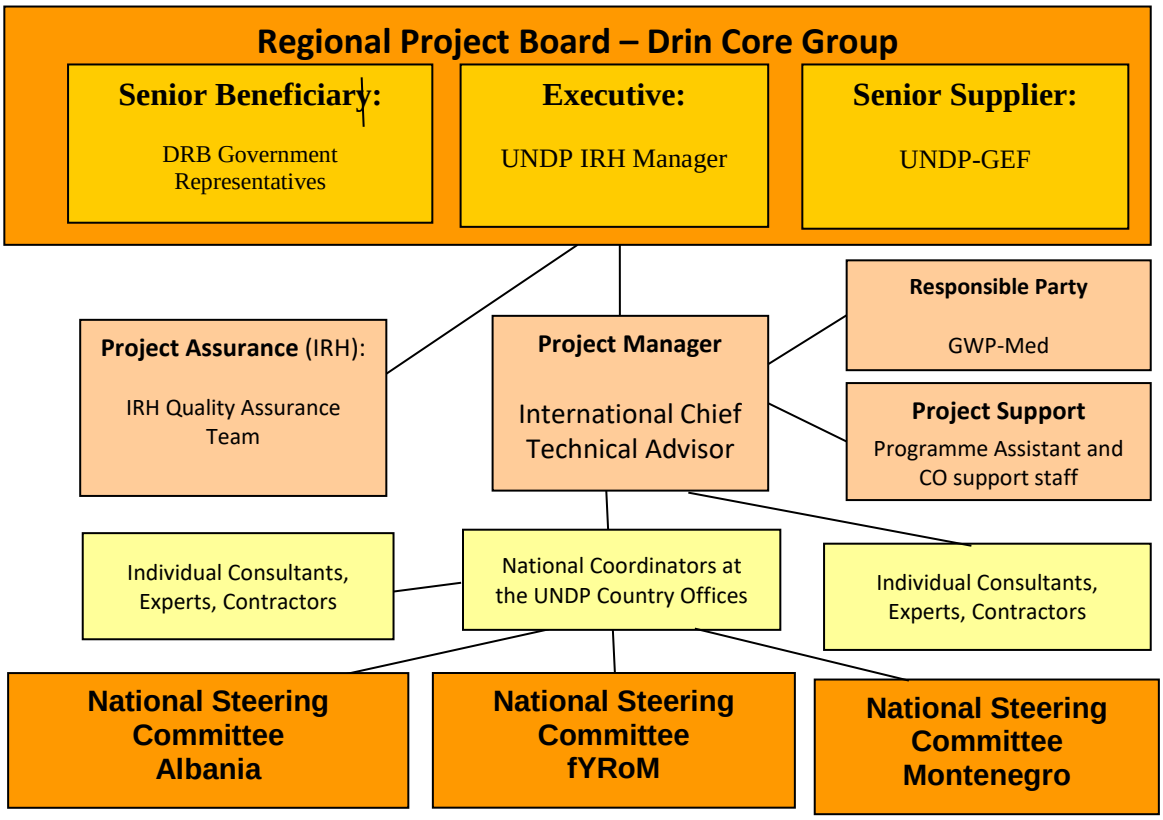
RPB is responsible for ensuring that the project remains on course to deliver products of the required quality to meet the outcomes defined. The RPB's role will include: (i) providing overall leadership, guidance and direction in successful delivery of outputs and their contribution to outcomes under the regional programme, ensuring the project remains within any specified constraints; (ii) overseeing project implementation; (iii) approving all work plans and budgets, at the proposal of the Project Manager (PM), for submission to UNDP-GEF; (iv) approving any major changes in plans or programmes; (v) reviewing annual progress reports and end project report; (vi) ensuring commitment of resources to support implementation; (vii) arbitrating any conflicts within the project and/or negotiating solutions between the project and any other stakeholders. The DCG will also be the focal point for data sharing and dissemination through its existing transboundary coordination functions and links with the national structures. IRH Senior Manager will represent UNDP in the RPB. RSC will meet according to necessity, but not less than once in 12 months, to review progress, approve work plans and approve major deliverables.

243. The **National Project Boards or Steering Committees** in the three beneficiary countries will be established to oversee and guide project implementation at the country level, including implementation of structural and non-structural flood risk management measures. The national Steering Committees will be composed of the national project stakeholders and will be co-chaired by UNDP Country Offices. At the national level, UNDP Country Offices will be the link to National Hydrometeorological Services (NMHSs) and other national and local institutions in charge for FRM, and will provide technical assistance to disseminate the programme results towards the related Ministries in charge of flood risk management. The NMHSs and other national FRM entities and stakeholders will be part of national steering committees. The network of GWP country partners (NGOs, CBOs etc.) will be engaged to disseminate and mainstream the programme results at local level.

244. **Project Assurance:** UNDP IRH and UNDP Country Offices will support project implementation by assisting in monitoring project budgets and expenditures, recruiting and contracting project personnel and consultant services, subcontracting and procuring equipment. UNDP IRH will also monitor the project implementation and achievement of the project outcomes/outputs and ensure the efficient use of donor funds through an assigned UNDP Project Manager. UNDP will act as the Senior Supplier and Project Assurance.

245. **Mechanisms for local participation:** the project will use the existing locally established mechanisms for local consultation and participation.

Project Structure



246. The day-to-day administration will be carried out by a Regional Project Manager (PM) and Project Assistant (PA). The staff will be recruited using standard UNDP recruitment procedures. Regional **Project Manager (PM)** will be an international professional designated for the duration of the project. The PM's prime responsibility will be to ensure that the project produces the results specified in the project document to the required standard of quality and within the specified constraints of time and cost. The PM will, with the support of the PA, manage the implementation of all activities, including: preparation/updates of work and budget plans, record keeping, accounting and reporting; drafting of terms of reference, technical specifications and other documents as necessary; identification, proposal of consultants to be approved by the RPB, coordination and supervision of consultants and suppliers; organization of duty travel, seminars, public outreach activities and other events; and maintaining working contacts with partners at the central and local levels. The PM is accountable to UNDP and the RPB for the quality, timeliness and effectiveness of the activities carried out, as well as for the use of funds. The PM will produce Annual Work and Budget Plans. The PM will further produce quarterly operational reports and Project Performance Reports (PPR). These reports will summarize the progress made versus the expected results, explain any significant variances, detail the necessary adjustments and be the main reporting mechanism for monitoring activities. The PM will be technically supported by contracted national and international service providers, based on need as determined by the PM. Recruitment of specialist services will be done in accordance with UNDP's rules and regulations.

247. The PM will be supported by an **International Chief Technical Advisor (CTA**, part time) recruited by UNDP for this project. CTA will provide (i) state of the art technical advice and (ii) associated policy advise to the programme and its activities. S/he will provide guidance and advice to the Regional Programme Manager and National Coordinators on identifying the best methods to ensure that the project achieves maximum impact, in accordance with European and international

best practice, towards its adaptation objectives. In addition, the project will rely for technical advisory support and guidance on the DCG **Expert Working Group on Floods.**

248. The **UNDP Country Offices (COs)** will implement in-country activities as per agreed workplans. IRH will ensure financial allocations to Country Offices as per established workplans / activities for each of the country. The assigned CO staff will support the project implementation, monitoring, and contribute to the financial and operational closure and final reporting. National Coordination Teams will be established at each beneficiary country hosted by the UNDP Country Offices and will be staffed by **National Coordinators** and project Finance/Administrative Assistance (part time). The National Coordinators will be coordinating all project activities at the national level, including: (i) selection, contracting and supervising teams of national consultants who will be implementing specific project activities in the country; (ii) identification and engagement of key stakeholders in the country and arranging regular consultations with them; (iii) keeping track of the financial status of the activities and allocations at all times, to control expenses, to handle outstanding commitments, to make payments and to monitor the performance of contractors; (iv) organizing and supporting national Steering Committee meetings and national stakeholder consultation workshops and events; (v) ensuring regular communication and coordination with the national government counterparts; (vi) overall project management at the national level and reporting to the UNDP IRH.

249. UNDP will provide Direct Project Services (DPS). DPS costs are those incurred by UNDP for the provision of services that are execution driven and can be traced in full to the delivery of project inputs. Direct Project Services are over and above the project cycle management services. They relate to operational and administrative support activities carried out by UNDP. DPS include the provision of the following estimated services: i) Payments, disbursements and other financial transactions; ii) Recruitment of staff, project personnel, and consultants; iii) Procurement of services and equipment, including disposal; iv) Organization of training activities, conferences, and workshops, including fellowships; v) Travel authorization, visa requests, ticketing, and travel arrangements; vi) Shipment, custom clearance, vehicle registration, and accreditation. These service costs are assigned as Project Management Cost, identified in the project budget as Direct Project Costs. Eligible Direct Project Costs should not be charged as a flat percentage. They should be calculated on the basis of estimated actual or transaction based costs and should be charged to the direct project costs account codes: "64397 – 'Services to projects - CO staff' and 74596 – 'Services to projects - GOE for CO'. UNDP recognizes that these services are not mandatory and will only be provided in full compliance with the UNDP recovery of direct costs policies. The DPS will be charged annually using the UNDP Universal Price List.

B. Describe the measures for financial and project / programme risk management.

250. The following table summarizes the preliminary risks identified through the initial consultative process. During the development of the project proposal and subsequent project document, the risks will be further analyzed and included in a Project Risk Log.

Risk	Level	Mitigation Strategy
Government change and/or administrative reforms in the beneficiary countries result in changing priorities that are not fully aligned with the expected results of the project	Medium	The project objective is in line with the intergovernmental cooperation goals under the Drin MOU and will be pursued by the DCG. The project has strong work components at community level. Regardless of government change and the priorities set at national level, the community focus will be maintained. Component 2 of the project will also be aligned with the National Adaptation Planning to ensure that project results are integrated in the government planning and policy frames for longer term implementation and monitoring. The project will have constant consultations with high-level government representatives and will carry out lobbying and advocacy campaigns

Risk	Level	Mitigation Strategy
		in support of CC adaptation, EWS and DRR. This will reduce the impact of the risk to the minimum level.
Unexpectedly strong extreme climatic events threaten/destroy hydrometeorological and/or flood defense infrastructure	High	Research and monitoring will facilitate a greater understanding of the causes of the impacts of these threats, facilitating an improvement in the action plans to adapt to them. The project will develop and implement emergency management/contingency plan in line with UNDP requirements. During the design and constructing of relevant infrastructure disaster risks will be taken into consideration or in other words, climate proofing will be carried out. These activities will reduce the level of impact and probability that the infrastructure will be destroyed to minimum level. The location for the hydrometeorological observation equipment will also be defined taking into account the assessment of disaster and climate risks.
Absorption and operational capacities of national project beneficiaries stay inadequate to properly run and maintain modeling, forecasting and EWS	Medium	The project will pay high attention to the capacity building of all relevant agencies through carrying out training of trainers, on-the-job and field trainings of the staff of relevant agencies, introducing/strengthening internship mechanisms within beneficiaries, developing technical guidelines, methodologies and sustainable operations and maintenance plans for established the modeling, forecasting and EWS. Altogether will reduce probability and impact of the risk to minimum level.
Changes and turn over in government staff	Medium	The project, through its component 2, will work on knowledge management and ensuring the establishment of systematic institutional memory of the Project at the short and long term, so that the new government staff can continue building on this information.
Local communities are not interested to be engaged in community-based flood risk reduction measures and EWS	Low	The risk is overall low. The project will conduct awareness campaign at grassroots' level on the climate-induced natural hazards, vulnerabilities and risks and benefits for reducing these risks. It will also make significant efforts to mobilize and empower local communities.
No finances are available for proper operation and maintenance of the upgraded hydrometeorological network, EWS and flood protection structures	Medium	The project will assess the institutional arrangements and capacity for the operation and maintenance of the hydrometric network and develop Institutional capacity development plan for hydrometric network O&M detailing manpower and financial requirements, and training needs, for the efficient O&M of all the stations in each Riparian country. The project will assess existing roles and responsibilities and the capacity of staff responsible for operating and maintaining the hydrometric network, establish mechanisms for population and maintenance of centralized basin hydrometric database and prepare an operational plan for the hydrometric network including transmission of data, data management, data analysis and reporting procedures. The maintenance plan will cover manpower, technical capacity, material and finance requirements. The project will also review existing financing of hydrometric network O&M in each riparian country, identify resourcing, and training needs as well as institutional arrangements for the management of the proposed new hydrometric network, and develop and implement O&M financing mechanisms for the hydrometric network.
Failure to engage the private sector in financing mechanisms	Medium/ High	The project will undertake willingness-to-pay surveys during Inception phase and will gauge feasibility of this approach early on. The project is developing other risk financing mechanisms of which private sector is envisaged to be a part, hence failure to engage private sector will shift focus to other mechanisms

C. Describe the measures for environmental and social risk management, in line with the Environmental and Social Policy of the Adaptation Fund.

251. During the preparation of the Full Project Proposal, all relevant issues related to environmental and social risks were identified, through the application of the UNDP Social and Environmental Safeguards Procedure (SESP) which meets the Adaptation Fund's Social and Environmental Policy and provides recommendations made for appropriate action for the project implementation stage. The Social and Environment Screening Report (Annex 6) and the environmental and social risk management plan (Annex 7) have been developed and provided in conjunction with the stakeholder engagement plan (Annex 9) and the gender assessment and action plan (Annex 8).

D. Describe the monitoring and evaluation arrangements and provide a budgeted M&E plan.

252. Project monitoring and evaluation (M&E) will be in accordance with established UNDP procedures and will be carried out by the Project team and verified by UNDP IRH and Country Offices in three beneficiary countries. Dedicated support by the technical adaptation teams in the UNDP Istanbul Regional Hub and UNDP-GEF New York will be provided on a regular basis.

253. A comprehensive Results Framework for the project will define execution indicators for project implementation as well as the respective means of verification. A Monitoring and Evaluation system for the project will be established based on these indicators and means of verification.

254. Targeted M&E activities for the proposed project include the following:

- A Project Inception Workshop will be conducted within two months of project start up with the full project team, relevant government counterparts and UNDP. The Inception Workshop is crucial to building ownership for the project results and plan the first-year annual work plan. A fundamental objective of the Inception Workshop will be to present the modalities of project implementation and execution, document mutual agreement for the proposed executive arrangements amongst stakeholders and assist the project team to understand and take ownership of the project's goals and objectives.
- Another key objective of the Inception Workshop is to introduce the project team which will support the project during its implementation. An Inception Report will be prepared and shared with participants to formalize various agreements decided during the meeting.
- A UNDP risk log will be regularly updated in intervals of no less than every six months in which critical risks to the project have been identified.
- Quarterly Progress Reports will be prepared by the Project team and verified by the Project Board.
- Project Performance Reports (PPR) will be prepared to monitor progress made since project start and for the previous reporting period. These annual reports include, but are not limited to, reporting on the following:
    - Progress made toward project objective and project outcomes - each with indicators, baseline data and end-of-project targets (cumulative);
    - Project outputs delivered per project Outcome (annual);
    - Lessons learned/good practices;
    - Annual expenditure reports;
- Reporting on project risk management.
- Government authorities, members of Steering Committee/Project Board and UNDP staff will conduct regular field visits to project sites based on the agreed schedule in the project's Inception Report/Annual Work Plan to assess first hand project progress.

255. The project will undergo an independent Mid-Term Evaluation (MTE) at the mid-point of project implementation, which will determine progress being made toward the achievement of outcomes and identify course correction if needed. It will focus on the effectiveness, efficiency and timeliness of project implementation; will highlight issues requiring decisions and actions; and will present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term.

256. Final External Evaluation will be conducted no later than 3 months before project closure.

257. The budgeted Monitoring & Evaluation plan is as follows:

Type of M&E activity	**Responsible Parties**	**Budget US$**	**Timeframe**
Inception workshop	Project Coordinator UNDP CO	$10,000	Within first three months of project start up
Inception Report	Project team UNDP CO	None	Immediately following IW
Measurement of Means of Verification for Project Purpose Indicators	Project Coordinator	None	State, mid and end of project
Annual measurement of indicators	Project Coordinator	None	Annual prior to annual reports and the definition of annual work plans
Monthly/quarterly reports	Project team	None	End of each month
Annual reports	Project team UNDP IRH, COs, RP	$5000 (total amount for all years)	End of each year
Meetings of project Regional Steering Committee and National Steering Committees	Project Coordinator UNDP-IRH, COs	$40,000	After inception workshop and thereafter at least once a year
Technical reports	Project team External consultants	None	To be determined by Project Team and UNDP CO
Mid-term external evaluation	Project team UNDP CO External consultants	$35,000	Mid-point of project implementation
Final external evaluation	Project team UNDP CO External Consultants	$35,000	End of project implementation
Final report	Project team UNDP CO	None	At least one month before end of project
Publication of lessons learned	Project team	$15,000 ($3,000 per year)	Yearly
Audit	UNDP IRH, COs Project team	$35,000 ($7,000 per year)	Yearly
Visits to field sites	UNDP IRH, COs Project team	$35,000 ($7,000 per year)	Yearly
Total indicative Cost		**$210,000**	

NB: Above costs do not cover UNDP staff time. All UNDP staff costs associated with M&E are covered by the MIE Fee. The M&E budget will integrated in the three project component budgets.

E. Include a results framework for the project / programme proposal, including milestones, targets and indicators.

Objective: 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 DRB to climate-induced floods.					
	Indicators	**Baseline**	**Targets** **Project completion**	**Means of verification**	**Risks and assumptions**
Objective of the Project **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 DRB to climate-induced floods**	Total Number of direct and indirect beneficiaries with reduced vulnerability to flood risks; Number of beneficiaries relative to total population	0	Direct beneficiaries: 190,000 people (XX% women TBD) / 12% of the DRB population Indirect beneficiaries: 1.6 million people living in DRB (XX% women TBD)	Census data Baseline and periodic vulnerability assessments and surveys Risk and vulnerability database Project mid-term and final evaluations	Capacities created at relevant agencies through the project are maintained and periodically renewed Political will to implement relevant legal-regulatory reform for effective and efficient FRM at national and transboundary level Enhanced hydrometeorological observation network results in enhanced generation and delivery of early warnings and response actions of communities at risk Coordination mechanisms have relevant representation, participation in the coordination
	Availability of high quality flood hazard and risk information generated and disseminated to stakeholders on a timely basis	Gaps in observation and flood risk information hamper effective flood forecasting and EWS, development of basin-level integrated CCA and FRM strategy and plan and climate resilient sectoral planning.	Enhanced food hazard and risk information for DRB is available and used for: (a) enhanced FFEWS (in cooperation with GIZ) (b) Climate-informed Drin River Basin Integrated CCA and FRM Strategy and Plan and implementation capacities are in place (c) Sectoral planning	Regional and national climate change and FRM/DRR policies, plans and reporting at the national, district and community levels; Project Reports; Midterm and Final Evaluations	

	Number and level[35] (where relevant) of effective coordination mechanisms for climate-resilient FRM in DRB	1 coordination mechanism: Drin Core Group/MOU: Level 3 The Drin Coordinated Action was established to promote joint action for the coordinated integrated management of the shared water resources in the basin. The MoU does not currently specifically address joint actions required for cooperation on flood risk management. The existing coordination and bilateral agreements are insufficient for a truly transboundary river basin approach to flood risk management.	4 coordination mechanisms: (a) DCG/MOU: Level 4 (b) Drin Floods Working Group: Level 4 (c) DRB Framework Agreement on FRM (d) DRB SAP is informed of climate-induced flood risks and integrated resilient FRM measures	Minutes of the meetings of coordination mechanisms Project annual reports; Mid-term evaluation, final report.	mechanisms are at the appropriate decision making level, the coordination mechanism meets with sufficient periodicity and consistently, the mechanism coordinates appropriate information flows and the mechanism monitors action on items/issues raised Effective cooperation and coordination with GIZ project on the implementation and enhancement of the FFEWS. GIZ project delivers its planned outcomes. Structural and non-structural measures met their design standards in reducing the risks to populations and reduction in agricultural land losses Target communities understand shorter-

[35] Level 1 = no coordination mechanism; Level 2= coordination mechanism in place; Level 3 = coordination mechanism in place, meeting regularly with appropriate representation (gender and decision-making authorities); Level 4 = coordination mechanism in place, meeting regularly, with appropriate representation, with appropriate information flows and monitoring of action items/issues raised.

					to-longer-term benefits of CRM and risk reduction interventions and engage on a voluntary basis in operations and maintenance of such systems
Outcome 1 Improved climate and risk informed decision-making, availability and use of climate risk information	**Indicator 1.1:** a) Coverage and effectiveness of the hydrometric monitoring networks in riparian countries. b) Number of new observation stations installed	Significant gaps in the coverage (especially in FYR Macedonia and Montenegro) and inefficiencies in data management, operations and maintenances of the hydrometric monitoring network across DRB prevents adequate forecasting and early	**Indicator target 1.1.** a) Enhanced coverage and efficiency of the hydrometric monitoring network in DRB and improved O&M provides for improved FFEWS and FRM decisions across DRB. b) Target number of new stations to be defined during Year1 of the project based on the network design.	Inventory of the new hydrometric monitoring equipment in riparian countries installed by the project (NHMSs) Reports on the operations of the FFEWS (GIZ project)	Government commitments to secure adequate O/M of monitoring equipment, relevant software and databases are fulfilled on a continuous basis both during the project implementation and afterwards

	Indicator 1.2: Level of introduction of modelling tools and technologies for the strategic flood risk assessment and flood hazard mapping	warning and efficient decision making on FRM. An integrated basin wide hydrological and hydraulic model for the DRB is absent. Under the new GIZ project detailed flood modelling and mapping is planned for the Lake Shkoder/Skadar and Bojana-Buna area. Lack of socio-economic data for risk, damages, losses, exposure and vulnerability assessments.	**Indicator target 1.2.** Enhanced modelling tools and technologies for the strategic flood risk assessment in DRB based on EUFD, including: a) Spatial Data Initiative[36] and data management system; b) Detailed topographic surveys and data for the Crn Drim in Macedonia. c) Detailed hydrological and hydraulic modelling for the Crn Drim in Macedonia and high resolution flood hazard inundation maps d) Numerical high-level basin-wide hydrological and hydraulic models of the DRB integrating detailed area-based modeling developed under AF, GIZ and national projects.	DRB integrated hydrological and hydraulic models Project annual reports; Mid-term evaluation, final report.	Capacities built across relevant agencies through the project are maintained and periodically updated Relevant government agencies cooperate on and allocate resources for the implementation of the data management Unified modeling methodologies, developed with the Project support and with GIZ project, are endorsed and used for mapping; Necessary data sets for developing hazard maps and risk models are available Effective cooperation and coordination with GIZ project on the implementation and enhancement of the FFEWS Governments allocate necessary human and technical resources to conduct vulnerability assessment;
	Indicator 1.3. Level of implementation of the systematic gender-sensitive socio-economic vulnerability assessment in the DRB		**Indicator target 1.3.** (a) Socio-economic data collection tool developed and embedded at local and central institutionsl to systematically collect damages and losses data. Bespoke GIS-based socio-econpmic modelling tool develeped and introduced. (b) Baseline, progress and final report on social and gender vulnerability. At least 30% participants of consultations are women.	Reports of the socio-economic surveys Evaluation of the socio-economic risk model Project annual reports; Mid-term evaluation, final report.	

[36] A data repository which will provide a structured environment to enforce data integrity and support data auditing, versioning and data quality. Audit trails, as well as structured and categorized schemas, will make data collation, manipulation and analysis more manageable throughout the project

			(c) Systematic recording of flood damage and losses in DisInventar database		Decision-makers at selected state agencies use assessment data in prioritizing resilience measures in high-risk areas
Outcome 2 Improved institutional arrangements, legislative and policy framework for climate-resilient FRM, and development of CCA and FRM strategy and plans at the basin, sub-basin, national and sub-national levels	**Indicator 2.1:** State of the Drin River Basin FRM Policy Framework and cooperation on flood risk management	Limited basin-level coordination and cooperation on flood risk management. Under an MoU between the national hydromet institutions there is cooperation and data exchange for flood warning, based on regional forecasts, EFAS and SEE FFG. The Drin Coordinated Action was established to promote joint action for the coordinated integrated management of the shared water resources in the basin. The MoU does not currently specifically address joint actions required for cooperation on flood risk management.	**Indicator target 2.1.** (a) FRM policies designed in line with relevant EU directives. (b) Basin risk transfer mechanisms designed, including risk financing and risk transfer strategy, private sector engagement strategy, feasibility studies for identified and shortlisted risk financing mechanisms. (c) Sector FRM policies (at least 2 – energy, agriculture) based on modelling of climate change impacts on the identified sectors and on the detailed methodologies for incorporating climate-change responsive flood risk considerations into risk assessments, strategies, policies and plans for the energy and agriculture sectors.	Project annual reports; Mid-term evaluation, final report;	Riparian governments have political will to implement relevant legal-regulatory reform for effective and efficient FRM framework in line with EUFD DCG maintain adequate mandate and authority to spearhead resilient FRM policies and strategies across the sub-region Private sector is interested and is engaging in developing risk transfer and risk reduction mechanisms

	Indicator 2.2. **a)** % increase in institutional capacity to promote integrated climate resilient flood risk management b) Number of staff from targeted institutions trained to respond to impacts of climate-related events	Institutional capacities at the regional, national and sub-national level across the basin are insufficient to secure climate-resilient FRM. The existing coordination and bilateral agreements are insufficient for a truly transboundary river basin approach to flood risk management. What is missing is a basin-level integrated climate change adaptation and flood risk management strategy and plan and a multi-lateral Framework Agreement for the DRB in the field of flood risk management which establishes the institutional and legal basis for cooperation.	**Indicator target 2.2.** a) 50% increase in institutional capacity (measured through an institutional capacity assessment scorecard) b) At least 50 officials and other key national/regional stakeholders trained on improving the enabling environment (minimum 30% women)	Institutional capacity assessment scorecard Capacity review Training test results Project annual reports; Mid-term evaluation, final report; Partner reporting and audit.	Beneficiary and partner institutions are willing to cooperate and conduct regulatory and institutional reform Capacities created at relevant agencies through the project are maintained and periodically renewed
	Indicator 2.3. State of Drin River Basin Integrated CCA and FRM Strategy		**Indicator target 2.3.** Drin River Basin Integrated CCA and FRM Strategy and Plan developed and endorsed by regional and national stakeholders; Implementation started.	Review of the Drin River Basin Integrated CCA and FRM Strategy Minutes of the DCG meetings Project annual reports; Mid-term evaluation, final report	
Outcome 3 Strengthened community resilience through improved flood management, through implementation of structural and non-structural measures and enhanced local capacity for CCA and FRM	**Indicator 3.1:** State of climate-responsive design of structural and non-structural measures for long-term FRM investment in DRB.	Communities of the DRB remain highly exposed to flooding. In the Riparian countries of the DRB, flood defense and flood risk management are done in a reactive manner and as budgets allow. Relevant institutions have limited annual budgets to address urgent issues like structural defense needs, and currently do not take a climate risk-informed strategic approach (e.g. river basin approach) to	**Indicator target 3.1.** For each of 3 riparian countries a set of structural and non-structural flood protection options identified and designed using climate risk information and cost-benefit appraisal methods.	Project design documentation, CBA Mid-term evaluation, final report	Co-financiers fully meet its commitment towards implementation of structural flood protection measures Structural and non-structural measures met their design standards in reducing the risks to populations and reduction in
	Indicator 3.2: **(a)** Number of people directly protected from flood risks through structural measures at 3 high risk sites in Albania, FYR		**Indicator target 3.2.** (a) 10,000 people directly protected (b) 7000 ha protected, including agricultural and municipal land	Project annual reports. Mid-term evaluation, final report Field visits, pilot site reports	

	Macedonia and Montenegro (b) Area of land protected from flood risks through structural measures at AF project 3 sites	flood risk management interventions. Capacities to design climate-responsive and resilient flood protection structures are limited. Many defenses have exceeded their design life and have not been upgraded or maintained and are therefore now largely ineffective. There is limited use of modern eco-system-based flood risk management approaches and approaches which combine both structural and non-structural measures as part of FRM, due to a lack of knowledge and application of non-structural measures and ecosystem-based approaches (EbA) to flood risk management. There is also limited knowledge and capacities among local communities on climate resilient livelihoods for coping with climate-induced hazards.		Community surveys	agricultural land losses Communities actively participate in planning and implementation of risk reduction measures Effective cooperation and coordination with GIZ project on the implementation and enhancement of the FFEWS
	Indicator 3.3: (a) number of communities across DRB supported with non-structural measures and adaptation planning (including training, participatory planning and implementation) (b) scale of agroforestry measures implemented (ha)		**Indicator target 3.3.** (a) At least 50 communities across DRB are supported with training, participatory CRM and FRM planning and/or implementation of non-structural measures (b) At least 150 ha	Project annual reports. Mid-term evaluation, final report Demonstration site reports Community training and awareness workshop reports Community Surveys	

F. Demonstrate how the project / programme aligns with the Results Framework of the Adaptation Fund

Project Objective(s)[37]	Project Objective Indicator(s)	Fund Outcome	Fund Outcome Indicator	Grant Amount (USD)
To assist the riparian countries in the implementation of an integrated climate-resilient river basin flood risk management approach in order to improve their capacity to manage flood risk at regional, national and local levels and to enhance resilience of vulnerable communities in the DRB to climate-induced floods.	Total Number of direct and indirect beneficiaries with reduced vulnerability to flood risks; Number of beneficiaries relative to total population Availability of high quality flood hazard and risk information generated and disseminated to stakeholders on a timely basis Number and level of effective coordination mechanisms for climate-resilient FRM in DRB	Outcome 1: Reduced exposure at national level to climate-related hazards and threats	1. Relevant threat and hazard information generated and disseminated to stakeholders on a timely basis	9,927,750
		Outcome 2: Strengthened institutional capacity to reduce risks associated with climate-induced socioeconomic and environmental losses	2.2. Number of people with reduced risk to extreme weather events	
Project Outcome(s)	**Project Outcome Indicator(s)**	**Fund Output**	**Fund Output Indicator**	**Grant Amount (USD)**
Improved climate and risk informed decision-making, availability and use of climate risk information	Indicator 1.1. a) Coverage and effectiveness of the hydrometric monitoring networks in riparian countries. b) Number of new observation stations installed Indicator 1.2: Level of introduction of modelling tools and technologies for the strategic flood risk assessment and flood hazard mapping Indicator 1.3. Level of implementation of the systematic	Output 1: Risk and vulnerability assessments conducted and updated at a national level	1.1. No. and type of projects that conduct and update risk and vulnerability assessments 1.2 Development of early warning systems	2,379,244
		Output 2.1: Strengthened capacity of national and regional centers and networks to respond rapidly to extreme weather events	2.1.1. No. of staff trained to respond to, and mitigate impacts of, climate-related events	

[37] The AF utilized OECD/DAC terminology for its results framework. Project proponents may use different terminology but the overall principle should still apply

	gender-sensitive socio-economic vulnerability assessment in the DRB			
Improved institutional arrangements, legislative and policy framework for climate-resilient FRM, and development of CCA and FRM strategy and plans at the basin, sub-basin, national and sub-national levels	Indicator 2.1: State of the Drin River Basin FRM Policy Framework and cooperation on flood risk management Indicator 2.2. **a)** % increase in institutional capacity to promote integrated climate resilient flood risk management b) Number of staff from targeted institutions trained to respond to impacts of climate-related events Indicator 2.3. State of Drin River Basin Integrated CCA and FRM Strategy	Output 2.2: Targeted population groups covered by adequate risk reduction systems	2.1.2. Capacity of staff to respond to, and mitigate impacts of, climate-related events from targeted institutions increased	1,120,756
		Output 7: Improved integration of climate-resilience strategies into country development plans	7.1. No., type, and sector of policies introduced or adjusted to address climate change risks	
Strengthened community resilience through improved flood forecasting and early warning, implementation of structural and non-structural measures and enhanced local capacity for CCA and FRM	Indicator 3.1: State of climate-responsive design of structural and non-structural measures for long-term FRM investment in DRB. Indicator 3.2: **(a)** Number of people directly protected from flood risks through structural measures at 3 high risk sites in Albania, FYR	Output 2.2: Targeted population groups covered by adequate risk reduction systems	2.2.1. Percentage of population covered by adequate risk-reduction systems	5,000,000
		Output 3: Targeted population groups participating in adaptation and risk reduction awareness activities	3.1.1 No. and type of risk reduction actions or strategies introduced at local level	

	Macedonia and Montenegro (b) Area of land protected from flood risks through structural measures at AF project 3 sites Indicator 3.3: (a) number of communities across DRB supported with non-structural measures and adaptation planning (including training, participatory planning and implementation) (b) scale of agroforestry measures implemented (ha)	Output 4: Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability	4.1.2. No. of physical assets strengthened or constructed to withstand conditions resulting from climate variability and change (by asset types)	
		Output 5: Vulnerable physical, natural, and social assets strengthened in response to climate change impacts, including variability	5.1. No. and type of natural resource assets created, maintained or improved to withstand conditions resulting from climate variability and change (by type of assets)	

G. Include a detailed budget with budget notes, broken down by country as applicable, a budget on the Implementing Entity management fee use, and an explanation and a breakdown of the execution costs.

G.1. Project Budget

Award ID:	Project ID(s):	TBD	Project ID(s):	TBD
Award Title:	TBD			
Business Unit:	SVK10			
Project Title:	Integrated climate-resilient transboundary flood risk management in the Drin River basin in the Western Balkans			
PIMS no.	6215			
Implementing Partner /Executing Agency	UNDP			

Project Outcomes	Fund ID	Atlas Budget Account Code	Atlas Budget Account Description	Amount Year 1 (USD)	Amount Year 2 (USD)	Amount Year 3 (USD)	Amount Year 4 (USD)	Amount Year 5 (USD)	TOTAL (USD)	Notes
COMPONENT 1: Improved climate and risk informed decision-making, availability and use of climate risk information	62040	61300	Salary & Post Adj Cst-IP Staff	30,000.0	30,000.0	30,000.0	30,000.0	30,000.0	150,000.00	P0
		71200	International Consultants	-	-	11,666.0	-	11,667.0	23,333.00	1A
		71200	International Consultants	320,178.00	58,928.00	83,928.00	33,928.00	33,928.00	530,890.00	1B, 4B
		71300	Local Consultants	212,850.00	15,600.00	15,600.00	15,600.00	15,600.00	275,250.00	1C
		71400	Contractual Services - Individ	24,602.00	24,602.00	24,602.00	24,602.00	24,602.00	123,010.00	P1
		71600	Travel	12,333.0	12,333.0	12,333.0	12,333.0	12,333.0	61,665.00	1H
		72100a	Contractual Services - Companies / Na	426,251.00	70,000.00	-	-	-	496,251.00	1G
		72200	Equipment and Furniture	549,424.00	-	-	-	-	549,424.00	1D
		72400	Communic & Audio Visual Equip	900.00	900.00	900.00	900.00	900.00	4,500.00	1K
		72500	Supplies	250.00	250.00	250.00	250.00	250.00	1,250.00	1L
		72800	Information Technology Equipmt	50,000.00	-	-	-	-	50,000.00	1E
		73100	Rental & Maintenance-Premises	1,504.00	1,504.00	1,504.00	1,504.00	1,504.00	7,520.00	P3
		74100	Professional Services	8,000.00	8,000.00	8,000.00	8,000.00	8,000.00	40,000.00	1J
		74200	Audio Visual&Print Prod Costs	4,000.00	4,000.00	4,000.00	4,000.00	5,151.00	21,151.00	1I
		71300	Local Consultants	45,000.00	-	-	-	-	45,000.00	1F
			Total Outcome 1	*1,685,292.0*	*226,117.0*	*192,783.0*	*131,117.0*	*143,935.0*	***2,379,244.00***	

COMPONENT 2: Improved institutional arrangements, legislative and policy framework for climate-resilient FRM, and development of CCA and FRM strategy and plans at the basin, sub-basin, national and sub-national levels	62040	61300	**Salary & Post Adj Cst-IP Staff**	30,000.00	30,000.00	30,000.00	30,000.00	30,000.00	150,000.00	**P0**
		71200	**International Consultants**	-	-	11,666.00	-	11,667.00	23,333.00	**1A**
		71200	**International Consultants**	75,000.00	48,000.00	-	-	-	123,000.00	**2B**
		71300	**Local Consultants**	6,000.00	6,000.00	6,000.00	6,000.00	6,000.00	30,000.00	**2J**
		71400	**Contractual Services - Individ**	24,602.00	24,602.00	24,602.00	24,602.00	24,602.00	123,010.00	**P1**
		71600	**Travel**	12,137.40	12,137.40	12,137.40	12,137.40	12,137.40	60,687.00	**2H**
		72100a	**Contractual Services - Companies / Na**	-	100,000.00	-	-	-	100,000.00	**2D**
		72100b	**Contractual Services - Companies / In**	-	133,200.00	139,253.00	-	-	272,453.00	**2E**
		72400	**Communic & Audio Visual Equip**	900.00	900.00	900.00	900.00	900.00	4,500.00	**2F**
		72500	**Supplies**	250.00	250.00	250.00	250.00	250.00	1,250.00	**2G**
		73100	**Rental & Maintenance-Premises**	1,504.60	1,504.60	1,504.60	1,504.60	1,504.60	7,523.00	**P3**
		75700	**Training, Workshops and Conference**	35,000.00	35,000.00	35,000.00	35,000.00	35,000.00	175,000.00	**2C**
		75700	**Training, Workshops and Confer**	10,000.00	10,000.00	10,000.00	10,000.00	10,000.00	50,000.00	**2I**
			Total Outcome 2	*195,394.00*	*401,594.00*	*271,313.00*	*120,394.00*	*132,061.00*	***1,120,756.00***	
COMPONENT 3: Strengthened community resilience through improved flood management through the implementation of structural and non-structural measures and enhanced local capacity for CCA and FRM	**62040**	61300	**Salary & Post Adj Cst-IP Staff**	20,000.00	20,000.00	20,000.00	20,000.00	20,000.00	100,000.00	**P0**
		71200	**International Consultants**	-	-	11,667.00	-	11,667.00	23,334.00	**1A**
		71200	**International Consultants**	20,000.00	20,000.00	20,000.00	20,000.00	20,000.00	100,000.00	**4B**
		71200	**International Consultants**	-	36,000.00	24,000.00	-	-	60,000.00	**3B**
		71300	**Local Consultants**	458,551.50	350,916.50	16,415.00	365,791.00	367,806.00	1,559,480.00	**3C**
		71400	**Contractual Services - Individ**	24,602.40	24,602.40	24,602.40	24,602.40	24,602.40	123,012.00	**P1**
		71600	**Travel**	12,528.60	12,528.60	12,528.60	12,528.60	12,528.60	62,643.00	**3H**
		72100a	**Contractual Services - Companies / Na**	-	472,500.00	1,039,518.00	1,058,743.00	-	2,570,761.00	**3D**
		72100	**Contractual Services - Companies**	150,000.00	200,000.00	-	-	-	350,000.00	**3E**
		72400	**Communic & Audio Visual Equip**	900.00	900.00	900.00	900.00	900.00	4,500.00	**3F**
		72500	**Supplies**	250.00	250.00	250.00	250.00	250.00	1,250.00	**3G**
		72800	**Information Technology Equipmt**	6,000.00	-	500.00	500.00	500.00	7,500.00	**3I**
		73400	**Rental & Maint of Other Equip**	6,000.00	6,000.00	6,000.00	6,000.00	6,000.00	30,000.00	**3J**
		73100	**Rental & Maintenance-Premises**	1,504.00	1,504.00	1,504.00	1,504.00	1,504.00	7,520.00	**P3**
			Total Outcome 3	*700,336.50*	*1,145,201.50*	*1,177,885.00*	*1,510,819.00*	*465,758.00*	***5,000,000.00***	
Project Management	**62040**	61300	**Salary & Post Adj Cst-IP Staff**	20,000.00	20,000.00	20,000.00	20,000.00	20,000.00	100,000.00	**P0**
		73100	**Rental & Maintenance-Premises**	6,306.40	6,306.40	6,306.40	6,306.40	6,306.40	31,532.00	**P3**
		71400	**Contractual Services - Individ**	57,900.00	57,900.00	57,900.00	57,900.00	57,900.00	289,500.00	**P2**
		71400	**Contractual Services - Individ**	16,193.60	16,193.60	16,193.60	16,193.60	16,193.60	80,968.00	**P1**
		74596	**Direct Project Costs**	29,600.00	29,600.00	29,600.00	29,600.00	29,600.00	148,000.00	**P4**
			Project Management Cost	*130,000.00*	*130,000.00*	*130,000.00*	*130,000.00*	*130,000.00*	**650,000.00**	
			Total per year	*2,941,459.41*	*2,064,660.06*	*1,922,599.39*	*2,053,178.05*	*945,853.09*		
								Total Direct Cost	**9,150,000.00**	
								Total GMS (8.5%)	**777,750.00**	
								Grand Total (Direct cost and GMS)	**9,927,750.00**	

G.2. Budget Notes:

Budget Note No.	Clarification of the budget items/ Justification of the estimated costs
1A	Monitoring and Evaluation (Inception, APR, MTE, TE), Individual experts, estimated at 70.000 USD lump sum, divided among outcomes 1-3, allocated in Y3 and Y5
1B	International Hydrometric expert to review the existing coverage, physical condition and data collection procedures of the basin hydrometric network, working across all Riparian countries (35 days @ $600/day)
	International Hydrometric expert to develop the optimised basin hydrometric network plan (15days @ $600/day)
	Telecommunications expert to undertake an assessment of the telecommunicatiosn network to support telemetered and automated stations. (15 days @ 250/day)
	International Hydrometric expert to assess the institutional arrangements and capacity for the operation and maintenance of the hydrometric network and develop Institutional capacity development plan (short, medium and long-term) for hydrometric network O&M detailing manpower and financial requirements, and training needs, for the efficient O&M of all the stations in each Riparian country. Develop detailed training curriculum for training to be delivered during the project. Assess the existing protocols for the collection, transmission, sharing, storage, management and use of the observed data. Deliverable: Hydrometric network capacity development plan, training needs and recommendations and action plan for implementation of data sharing protocols and management (30 days @ $600/day)
	Implementation of action plan for data sharing protocols and management (30 days @ $600/day)
	International Hydrometric expert to develop hydrometric network O&M plan and assist countries to implement elements of the plan. 30 days @ $600/day
	Undertake high-level basin wider flood modelling, developing hydrological and hydraulic models of the basin = 80,000
	Integrated GIZ models into basin model
	Flood risk assessment capacity assessment and develop long-term capacity development plan, training needs and training curriculum for training to be provided by the project
	Develop and codify methods and tools for undertaking socio-economic surveys to collect necessary information to fully map the socio-economic conditions of within the basin.
	International consultant to develop a GIS-based flood risk model which integrates various spatial socio-economic data with the flood hazard maps, calculates flood risk, performs vulnerability assessment, produce vulnerability maps which will include damages and loss of life estimates and to test flood management options.
	Work with riparian countreis to identify and undertake appraisal-led cost-benefit analysis of FRM structural and none-structural options for long-term basin FRM
1C	National Hydrometric experts from each Riparian country to work under the international expert, to input to review of the existing coverage, physical condition and data collection procedures of the basin hydrometric network, working across all Riparian countries (3 x 60 days @ $400/day)
	Local consultant to develop specification including detailed design of of hydrometric stations (civil works etc.) and specification of equipment to be procured based on detailed optimised hydrometric network plan. Assume 15 days per country $250 per day
	International Hydrometric expert to review existing financing of hydrometric network O&M in each riparian country, identify resourcing, and training needs as well as institutional arrangements for the management of the proposed new hydrometric network. Develop and implement O&M financing mechanisms for the hydrometric network. 15 days @$600/day
	Project GIS experts to establish and populate the project SDI and data managemetn system and the undertaken GIS data collection, digitisation, analysis for the duration of the project. Assume on average 1 day per week for 5 years (260 days) @ $300/day.
	Undertake hydrological and hydraulic models of the DRB in Macedonia based on detailed surveys of the physical characteristics of the river basin, and produce high resolution EU flood hazard inundation maps (for Macedonia). Macedonia detailed modelling = 80,000.
	Local consultant to develop the GIS-based flood risk model for the DRB
1D	Procurement of hydrometric stations for Montenegro (cost provided minus vehicles) - Establishment of new hydrological and rainfall stations in the basin of Lake Skadar and the Adriatic Sea (95,000.00); Equipment for hydrological stations (66,000.00); Instruments for measuring, maintenance and improvement of work (67.000.00); Hardware and software (50,330.00); Trainings (20,000.00); Equipment for staff (14,400.00); Costs for performing one serie of hydrometric measurements and control of instruments (1,44.00)
	Procurement of hydrometric stations for Macedonia - Hydrological Stations ($137,700); Equipment fo Hydrometric measurement&Service ($63,825); Meteorological Stations ($92,900); Equipment for Service and Field Trip Meteorology (5,550); Raman Depolarization LIDAR for Meteorological Applications ($99,900); 1x Type CR1000 -ST-SW-NC ($1644); 2 x Dataloger CR300 ($1270); 3 x Type SP20 20W Solar Panel, solar panel, 20 W , Mounting kit ($960); 3 x Type CH150-SW, 12 V Charging Regulator – 3 (750); 1 x Type SR50A, sensor for snow depth, 3 m cable ($4,800); Mounting kit 19517 for SR50A ($125)

1E	Purchase of GIS software and hardware for proejct SDI (Arc GIS desktop = 3 licence x $3k; ArcGIS online with cloud hosting assuming 200 named users = 7-10K per year) = ($35k to $50)k + $9k = $50k
1F	30 junior experts hired on a short-term basis to digitise all relevant data for 3 months. Assume 100 stations with at least 3 recordings per day and 3 parameters = 110,000 records over 50 years. Assume digitisation @ 0.5 min per record = 1,900 days. Over 3 months, this will take approx. 30 people. @ $25 per day = $45,000
1G	Local survey company to undertake detailed topographic surveys of the river channel through high risk areas including all major infrastructure across the river (e.g. bridges, dams etc.) and along river banks (e.g. flood walls, levees etc.) for the Crn Drim in Macedonia
	Assuming LiDAR data acquired for the floodplain only and cheaper DEM data (or freely available DEM data) used for the rest of the catchment. Assume modelling for whole Crn Drim
	Acquire DEM data for the floodplain for whole basin (for high level model). Contingency for modelling Albania and Montenegro for detailed design
	Undertake socio-economic suevrys and developed necessary basin datasets for long-term socio-economic risk, vulnerability and damage and loss modelling
	Establishment of Desinventar and associated data collection tools for D&L accounting in all Riparian countries. Including training
	Develop harmonized methods, guidelines and procedures in line with Sendai Framework, for recording flood events, undertaking post-event surveys and assessing vulnerability to flooding as well as assessing the effectiveness of flood mitigation measures in reducing vulnerability and damages.
1 H	Travel for Outcome 1/ including for monitoring and project implementation - 61.655
1I	Printing and publication of annual reports, publications $4,000 * 5 years - $20,000 included under Component 1
1J	Audit as per UNDP rules are regulations. Audit can either be done by an audit firm that is selected by the Office of Audit and Investigation at regional level or done at individual country level per CO/country component. Calculation 0.4% x total budget rounded to 40.000 USD, allocated in 2nd and 4th year but audit could be done at any time during implementation.
1K	Communication costs for Outcome 1, average 900 USD per year (mobile, internet) x 5 years = 4500
1L	Office supplies (office stationary, other small office supplies) for Outcome 1, Average 250 USD per year x 5 years= 1250
OUTCOME 2	
2B	Policy expert to review existing FM policy and enabling environments in each riparian country and develop basin FRM policies for the implementation of FRM legislative and policy framework in line with relevant EU directives. Mainly desk study and country-level consultations in eash Riparian country
	Economist/Insurance expert to provide techncial assistance to and guide the development basin risk transfer mechanisms. Overall responsibility for 1) Development of risk financing and risk transfer mechanisms strategy to include private sector engagement strategy for long-term implementation of risk financing and risk transfer mechanisms for national-level flood risk financing and resilience strategy; 2) identification or public-sector risk financing mechanisms for flood risk management; 3) Risk financing and transfer mechanisms products and tools identifiction (if existing); 4) development based on detailed socio-economic risk, damages and losses assessment (to be undertaken in Output 1.3); 5) Oversee feasibility studies of all identified and shortlisted risk financing mechanisms, development of a basin flood insurance model for the assessment of premiums and payouts of flood events of different return periods; 6) Oversee the development of basin flood insurance scheme. Assume 60 days at $800/day
	Institutional expert to undertake Institutional mapping to identify the current relevant national and sub-national government departments with functions in flood risk management in each Riparian country.
	Institutional expert to undertake Institutional capacity assessment and gap analysis to include functional, resourcing, technical and financial capacity assessment. Development of long-term Institutional capacity development plan addressing resourcing, technical, and financial needs in each Riparian. Develop training programme for climate risk management and flood risk management and embed in relevant national/regional institutions to improve the technical capacity and knowledge base for climate risk management and a long-term adaptation planning for flood risk management.
2C	Workshop to support policy development and consultation with relevant sector stakeholders. Assume 1 workshop per year for 5 years @ $5,000 per workshop
	Deliver prioritized training to practitioners, decision-makers and communities in all aspects of FRM. Assume 3 training sessiosn per year (15) and allow for 200 participants each time. Assume 10k per training
2D	Local consultant team to undertake: 3) Development of Risk financing and transfer mechanisms products and tools identifiction (if existing) and/or development based on detailed socio-economic risk, damages and losses assessment (to be undertaken in Output 1.3); 4) Undertakefeasibility studies of all identified and shortlisted risk financing mechanisms; 5) development of a basin flood insurance model for the assessment of premiums and payouts of flood events of different return periods;m Assume team of 5 lump sum fee
	The ToR of the Drin EWG Floods will be revisited in terms of mandate, membership, resource requirements, technical capacity and technical enabling environment; data sharing and data access and technical means and tools for coordination. In consultation with riparian countries and the DCG a strategy and a five-year work program of the Drin EWG Floods will be developed and implemented.

2E	Polic expert for Sector FRM policies (at least 2 - energy, agriculture) - Undertake detailed technical studies (including modelling) on climate change impacts on the identified sectors (energy and agriculture) in the DRB. Consult with national sector leaders and relevant stakeholders on findings of study and invite comments on recommendations through the floods working group. Develop and codify detailed methodologies for incorporating climate-change responsive flood risk considerations into risk assessments, strategies, policies and plans for the energy and agriculture sectors. Develop and finalize robust sector FRM policies and any necessary enabling guidelines and/or tools for effective implementation of new policies.
	Development of an integrated basin flood risk management plan for the DRB with participation of all relevant stakeholders. The plan will take a bottom-up, multi-stakeholder, consensus-based approach. This activity will be mainstreamed into the national on-going work on the development of the river basin management plans through the relevant national authorities. From the basin plan, and sub-national plans will be developed.
2F	Communication costs for Outcome 2, average 900 USD per year (mobile, internet) x 5 years = 4500
2G	Office supplies (office stationary, other small office supplies) for Outcome 2, Average 250 USD per year x 5 years= 1250
2I	Training, Workshops and Conferences (Inception workshop, steering committees, etc. $10,000 * 5 = $50,000 can put all under Component 2)
2J	National Gender Consultant/s, lump sum estimated at 30.000 USD; Included under Outcome 2 entirely, allocated to 5 years/6000 USD
2H	Travel for Outcome 2/ including for monitoring and project implementation
	OUTCOME 3
3B	Chief Resident Engineer - International Engineer to lead Studies to identify as long-list of options for FRM in DRB. Long list of options will be examined and qualitatively assessed in terms of the socio-economic, environmental, engineering and hydrological impacts of the options, and will form the basis of the short-listing process to be carried out in consultation with stakeholders. An initial appraisal of the short-listed options will be carried out to determine technical performance (through modelling) in terms of flood damages reduction in the basin. Feasibility outline and detailed design studies will be carried out on each preferred option/flood alleviation scheme. (assume $700/day for 20 days). Includes oversight of detailed engineering design of structural measures (assume $700/day for 20 days), Includes Resident Engineer duties (assume $700/day for 80 days)
3C	Local Engineering firm to undertake studies to identify as long-list of options forFRM in DRB. Long list of options will be examined and qualitatively assessed in terms of the socio-economic, environmental, engineering and hydrological impacts of the options, and will form the basis of the short-listing process to be carried out in consultation with stakeholders. An initial appraisal of the short-listed options will be carried out to determine technical performance (through modelling) in terms of flood damages reduction in the basin. Feasibility outline and detailed design studies will be carried out on each preferred option/flood alleviation scheme. (Assume $300/day for 60 days) x3
	Local engineers Albania working with relevant government institutes to undertake detailed design of priority structural measures
	Local company in Montenegro working with relevant government institutes to undertake detailed design of priority structural measures
	Local engineers in Macedonia working with relevant government institutes to undertake detailed design of priority structural measures
	development of a long-term maintenance plan for the protective embankment
	Studies to identify a long-list of non-structural options for FRM in DRB. Long list of options will be examined and qualitatively assessed in terms of the socio-economic, environmental, engineering and hydrological impacts of the options, and will form the basis of the short-listing process to be carried out in consultation with stakeholders. An initial appraisal of the short-listed options will be carried out to determine technical performance (through modelling, site visits, desk studies) in terms of flood damages reduction in the basin. Feasibility outline and detailed design studies will be carried out on each preferred non-structural option and assesment will be made in combination with the preferreed structural flood alleviation schemes idenfieid in 3.1.1. (assume $300/day for 40 days). Includes oversight of detailed design of non-structural measures (assume $300/day for 20 days)
	Implementation of non-structural measures in Albania
	Implementation of non-structural measures in Montenegro
	Implementation of non-structural measures in Macedonia
3D	Albania structural measure
	Montenegro - Upgrading and reinforcement of the protective embankment along the Bojana River
	Macedonia - Afforestation and management of bare lands (sparsely vegetated) affected with high erosion in the Sateska River Basin in total area of up to 100 hectares
	Macedonia - Construction of natural based sediment retention structures at fan apex or on fan (on 2 locations)
	FYR Macedonia - Improvement of hydraulic capacity of Crni Drim River with in urban zone
	FYR - Macedonia - Reconstruction, updating (increasing the capacity) of banks on Crni Drim in rural part in total length of up to 10 km
	FYR Macedonia - Improvement of existing drainage system in Struga municipality for underground flood protection

3E	Environmental Safeguard (EIA), lump sum 350.000 USD, Y 1 = 100.000 USD, Y 2 = 250.000 USD, allocated under Outcome 3
3F	Communication costs for Outcome 2, average 900 USD per year (mobile, internet) x 5 years = 4500
3G	Office supplies (office stationary, other small office supplies) for Outcome 3, Average 250 USD per year x 5 years= 1250
3H	Travel for Outcome 3/ including for monitoring and project implementation
3I	Office equipment, average 2500 USD per office for the project lifetime x 3 Cos = 7500 USD, Allocated in full under Outcome 3, 6000 in Y1, 500 USD in year 3, 4 and 5
3J	Fuel for project vehicle/contribution for use of CO owned vehicle, Unit = CO, Cost = average 2000 USD per year x 5 years = 10000 USD. This account also covers rent of vehicle or maintenance of vehicle; Included under Outcome 1, divided per year
4B	Chief Technical Advisor (CTA), lump sum 269,640 USD, allocated under Outcome 3 - 100.000 USD and Outcome 1 - 169.640 USD, allocated for 5 years
	OUTCOME 4 / Project Management
P0	Regional Project Manager, level P3, post estimated at 100.000 USD per year including salary at full/organizational cost plus removal costs. Cost is allocated under Outome 1 - 150.000 USD, Outcome 2- 150.000 USD, Outcome 3- 100.000 USD and Project Management Costs - 100.000 USD, allocated for 5 years
P1	National Project Coordinator, SC contract level SB4/SC10/1, average salary for MK under the assumption that all COs have similar salary scales, SB4/SC10/1. Unit =CO, Price = Annual salary with full organizational cost per person x 5 years x 3 persons (approx. 30000 USD x 5=1150000 USD); 150,000 USD x 3 = 450.000 USD. 18% or 80.968 USD allocated under project management costs, the remaining costs divided among 3 Outcomes equally
P2	Project Assistant, SC contract level SB3/SC7/3, average salary for MK under the assumption that all COs have similar salary scales, SB3/SC7/3. Unit =CO, Price = Annual salary with full organizational cost x 5 years (approx. 19.300 USD x 5=96.500 USD) 96.500 USD x 3 persons = 289.500 USD, Budgetted under Project Management costs, i.e.96.500 USD /5 years
P3	Office rent, 300 monthly rent + utilities x 60 months = 18000, Divided between Project Management Costs (58%) and Outcomes 1-3 (14%x3)
P4	UNDP Direct Project Coasts included under Project Management Costs

G.3. UNDP Direct Project Support Services (Total DPC: USD 148,000)

DESCRIPTION OF UNDP SUPPORT SERVICES FOR ISTANBUL REGIONAL HUB:

Support services	Schedule for the provision of the support services	Cost to UNDP of providing such support services (where appropriate)	Amount and method of reimbursement of UNDP (where appropriate)
1. Human Resources			
Identification and/or recruitment of project personnel: Regional Project Manager	**In the first quarter of the project implementation**	US$ 736.75	**US$737** **UNDP will directly charge the project in accordance with the UPL**
Local Personnel HR & Benefits Administration & Management	**One- time fee, per staff at: the issuance of a contract, and- again at separation**	US$ 244.65 244.65 x 2	**US$ 489** **UNDP will directly charge the project in accordance with the UPL**
Recurrent personnel management services: **Local Payroll & Banking (35%)** **Performance evaluation (30%)** **Extension, promotion, entitlements (30%)**	**Annual fee per employee, per calendar year**	541.11 x 5 years	**US$ 2,706** **UNDP will directly charge the project in accordance with the UPL**

Total HR:			**US$ 3,932**
2. Finance			
Payment Process	**Ongoing throughout implementation when applicable**	44.21 x 150	**US$6,632** **UNDP will directly charge the project in accordance with the UPL**
Total Finance:			**US$6,632**
3. Procurement			
Procurement not involving CAP - below US$ 50,000	**As per the working plan**	260.18 x 8	**US$ 2,081** **UNDP will directly charge the project in accordance with the UPL**
Procurement process involving CAP (and/or ITB, RFP, requirements) - above US$ 50,000)	**As per the working plan**	659.46 x 4	**US$ 2,638** **UNDP will directly charge the project in accordance with the UPL**
Consultant recruitment	**As per the working plan**	286.20 x 20	**US$ 5,724** **UNDP will directly charge the project in accordance with the UPL**
Disposal of equipment	**At the end of the project implementation**	US$ 335.91	**US$ 336** **UNDP will directly charge the project in accordance with the UPL**
Total Procurement:			**US$ 10,779**
4. Admin Support			
Travel management (booking, purchase, F10 settlement)	**Ongoing throughout implementation when applicable**	US$ 78.08 x 89	**US$ 6,949** **UNDP will directly charge the project in accordance with the UPL**
Total Admin Support:			**US$ 6,949**
Total DPC			**USD 28,292**

DESCRIPTION OF UNDP SUPPORT SERVICES FOR ALBANIA:

Support services	Schedule for the provision of the support services	Cost to UNDP of providing such support services (where appropriate)	Amount and method of reimbursement of UNDP (where appropriate)
1. Human Resources			
Identification and/or recruitment of project personnel -Project Coordinator (PC) and Project Assistant (PA)	In the first quarter of the project implementation	US$ 600*2 (PC &PA)	US$1,200 UNDP will directly charge the project in accordance with the UPL
Local Personnel HR & Benefits Administration & Management	One- time fee, per staff at: the issuance of a contract, and- again at separation	US$ 206*4 (contract issuance and separation for PC & PA	US$ 824 UNDP will directly charge the project in accordance with the UPL
Recurrent personnel management services: Local Payroll & Banking (35%) Performance evaluation (30%) Extension, promotion, entitlements (30%) Leave monitoring (5%)	Annual fee per employee, per calendar year	US$449*2 (PC&PA for 5 years duration)	US$ 4,490 UNDP will directly charge the project in accordance with the UPL
Consultant recruitment Advertising (20%) Shortlisting &selection (40%) Contract issuance (40%)	Per IC process	US$234*35	US$ 8,190 UNDP will directly charge the project in accordance with the UPL
Total HR:			**US$ 14,704**
2. Finance			
Payment Process	Ongoing throughout implementation as applicable	36* 500	US$**18,000** UNDP will directly charge the project in accordance with the UPL
Total Finance:			**US$18,000**
3. Procurement			
Procurement not involving CAP - below US$ 50,000	As per the work plan	217*18	US$ 3,906 UNDP will directly charge the project

			in accordance with the UPL
Procurement process involving CAP (and/or ITB, RFP, requirements) - above US$ 50,000)	As per the work plan	541*6	US$ 3,246 UNDP will directly charge the project in accordance with the UPL
Total Procurement:			**US$ 7,152**
4. Admin Support			
Travel request or authorization (40%) F10 settlement) (35%)	Ongoing throughout implementation as applicable	US$ 38*40 US$ 34*40	US$ 3,040 UNDP will directly charge the project in accordance with the UPL
Total Admin Support:			**US$ 3,040**
Total DPC			**USD 42,896**

DESCRIPTION OF UNDP SUPPORT SERVICES FOR THE FORMER YUGOSLAV REPUBLIC OF MACEDONIA:

Support services	**Schedule for the provision of the support services**	**Cost to UNDP of providing such support services (where appropriate)**	**Amount and method of reimbursement of UNDP (where appropriate)**
1. Human Resources			
Identification and/or recruitment of project personnel -Project Manager and Project Assistant	In the first quarter of the project implementation	US$ 599.81 599.81 x 2	US$1,200 UNDP will directly charge the project in accordance with the UPL
Local Personnel HR & Benefits Administration & Management	One- time fee, per staff at: the issuance of a contract, and- again at separation	US$ 205.66 205.66 x4	US$ 822 UNDP will directly charge the project in accordance with the UPL
Recurrent personnel management services: Local Payroll & Banking (35%) Performance evaluation (30%) Extension, promotion, entitlements (30%)	Annual fee per employee, per calendar year	448.67 x 2persons x 5 years	US$ 4,487 UNDP will directly charge the project in accordance with the UPL
Total HR:			**US$ 6,509**
2. Finance			

Payment Process	Ongoing throughout implementation when applicable	38.49 x 500	US$**19,245** UNDP will directly charge the project in accordance with the UPL
Total Finance:			**US$19,245**
3. Procurement			
Procurement not involving CAP - below US$ 50,000	As per the working plan	217.35 x 15	US$ 3,260 UNDP will directly charge the project in accordance with the UPL
Procurement process involving CAP (and/or ITB, RFP, requirements) - above US$ 50,000)	As per the working plan	540.84 x 10	US$ 5,408 UNDP will directly charge the project in accordance with the UPL
Consultant recruitment	As per the working plan	234.26 x 20	US$ 4,685 UNDP will directly charge the project in accordance with the UPL
Total Procurement:			**US$ 13,353**
4. Admin Support			
Ticket request (booking, purchase, F10 settlement)	Ongoing throughout implementation when applicable	US$ 66.04 x 16	US$ 1,057 UNDP will directly charge the project in accordance with the UPL
Total Admin Support:			**US$ 1,057**
Total DPC			**USD 40,164**

DESCRIPTION OF UNDP SUPPORT SERVICES FOR MONTENEGRO:

Support services	**Schedule for the provision of the support services**	**Cost to UNDP of providing such support services (where appropriate)**	**Amount and method of reimbursement of UNDP (where appropriate)**
1. Human Resources			
Identification and/or recruitment of project personnel -Project Coordinator and Project Assistant	In the first quarter of the project implementation	US$ 599.81 599.81 x 2	US$1,200 UNDP will directly charge the project in accordance with the UPL

Local Personnel HR & Benefits Administration & Management	One- time fee, per staff at: the issuance of a contract, and- again at separation	US$ 205.66 205.66 x4	US$ 823 UNDP will directly charge the project in accordance with the UPL
Recurrent personnel management services: Local Payroll & Banking (35%) Performance evaluation (30%) Extension, promotion, entitlements (30%)	Annual fee per employee, per calendar year	448.67 x 2persons x 5 years	US$ 4,489 UNDP will directly charge the project in accordance with the UPL
Total HR:			**US$ 6,512**
2. Finance			
Payment Process	Ongoing throughout implementation when applicable	38.49 x 400	US$**15,396** UNDP will directly charge the project in accordance with the UPL
Total Finance:			**US$15,396**
3. Procurement			
Procurement not involving CAP - below US$ 50,000	As per the working plan	217.35 x 15	US$ 3,260 UNDP will directly charge the project in accordance with the UPL
Procurement process involving CAP (and/or ITB, RFP, requirements) - above US$ 50,000)	As per the working plan	540.84 x 10	US$ 5,408 UNDP will directly charge the project in accordance with the UPL
Consultant recruitment	As per the working plan	234.26 x 15	US$ 4,685 UNDP will directly charge the project in accordance with the UPL
Total Procurement:			**US$ 13,353**
4. Admin Support			
Travel request (booking, purchase, F10 settlement)	Ongoing throughout implementation when applicable	US$ 66.04 x 21	US$ 1,387 UNDP will directly charge the project in accordance with the UPL
Total Admin Support:			**US$ 1,387**
Total DPC			**USD 36,648**

258. The distribution of the Implementing Entity management fee budget use is provided in the **Annex 13.**

H. Include a disbursement schedule with time-bound milestones.

	Upon agreement & signature (US$)	**After Year 1** (US$)	**After Year 2** (US$)	**After Year 3** (US$)	**After Year 4** (US$)	**Total disbursed** (over 5 years)
Scheduled date (tentative)	Apr-19	Jun-20	Jun-21	Jun-22	Jun-23	
Project funds	2,581,022.50	1,772,912.50	1,641,981.00	1,762,330.00	741,754.00	**8,500,000.00**
Project Execution Costs	130,000.00	130,000.00	130,000.00	130,000.00	130,000.00	650,000.00
Implementing Entity fee (8.5%)	449,362.00	97,049.00	90,371.00	96,509.00	44,459.00	777,750.00
					Total	**9,927,750.00**

PART IV: ENDORSEMENT BY GOVERNMENTS AND CERTIFICATION BY THE IMPLEMENTING ENTITY

A. Record of endorsement on behalf of the government[38] *Provide the name and position of the government official and indicate date of endorsement for each country participating in the proposed project / programme. Add more lines as necessary. The endorsement letters should be attached as an annex to the project/programme proposal. Please attach the endorsement letters with this template; add as many participating governments if a regional project/programme:*

Albania *Blendi Klosi,* *Minister of Tourism and Environment*	Date*: 24 January 2018*
Montenegro *Igor Gradevic,* *General Director, directorate for EU Integration and International Cooperation* *Ministry of Sustainable Development and Tourism*	Date*: 5 September 2018*
The former Yugoslav Republic of Macedonia *Sabulla Duraki* *Minister of Environment and Physical Planning*	Date*: 6 September 2018*

B. Implementing Entity certification *Provide the name and signature of the Implementing Entity Coordinator and the date of signature. Provide also the project/programme contact person's name, telephone number and email address*

I certify that this proposal has been prepared in accordance with guidelines provided by the Adaptation Fund Board, and prevailing National Development and Adaptation Plans (including National Communications to the UNFCCC, national adaptation strategies, disaster risk reduction strategies and action plans etc.) and subject to the approval by the Adaptation Fund Board, commit to implementing the project/programme in compliance with the Environmental and Social Policy of the Adaptation Fund and on the understanding that the Implementing Entity will be fully (legally and financially) responsible for the implementation of this project/programme.	
 Pradeep Kurukulasuriya Executive Coordinator, a.i. Global Environmental Finance Bureau for Policy and Programme Support United Nations Development Programme	
Date: 6 January 2019	Tel. and email: pradeep.kurukulasuriya@undp.org
Project Contact Person: Natalia Olofinskaya, Regional Technical Advisor, UNDP IRH	
Tel. and Email: nataly.olofinskaya@undp.org; +90 (543) 532-3046	

6. Each Party shall designate and communicate to the secretariat the authority that will endorse on behalf of the national government the projects and programmes proposed by the implementing entities.

ANNEXES:
(Provided in a separate file)

Annex 1. Letters of Endorsement
Annex 2. Socio-economic context
Annex 3. Approach to flood hazard, risk and vulnerability modelling
Annex 4. Potential risk financing mechanisms
Annex 5. Description of project sites and structural flood risk reduction measures
Annex 6. Social and Environmental Screening Template
Annex 7. Environmental and Social Management Plan (ESMP)
Annex 8. Gender Assessment and Action Plan
Annex 9. Stakeholder Consultations and Stakeholder Engagement Plan
Annex 10. Key relevant projects for cooperation
Annex 11. GIZ Project Brief. Climate change adaptation through transboundary flood risk management in the Western Balkans.
Annex 12. Proposed list of hydrometric equipment to be purchased and installed by the project
Annex 13. A breakdown of the IE Management Fee
Annex 14. Project timetable

Annex 1. Letters of Endorsement from the national Designated Authorities

1.1. Albania

NEW LETTER NEEDED

REPUBLIKA E SHQIPËRISË

MINISTRY OF TOURISM AND ENVIRONMENT

MINISTER

No. prot. 596 Date: 24 · 01 · 2018

Subject: **Letter of Endorsement by Government of Albania**

To: The Adaptation Fund Board
c/o Adaptation Fund Board Secretariat
Email: Secretariat@Adaptation-Fund.org
Fax: 202 522 3240/5

Cc: Adriana Dinu, Executive Coordinator, UNDP-Global Environment Finance

Subject: Endorsement for the project proposal "Integrated climate-resilient transboundary flood risk management in the Drin River basin in the Western Balkans"

In my capacity, as designated authority for the Adaptation Fund in Albania, I confirm that the above regional project proposal is in accordance with the government's national and regional priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change.

Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund, and if approved, to be implemented and executed by the United Nations Development Programme.

Sincerely,

MINISTER

BLENDI KLOSI

1.2. FYR of Macedonia

REPUBLIC OF MACEDONIA
MINISTRY OF ENVIRONMENT AND PHYSICAL PLANNING

МКД СЕРТИФИКАТ
МКС EN ISO 9001:2009

Republic of Macedonia
Ministry of environment and physical planning

Address: bul. Goce Delcev
№ 18, 1000 Skopje
Republic of Macedonia

Phone: ++ 389 2 3251 400
Fax: ++ 389 2 3220 165
E-mail:
infoeko@moepp.gov.mk
Web: www. moepp.gov.mk

Our Number : 08-889/3

Date: 06. 09. 2018

TO:
The Adaptation Fund Board
c/o Adaptation Fund Board Secretariat
Email: Secretariat@Adaptation-Fund.org
Fax: 202 522 3240/5

Cc: Adriana Dinu, Executive Coordinator, UNDP- Global Environmental Facility

SUBJECT: ENDORSEMENT FOR THE REGIONAL PROJECT "INTEGRATED CLIMATE-RESILIENT TRANSBOUNDARY FLOOD RISK MANAGEMENT IN THE DRIN RIVER BASIN IN THE WESTERN BALKANS"

I confirm that the above regional project proposal is in accordance with the government's national and regional priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in the Republic of Macedonia, and specifically in the Drini River Basin.

Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the project will be implemented by the United Nations Development Programme.

Sincerely,

MINISTER
Sadulla Duraki

Prepared by: Dr. Teodora O. Gricharovska, State Counselor on Climate Change and Ylber Mata, Head of Water Department

Approved by: Ana Petrovska, State Secretary

Attachment: Concept Idea for the regional project"Integrated climate resilient transboundary flood risk management in the Drini River Basin in the Western Balkans".

1.3. MONTENEGRO

MONTENEGRO

MINISTRY OF SUSTAINABLE DEVELOPMENT
AND TOURISM

Letter of Endorsement by Government

Podgorica, 5th September 2018

To: **The Adaptation Fund Board**
c/o Adaptation Fund Board Secretariat
Email: Secretariat@Adaptation-Fund.org
Fax: 202 522 3240/5

Subject: Endorsement for regional project **Integrated climate-resilient transboundary flood risk management in the Drin River basin in the Western Balkans**

In my capacity as designated authority for the Adaptation Fund in Montenegro, I confirm that the above regional project/programme proposal is in accordance with the government's national priorities in implementing adaptation activities to reduce adverse impacts of, and risks, posed by climate change in Montenegro's part of Drin River basin.

Accordingly, I am pleased to endorse the above project proposal with support from the Adaptation Fund. If approved, the project will be implemented and executed by the United Nations Development Programme.

Sincerely,

Igor Gradević
General Director

Directorate for EU Integration and International Cooperation

ANNEX 2.

SOCIO-ECONOMIC CONTEXT

All riparian countries of the Drin River Basin are parliamentary democracies and are developing (upper) middle-income economies[1] which have transitioned from centralized economies to market-based economies.

Albania

Economy: Albania has made economic progress from the poorest nation in Europe in the early 1990s to middle-income status in 2008, due its successful transition from a centrally planned to a market-oriented economy, helped by abundant international aid and other strategic assistance over the past decades. Although Albania's economy has shown steady growth since 2014 (economic growth was 3.8% in 2017), growth has slowed, and the country is still one of the poorest in Europe. A large informal economy and a weak energy and transportation infrastructure remain obstacles. Close trade, remittance, and banking sector ties with Greece and Italy make Albania vulnerable to spillover effects of possible debt crises and weak growth in the euro zone. Remittances, a significant catalyst for economic growth, declined from 12-15% of GDP before the 2008 financial crisis to 5.8% of GDP in 2015, mostly from Albanians residing in Greece and Italy. GDP (PPP) is at 35.87 Billion and GDP per capita is $12,500. Despite tax and judiciary reforms undertaken in 2015/16, to increase tax compliance and bring more businesses into the formal economy, Public Debt in 2017 was 71.3% of GDP, slightly down from 72% in 2016 but still exceeding its former statutory limit of 60% of GDP in 2013, however inward FDI has increased significantly. Unemployment in 2017 was 14% with 14.2% of the population living below the poverty line.

Agriculture and Industry: The agricultural sector, which accounts for more than 40% of employment and 22.6% of consumption, is limited primarily to small family operations and subsistence farming, because of a lack of modern equipment, unclear property rights, and the prevalence of small, inefficient plots of land. Main agricultural production includes wheat, corn, potatoes, vegetables, fruits, olives and olive oil, grapes; meat, dairy products, sheep and goats. Industry accounts for 23.8% of GDP production (a 3.5% growth in 2017), accounts for 11% of employment and comprises: food, footwear, apparel and clothing; lumber, oil, cement, chemicals, mining, basic metals, hydropower. Almost half the population (46.8%) is employed in the Service sector and accounts for 53.7% of GDP.

Energy: Energy from fossil fuel makes up 5.2% of consumption. Hydropower accounts for 94.4 94.8% of total installed energy capacity (2015 est.), making Albania one of the few countries that are almost 100 percent reliant on renewable energy. Other sources of renewable energy are biomass, solar, wind and geothermal potential. Albania's electricity supply is uneven despite upgraded transmission capacities with neighboring countries. However, the government has recently taken steps to stem non-technical losses and has begun to upgrade the distribution grid. Better enforcement of electricity contracts has improved the financial viability of the sector, decreasing its reliance on budget support.

Montenegro

Economy: Montenegro's economy is transitioning to a market system. Around 90% of Montenegrin state-owned companies have been privatized, including 100% of banking, telecommunications, and oil distribution. Montenegro has a GDP of $10.86 Billion, a growth of 3.5% (2017), and GDP per capita of $17,400 (2017). Unemployment is currently at 17.1%, and 8.6% of the population live below the poverty line. Cheaper borrowing costs have stimulated Montenegro's growing debt, which currently sits at around 70% of GDP (68.4% of GDP in 2017), with a forecast, absent fiscal consolidation, to increase to 80% by 2019.

Sectors: Industry which comprises steelmaking, aluminum, agricultural processing, consumer goods, tourism, accounts for 21.2% GDP consumption and employs 17.9% of the labor force. Tourism, which accounts for more than 20% of Montenegro's GDP, brings in three times as many visitors as Montenegro's

[1] With the exception of Greece which is a developed country, but and not included in this proposal.

total population every year. In addition to tourism, energy and agriculture are considered two distinct pillars of the economy. The government recognizes the need to the business environment and open the economy to foreign investors. Net foreign direct investment in 2017 reached $848 million and investment per capita is one of the highest in Europe, due to a low corporate tax rate. The biggest foreign investors in Montenegro in 2017 were Norway, Russia, Italy, Azerbaijan and Hungary. Services accounts for 70.5% of GDP consumption and employs 76.8% of the labor force while agriculture accounts for 8.3% consumption and employs 5.3% and comprises tobacco, potatoes, citrus fruits, olives and related products, grapes; sheep, wine.

Infrastructure: Montenegro is currently planning major overhauls of its road and rail networks, and possible expansions of its air transportation system.

Energy: Fossil fuel accounts for 24.8% of energy while hydropower accounts for 75.2%. Only 20% of Montenegro's hydropower potential is utilized. Montenegro plans to become a net energy exporter, and the construction of an underwater cable to Italy, which will be completed by the end of 2018, will help meet its goal.

Former Yugoslav Republic of Macedonia

Economy: Since its independence in 1991, The Former Yugoslav Republic Macedonia has made progress in liberalizing its economy and improving its business environment. Its low tax rates and free economic zones have helped to attract foreign investment, which is still low relative to the rest of Europe. Corruption and weak rule of law remain significant problems. Some businesses complain of opaque regulations and unequal enforcement of the law[2]. GDP is $31.55 Billion, with a growth of 2.5% (2017), and GDP per capita of $15,200 (2017). Unemployment is currently at 23.4.1%, and 21.5% of the population live below the poverty line. Public debt is 47.3% of GDP, relatively low compared to its Western Balkan neighbors and the rest of Europe.

Sectors: Agriculture employs 16.2% of the labor force, Industry 29.2% and Services 54.3%

Energy: The Former Yugoslav Republic Macedonia has a technical hydropower potential of 5,500 GWh, of which only about 1,500 GWh is currently utilized, representing a total installed capacity of 674 MW. Most of its currently operational stations are located in the mountainous north-west, near to the Albanian border. 64.3% electricity in The Former Yugoslav Republic Macedonia is from fossil fuels, 32.8% from hydropower and 2.9% from other renewable.

[2] CIA World Fact Book https://www.cia.gov/library/publications/the-world-factbook/geos/mk.html

Annex 3.

Approach to flood hazard, risk and vulnerability modelling

General Approach

The approach to flood hazard assessment, modelling and mapping will be in line with EU floods directive approach. Flood Hazard maps provide spatially distributed information on flood extent, water depths or water levels, and flow velocity or relevant water flow direction and other information. Flood hazard maps will be produced by numerical modelling of the hydrological and hydraulic routing processes of the catchment.

The hydrological and hydraulic models will enable an understanding of flood response of the catchment and sub-catchments, and will inform the design of flood management/defense options and flood forecasting and emergency response systems. The project will develop a modelling tool that may be utilized for present and future flood risk assessment. This will be ensured by:

- Developing the modelling tool in consultation with the relevant government agencies in riparian countries
- Using appropriate methods given existing limitations on data availability and quality, while taking care that methods will allow for future model development should better/more data become available;
- Creating a tool that may be scaled to include other river basins in the future; and
- Including the ability to model flood risk under baseline, as well and climate change, land use change and other scenarios

Hydrological Modelling

The purpose of the hydrological analysis will be to model the response of the catchment and sub-catchments to rainfall and to derive flood hydrographs of different return periods (magnitudes). The approach will be tailored to the available data following the initial data review in the proposal development stage. The potential impacts of climate change will need to be considered by modelling a range of climate change scenarios. Rainfall-runoff models of all upstream catchments that feed into the basin will be developed to simulate the runoff response (i.e. hydrograph shape) of these catchments. Rainfall-runoff modelling will be based on catchment physical data (topography, land use, soils, geology) and rainfall event characteristics (observed rainfall timeseries data of specific events, and statistical rainfall parameters when modelling design rainfall). Catchment-scale topographic data is needed to provide catchment physical parameters such as area, slope, stream length etc. for input to the rainfall-runoff model. For this purpose, topographic data of relatively coarse resolution (coarse compared to what is needed for floodplain hydraulic modelling) can be used. This is likely to be freely available global datasets. Rainfall-runoff modelling requires long records of historical meteorological (precipitation, temperature etc.), and hydrological (flow and water level) data at the appropriate spatial and temporal scale (preferably sub-daily). For rapidly responding sub-catchments (flash-flood prone), rainfall-runoff modelling requires sub-daily rainfall and flow data (e.g. hourly) for calibration. Sub-daily rainfall data is also required for development of design rainfall parameters. Hydrological model calibration will be approached by adjusting hydrological parameters that control the percentage runoff, time to peak and rate of runoff as well as baseflow and comparing modelled and observed hydrographs.

Design rainfall is rainfall that defines events of given probability or chance of occurrence (for example the 1 in 100year rainfall or rainfall with a 1% chance of occurring). For design rainfall-runoff modelling, historical rainfall data will be analyzed statistically to derive the depth-duration-frequency (DDF) curve which will give the rainfall depth for different return period storms of different durations (or existing DDF curves will be reviewed and used if appropriate). Here, sub-daily data is most appropriate as it allows the derivation of storms of all durations. If sub-daily rainfall data is not available for this analysis, a standard distribution can be used to derive the hyetographs for rainfall-runoff modelling. A rainfall-runoff approach (as opposed to only a statistical approach) is proposed for the development of design flood hydrographs, as it will ensure that account can be taken of the influence of floodplain storage within catchments. Also given the influence of groundwater in some sub-catchments, it will be important to ensure that the rainfall-runoff model is a

continuous moisture accounting model which effectively represents the continuous baseflow recharge, which could have a significant impact of the size of the flood. Rainfall-runoff modelling is also best suited to investigating climate and land use change impacts, and for exploring factors such as the travel time of flood peaks, which are important for designing flood forecasting and early warning systems, and for informing disaster response planning which rely on accurate estimates of time of arrival of peak flows. Importantly, rainfall-runoff modelling is most appropriate for modelling the influence of the many reservoirs within a catchment. Statistical analysis of hydrometeorological records will also be undertaken. The hydrographs generated by the rainfall-runoff model will be scaled to match flood peaks derived from a statistical analysis of historical gauge data if data of sufficient length and quality is available to develop an appropriate statistical analysis of flood peaks. If gauged data for the study catchment is limited there may be a need to adopt a regional approach by first extending the analysis to include gauges for hydrologically similar catchments outside of the Drin basin. The resulting runoff hydrographs will be used as input to the hydrodynamic model described in the following section.

Well established hydrological models such as Hec-HMS, US SCS, Probability Distributed Moisture (PDM) model will be reviewed and considered at project inception stage. It is envisaged that Hec-HMS will be used for undertaking the hydrological modelling.

Hydrodynamic Modelling

A hydrodynamic model of each floodplain will be developed to route the flood hydrograph through the channel and floodplain of the study basin. To develop such a model, the main data requirement is high resolution topographic data of the channel and floodplain. Channel topography would ideally be provided by undertaking channel cross-sectional surveys. A topographic survey of the river channel will be conducted, to capture the main changes in the longitudinal and cross-sectional river profile along key reaches. Survey density (cross-section spacing) would normally vary depending on whether the area is highly populated or more rural to ensure that the highest risk areas are well covered. Whether an area has historically flooded is also a key factor, as well as future flood risk under climate change. Hence in the unpopulated and low risk parts of the basin, cross-sections survey spacing can be sparse, while in densely populated areas or areas of historical flooding, or likely to flood in the future, it would be desirable to have cross-sections more closely spaced. These guidelines can be tempered by the variability of the channel profile in these areas. It may be necessary to forego cross-section surveys in some areas altogether and extract the data from the floodplain DEM for constructing the model in these areas. Alternatively, if the channel profile is changing very rapidly, closer spacing might be required. In some low-lying areas, where floodplain flow dominates or where the channel bed is exposed during floodplain DEM surveys, cross-section surveys can also be foregone (but not in high risk and heavily populated areas which tends to be on these low-lying floodplains), if DEM data of an appropriate resolution and accuracy is available for floodplain modelling. It should be noted that any cross-section surveys that may be carried out as part of this study will be a ‘snap-shot’ in time of the channel profile. Given the geomorphologically active nature of the river, this survey will become out of date in time and in some cases, it would be important to ensure that a programme of regular channel surveys is implemented particularly at gauging stations, critical infrastructure and along active reaches. Any existing survey or as-built drawings for existing structures, as well as any reports on the original design would be useful to help to characterize structures such as bridges, and other structures across the river, as well as any linear structures such as existing river walls. Typically channel topographic surveys could take months to be completed, particularly for large areas and where seasonal weather conditions might hamper surveys. A detailed scope of the channel surveys will be developed at the start of the project and surveys will be scheduled based on the order in which basins are to be modelled.

Higher resolution DEM data for detailed hydraulic modelling of floodplain flows. The intention is to acquired Light Detection and Ranging (LiDAR) data the floodplains, the cost and feasibility of which will be assessed at concept stage. This high-resolution DEM would provide significantly enhanced accuracy for the hydraulic modelling in comparison other sources. Using all topographic datasets, baseline models of the floodplain of the river basins will be developed, that represents the current catchment conditions, including current operation and maintenance practices for any structures on the main channel and floodplain as well as linear flood defenses that influence the movement of water between the channel and floodplain as well as all reservoirs in the basin. The baseline model will be used to assess the existing standard of protection (i.e. the minimum size of the event for which flooding occurs) within the catchment, provide clarity on the current

flooding mechanisms, and serve as a baseline against which the economic appraisal of proposed interventions can be made. The baseline model will need to utilize a mixture of 1D and 2D modelling techniques, based on the combined topographical datasets (i.e. floodplain DTM, channel and hydrographic survey data, if available). Appropriate channel, floodplain frictional resistance values can be estimated from photographs, land-use maps and site visits. Key structures of significance to flow conveyance will be identified for inclusion in the model, and data on operational control of dams and other gated structures will be utilized. The hydraulic model will need to be calibrated and verified in tandem with the hydrological model by varying channel and floodplain frictional resistance and structure discharge coefficients values until good agreement is obtained between modelled and observed levels and flows at key gauging locations or observed flood extent maps derived from historical flood surveys and satellite imagery. Calibration to historical events will need to be undertaken in the hydrological model, ensuring that the modelled runoff hydrographs fit the observed as closely as possible. Depending on the availability of data, calibration of the hydraulic model will be done to fit observed flood levels and extents at key locations for which observations are available. This will include anecdotal information from the communities affected by flooding, which will be collected as part of the community surveys. Anecdotal information will also be collected using participatory GIS methods where possible. All data available for calibration will be reviewed and ascertained during the early stage of the project to confirm this approach. The extent of the detail with which the system can be represented will depend on the available data, including data that can be realistically collected during the study period. It is envisaged that the level of detailed representation within the model will vary along the various reaches within the catchments and from sub-catchment to sub-catchment. The hydraulic model will be created to ensure that the urban and important agricultural areas and those identified as significant to the cause and/or effect of flooding, are well represented. Where necessary, less significant reaches and sub-catchments may be modelled using simple routing models which will link into the more detailed hydraulic reaches. Should risks be identified or more detailed information (like channel surveys) become available for the reaches designated as less critical at this time, the model could be easily updated to enable full hydraulic modelling along these reaches. It is important to note that model accuracy will be dependent on the quality of the input data, the extent of detailed topographical representation and the accuracy of modelling assumptions. Three significant sources of error may be the accuracy and spatial resolutions of the topographic data used to build the model, choice of model parameters such as roughness (frictional resistance) and discharge coefficients, particularly for over bank flows. The calibrated and verified hydraulic model will be used to run design events of different annual probability (return period) of occurrence, to produce flood maps.

There is currently a wide array of commercial modelling packages, for example, Info works (1D and 2D by Innovyze, formerly HR Wallingford), MIKE (DHI), HEC-RAS 1D and 2D (USACE), Tuflow, SOBEK 2D and Flo2D packages to name a few. These and other tools typically provide a map-based interface to the underlying models, and survey data, models, time series data and asset information can easily be added as it becomes available. The choice of modelling software will be agreed among the riparian countries and will consider any existing modelling software being used, as well as regional modelling approaches.

Risk and Vulnerability Modelling and Mapping

The approach to risk and vulnerability assessment, modelling and mapping will be in line with EU floods directive approach. Baseline socio-economic assessment and preparation of flood vulnerability map will be based on baseline hazard mapping, combined with infrastructure (bridges, roads and buildings), land use (settlements, agriculture, grazing lands, and conservation areas), property and socio-economics data, to assess the socio-economic impacts of all hazards and produce vulnerability maps for the river basin. This vulnerability map, based on the accurate hazard mapping of the current situation will form the baseline. In order to develop vulnerability maps, a GIS-based risk modelling tool will integrate the various spatial socio-economic data with hazard maps, and produce vulnerability maps which will include economic losses and damages and loss of life estimates. Large hydro meteorological events often result in losses to infrastructure, particularly roads and water supply, losses to agriculture and damage to property, along with concomitant social effects associated with loss of potable water and agricultural productivity. The baseline socio economic appraisal will concentrate on these and other sectors. Agricultural damage per unit of area will be calculated based on land use, typical crop yields and current market values. The loss of dwellings will be valued based on the type of structure. For example, for temporary dwellings the cost of building materials, the number of days labor for rebuilding will be important whereas damage to permanent buildings

will be based on an average value, established through local consultation and proportional damage by flood depth to buildings and their contents will be estimated.

The probability of the loss of life and injury will be valued based on the density of population, average hazard severity (e.g. flood depth and velocity). This will then be multiplied by a reference valuation for the statistical economic loss of a life, which will be derived through local consultation, and also included within the economic appraisal. Costs for the rebuild of damaged major infrastructure will be included, as well as the costs for post event aid relief, based on the historic records for previous events. Care will be taken to include but not double count, the gender effects of disasters. It is known that the consequences for the balance between productive and reproductive activities of women is severely altered during and post the hazardous event. This has impacts on the household income and the resilience of the household.

It will be important though challenging, to assess the macro economic effects of hazards on the basin economy and that of each riparian country. All sources of damage and loss will be incorporated through mapping to generate Economic Vulnerability maps. As discussed above, this will involve land use, density of population, agriculture and major infrastructure and buildings. From these maps, the potential damages caused by a range of severity of events can be produced for the baseline condition, by comparison with the maximum hazard extent/severity. This baseline assumes that nothing is done over and above current the 'business as usual' approach to prevent the hazard and that any defenses likely to fail have failed. From the range of events, a statistical Annual Average Damage and Present Value of Damage will be produced for this baseline. This will be based on an agreed appraisal period, e.g. 50 years, with an approved discount rate. Once this baseline is confirmed, then the hazard mitigation options and their damages avoided can be considered. Although there are many contributing factors to economic loss caused by a hazard or combination of hazards, it will be the aim of the analysis to capture the largest contributors to this loss, which can be most readily valued. This will provide a reliable basis from which to make decisions. The use of appraisal summary tables, which will set out principle receptors impacted by hazards, the scale of the impact and the level of quantification required will ensure that all aspects, both quantifiable and unquantifiable are still considered in the decision-making process. This decision process will be assisted by Multi Criteria Analysis to give comparative weight to all impacts whether measured in monetary terms or not. The results of this assessment will be used in the appraisal of intervention options.

Under the GEF project the basin socio-economic data has been collected and analyzed with GIS and this will be an important starting point for the analysis of flood risk and vulnerability. During project proposal develop and project inception phases, any necessary additional data collection will be determined, before developing and implementing the GIS-based flood risk and vulnerability model as described above.

Annex 4

Potential Risk Financing Mechanisms

Risk financing in riparian countries, is mainly from central and local government budgets, which suffer from limited financial resources compared to the annual average damages and losses that can be incurred from flood events and the expected increase in damages and losses under climate change. The lack of financial capacity undermines ability to carry out statutory central and government functions and the ability to enforce regulations against harmful practices and activities, such as development in the floodplain, the uses of flood resilient building codes for houses and other structures, thus increasing exposure and vulnerability of people, structures and economic activity in built areas and agricultural and natural landscapes. There is limited to no involvement of the private sector in climate risk financing in riparian countries, despite the large damages that would be incurred to the private sector from flooding.

A key barrier to the establishment of adequate climate risk financing is the lack of climate risk information to quantity likely damages and losses under current and climate change conditions as well as the ability to undertake the economic analyses to fully understand the investment priorities to address the risks. The project will address this barrier by establishing basin level socio-economic assessment, risk planning and risk financial and investment planning for addressing flood risk. Furthermore, the project will provide the means for identifying the necessary budget requirements for addressing flood risks, and for national and local level private sector engagement in establishing risk financing schemes.

The main risk transfer mechanism that will be considered is flood insurance. In 2008, the World Bank launched the regional lending program to support the establishment of a regional catastrophe reinsurance company with the aim to contribute to the development of a catastrophe insurance market in Southeast Europe and Caucasus that would provide homeowners and small and medium-sized enterprises (SMEs) with the opportunity to purchase affordable catastrophe and weather risk insurance coverage to address the high vulnerability to natural disasters in SE Europe. In 2009, in order to implement the World Bank program of lending and technical assistance for the development of the regional catastrophe insurance market, the countries of the region created Europa Reinsurance Facility Ltd. (Europa Re) - a special catastrophe and weather risk reinsurance company. Albania, the former Yugoslav Republic of Macedonia and Serbia are the major shareholders of the company. The project, through the development and establishment of climate risk information, will assist the Riparians in developing the policy and enabling environments to fully participate in the Europa Re insurance and the local communities that reside in high flood risk areas to benefit from the provided services. The project will also examine whether Payment for Eco-system Services (PES) schemes will be relevant, particularly associated with the agro-forestry and other community-based schemes being implemented.

Annex 5. Description of project sites and structural flood risk reduction measures

I. Former Yugoslav Republic of Macedonia

Project site: Macedonian part of the River Drim and the River Sateska

Basic info about the pilot municipalities

Debarca is a municipality in southwestern part of the country. The municipality encompasses the Debarca Valley, part of the Sateska River watershed that flows into Lake Ohrid and belongs to the Lake Ohrid Basin. The total area of the municipality is 425.39 km2. The municipality consists of 30 villages. According to the last national census from 2002 this municipality has 5,507 inhabitants and 1995 households. The municipality has total agricultural land of 23,624 ha, out of which 10,303 ha or 43% are arable land, 3,844 ha or 16.27% are pastures, and 9,480 ha or 40.13% are forests. Sateska river is the biggest water course on the territory of Debarca municipality, and its basin cover the territory of 420 km² (39.36% of the Lake Ohrid Basin). There also several smaller rivers and water accumulations. It is the municipality in which "St. Paul the Apostle" Airport is located, the county's second of two international airports. According to the national waste management strategy, the regional landfill for the south-west planning region will be located in the village of Godivje, on the territory of Debarca municipality.

Struga is a municipality in southwestern part of the country. The total area of the municipality is 483 km2. According to the last national census from 2002 this municipality has 63,376 inhabitants. The municipality has 51 inhabited places, one town (Struga) and 50 villages. Together with the town of Ohrid it is one of the biggest tourist resort in the country.

Ohrid is a municipality in southwestern part of the country. The total area of the municipality is 389.93 km2. The municipality consists of 30 villages. According to the last national census from 2002 this municipality has 55,749 inhabitants and 16.012 households. The municipality has 29 inhabited places, one town (Ohrid) and 28 villages. The town of Ohrid, Lake Ohrid and Struga are the UNESCO World Heritage Site, and the biggest tourist resort in the country.

River Sateska and River Crn Drim

In 1961/2 Sateska river was redirected from its natural flow in the River Crn Drim to the Lake Ohrid, bwtween the towns of Struga and Ohrid. This was motivated by three main resons:

- To decrease the sediment load on the artificial reservoir Globocica and the hydropower plant Globocica;
- To ensure the hydro potential of the hydropower plants on the River Crn Drim;
- To drain the Struga wetland/marshland

The diversion of Sateska River caused a huge sediment load of approx. 120, 000 м3 annually to Lake Ohrid which is negatively affecting the habitats and the entire ecosystem in the littoral part of the Ohrid Lake. Moreover, Sateska River brings 39% of phosphorus load to the Lake Ohrid which on a long run will increase the eutrophication of the Lake. The sediment that Sateska is bringing is significantly decreasing the capacity of riverbed to absorb the excess water in the case of extreme weather events and/or intensive rainfalls.

Historic floods and flood prevention

The Black Drim River Basin is identified as one of the flood-prone regions in the country. Major identified past floods are the ones in 1962, 1975, 1995 and the most recent one in 2010 and 2015. There are number of different sources of flooding in the Crni Drim Basin, including:

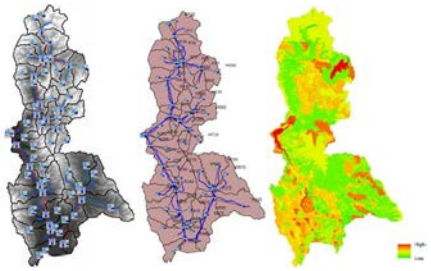
- Fluvial flooding from major rivers when run-off from the surrounding area exceeds the flow capacity of the rivers, streams or the artificial drainage system (Crni Drim, Sateska River)
- Torrential foods: combination of high water discharge and mass movement through the channels of the streams, leading to the transport of large volumes of sediment and debris (Sushicka, Kalishka, Shum, Dzepinka and other torrential rivers).

- Coastal Flooding, in coastal areas of the towns Ohrid and Struga, which is happening during extreme weather events and high tides that are causing a rise in lake levels and coastal flooding.
- Groundwater floods especially in the region of Struga (Struga is built on a former wetland/marshland and has high level of underground waters)
- Flooding in urban areas (due to intensive rainfalls)




In 2018, UNDP commissioned a preliminary flood risk assessment for Sateska river and Crn Drim River from the outlet of the Ohrid Lake to Gobocia artificial accumulation, using a model that was used for preliminary flood risk assessment in almost all other river basins and sub-basins in the country and calibrated for the local conditions. It identifies the areas that are prone to flooding, critical infrastructure exposed to floods, the areas of agricultural and arable land, population that will be exposed to floods. The maps below show the results of the modeling.

HYDROLOGICAL MODELING



HYDRAULIC MODELING

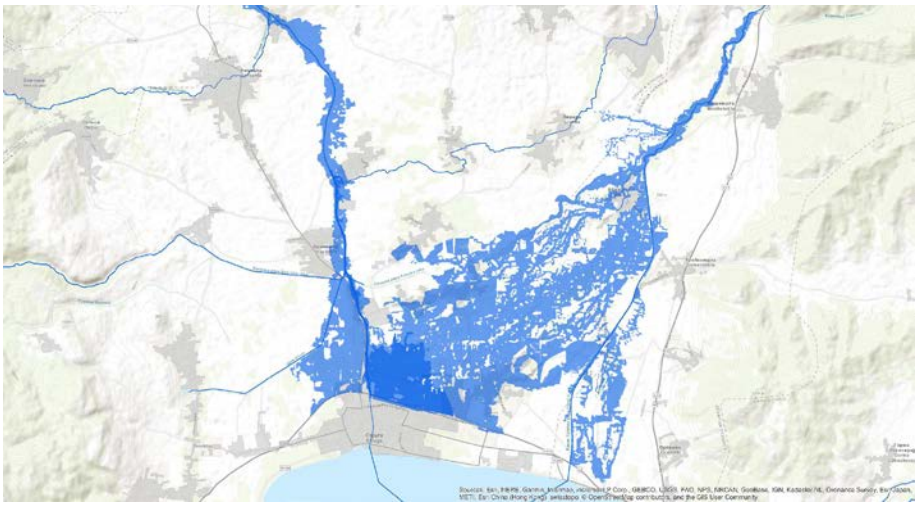
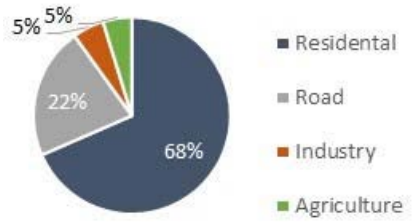
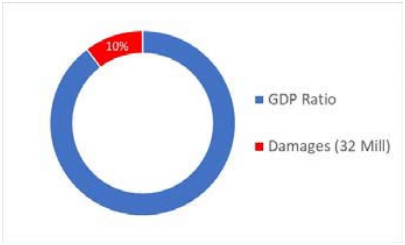


Figure 5.1 AREAS UNDER RISK OF FLOODING FROM CRN DRIM & SATESKA

The flood risk assessment was also followed by an assessment of potential economic damages and losses. It shows that floods with medium probability of occurrence in this region can cause damage in the range of over 35 million euros.

- Area to be affected: 3,550 ha
- Potentially indirectly affected population: 70.000
- Potentially directly affected population: 6.500
- Houses: 2.500
- Road network: more than 40 km
- Hotspots: Landfill site in Stuga, and in perspective, the regional landfill in the Municipality of Debarca
- Other objects at risk: possible flooding of central Waste Water Treatment Plant in Vranishta that treats the wastewater from the municipality of Struga and Ohrid, possible flooding of Ohrid international airport, flooding of schools, churches, monuments
- Industrial objects: 40





During the 60s and 70s in the watershed of the Black Drim River, several infrastructure facilities were built to reduce the risk of flooding. To protect against fluvial (surface water) flooding, part of the riverbeds of Sateska and Black Drim Rivers have been regulated in the length of approximately 18 km. Also, to protect the town of Struga from flooding especially from the ground water, drainage channel network with a length of over 37 km was built. Also, to reduce the erosion processes, if the critical torrential watercourses in the Sateska River Basin, several small check dams and water reservoirs were built.

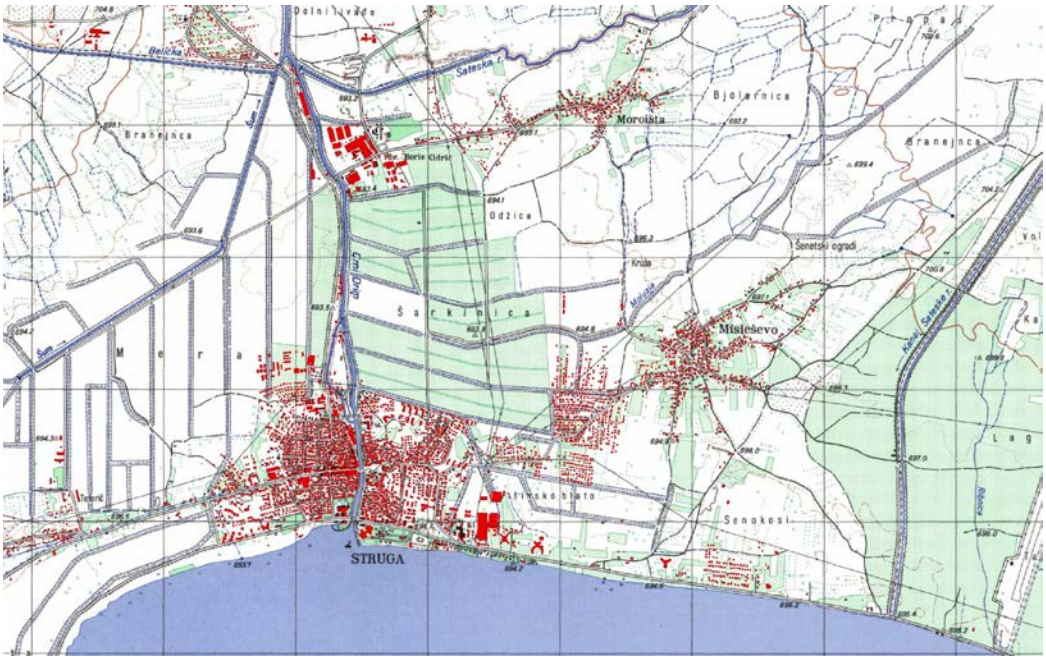


Figure 5.2. Drainage network - Struga Valley. L~37.5 km 5 Main channels (Kalishki, Shum, Muluzija, Struga istok, Draslajca) 36 Drainage channels

In the period September – November 2018, UNDP also commissioned a geodetic survey of the old riverbed of Sateska, and the River Crn Drim from the outlet of Lake Ohrid to Globocica artificial reservoir. The report from the survey consist of the following sections: geological and hydrogeological characteristic of the terrain, hydrometric measurements and determination of the composition of the suspended sediment, as well as topographic and geological map. This survey clearly determined the most critical sections of both rivers that can caused flooding because of insufficient discharge capacity, as well as poor maintenance of regulated watercourses and natural river streams, modifications in the entire river basin, and recommendations for actions and measures.

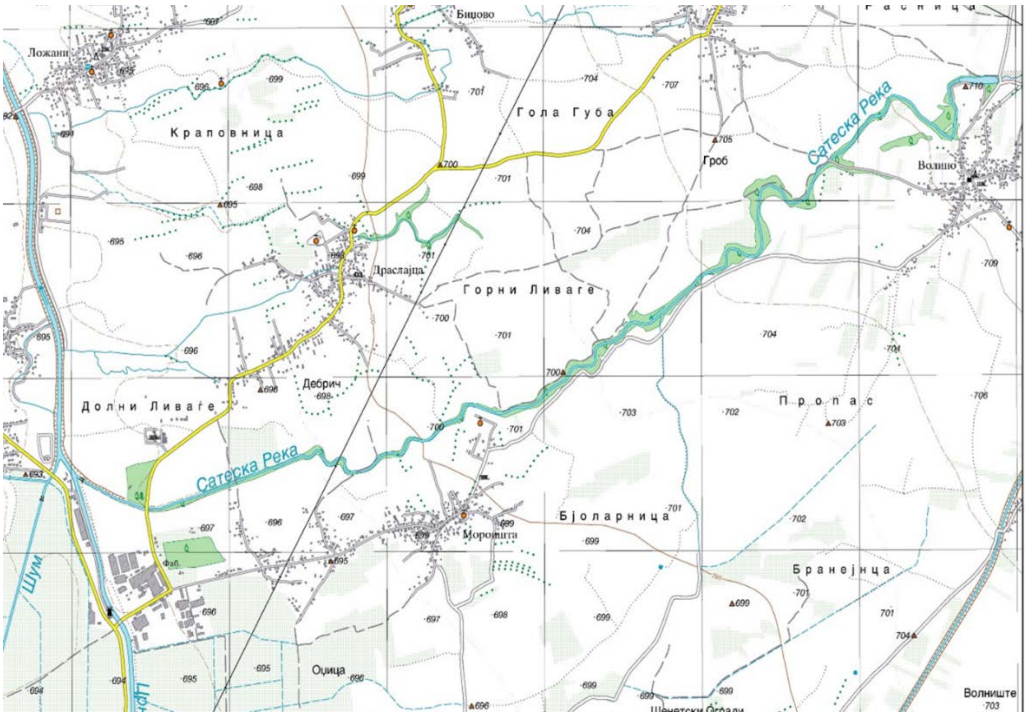


Figure 5.3 Topographic map of River Sateska, M = 1:25 000

Current hydraulic capacity of Crni Drim – Urban part of Struga

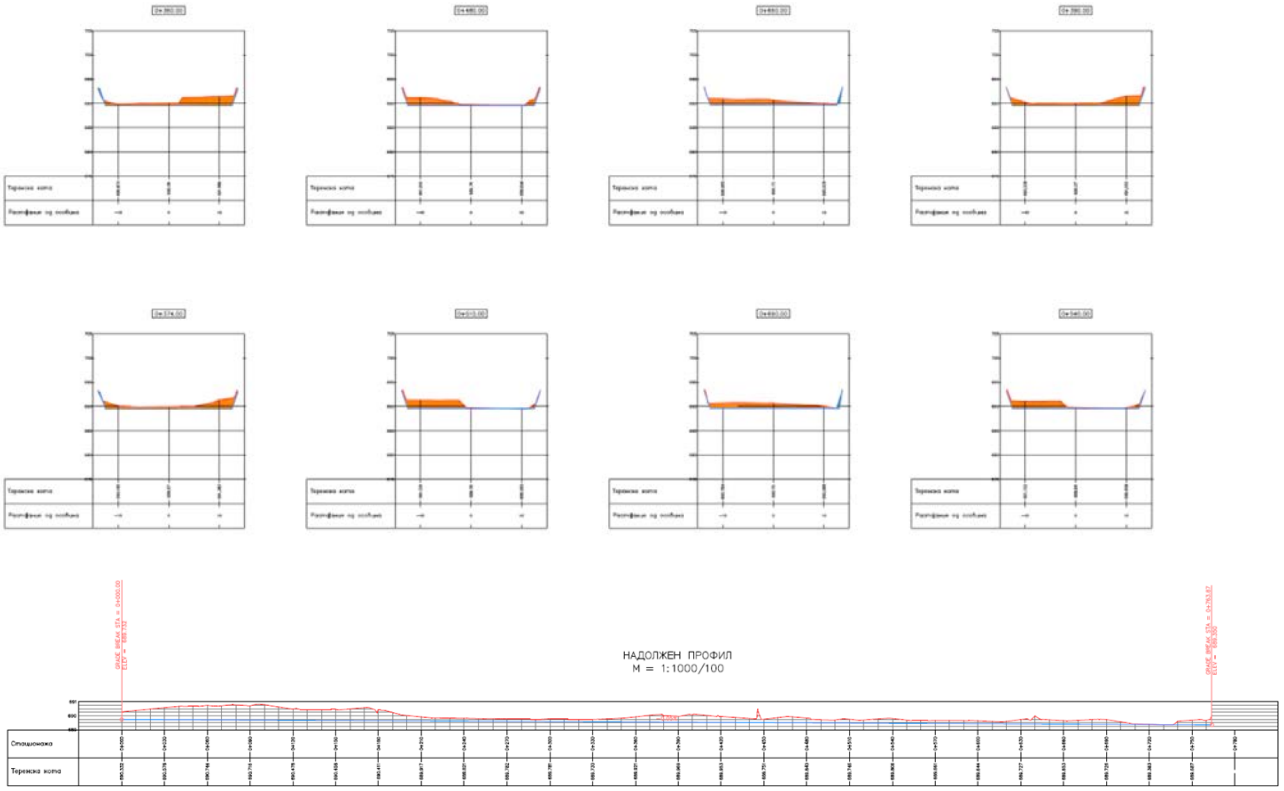
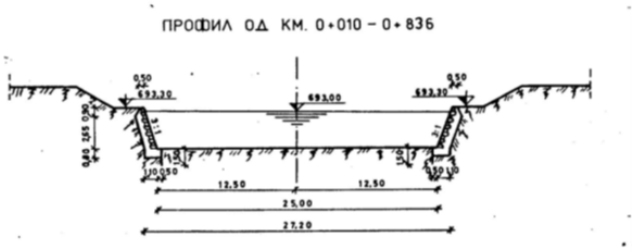


Figure 5.4. Current hydraulic capacity of Crni Drim – Urban part of Struga

Table 5.1. Estimated deposits ~ 15.000 m³

Station	Cut Area (Sq.M.)	Cut Volume (Cu.M.)	Cum. Cut Vol. (Cu.M.)
0	20.29	0	0
30	11.19	472.26	472.26
60	11.09	334.27	806.53
90	12.68	356.57	1,163.10
120	13.56	393.62	1,556.72
150	12.81	395.52	1,952.24
180	15.51	424.8	2,377.05
182	15.63	37.48	2,414.53
189	16.03	103.47	2,518.00
210	16.47	342.18	2,860.18
240	17.17	504.7	3,364.88
270	17.54	520.72	3,885.60
300	19.88	561.28	4,446.88
330	20.52	605.95	5,052.83
360	27.76	724.18	5,777.02
374	21.36	343.93	6,120.95
390	24.06	363.34	6,484.29
392	23.08	53.65	6,537.93
420	14.07	514.97	7,052.91
450	17.25	469.74	7,522.65
480	17.68	523.99	8,046.64
510	21.27	584.36	8,631.00
540	19.8	616.04	9,247.04
570	22.21	630.09	9,877.13
600	26.55	731.48	10,608.61
630	29.22	836.67	11,445.28
660	22.64	777.89	12,223.16
690	21.9	668.04	12,891.20
720	18.49	605.89	13,497.09
750	17.17	534.99	14,032.08
764	0	119.09	14,151.18



Taking into consideration the problem caused by the sediment that Sateska is bringing also to the river Crni Drim, the Government financed the preparation of technical documentation/construction design and Bill of Quantities for the regulation of the old and current riverbed of Sateska, as well as afforestation/reforestation study. However, due to the high estimated costs, the project has not been implemented yet.

Proposed solution

Based on field visits, semi-structured interviews, report from previous flood events, previous project documentation and geodesy surveying, following solutions are proposed:

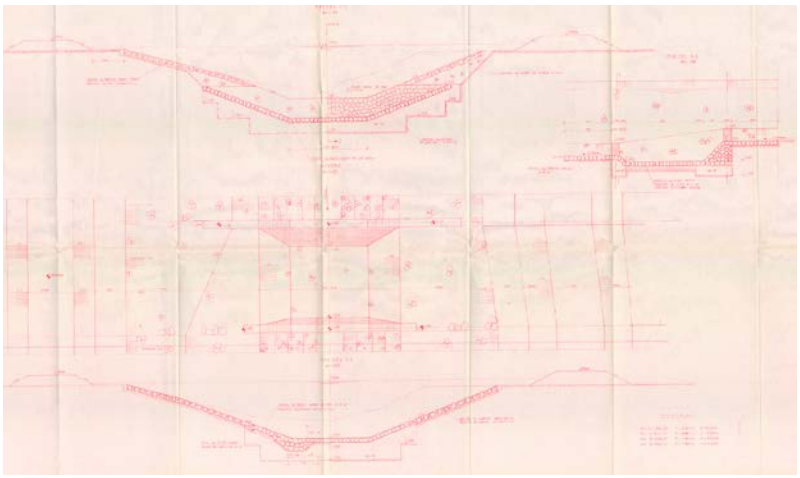
Structural measures, urban, flood plain		
Measure	**Result/Use**	**Estimated cost (USD)**
Construction of natural based sediment retention structures at fan apex or on fan (on 2 locations)	Reducing future potential damages caused by sediment transport and disposal	227,531
Improvement of hydraulic capacity of Crni Drim River with in urban zone	Effective control of water levels in Ohrid lake and protection from coastal flooding	91,012
Reconstruction and increasing the capacity of banks on Crni Drim in rural part in total length of up to 10 km	Increasing the flow capacity, Reducing future potential damages caused by flooding	341,297
Improvement of existing drainage system in Struga municipality for underground flood protection	Control on the level of groundwater	102,389
Reconstruction of existing diversion structure on Sateska River near Volino	Sediment control and reduction of maximal discharges	113,766
Artificial shaping of Sateska river natural bed on critical parts	Reducing future potential damages caused by flooding	182,025
Non-structural measures, at watershed level		
Data and Modelling[3]		
Conducting high resolution LIDAR (light detection and ranging) mapping/surveys along the riverbeds with a buffer zone and merge the LIDAR results with the existing DTM models	Modelling of floods (open terrain), flows, landslides or rock fall	Covered in Outcome 1
Develop flood hazard and flood risk maps (modeling)	priority setting of flood reduction measures (planning and design)	Covered in Outcome 1
Development of reservoir management models based on daily measurement	Optimal management of the reservoirs based on economic principles, introducing flood control volume in to the existing reservoirs	Covered in Outcome 2
Improvement of the existing hydro-meteorological monitoring system and weather forecast system	Effective real-time weather forecast	Covered in Outcome 1
Afforestation and management of bare lands (sparsely vegetated) affected with high erosion in the Sateska River Basin in total area of up to 100 hectares	Reducing the force of the high wave with water retention on a basin level	227,531
TOTAL:		**1,285,551 USD**

1. **Afforestation and management of bare lands (sparsely vegetated) affected with high erosion in the Sateska River Basin in total area of up to 100 hectares**



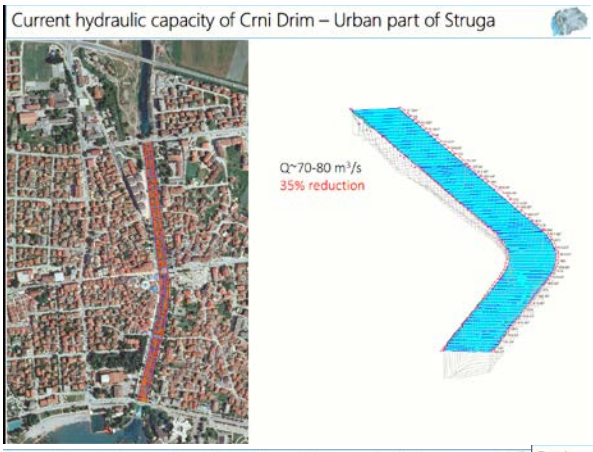
2. **Construction of natural based sediment retention structures at fan apex or on fan (on 2 locations)**

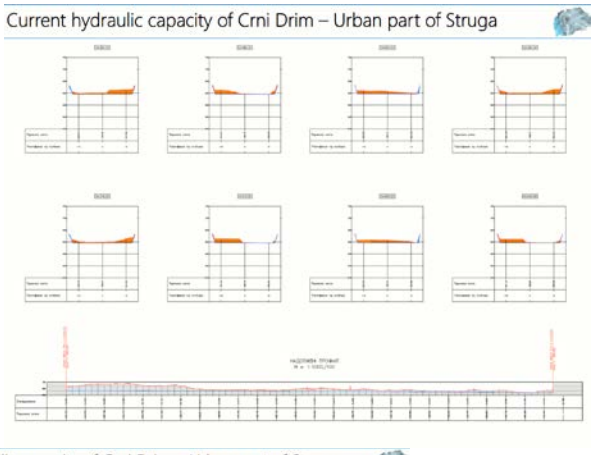
The largest amount of sediment is based just after the diversion structure, which naturally represent the best location for the sedimentation barrier, that will also stop the sediment flow towards the Ohrid Lake and river Crn Drim.

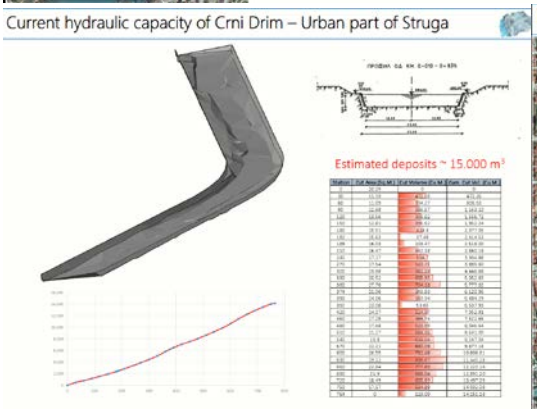


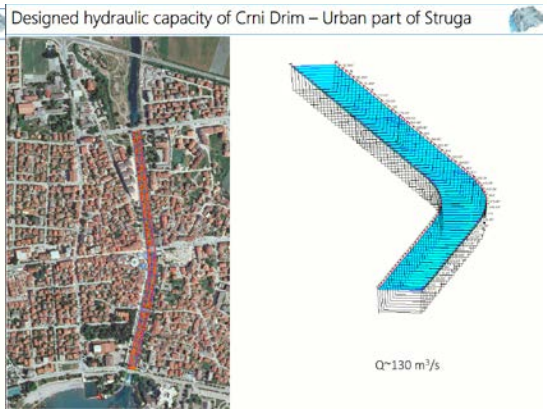
3. **Improvement of hydraulic capacity of Crni Drim River with in urban zone**

This activity will ensure effective control of water levels in Ohrid lake and protection from coastal flooding. According to the results from the geodesy survey of the river Crn Drim it is concluded that current hydraulic capacity of the River Crn Drim in the urban area of Struga is reduced by 35%, because of the 15.000m^3 of sediment. It is estimated that some 100.000m3 of sediment is drawn in the River Drim form the urban area up to the Globochica lake. With the sediment cleaning of the Rivers, we will improve the waterflow, the capacity of the rivers and we will decrease the underground water.







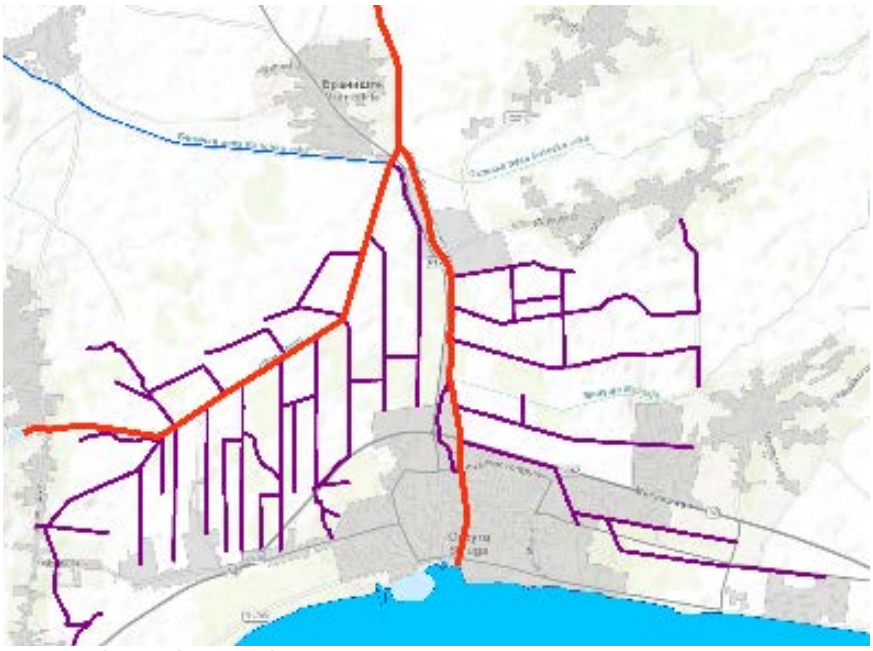


4. **Reconstruction, updating (increasing the capacity) of the most critical banks on Crni Drim in rural part in total length of up to 10 km**

In order to increase the capacity of the river Crn Drim, it is necessary to ensure proper embankment of the river bed and clean the river bed and the banks from vegetation. This will improve the hydraulic capacity of Crn Drim and will decrease the flood risk for the agriculture land communication infrastructure and the rural settlements.

5. **Imrovement of existing drainage system in Struga municipality for underground flood protection** through cleaning and remediation of the Struga channel network of 37km of which most important:
    - **Kalishta channel** (cleaning of high vegetation, cleaning of sediment and remediation of river banks)

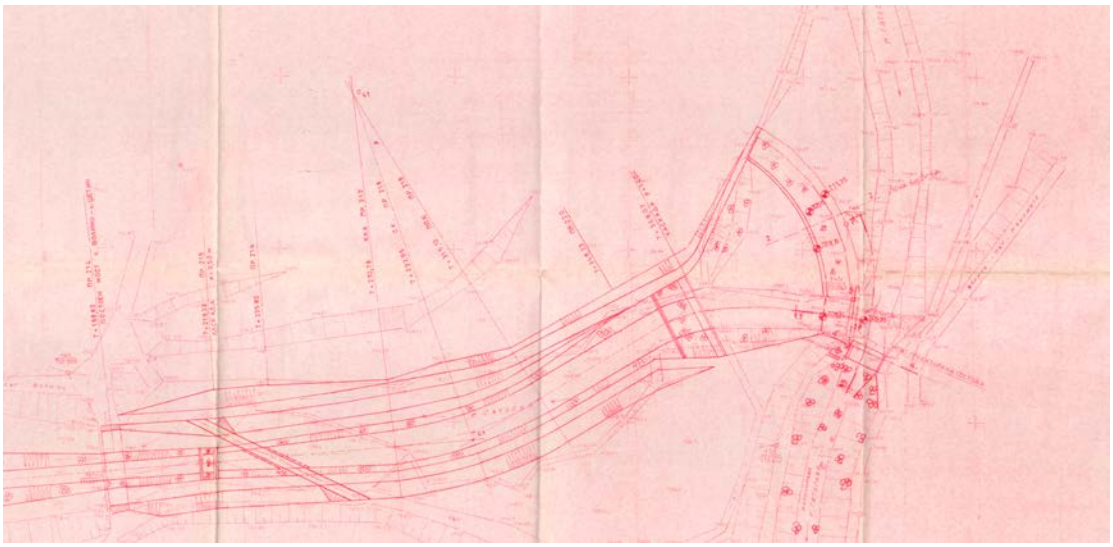
- **SHUM – main channel** (cleaning of high vegetation, cleaning of sediment, remediation of river banks and cleaning of side channels)
- **Main chanel "Muluzija"** 5.8km (new outlet near Misleshevo, cleaning of high vegetation, cleaning of side drainage channels, cleaning of side drainage channels in Moroishta that are not part of the main channel network and cleaning of tight areas of small channels in village of Misleshevo and cooperation with the local population for maintenance)
- **Main Chanel Struga East** - Cleaning of high vegetation, cleaning of sediment, remediation of the river banks, cleaning of side drainage channels, since this channel effect the underground waters and flooding the basements and the farm land.



Struga channel network

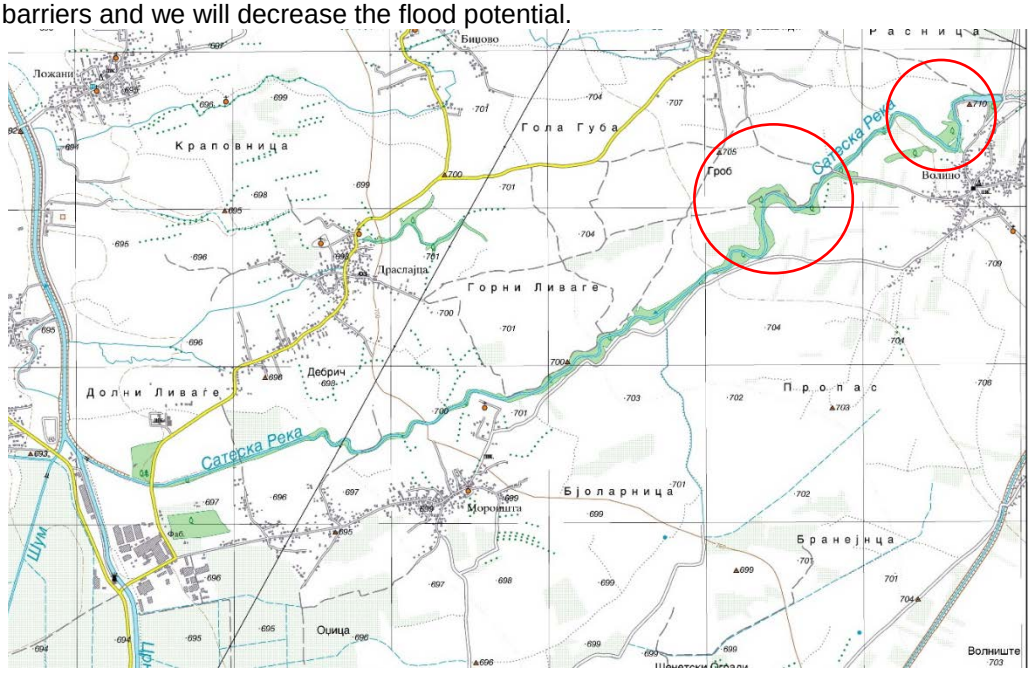
6. Reconstruction of existing diversion structure on Sateska River near Volino

The existing diversion structure on Sateska River near Volino is not functional for many years, because it was not built properly, the whole area is buried in sediment, it is very difficult to open or close the diversion doors, so proper regulation of the waterflow is impossible. Reconstruction of the diversion structure will assure, proper waterflow and flood prevention.



7. Artificial shaping of Sateska river natural bed on critical parts

On two locations River Sateska has hard turns, that during high water levels are acting as barrier, and because of the angle of the turn and the low river bank results with flood of the agriculture land and the settlements near the River Sateska. With artificial shaping of the river we will prevent the turns to act as barriers and we will decrease the flood potential.



UNDP will ensure co-financing of up to US$ 400,000 from the ongoing Project ''*Improving the management of protected areas*'. This project aims to improve nature protection and to promote sustainable use of natural resources while increasing the capacity of local self-governments and civil society organizations to manage and promote protected areas in a professional and sustainable fashion. Municipalities of Ohrid, Struga and Debrca applied in UNDP a joint project for immediate actions for improving the quality of the Lake Ohrid waters. The project is focused on Sateska river and mitigation measures that will decrease the pollution of the lake and littoral that is negatively affecting the biodiversity of the lake and the quality of the water, but also prevent future flooding's from Sateska and Crn Drim Rivers. The project is financed by the European Union, through IPA II – Sector operational programme for environment and climate action 2014-2020 and implemented by the United Nations Development Programme (UNDP) in close cooperation with the Ministry of Environment and Physical Planning.

Number and type of beneficiaries

Based on previous flood events and hydraulic modeling for the region including River Sateska and river Crn Drim it is expected that from the project, direct beneficiaries will be the people from Municipality of Struga and Debrca or more specific:

- In Stuga 400 homes (basements) will be safe from underground water floods
- In Struga and Debrca 200 Supplementary objects of farm infrastructure (storage of food, animals, agriculture mechanization) in v.Moroishta, Dobovjani, Tashmarunishta, Vranishta and Struga.
- 30 homes/objects in Kalishta and Radozda,
- Struga, Debrca, debar and Vevchani local road infrastructure will be preserved from floods and population of 70.000 will have access to their land but also access to their everyday needs.
- Preserved waste water collector system and drinking water distribution system for Municipality of Struga and Debrca
- 40-60 industrial object and their produced goods or supplies will be safe from flooding
- 30.000ha of farm land will be protected from floods and tons of crops will be saved
- Roma population at risk from their improvised settlements near the river
- Reduction of Health costs that will occur after flood events (stress, injuries, medication, veterinary services)
- Protection of tourist infrastructure (at least 10 hotels, around 100 private apartments, at least 100 shops and restaurants).

Responsibilities for operations and maintenance:

- Joint coordination body between Municipalities of Struga, Debrca, Ohrid, Public enterprise for water economy, Center for crises management, Hydrometeorological institute for communication and coordination of flood risks.
- The local governments and the Public Enterprise for water Economy will allocate annually funding in their budget for regular operations and maintenance.
- ELEM, state company that manages hydropower plants, is providing annual funding of approximately 200,000 EURO to the state/local municipalities budget which can be directed for maintenance and operation.
- The government has requested the Ministry of Environment and Physical Planning, the Ministry of Agriculture , Forestry and Water Economy n the Public Enterprise for Water Economy to propose legislative changes that will overcome the barriers for sustainable management of waters in the country, particularly regarding the flood management, as well as to propose a sustainable model for financing of the operation of the PE Water Economy that will enable them to regularly clean the riverbeds and drainage channels.

II. Montenegro

Establishment of full-scale embankment system on Bojana River in Montenegro

Municipality: Ulcinj

Basic info about the pilot municipalities

According to the 2011 census, total of 20,265 inhabitants live in the Ulcinj Municipality, in 39 settlements, 3.21% of the population of Montenegro. Gender ratio is almost equal (9938 male and 9983 female) There are 5,812 households and 15,845 accommodation units in the municipality. Urban area is populated with 10,828 inhabitants, 3,245 households and 6,669 accommodation units. 9,437 inhabitants live in rural areas, with 2,567 households and 9,176 houses.

The population density in the Ulcinj Municipality is 71-100 person/km2, and it is much higher in the summer period. Namely, during tourist season, the number of inhabitants has increased by at least 30,000 registered guests and a significant number of unregistered ones. It is estimated that the municipality of Ulcinj will experience more intensive demographic and economic changes, which will result in increased number of inhabitants and, therefore, degree of vulnerability.

Historic floods and flood prevention

At this downstream section, the Bojana river receives several tributaries from the Montenegrin side. These tributaries are: the Kravarski potok stream, the Meraja River, formed by the Rastiski potok stream merging with the Brazisa river, the Vladimir River, which branches upstream and partly discharges into the Bojana River near Stodra, and partly into the Sasko Lake, from where it flows to the Bojana River, and the Medjurjec River and the stream of Klezna (first discharging into the Sasko lake), and then into the Sveti Djordje stream, and further into the Bojana River near Sveti Djordje. Some of the mentioned watercourses originate from natural springs of which the most significant are Rastis, Brajsa, Kaliman, Klezna and Gac. The mentioned watercourses drain the karst area with very high rainfall (1,500 to 2,500 mm per year, and in extreme cases the height of one-hour rainfall exceeds 100 mm). Thanks to the present morphological formations of terrain and rainfall, smaller lakes are formed in this area. The Sasko Lake is the most distinct phenomenon of this kind. In the area along the Bojana River and in the basins of the said small watercourses there are approximately 2,400 hectares of fertile land, representing a significant percentage of total agricultural land in the coastal zone of Montenegro. The entire area along the Bojana River is endangered by the flood waters of the Bojana River itself and the mountainous watercourses.

Figure 5.5 Map of Bojana Riverbed

For the protection against flooding caused by high water levels in the Bojana river, the following facilities were built:

- 6,337 meters long **embankment Sveti Nikola** (St. Nicholas) – Rec
- 1,455 meters long **embankment Sutjel – Sveti Djordje** (St. George).

These embankments have protected an area of approximately 600 ha between the Bojana River and the old embankment of the salt works, as well as Ulcinj field itself. After the flood of 1963 it was found that the embankment of Sutjel-Sveti Djordje was not tall enough along 40% of its length, and the embankment of Sveti Nikola-Rec was not tall enough along 27% of its length. The embankments have not been systematically maintained, they are covered with shrubs and trees, and no performance of their protective function against large water waves can be spoken about.

The embankment of Paratuk was built in 1966 in the area between the embankments along the Bojana river and the old Bojana embankment. The embankment is 195 meters long and divides the protected area into two cassettes.
The embankment of Gropat-Stodra, 960 meters long, was built to protect the field of Vladimir against high water levels in the Bojana River, protecting approximately 110 ha.
The embankment of Stodra-Sukobin, 2,900 meters long, protects approximately 360 ha of agricultural land in the Sukobin field against high water levels in the Bojana River. Along this section, the embankment is constantly threatened by the Bojana riverbank shifting.

No.	Watercourse	Site	Facility Type
1.	**Bojana**	Sveti Nikola-Rec	6,337 m long embankment
2.		Sutjel-Sveti Djordje	1,455 m long embankment
3.		Paratuk	195 m long embankment
4.		Gropat-Stodra	960 m long embankment
5.		Stodra-Sukobin	2,900 m long embankment

Table 1: Overview of built floor protection facilities

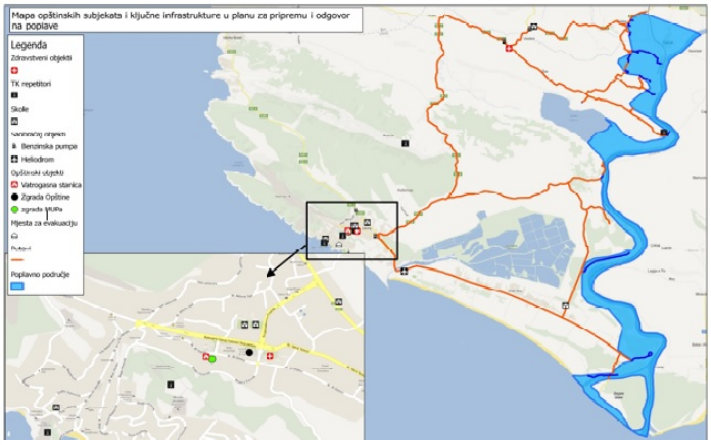


Figure 5.7: Flood risk management infrastructure in Ulcinj municipality

Flooded Areas

In Ulcinj Municipality, large areas of land and private buildings along the Bojana River are most threatened. These are primarily single-level, one-storey or two-storey houses, as well as large fruit and vegetable plantations. Floods along the Bojana River primarily threaten the settlements of Sukobin, Lisna-Bori and Fraskanjel, and to a lesser extent the settlements of Sveti Djordje, Rec, Donji Stoj and Gornji Stoj. Several embankments were built in the threatened area, however the condition of existing embankments is unsatisfactory because of insufficient and inadequate prevention and no safe protection is provided in the event of major floods.

Figure 5.8: Condition of Sveti Nikola-Rec embankment

Location Sukobin, Lisna-Bori and Fraskanjel

It is an area extending along the Bojana River, between the boundary to Bar Municipality and Briska gora. There are 7 families in Sukobin, 17 families in Lisna-Bori and 5 families in Fraskanjel who are directly threatened. During heavy rainfall, the flooded area merges with Sasko Lake, flooding vast agricultural areas in these villages (Sasko Lake 315 ha, the fields of Fraskanjel and Klezansko covering 500 ha). In the event of the protective embankments break, the number of flooded buildings and agricultural areas would be very high. These include thousands of private houses in the settlements of Gornji Stoj and Donji Stoj (5.237 households) and further towards center of Ulcinj Municipality. The salt works "Bajo Sekulic" covering 14.5 km² are there as well.

Figure 5.9: Flooded structures along the Bojana River (view from Fraskanjel)

Location Gornji Stoj

This is the area along the embankment Sveti Nikola-Rec, where seven private buildings get flooded. In the event of the embankment break, numerous buildings in the densely populated area of Gornji Stoj and Donji Devi, and further to Ulcinj, would be endangered.

These settlements are very densely populated, which is why the potential damages are bigger, as shown in the table below:

No.	Settlement	Number of Inhabitants	Number of Households	Residential Buildings
1.	Lisna Bore	175	41	45
2.	Fraskanjel	57	12	18
3.	Sveti Djordje	69	14	24
4.	Rec	63	23	24
5.	Donji Stoj	1.176	434	4.690
6.	Gornji Stoj	111	24	547

Table 2: Overview of the number of inhabitants, households and residential buildings in the settlements threatened

Location Ada Bojana

At the mouth of the Bojana river, there is a huge complex of 390 structures (fishing houses, weekend houses and restaurants), as well as Ada tourist center (440ha), with a significant number of bungalows and associated facilities. During major floods, the mentioned settlements are flooded and there is water penetration in almost all structures along the Bojana riverbank.

Figure 5.10: The mouth of the Bojana River (December 2010 floods)

Before erecting the embankments along the Bojana River, floodwaters used to penetrate deep into the mainland through the valleys of tributaries, which is particularly characteristic for the furthest downstream area. Namely, the Bojana River used to penetrate the mainland for approximately 8 km there, flooding the valley of Medjurjec and Klezna, including the whole Sasko Lake. The Bojana riverbed, and parts of other mountainous watercourses, are situated at a relatively high ground level, so that the terrain slopes down from the river. Therefore, in the event of the defensive line break, significant areas may be affected by flooding at a relatively long distance from the point of break. Particularly important are the following flood zones:

- Vladimir-Sukobin field,
- Sasko Lake, and
- Ulcinj field.

The **Vladimir field** is divided into several areas by a series of ridges. The largest one is the field of Vladimir, which stretches along the Vladimir River. Further to the north, it extends into the field of Sukobin. In this area, approximately 500 hectares are flooded by the Bojana River. In addition, this plain is endangered by high water levels of other watercourses, such as: Kravarski potok stream, Rastiski potok stream, the Brajsa River and the Vladimir River. The **Sasko Lake** is "endangered" both by high water levers of the Bojana River and the Medjurjec watercourse. The **Ulcinj field** is endangered by high water levels of the Bojana River and there have been significant damages in the past due to these floods.

No.	Watercourse	Section Description	Characteristics
1.	**Bojana**	Vladimir-Sukobin Field	Flooding agricultural land
2.		Sasko Lake area	Flooding agricultural land
3.		Ulcinj Field	Flooding agricultural land and industrial facilities

Table 3: Overview of flood-threatened areas

The floods along the Bojana River in January and December 2010 confirmed the causal connection with the wider hydro-technical and water systems in the immediate surroundings.

In November and December 2010, record-breaking precipitation amounts were recorded in the observed drainage basins. Such long-lasting abundant rainfall caused the overflow of reservoirs near Niksic, record water levels in Lake Skadar and record water levels in the Bojana River and other river flows. This situation is the most dramatic example of abundant rainfall and large amounts of flood water. The situation in the area of Lake Skadar was alarming when the lake water level reached a record high of 10.44 asl. The situation in the Lake Skadar region deteriorated rapidly after the Niksic reservoirs started overflowing.

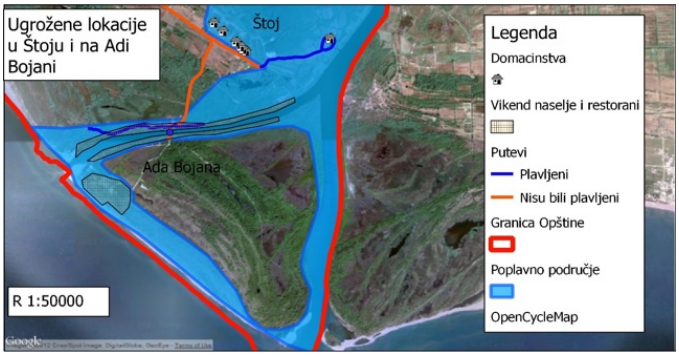


Figure 5.11: Flooded areas Stoj, Ada, Bojana, 2010

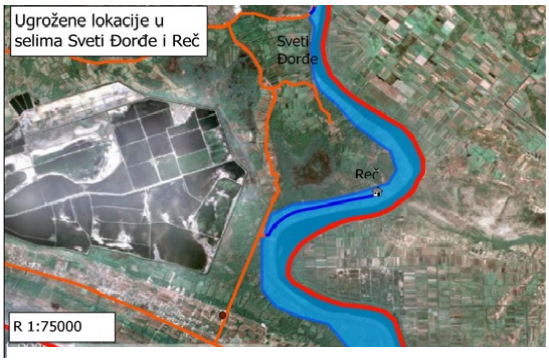


Figure 5.12: Flooded area Sveti Djordje and Rec, 2010

Table 4: Maximum water levels in the watersheds of the Adriatic Sea and Lake Skadar

No	Hydrological Station	Watercourse	H max before floods	Date	H max floods	Date
1.	Plavnica	Lake Skadar	530 cm	14 Jan 1963	588cm	4 Dec 2010
2.	Duklo	Zeta	243cm	18 Oct 1992	243cm	2 Dec 2010
3.	Fraskanjel	Bojana	603cm	5 Dec 1966	636cm	4 Dec 2010
4.	Podgorica	Moraca	1226cm	17 Nov 1979	1177cm	2 Dec 2010

Figure 5.13: Flooded area Fraskanjelu and Lisnabore, 2010

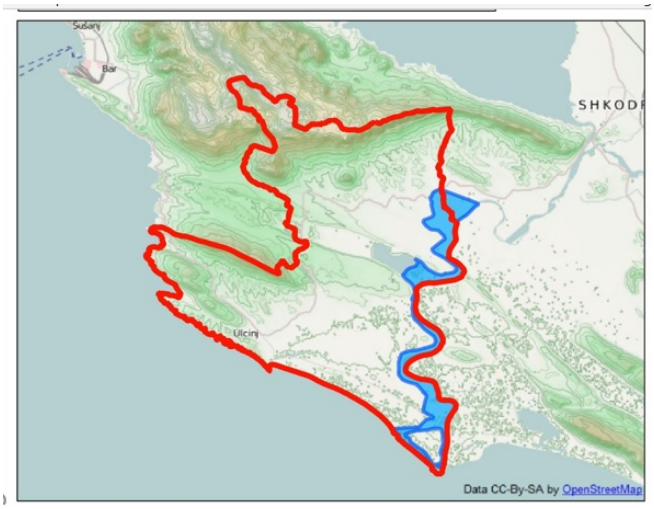


Figure 5.14: Flood risk areas in Ulcinj Municipality

The catastrophic floods that occurred in Ulcinj in January and December 2010 were caused by intense rainfall, sudden meltdown of snow and the influx of huge amounts of water from the Drim River, which resulted in record-breaking water level rising in the Bojana River, as shown in the previous table, when the maximum level was reached on 4 December 2010.

The following settlements were flooded: part of Sukobi, Lisna Bori, Fraskanjel, Sas, Stodra, Sv. Djordje, Rec, Sutjel, Sv. Nikola, and the Bojana riverbank to the river mouth, as well as Ada Bojana. The most severe damages were suffered by flooded residential houses in the settlements of Lisna Bori, Sukobin, Fraskanjel and Sas, downstream cottages and catering facilities to the river delta and buildings of the company “Ulcinjska rivijera” at Ada Bojana.

Figure 5.15: A flooded house in Fraskanjel (3 December 2010)

In total, approximately 7.4% of Ulcinj Municipality's territory was flooded, where agricultural land, agricultural equipment, plantations (greenhouses) and tangerine plantations were most affected. Several infrastructure facilities were flooded: Fraskanjel water source (12 wells with pump stations), transformer substations supplying electricity to 4 pump stations, and hydrological station in Fraskanjel.

The embankments of Sveti Djordje-Sutjel and Rec-Sveti Nikola were important defensive infrastructural facilities that were partially damaged, and then suffered even more damage during the December floods. There was an immediate intervention on those embankments using construction machines at the most critical points and works on the embankment of Sveti Djordje were initiated for the purpose of full reconstruction. However, after the January floods in 2010, 900 m remained unfinished so that, in this first days of November-December floods, an urgent intervention was carried out on that section as it was the most vulnerable. Also, at the last moment, the embankment of Sveti Djordje-Sutjel was repaired, and it could not be broken, although partially covered by water.

Figure 5.16: Embankment at Sveti Djordje – flooding by the Bojana River (4 December 2010)

When the Bojana River water level reached its maximum, on 4 December 2010, the other embankment of Rec-Sveti Nikola, partly used as a paved road to the village of Rec was also flooded. The water level was approximately 40 cm above the road. This section was also subject to intensive intervention works to repair the critical points where it was noticed that water could break through the embankment. Had those embankments been broken, there would have been a completely different situation with unfortunate consequences because the Bojana River would have merged with the salt pans and formed a new arm across Port Milena, thus endangering the entire Great Beach with Donji Stoj and Gornji Stoj and the field of Ulcinj.

Flood frequency and intensity and risk analysis

Large volumes of precipitation over the year, their distribution and significant fluctuation amplitudes of karst springs, and the location of karst fields and major depressions with a limited capacity of sinks, torrent characteristics, unplanned urbanization in the flooded areas and the condition of the infrastructure near the watercourses, result in periodic flooding of parts of the territory of Ulcinj Municipality, along the existing watercourses and canals. This especially happens in the spring and fall months, causing considerable damage. The following direct consequence of more serious and major floods may be expected in the territory of Ulcinj:

- Interruption of inter-municipal roads and damage to mainland, local and rural roads;
- Activating a certain number of landslides and rockfalls;
- Damaging (collapse or backfilling) a certain number of tunnels;
- Reducing or completely interrupting drinking water supply from water intake structures and poor drinking water quality;
- Interrupting electricity supply;
- Damaging or destroying a number of economic facilities;
- Various disturbances on waterworks, sewerage facilities etc., which may cause an epidemic outbreak of various diseases on a certain scale;
- Destruction or severe damage to a larger number of family homes, residential buildings, agricultural and economic facilities;
- Interruption and difficult supply of food products and basic foodstuffs to the population;
- Problems in supplying the population in remote areas.

Proposed solution

Overview of Necessary Works and Measures for Watercourse Regulation and Flood Protection

The AF project will implement upgrading and reinforcement of the protective embankment along the Bojana River and development of a long-term maintenance plan for the protective embankment.

It should be noted that there is no up-to-date hydrological or hydraulic assessments of the Bojana River or Lake Skhoder/Skadar, that would permit detailed design of the proposed intervention. Past remedial works also haven't taken climate change into consideration and have largely repaired the embankment to original condition as necessary. Hence, AF project will undertake detailed design and implementation of climate resilient rehabilitation of the Bojana embankment. It will utilize detailed modelling to be produced by GIZ which will include up-to-date hydrology and hydraulic modelling and climate change and would enable options modelling in the identification and development of the most appropriate design.

The following activities will be carried out by the AF project:

- Detail technical documentation for full scale embankment system on Bojana River in Montenegro, including all necessary assessments, field examinations and mapping (Output 3.1);
- Detail Bill of Quantities for rehabilitation and construction of embankments; (Output 3.2)
- Construction and restoration of priority embankments (Output 3.2);
- Creating a database for all facilities and populations in the affected area (Output 1.3).

Direct and indirect beneficiaries of the proposed structural measures:

Direct beneficiaries: As demonstrated by the 2010 floods, the whole Ulcinj Municipality (20,000 residents) are at risk of serious damage in case of failure of the embankments system and can be considered as direct beneficiaries of the project. This includes 2,000 people living in six most vulnerable communities listed above. In addition, at least 30,000 registered tourists visit municipality each year (Flood Risk Management Plan for Ulcinj Municipality, 2013).

Approximately 3,500 ha of land (largely agricultural land) will be protected with the structural measures based on 2010 floods affected areas (source: FRM Plan for Ulcinj Municipality, 2013, see the map included above)

Indirect beneficiaries who would benefit from the other AF project activities: approximately 24,000 people living in the municipalities located in the Adriatic basin of Montenegro: Podgorica (15000 people), Cetinje (3000 people), Bar (3000 people), Danilovgrad (3000 people), Niksic (3000 people); as well as approximately 70,000 tourists visiting these municipalities each year.

III. Albania

Construction/reconstruction of flood protection infrastructure in the downstream of Drini, Buna

Area at risk - the Lower Drini-Buna River Basin in North-West Albania

The land of the Lower Drini–Buna River basin is at a very high risk of flooding. This is a result of geological changes some 150 years ago which diverted the flow of the Drini to join the Buna at Bahcallek. The capacity of the Buna River, particularly the reach from the Drini-Buna confluence to Shirqi Village, is insufficient to prevent frequent overtopping of the river banks and consequent flooding. The most recent major flood events occurred in January 2010 and again in December 2010 causing major hardship to the local population. The flooding of January 2010 in the district of Shkodra was at the time considered the biggest emergency event to have arisen in the area: 14,100 ha were flooded, 4600 houses were inundated, and 12,150 people evacuated. The direct economic loss to Albania has been estimated as ALL 2.5 billion (EUR

18 million) from the December 2010 event alone, rising to ALL 4.4 billion (EUR 37 million) when indirect losses are accounted for. A World Bank study shows that out-of-bank flow occurs from the Buna on average once every two years, and direct damages caused by flooding rise from ALL 135 million for a 50% likelihood event, up to ALL 5830 million for the 0.1% likelihood event. From the 1960s a system of flood protection dikes has been developed on the downstream reaches of the Buna River and downstream part of the Drini River between Vau Dejes and Bahcellek, to protect against flooding over the left bank into developed residential and settled agricultural areas. These dikes have been partially effective in protecting land from flooding, however in the most serious events, breaches have occurred in the dikes, particularly in the reach between Shirqi and Belaj. Over the upper reach of the Buna River, from Bahcallek to Shirqi there are no existing flood protection dikes. The reason for this is that it is feared that construction of dikes in this reach would result in increased flood levels in Shkodra Lake, with consequent increase in flood risk to the City of Shkodra and surrounding area.

Overall description of environmental issues and features of the high-risk area

Albanian side of the Buna-Bojana Delta is an outstandingly important wetland landscape. It is formally protected as a Ramsar site in international and as a Category IV protected area under Albanian law. The most important thing to understand about this wetland is that it is a mosaic of many different and interconnecting habitats. These interconnected habitats of wet meadow, alluvial forest, reed bed, marshes, lakes and watercourses all depend for their survival on a proportion of permanent water which finds its way across the delta throughout the year replenishing the wetland systems before entering the Viluni Lake and then the Adriatic. The critical environmental challenge of this project will be to reduce the risk of repeated floods as happened in 2010 without reducing permanent water levels through the system so much that the scheme indirectly triggers large scale drainage and so a land use change to cereal crops throughout the delta. Major drainage for agriculture in the Velipoja area carried out between 1950 and 1970 show that large scale land use change is a real threat, which could destroy the protected area and its high tourist potential.

Water quality

The water quality within the Buna River and associated water courses within the study area is reasonably good quality classified as A2 in Albania which is the equivalent of Class B by UK Environment Agency standards. The reason why this is less than the highest quality is that the very clean waters of the Drin are affected by sewage from Shkodra and the small settlements in the delta leading to significant amounts of ammonia in some areas. There is also some coastal pollution from Porta Milena near Ulcinj in Montenegro and some pollution of Lake Shkodra from the aluminium works at Podgorica in Montenegro.

Fisheries

The water coming from Lake Shkodra is highly alkaline which is of benefit to salmonids and other species and the Buna river is a very important migratory corridor for fish between the Adriatic and both Lake Shkodra and the upper Drin. The highly braided nature of the channel with its islands, backwaters and shallows (even more marked in the Lower Drin) is all excellent habitat for fish migration and spawning. Traditionally main species sought by fishermen are carp (*Cyprinus carpio)*, bleak (*Alburnus alburnus alborella)*, eel (*Anguilla Anguilla)*, mullets (*Mugil cephalus),* and twaite shad (*Allosa fallax).* The river supports some increasingly endangered fish notably three species of sturgeon, *Acipenser sturio, Acipenser naccarii* and *Acipenser stellatus.* Bottle nosed dolphin was also recently recorded up to the first bend in the river above the mouth. Pressures on fisheries include the use of explosives, lack of protected spawning areas, over-fishing and permanent nets at key migration points notably the mouth of the Buna at Skadar Lake and at the Viluni Lagoon estuary. The licensed fishermen regularly appeal to the authorities for support against illegal fishing.

Cultural Heritage

In addition to the protected areas described above there are a large number of small sites described as 'nature's monuments' protected under Decision number 676 dated 20.12.2002 as 'protected zones'. They are scheduled under each prefecture and district and from their titles they would appear to be cultural sites associated with animist religion rather than areas of high biodiversity in the conventional ecological sense of the term. They include many springs, groves and caves. Typical titles include 'Hole of the Dragon', 'Hay stacks of Radi', 'Eye of Gjoni', 'Sacred Stone' and ''Circle of the Old Woman'. Since animism still exists in Eastern Europe these should be avoided by any operations to prevent conflict with local communities in addition to the need to respect their formal protected status. A list of the sites recorded for the Prefecture of Shjodra includes three which appear to occur in the study area: 'the gravity block of the black stone', the cave of Jubani and the Forest of the Island of Franz Joseph.. Of these the island of Franz Joseph is on the shoreline south west of the proposals. The cave of Jubani appears north of operations but the Gravity block of the black stone appears to be in the region of Trushi and Melgusha probably on an eminence above the flood land. It should be avoided by any proposals.

There are a number of villages with traditional vernacular buildings scattered through the wetland. These villages badly need protecting from further floods of the severity of 2010 but their traditional farming management of the meadows and grazing is also exactly what creates the landscape quality and heritage value of the area. Indeed this traditional farmed landscape which is increasingly rare in Europe is a cultural feature in its own right.

The entire site is overlooked by Rozafa castle, one of the most spectacular monuments in the Balkans. This was fortified as early as Illyrian times when the Ardiaean Queen Teuta launched her attack on the Romans from it. It was twice besieged by the Turks, the cataclysmic siege of 1479 being the subject of Veronese's frescoes in the doge's palace in Venice. There is also a Roman road from Shkodra to Durres. Since the Buna delta lies so close to these historic sites and wetland famously preserves buried artefacts there is always the possibility that excavations within the study area could expose features of archaeological interest and there has been discussion in Shkodra of buried ships in the vicinity of the delta.

Lakes, reed beds and water channels

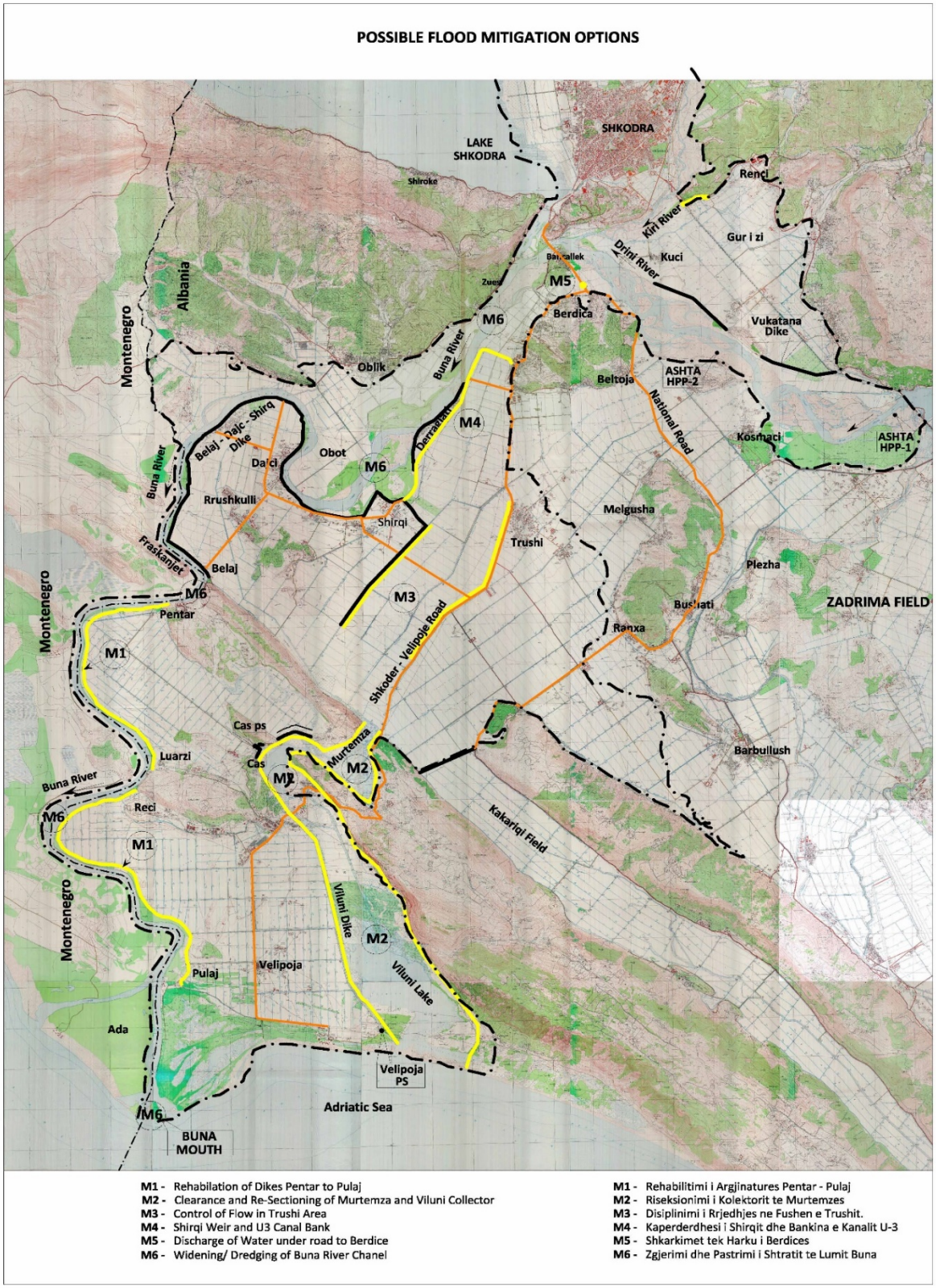
Murtemza Lake which lies in the bend of the Murtemza Gap is almost entirely blocked with reeds. It supports large populations of great reed warbler and may well support bittern. White water lily is also present. The other lake is the Villuni Lake which is the only natural lagoon in the delta. It is a breeding ground for little ringed plover and redshank and an important feeding area for pygmy cormorant and sandwich tern. The network of ditches and channels connecting these larger water bodies support dragonflies duck and many rare plants such as the water chestnut, *Trapa natans* which grows in the channel flowing under Gjolulit bridge.

<u>Proposed solution</u>

Structural measures: The project will implement rehabilitation/enhancement of dikes/embankments, flow control measures and clearance of vegetation. Three options for structural measures have been shortlisted at the project development phase with the Government of Albania. These options will be further assessed and detailed design will be completed for one of them during the project implementation:

- Improvements to existing river dikes – option Pentari to Pulaj. If implemented this measure will benefit villagers, their homes, livestock, agricultural land and other assets in the villages of Luarzi, Reci, Reci i ri, Pentari, Velipoja and Pulaj, as flooding will be reduced in extent, depth and duration
- Clearance of vegetation and widening of drainage channels Murtemza-Viluni. Access for clearance of vegetation and excavation will be limited by weather conditions and any overland flooding.

- Reinforcement of Canal Embankment and Renewal of Shirqi Weir, plus control of overland flow from Shirqi to Murtemza. These components should be undertaken after works at Murtemza and before any dredging to increase the capacity of the Upper Buna.



Non-Structural Measures: The proposed structural measures will be supported with the non-structural measures (Output 3.3) as follows: (i) protection of river bank areas (planting of hydrophilic vegetation e.g. willows, acacias along the riverside to protect soil from erosion), (ii) prevention of constructions and land use (Buna River in the area of Zue village (1 km); Drin River (3,5 km) in the area of Ganjola-Vukatanë-Kuç; Kir River (1,5 km) Bardhaj-Bleran and in the area of Kuci village); (iii) enforcing planning controls to prevent further development in the flood route through Berdica, and in other 'at-risk' areas such as the low-lying land between the Drini and Buna at their confluence.

Beneficiary communities:

Area	Population	Number of Households	Area (ha)
Shkodra Municipality	114,219	34,898	1646
Vau I Dejes Municipality	12,520	3,385	3060
Ana e Malit	5,859	1,690	4180
Berdicë	9,172	2,556	3102
Guri i Zi	11,619	3,072	8170
Rethina	23,418	5,668	4705
Velipojë	8,718	2,255	7240
Total	185,525	53,524	32103

Annex 6. Social and Environmental Screening Template

Project Information

Project Information	
1. Project Title	Integrated climate-resilient transboundary flood risk management in the Drin River basin in the Western Balkans
2. Project Number	XXX
3. Location (Global/Region/Country)	Albania, the Former Yugoslav Republic of Macedonia, Montenegro

Part A. Integrating Overarching Principles to Strengthen Social and Environmental Sustainability

QUESTION 1: How Does the Project Integrate the Overarching Principles in order to Strengthen Social and Environmental Sustainability?
Briefly describe in the space below how the Project mainstreams the human-rights based approach
The project mainstreams a human-rights based approach by designing project interventions (integrated approach to flood control including both structural and non-structural measures) to promote the resilience and rights of those citizens affected by increasing severe floods in the Drin River basin, in particular vulnerable farmers and residents in small municipalities and urban settlements, to better handle increasingly severe flooding brought on by changing environmental conditions, while ensuring their right to productive land, work, water, and health. None of the proposed project activities violate human rights obligations but rather try to prioritize the rights of those most vulnerable to flood impacts, including extremely marginalized Roma and Egyptian communities living in the most flood prone areas of the Drin River basin. The project also takes a human-rights based approach by promoting inclusive, participatory decision-making processes that integrate a broad range community and stakeholder perspectives, including the needs and priorities of local government and community stakeholders.
Briefly describe in the space below how the Project is likely to improve gender equality and women's empowerment
The project will, through both its hard and soft interventions, safeguard local communities and their assets from flood disasters with particular attention promoting gender equitable participation in decision-making processes, as well as ensuring that information-sharing, awareness raising and training and capacity building activities are also implemented in a gender responsive manner. Project activities will include more in depth analysis of the gender and social inclusion dimensions of flood risk management, while ensuring that all activities are implemented in a manner that accounts for the differential needs of women, girls, men and boys, as well as the elderly, disabled, and the extremely marginalize (inclusion of flood risk information sharing with the Roma community).
Briefly describe in the space below how the Project mainstreams environmental sustainability
The project has mainstreamed environmental sustainability by undertaking an early screening of environmental safeguards issues in project design including the avoidance of measures such as river dredging, the building of dams and the creation of new channels in over to avoid adverse impacts on river ecosystems. Furthermore the project builds the capacity of all countries to take an integrated approach to flood control without a narrow focus on grey infrastructure, looking at both transboundary impacts and landscape level management approaches The basin-wide hydrological modeling component of the project will allow the Drin Basin countries to make informed decisions on water balance in the basin, including releases from reservoirs to account for adequate hydrological flows to sensitive wetland ecosystems to avoid any hindrance of ecosystem function. All structural measures will avoid environmental sensitive areas and will be built in a manner to avoid exacerbating riverbank erosion. Reforestation will take place with native species and will have multiple environmental co-benefits in increasing infiltration, maintaining robust habitats and reducing upstream erosion and siltation.

Part B. Identifying and Managing Social and Environmental Risks

QUESTION 2: What are the Potential Social and Environmental Risks? *Note: Describe briefly potential social and environmental risks identified in Attachment 1 – Risk Screening Checklist (based on any "Yes" responses). If no risks have been identified in Attachment 1 then note "No Risks Identified" and skip to Question 4 and Select "Low Risk". Questions 5 and 6 not required for Low Risk Projects.*	**QUESTION 3: What is the level of significance of the potential social and environmental risks?** *Note: Respond to Questions 4 and 5 below before proceeding to Question 6*			**QUESTION 6: What social and environmental assessment and management measures have been conducted and/or are required to address potential risks (for Risks with Moderate and High Significance)?**
Risk Description	***Impact and Probability (1-5)***	***Significance (Low, Moderate, High)***	***Comments***	***Description of assessment and management measures as reflected in the Project design. If ESIA or SESA is required note that the assessment should consider all potential impacts and risks.***
Risk 1: The project could exclude potentially affected stakeholders such as vulnerable groups, from fully participating in decisions that may affect them.	I = 2 P = 3	**Low**	There is fluctuating, albeit small population of marginalized Roma community members (difficult to obtain official figures, but estimated at ~1% of beneficiary population) that are settled in the highly vulnerable areas of the Drin flood basin with no fixed shelter or access to services. Difficult to integrate in formal decision making processes.	The project design process included the perspectives of a range of primary stakeholder, including community members and local government officials and partners that highlighted the marginalization and vulnerability of the Roma community. The project interventions (particularly locations for the structural measures for flood control) will account for those areas that cause the most socio-economic damage, accounting for damages to temporary or persistent Roma settlements. Furthermore, in case impacts on Roma settlements (or those of any other vulnerable group or beneficiary) that may lead to economic displacement (all physical displacement will be strictly avoided), stakeholders will have access to compensation as well as be informed of both the project- level Grievance Redress Mechanism (GRM) which will be advertised in the informal settlements (including Roma and Egyptian communities, and municipalities closest to the structural measures.
Risk 2: Duty-bearers do not have the capacity to meet their obligations and sustainability requirement for the project.	I = 3 P = 3	**Moderate**	The project requires that green and grey measures be maintained over time, including reinforcement of laws and regulations pertaining to deforestation for upstream planting measures as well as the maintenance of grey	The stakeholder consultations which took place in the project preparation phase built buy-in among both national and local govt. counterparts to both provide adequate co-financing, man-power and capacity for the maintenance of all infrastructure to be constructed as part of the project.

			infrastructure, particularly in the case of damage and in the face of ongoing erosion processes occurring at riverbanks. The current maintenance record of infrastructure is poor and the regulatory capacity of local govt. officers to monitor deforestation is low.	
Risk 3: Would the Project potentially reproduce discriminations against women based on gender, especially regarding participation in design and implementation or access to opportunities and benefits?	I = 2 P = 1	**Low**	Given the existing conditions in regards to gender equality in existing flood related institutions, project interventions will have to be designed in a sensitive manner in order to avoid reinforcing existing inequalities	As part of the project design process a Gender Assessment and Action Plan was prepared which gives an overview of the gender situation in the region, as well as provides a gender action plan, in order to mainstream gender into project activities, principally in regards to the capacity, build, traning and decision making aspects of the project.
Risk 4: The proposed Project may directly or indirectly increase social and environmental vulnerability to climate change (also known as maladaptive practices) or the disturbance to critical habitats and/or sensitive environmental areas, including legally protection areas and the possibility that physical structures will exacerbate bank erosion processes.	I= 3 P= 3	**Moderate**	Some particular infrastructure or structural measures for flood control, including ongoing activities of dredging of riverbeds, or the creation of new channels as part of flood control measures have serious ecological consequences (degradation of water quality, exacerbation of riverbed erosion processes, disturbance of fish spawning etc.) affecting critical habitats and offer only temporary solutions to ongoing erosion and siltation processes. They also may accelerate erosion by increasing the speed and volume of channel flow and influence river hydraulics in unpredictable and ways, including the increase of bank erosion. Project interventions are also planned within or in proximity to sensitive wetland environment that act as	As part of the project design, all proposed structural measures with significantly adverse environmental and social impacts, such as dredging or the creation of new channels was eliminated. Special attention will be given in the transboundary basin-wide hydrological modeling to understand and subsequent prioritize adequate hydrological flows to wetlands to maintain ecosystem functions. Furthermore, the location of all structural measures will avoid environmentally sensitive areas and all green infrastructures will use a diversity of native species for planting. An integrated landscape management approach will be emphasized for flood control without a narrow emphasis on structural measures that may decrease erosion in own areas while increasing erosion in another. Furthermore, all construction activities will be carried out with respect to national regulations, including Environmental and Social Impact Assessment (ESIA) as required.

			important bird breeding grounds. If water requirements are not taken into considerations in modeling and integrated flood management measures, wetlands may not receive adequate water to fulfill ecosystems functions	
Risk 7: Potential outcomes of the project will be sensitive to impacts of climate change	I = 3 P = 1	**Low**	Most current structural measures do not account for future projections of floods, exacerbated by climate change.	The project activities represent a paradigm shift in flood control planning by introducing Introduction of appraisal-led design for structural and non-structural measures using climate risk information (among other criteria) for detailed design.

QUESTION 4: What is the overall Project risk categorization?

Select one (see SESP for guidance)		Comments
Low Risk	☐	
Moderate Risk	X	High risk for potential restricts of availability and access to resources and land and disturbance to critical habitats and/or sensitive environmental areas, including legally protection areas and potential for indirectly increase environmental vulnerabilities.
High Risk	☐	

QUESTION 5: Based on the identified risks and risk categorization, what requirements of the SES are relevant?

Check all that apply		Comments
Principle 1: Human Rights		
Principle 2: Gender Equality and Women's Empowerment	X	A gender assessment and action plan has been developed to ensure that project interventions are implemented in a gender-sensitive manner
1. Biodiversity Conservation and Natural Resource Management	X	Project interventions are in proximity to environmental sensitive areas, critical habitats and protected areas.
2. Climate Change Mitigation and Adaptation	X	The project interventions are designed to increase adaptive capacity to evolving flood risk. Structural interventions have been designed to account for potential maladaptation
3. Community Health, Safety and Working Conditions	X	Community health and safety outcomes will be significantly improved through project interventions.

	4. Cultural Heritage	X	
	5. Displacement and Resettlement	☐	
	6. Indigenous Peoples	☐	
	7. Pollution Prevention and Resource Efficiency	X	

Final Sign Off

Signature	***Date***	***Description***
QA Assessor		
QA Approver		
PAC Chair		

SESP Attachment 1. Social and Environmental Risk Screening Checklist

Checklist Potential Social and Environmental Risks		
Principles 1: Human Rights		**Answer (Yes/No)**
1.	Could the Project lead to adverse impacts on enjoyment of the human rights (civil, political, economic, social or cultural) of the affected population and particularly of marginalized groups?	No
2.	Is there a likelihood that the Project would have inequitable or discriminatory adverse impacts on affected populations, particularly people living in poverty or marginalized or excluded individuals or groups? [4]	No
3.	Could the Project potentially restrict availability, quality of and access to resources or basic services, in particular to marginalized individuals or groups?	No
4.	Is there a likelihood that the Project would exclude any potentially affected stakeholders, in particular marginalized groups, from fully participating in decisions that may affect them?	Yes
5.	Is there a risk that duty-bearers do not have the capacity to meet their obligations in the Project?	No
6.	Is there a risk that rights-holders do not have the capacity to claim their rights?	No
7.	Have local communities or individuals, given the opportunity, raised human rights concerns regarding the Project during the stakeholder engagement process?	No
8.	Is there a risk that the Project would exacerbate conflicts among and/or the risk of violence to project-affected communities and individuals?	No
Principle 2: Gender Equality and Women's Empowerment		
1.	Is there a likelihood that the proposed Project would have adverse impacts on gender equality and/or the situation of women and girls?	No
2.	Would the Project potentially reproduce discriminations against women based on gender, especially regarding participation in design and implementation or access to opportunities and benefits?	Yes
3.	Have women's groups/leaders raised gender equality concerns regarding the Project during the stakeholder engagement process and has this been included in the overall Project proposal and in the risk assessment?	No
4.	Would the Project potentially limit women's ability to use, develop and protect natural resources, taking into account different roles and positions of women and men in accessing environmental goods and services? *For example, activities that could lead to natural resources degradation or depletion in communities who depend on these resources for their livelihoods and well being*	No
Principle 3: Environmental Sustainability: Screening questions regarding environmental risks are encompassed by the specific Standard-related questions below		
Standard 1: Biodiversity Conservation and Sustainable Natural Resource Management		
1.1	Would the Project potentially cause adverse impacts to habitats (e.g. modified, natural, and critical habitats) and/or ecosystems and ecosystem services? *For example, through habitat loss, conversion or degradation, fragmentation, hydrological changes*	Yes

[4] Prohibited grounds of discrimination include race, ethnicity, gender, age, language, disability, sexual orientation, religion, political or other opinion, national or social or geographical origin, property, birth or other status including as an indigenous person or as a member of a minority. References to "women and men" or similar is understood to include women and men, boys and girls, and other groups discriminated against based on their gender identities, such as transgender people and transsexuals.

1.2	Are any Project activities proposed within or adjacent to critical habitats and/or environmentally sensitive areas, including legally protected areas (e.g. nature reserve, national park), areas proposed for protection, or recognized as such by authoritative sources and/or indigenous peoples or local communities?	Yes
1.3	Does the Project involve changes to the use of lands and resources that may have adverse impacts on habitats, ecosystems, and/or livelihoods? (Note: if restrictions and/or limitations of access to lands would apply, refer to Standard 5)	No
1.4	Would Project activities pose risks to endangered species?	No
1.5	Would the Project pose a risk of introducing invasive alien species?	No
1.6	Does the Project involve harvesting of natural forests, plantation development, or reforestation?	Yes
1.7	Does the Project involve the production and/or harvesting of fish populations or other aquatic species?	No
1.8	Does the Project involve significant extraction, diversion or containment of surface or ground water? *For example, construction of dams, reservoirs, river basin developments, groundwater extraction*	Yes
1.9	Does the Project involve utilization of genetic resources? (e.g. collection and/or harvesting, commercial development)	No
1.10	Would the Project generate potential adverse transboundary or global environmental concerns?	No
1.11	Would the Project result in secondary or consequential development activities which could lead to adverse social and environmental effects, or would it generate cumulative impacts with other known existing or planned activities in the area?	No
Standard 2: Climate Change Mitigation and Adaptation		
2.1	Will the proposed Project result in significant[5] greenhouse gas emissions or may exacerbate climate change?	No
2.2	Would the potential outcomes of the Project be sensitive or vulnerable to potential impacts of climate change?	Yes
2.3	Is the proposed Project likely to directly or indirectly increase social and environmental vulnerability to climate change now or in the future (also known as maladaptive practices)? *For example, changes to land use planning may encourage further development of floodplains, potentially increasing the population's vulnerability to climate change, specifically flooding*	Yes
Standard 3: Community Health, Safety and Working Conditions		
3.1	Would elements of Project construction, operation, or decommissioning pose potential safety risks to local communities?	Yes
3.2	Would the Project pose potential risks to community health and safety due to the transport, storage, and use and/or disposal of hazardous or dangerous materials (e.g. explosives, fuel and other chemicals during construction and operation)?	No
3.3	Does the Project involve large-scale infrastructure development (e.g. dams, roads, buildings)?	No
3.4	Would failure of structural elements of the Project pose risks to communities? (e.g. collapse of buildings or infrastructure)	Yes
3.5	Would the proposed Project be susceptible to or lead to increased vulnerability to earthquakes, subsidence, landslides, erosion, flooding or extreme climatic conditions?	No
3.6	Would the Project result in potential increased health risks (e.g. from water-borne or other vector-borne diseases or communicable infections such as HIV/AIDS)?	No

[5] In regards to CO_2, 'significant emissions' corresponds generally to more than 25,000 tons per year (from both direct and indirect sources). [The Guidance Note on Climate Change Mitigation and Adaptation provides additional information on GHG emissions.]

3.7	Does the Project pose potential risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during Project construction, operation, or decommissioning?	No
3.8	Does the Project involve support for employment or livelihoods that may fail to comply with national and international labor standards (i.e. principles and standards of ILO fundamental conventions)?	No
3.9	Does the Project engage security personnel that may pose a potential risk to health and safety of communities and/or individuals (e.g. due to a lack of adequate training or accountability)?	No
Standard 4: Cultural Heritage		
4.1	Will the proposed Project result in interventions that would potentially adversely impact sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture (e.g. knowledge, innovations, practices)? (Note: Projects intended to protect and conserve Cultural Heritage may also have inadvertent adverse impacts)	No
4.2	Does the Project propose utilizing tangible and/or intangible forms of cultural heritage for commercial or other purposes?	No
Standard 5: Displacement and Resettlement		
5.1	Would the Project potentially involve temporary or permanent and full or partial physical displacement?	No
5.2	Would the Project possibly result in economic displacement (e.g. loss of assets or access to resources due to land acquisition or access restrictions – even in the absence of physical relocation)?	No
5.3	Is there a risk that the Project would lead to forced evictions?[6]	No
5.4	Would the proposed Project possibly affect land tenure arrangements and/or community based property rights/customary rights to land, territories and/or resources?	No
Standard 6: Indigenous Peoples		
6.1	Are indigenous peoples present in the Project area (including Project area of influence)?	No
6.2	Is it likely that the Project or portions of the Project will be located on lands and territories claimed by indigenous peoples?	No
6.3	Would the proposed Project potentially affect the human rights, lands, natural resources, territories, and traditional livelihoods of indigenous peoples (regardless of whether indigenous peoples possess the legal titles to such areas, whether the Project is located within or outside of the lands and territories inhabited by the affected peoples, or whether the indigenous peoples are recognized as indigenous peoples by the country in question)? If the answer to the screening question 6.3 is "yes" the potential risk impacts are considered potentially severe and/or critical and the Project would be categorized as either Moderate or High Risk.	No
6.4	Has there been an absence of culturally appropriate consultations carried out with the objective of achieving FPIC on matters that may affect the rights and interests, lands, resources, territories and traditional livelihoods of the indigenous peoples concerned?	No
6.5	Does the proposed Project involve the utilization and/or commercial development of natural resources on lands and territories claimed by indigenous peoples?	No
6.6	Is there a potential for forced eviction or the whole or partial physical or economic displacement of indigenous peoples, including through access restrictions to lands, territories, and resources?	No
6.7	Would the Project adversely affect the development priorities of indigenous peoples as defined by them?	No

[6] Forced evictions include acts and/or omissions involving the coerced or involuntary displacement of individuals, groups, or communities from homes and/or lands and common property resources that were occupied or depended upon, thus eliminating the ability of an individual, group, or community to reside or work in a particular dwelling, residence, or location without the provision of, and access to, appropriate forms of legal or other protections.

6.8	Would the Project potentially affect the physical and cultural survival of indigenous peoples?	No
6.9	Would the Project potentially affect the Cultural Heritage of indigenous peoples, including through the commercialization or use of their traditional knowledge and practices?	No
Standard 7: Pollution Prevention and Resource Efficiency		
7.1	Would the Project potentially result in the release of pollutants to the environment due to routine or non-routine circumstances with the potential for adverse local, regional, and/or transboundary impacts?	No
7.2	Would the proposed Project potentially result in the generation of waste (both hazardous and non-hazardous)?	Yes
7.3	Will the proposed Project potentially involve the manufacture, trade, release, and/or use of hazardous chemicals and/or materials? Does the Project propose use of chemicals or materials subject to international bans or phase-outs? *For example, DDT, PCBs and other chemicals listed in international conventions such as the Stockholm Conventions on Persistent Organic Pollutants or the Montreal Protocol*	No
7.4	Will the proposed Project involve the application of pesticides that may have a negative effect on the environment or human health?	No
7.5	Does the Project include activities that require significant consumption of raw materials, energy, and/or water?	No

Annex 7: Environmental and Social Management Plan (ESMP)

Integrated climate-resilient transboundary flood risk management in the Drin River basin in the Western Balkans

1. Introduction

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 (DRB) to climate-induced floods.

The intervention area of the project is transboundary cooperation between the riparian countries being:

1. Albania
2. The Former Yugoslav Republic of Macedonia
3. Montenegro

Social and Environmental Screening Procedure (SESP) and Social Environmental and Social Management Plan

The ESMP frames the social and environmental vision in the management of the project, to generate social and environmental benefits and avoiding or minimizing adverse impacts. For UNDP projects, it is necessary to diagnose and categorize the project, and it is the Social and Environmental Screening Procedure (SESP) that satisfies this requirement. In this context, the objectives of the SESP are geared to:

1. Integrate the global principles of UNDP's SES in order to improve social and environmental sustainability.
2. Identify potential social and environmental risks and their significance; determine the project's risk category (low, moderate, high); and,
3. Determine the level of social and environmental assessment and management required to respond to potential risks and impacts.
4. Outline the mitigation measures required to implement for each risk, as part of the project Environmental and Social Management Plan (ESMP).

Although the project includes a social and environmental focus in the development of its activities, this Environmental and Social Management Plan (ESMP) aims to guide the avoidance, minimization, mitigation and management of potential risks and adverse impacts of the project in social and environmental terms, and uses UNDP's risk screening checklist to integrate recognized global principles, identify possible social and environmental risks, their importance, and determine the project's risk category (low, moderate, or high) according to the resulting analysis.

For the SESP of the project, please see Annex 6, which identifies the environmental and social risks associated with the project, as well as the level of significance of each risk and mitigation and management measures for each risk (the main risks and management measures are summarized below.)

1.1 Project Components and Results

The project will work with partners to strengthen the current flood forecasting and early warning system to ensure an end-to-end fully integrated flood forecasting and early warning system (FFEWS) is operational within the basin. In this regard, the project supports the further development the system to provide impact-based forecasting and dissemination of warnings within a common platform, which importantly includes enhanced last mile connectivity to at risk communities. The project will develop and implement a transboundary integrated FRM strategies providing the national authorities with robust and innovative solutions for FRM, DRR and climate adaptation, including ecosystem-based gender sensitive participatory approaches. In addition, the project will develop the underlying capacity of national and regional institutions to ensure sustainability and to scale up the results. It will support stakeholders by providing guidance,

sharing climate information, knowledge and best practices. The project will also invest in the priority structural and community-based non-structural measures. Importantly, the project is aligned with and will support the implementation of the EU Floods Directive (EUFD) in DRB countries.

The following is a description of the components and results:

Component 1: Hazard and Risk Knowledge Management Tools

Outcome: Improved climate and risk informed decision-making; availability and use of climate risk information

Output 1.1. Strengthened hydrometric monitoring networks in all riparian countries based on a unified optimized basin-scale assessment of monitoring needs

Output 1.2. Improved knowledge of CC-induced flood risk and risk knowledge sharing through the introduction of river basin modelling tools and technologies for strategic flood risk assessment based on EUFD and development of basin flood hazard maps

Output 1.3. GIS-based vulnerability, loss and damages assessment tools and database established to record, analyse and predict flood events and associated losses

Component 2: Transboundary institutional, legal and policy framework for FRM

Outcome 2: Improved 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.

Output 2.1: Drin River Basin FRM Policy Framework and improved long-term cooperation on FRM

Output 2.2. Regional, national and sub-national institutions (including meteorological and hydrological sectors) are trained in climate-resilient FRM, responsibilities clarified and coordination strengthened

Output 2.3. Drin River basin Integrated CCA and FRM Strategy and Plan developed

Component 3: Community-based climate change adaptation and FRM interventions

Outcome 3: Strengthened community resilience through improved flood management, through implementation of structural and non-structural measures and enhanced local capacity for CCA and FRM

Output 3.1. Introduction of appraisal-led design for structural and non-structural measures using climate risk information and cost-benefit appraisal methods and application of methods to the detailed design of prioritised structural and non-structural measures for three riparian countries

Output 3.2. Construction of structural risk reduction measures in prioritized areas

Output 3.3. Strengthened community resilience to flooding through the participatory design and implementation of non-structural community-based resilience, adaptation and awareness measures

2. Summary of Environmental and Social Impact Analysis

As part of project design, an SESP was prepared in order to avoid any high environmental and social risks and to maximize environmental and social co-benefits. The SESP found the following pre-mitigation risks and overall risk categorization:

1. The level of risk resulting the application of the SESP for the project is “Moderate”.

2. Pre-mitigation Risks that are considered significant are:
    a. Possibility of disturbance to critical habitats and/or sensitive environmental areas, as structural measures are proposed in proximity to important birding and spawning areas, including legally protected areas. Narrow focus on flood control may not integrate aspect of water management to account for water availability to wetlands.
    b. Possibility that physical structures will exacerbate existing bank erosion processes and hydraulic regimes that may lead to maladaptation.
    c. Potential outcomes of the project will be sensitive to impacts of climate change and likelihood if flood projections are not accounted for in structural design.
    d. That the project indirectly will increase social and environmental vulnerabilities through measures such as the diversions of channels and river flows, dredging and de-stilting.
    e. Possibility that the project will reinforce existing gendered differences in participation and decision-making.
    f. Possibility that the project will not prioritize the needs of the most vulnerable /marginalized stakeholders
    g. Possibility that the project will have inadequate commitment from local authorities in regards to the maintenance of infrastructure.
3. The timely implementation of mitigation and management measures, as outlined in the SESP and below will serve to mitigate the potential risks encountered.

Design considerations to avoid risks and maximize co-benefits:

1. Ensuring that the implementation of “grey infrastructure” and hard structural flood reduction measures does not exacerbate bank erosion, disturb sensitive environmental systems by accounting for the provisions of the protected area management plans.

2. All structural measures with significant potential impacts of ecosystems will be subject to an environmental impact assessment according to national regulations.

3. The location of embankments will be chosen to maximize the flood control potential, but not in areas of accelerated bank erosion.

4. Locations of embankments will also be based on the prioritization of local government and community representatives, while also accounting for extreme socio-economic vulnerability of marginalization, particularly prioritizing areas where people have inadequate shelter (Roma community).

5. Ensuring that implementation of hard structural measures does not happen in isolation of habitations and biodiversity conservation requirements risking adverse effects of wetland loss, by conducting hydrological modelling at the basin scale that allows for adequate water availability to wetlands. It will also be important to prioritize planning of cross-sectoral water management at the national scale, to ensure timed releases and water availability for ecosystem functions prioritized alongside energy requirements.

6. Developing capacity to identify and manage the underlying root causes to flood risks (such as deforestation, lack of strategic water management, waste management, lack of modelling for over deign of structural measures based on future flood conditions) rather than focusing on reactive and prevention measures. Likewise, facilitating synergized hazard mapping where possible, to capture other aspects of the hydrological cycles, variability or the state and behaviour of hydrological systems in the Drin River Basin.

7. Emphasis on local ownership and reinforcement of the local capacity to maintain structural flood control measures such as embankments (as well as a commitment of co-finance for maintenance).

3. Stakeholder Consultation and Gender Analysis and Action Plan

As part of UNDP Social and Environmental Screening Procedure, and in order to validate and scope identified risks, understand the project context in depth, and integrate the perspective of a range of stakeholders, two annexes complementary to the Environmental and Social Management Plan were prepared. Please refer to Annex 9 Stakeholder Engagement Plan, and Annex 8 Gender Assessment and Action Plan. The Stakeholder engagement plan includes description of the Grievance Redress Mechanism, and additional, measure to mitigate the project's environmental and social risks.

Annex 8: Gender Assessment and Action Plan

Integrated climate-resilient transboundary flood risk management in the Drin River basin in the Western Balkans

I. Introduction

The Adaptation Fund (AF) proposal "Integrated climate-resilient transboundary flood risk management in the Drin River basin in the Western Balkans" (Project) seeks to strengthen the resilience of communities and livelihoods in the Drin River Basin (DRB) to climate-induced flood risks, in Albania, Montenegro and the Former Yugoslav Republic of Macedonia (Macedonia)[7]. The Project proposes to implement an integrated climate-resilient river basin FRM approach in order to strengthen the capacity and resources to manage flood risks at regional, national and local levels and, through the implementation of early warning (EW) systems, to enhance the resilience of vulnerable, largely rural communities in the DRB.

The Gender Assessment addresses gender relations in the Western Balkan region, with a specific focus on the gender and social inclusion issues and recommendations that are relevant to the design, implementation and monitoring of the Project; and, a Gender Action Plan identifies specific initiatives that are proposed to strengthen gender mainstreaming throughout the different outputs and activities of the Project. The Gender Assessment and Action Plan (GAAP), is based primarily upon available data from studies conducted by the governments of the three countries, United Nations (UN) organizations and donor and research agencies, as well as consultations with local gender experts.

II. Socio-Economic Overview of the Regional Countries

Albania and Montenegro both have populations of 2-3 million; Macedonia is a significantly smaller country with a population of 0.64 million[8]. In all countries, the rural population accounts for approximately 30-40% of the total, with the majority of people living in urban areas. Albania is a majority Muslim country (57%) and more than 80% of citizens are ethnic Albanians. Macedonia and Montenegro are both majority Orthodox Christian countries. In Macedonia, ethnic Albanians account for one-third of the population. Over 90% of the population of Montenegro are of Slavic origin, including 45% Montenegrin, 29% Serb and 15% Bosnian. In all three countries, Roma and other ethnic minorities each account for 1-3% of the population, and small Roma populations can also be found in the high risks areas within the floodplains falling within the project intervention areas [9].

The male/female ratio at birth is slightly greater than 1.0 in the three countries, but averages 0.98-0.99 due to the greater life expectancy of women. The populations of the countries are aging, with people aged 65 years or older now accounting for 10-15% of total populations. While age-related dependency ratios for elderly (18-21%) are lower than ratios for youth (24-27%), they are increasing.

The countries are in the process of transitioning towards open-market systems. The service sector contributes from 54% (Albania) to 71% (Montenegro) to GDP; and, accounts for from 40% (Albania) to 75% (Montenegro) of employment. In Montenegro, 20% of GDP comes from tourism; the number of tourists visiting Montenegro each year equals the country's population. Agriculture throughout the region is largely family-scale subsistence cultivation of crops and raising livestock. It is most important in Albania where it contributes 23% to GDP and employs 42% of the labor force. In Montenegro and Macedonia, agriculture contributes 10% or less to GDP and employs 8% (Montenegro) and 17% (Macedonia) of the labor force. Poverty levels are low in Montenegro (9%) and Albania (14%), but significantly higher in Macedonia (22%).

[7] The three countries target by the Project will be referred to as the "regional countries" or the "region" throughout this document.

[8] The data reported in this section were obtained from the 2018 CIA World Factbook (https://www.cia.gov/library/publications/the-world-factbook/).

[9] Note: Various sources indicate that the Roma population, in particular, may be underreported in each country.

III. Gender Equality in the Region

A number of indices have been developed to measure and track the progress of countries to promote national development and achieve gender equality. The United National Development Project (UNDP) uses a human development index (HDI), as well as gender measures including the Gender Development Index (GDI) and the Gender Inequality Index (GII). The HDI is a composite index that combines data on per capita income with data on education and health achievements. The progress in regional countries places them among those with very high human development (Montenegro) and high human development (Albania and Macedonia)[10]. All three countries have steadily increased their HDI over the period since 1990[11].
The GDI measures gender disparities in the level of human development, looking specifically at how women "score" on income, education and health. The closer the ratio is to 1.00, the smaller the gap between women and men. The GII measures gender inequality based on women's access to reproductive health, their participation in the labor force and their empowerment in terms of their share of the population with at least some secondary education and their representation in national parliaments. A low GII value signifies low inequality between women and men. The regional countries all have GDI and GII values that support a view of higher than average levels of equality between women and men, commensurate with the overall high level of development.

Table 1: UNDP Development and Gender Indices

	Albania	Macedonia	Montenegro
HDI	0.785	0.757	0.814
GDI	0.976	0.946	0.956
GII	0.238	0.149	0.132

Source: UNDP, 2016

The Global Gender Gap Index (GGGI) of the World Economic Forum (WEF) examines the gap between women and men in four categories: economic participation and opportunity, educational attainment, health and survival; and political empowerment[12]. In the regional countries, gender parity is high in the areas of education and health, but the overall level of parity is reduced due to lower economic and political participation of women.

Table 2: WEF Global Gender Gap

	Albania		Macedonia		Montenegro	
	Score	Rank	Score	Rank	Score	Rank
Global Index	0.728	38	0.702	67	0.693	77
Economic participation & opportunity	0.673	70	0.636	96	0.653	88
Educational attainment	0.986	87	0.985	90	0.988	83
Health and survival	0.968	120	0.976	65	0.974	75
Political participation	0.284	31	0.209	58	0.157	79

Source: WEF, 2017. Scores: Parity = 1.00; Imparity = 0.00; Ranks are among a total of 144 countries.

In 2014, the Organization for Economic Cooperation and Development (OECD) developed the Social Institutions and Gender Index (SIGI), a composite index that measures gender discrimination on a scale increasing from 0 to 1, using 14 indicators grouped into five sub-indices: discriminatory family code, restricted physical integrity, son bias, restricted resources and assets, and restricted civil liberties[13]. The index for Albania (0.2476) signifies a high level of gender discrimination while the index for Macedonia

[10] UNDP, 2018. Human Development Indices and Indicators: 2018 Statistical Update.
[11] Ibid.
[12] World Economic Forum, 2017. The Global Gender Gap Report 2017.
[13] OECD, 2014. Social Institutional and Gender Index (SIGI), 2014 Synthesis Report

(0.1345) is indicative of a medium level of gender discrimination[14]. Both countries have a family code that is not significantly discriminatory towards women, however both countries have a strong gender bias for sons. The difference in the overall indices is a lower level of restricted civil liberties in Macedonia.

IV. Social and Cultural Norms

While the regional countries are transitioning to market economies and, in many instances, are signatories to international conventions and have adopted legislation to promote gender equality[15], gender stereotypes persist that directly and adversely affect women's opportunities and empowerment. They are discussed here because they underscore many of the issues related to women's education, their work and their agency.

There are widely held beliefs among both women and men in the regional countries that it is "better for everyone involved" if men earn the money and women take care of the home and children and that women have lower leadership skills than men[16]. A strong tradition of patriarchal structures in each country is aligned with the conservatism of the dominant religions. The education system and the media throughout the region further reinforce the influence of gender stereotypes[17].

Notwithstanding, a survey conducted in 2016 indicates changing attitudes[18]. In particular, a significant majority of men as well as women in the regional countries espouse views that women are as competent as men as business executives and it is important for daughters to get a university education.

Table 3: Changing Attitudes Towards Women (% survey respondents)

	Albania		**Macedonia**		**Montenegro**	
	M	**F**	**M**	**F**	**M**	**F**
Women are as competent as men as business executives	70	82	82	84	79	89
It is important that my daughter has a university education	86	86	77	80	82	83

Source: EBRD, 2017

V. Education

Overall, education levels are high in the regional countries; and, gender parity is strong. In Albania and Montenegro, 90% or more of adults in these countries have some secondary education; and, gender parity has been achieved in Albania and is strong in Montenegro. Although secondary education is now compulsory in Macedonia[19], available data indicate a much lower proportion of adults who have some secondary education overall and, particularly, for women.

Among students in school, the rates of net enrolment and attendance in primary and secondary school are generally high in all regional countries. There is frequently no gender gap although when one does occur, it is often in favor of females. As a result, in all countries, nearly all adults, as well as young people are literate.

Educational opportunities and outcomes, however, are not as good for women in rural areas and from ethnic minority communities. In Macedonia, for example, nearly 25% of women in rural areas have little or no formal education, compared with 12% of rural men and 10% of urban women[20]. Women and sometimes

[14] No data are reported for Montenegro.
[15] See Section 8 below.
[16] Civil Society Forum (CSF), 2018. Gender Issues in the Western Balkans.
[17] Ibid.
[18] European Bank for Reconstruction and Development (EBRD), 2017. Life in Transition;
[19] Paunova, 2013. Gender Mainstreaming in the Republic of Macedonia: Beyond the EU Lenses.
[20] Paunova, 2013. Op cit.

men from ethnic minority communities in all countries are more likely to have significantly less or no education, compared with other groups.

At the tertiary level, women often outnumber men. However, women tend to pursue general studies or studies in social sciences, business or law, whereas men are much more likely to get degrees in technical fields such as the sciences, mathematics, engineering, etc. Women's choices reflect the persistence of gender stereotypes about appropriate or acceptable fields for women that can also undermine women's self-belief and confidence in their capabilities[21].

Table 4: Educational Achievement			
	Albania	**Macedonia**	**Montenegro**
Population with at least some secondary education			
Aged 25+ years	92.9	47.8	89.4
F/M ratio	1.00	0.72	0.90
Literacy rate (% adults, 15+ years)	97.2	97.8	98.4
Youth literacy rate (% aged 15-24 years)			
Women	99.0	98.5	99.1
Men	99.9	98.8	99.4
Share of female graduates in technical fields at tertiary level (%)	13.4	15.7	n/a
Source: UNDP, 2016; www.unicef.org			

VI. Women's Economic Opportunities

Women in the region are less likely than men to participate in the labor force or to be employed[22]. Large gender gaps exist at the national level in the three countries (see table below). The gaps are even larger for women who live in rural areas and/or come from ethnic minority communities or are older. Education also plays an important role: in Montenegro, 70% of women and men with tertiary education are employed while among people with primary school plus some vocational education, 33% of women are employed compared with 58% of men[23].

The factors the contribute to women's lower participation in economic activities include the time demands of family and household responsibilities, combined with the lack of child care; traditional values that pressure women to marry young and have children and discourage them from working outside the home; and, lower education and job skills and, in ethnic minority areas, linguistic limitations; limited mobility and access to transport; and, lack of social and political connections that assist men to get jobs[24].

Table 5: Economically Active Women and Men			
	Albania	**Macedonia**	**Montenegro**
Labor force participation rate[10] (% working age population)			
Women	45	43	43
Men	65	57	68
Employment-population ratio[10] (% working age population), 2016			
Women	38	33	41

[21] Shkullaku, 2013, cited in Browne, 2017. Gender Norms in the Western Balkans.
[22] The labor force participation rate (LFPR) measures the proportion of the working-age population that is currently working or seeking work. The employment-population ratio (EPR) measures the proportion the working-age population that is currently employed.
[23] World Bank (WB), 2013. FYR Macedonia: Gender Diagnostic: Gaps in Endowments, Access to Economic Opportunities and Agency.
[24] Paunova, 2013. Op. cit.

Table 5: Economically Active Women and Men			
	Albania	**Macedonia**	**Montenegro**
Men	53	51	49
Unemployment			
Total (% of labor force)	13.9	16.0	23.0
Youth (% 15-24 years)	30.0	33.1	46.9
F/M unemployment ratio	0.93	0.93	0.92
Women's wages relative to men's (% difference)	-18	-20	-16
Firms with female manager/owner (%)	20/17	18/36	17/22
Women who own land (% property owners)	38	17	25
Sources: Browne, 2017; FAO, 2016; Paunova			

Women who work tend to be employed in the service sector, including retail/wholesale, health, education, tourism, and financial services; and, in public administration. For example, in Montenegro, 85% of women's employment is in the service sector; half of people with tertiary education work in public administration, of which 65% are women[25]. The occupational choices women make reflect their education as well as social norms about appropriate work for women outside the household. In Montenegro, the Labor Law further limits women's opportunities to work in industry or on civil works and prevents most women from working at night[26].

Among women with wage or salaried work, there are significant gender gaps in the wages earned compared with those of men; on average, women's wages tend to be 15-20% lower, that are as much as twice as high for rural and ethnic minority women[27]. The sectors in which women work and the fact that many women interrupt their working when they are married and have children at home are among the reasons; however, analyses suggest that a major reason for the gaps is gender discrimination[28].

Very few women in urban and rural areas are self-employed or own and operate businesses. In Macedonia, for example, 12% of women compared with 20% of men started businesses, as reported in a 2010 survey; however, women and men were both equally successful[29]. Across the three countries, the numbers of women who manage and/or own businesses is very low.

Women are more likely than men to be engaged in unpaid work as family laborers, particularly in rural areas where agriculture is a main household economic activity. In Albania, for instance, agriculture employs more than 50% of working women, of whom 87% are unpaid family workers[30]. Further, women farmers lack access to and/or control of important resources. In all countries, men overwhelmingly are the owners of property as opposed to women, including agricultural land[31]. While women have legislated rights to inheritance, traditional practices favor sons over daughters[32]. Cultural norms, gender stereotypes, lower education and limited mobility contribute to women farmers having less access than men to agricultural extension, improved technologies, markets, farmers' associations, credit and other resources.

[25] WB, 2013. Op cit.
[26] Ibid.
[27] Browne, 2017. Op. cit.
[28] Paunova, 2013. Op cit.
[29] WB, 2013. Op cit.
[30] FAO, 2016. Gender, agriculture and rural development in Albania.
[31] Brown, 2017, Op. cit.
[32] WB, 2013. Op cit.

VII. Agency

1.1 Political participation

Women are underrepresented in government and senior, decision-making positions in the region, notwithstanding the adoption of quotas for the election of women to national parliaments. Macedonia is the only country that meets its quota of 33%, which is prescribed by the 2006 Election Code that stipulates that one of every three positions on a party's candidate list must be a woman[33]. Albania has slightly increased women's representation in parliament in recent years[34], however in both Albania and Montenegro, the proportion of women members is about two-thirds of the legislated quotas. In addition, very few women hold senior, decision-making positions in government. In Albania, more than one-third of government ministers are women, but the percentages drop to below 20% and below 10%, respectively, in Macedonia and Montenegro.

Table 6: Women's Political Participation, National Government			
	Albania	**Macedonia**	**Montenegro**
Women elected to Parliament (% total members)			
Quota	30	30	33
Actual (2016)	21	23	33
Female ministers (% total)	35	19	8
Source: World Economic Forum, Global Gender Gap Report 2016			

At the sub-national level, only 15% of mayors or heads of municipal councils are women and women account for only 35% of municipal councilors[35]. In 2015, Albania adopted a quota of 50% women on candidate lists for municipal elections[36]. Albania and Macedonia both have women's alliances that advocate for greater political participation of women; and, Montenegro has a cross-party pool of gender equality trainers at the national level.

Membership in political parties is low in the regional countries and, with the exception of Montenegro; there is a significant gender gap[37]. In Albania, more than one-quarter of men belong to a political party, but only 15% of women. In Macedonia, 17% and 10%, respectively, of men and women are party members. In Montenegro, just under 15% of both women and men are party members. Women's options to vote are further limited, for instance, in ethnic minority areas where men will often cast votes on behalf of women[38].

1.2 Participation in Voluntary Associations

The participation of women and men in voluntary associations is generally higher than their participation in political parties and there is a small gender gap[39]. Voluntary associations may include church and religious organizations, labor unions, environmental organizations, women's groups, farming cooperatives and others. In regional countries, 25-30% of men are active in voluntary associations and 20-25% of women.

1.3 Decision-Making in the Household

Little information is available about women's opportunities to influence or make decisions about household economic activities or the management of the household. How decisions are made is directly related to the balance of power. Therefore, the dominance of men as "head of household" suggests that men may make all major decisions. In Albania, the opportunities for women to make decisions alone or in collaboration with

[33] Browne, 2017. Op cit.
[34] Ibid.
[35] UNDP, 2016. Op. cit
[36] Browne, 2017. Op cit.
[37] EBRD, 2017. Op Cit.
[38] Paunova, 2013, Op Cit.
[39] Ibid.

their husbands for instance about women's earnings will be used increases for women who are employed and education[40]. In rural areas, rigid gender roles and the dominance of men as the head of household limit women's decision-making related to agricultural and other economic activities of the household[41].

1.4 Gender-Based Violence

Gender-based violence (GBV) is widespread across the regional countries; women are the most frequent victims and the incidence is particularly egregious among ethnic minority communities[42]. There is increasing public awareness of the issues of GBV due to initiatives by governments, women's organizations and other NGOs, including behavior change campaigns directed towards men. Strategies and laws against domestic violence and other forms of GBV have been adopted that are, however, not always rigorously implemented or enforced. Women also tend to under-report GBV due to mistrust of authorities and cultural norms of acceptance.

Several factors have been identified as contributing to the incidence of GBV, particularly that patriarchal beliefs and attitudes predominant throughout the region. Many women as well as men believe it is acceptable for a man to physically abuse a woman in certain circumstances. Small arms and light weapons (SALW) are prevalent throughout the region, owned and used predominantly by men. Studies have shown a strong correlation between the availability of SALW and violence against women and girls[43]. Regular and frequent alcohol consumption by men has increased in Montenegro and other areas of the region[44], with the likelihood this contributes to domestic violence. Psychological stress is also high among both men and women in Montenegro (40% and 45%, respectively)[45].

VIII. Legal and Administrative Framework for Gender Equality

The three countries are, each, signatories to the Convention Against All Forms of Discrimination Against Women (CEDAW), and have adopted national plans for its implementation. They are also all candidates for accession to the European Union (EU) and are working towards meeting EU gender equality standards[46]. This involves adoption of national legislation and action plans and the establishment of administrative structures to promote gender equality, as summarized in the following table.

Table 7: Gender Equality Legal and Administrative Framework

	Albania	**Macedonia**	**Montenegro**
International conventions on gender equality, e.g., CEDAW	✓	✓	✓
Initiatives to comply with EU gender equality standards	✓	✓	✓
National legislation and/or action plans			
Gender equality	✓	✓	✓
GBV/domestic violence	✓	✓	✓
Anti-discrimination	✓	✓	✓
Administrative structures for gender mainstreaming			
Ministry responsible for gender equality	✓	✓	✓

[40] FAO, 2016. Op cit.
[41] Ibid.
[42] Ibid.
[43] Browne, 2013. Op cit.
[44] WB, 2013. Op cit.
[45] Browne, 2017. Op cit.
[46] Cornelissen, M., 2012. Women's Rights in the Western Balkans in the Context of EU integration: Institutional Mechanisms for Gender Equality ((https://ravnopravnost.gov.hr/UserDocsImages/arhiva/images/pdf/Izvje%C5%A1%C4%87e_Womens%20Rights%20in%20the%20Western%20Balkans%20in%20the%20Context%20of%20EU%20Integration.pdf)

Inter-ministerial coordination on gender mainstreaming	✓	Unclear	Unclear
Gender equality focal points at national and/or local level	Partial	✓	✓
Gender budgeting	✓	Unclear	Unclear
Gender-responsive M&E	✓	Partial	Partial
Sex-disaggregated data	✓	Partial	✓
Gender mainstreaming capacity development projects	Unclear	Unclear	✓
Source: Cornelissen, M., 2012			

Notwithstanding the legislation and administrative structures that exist across the regional countries, there remains a lack of or insufficient political and government awareness and/or support for promoting gender equality and mainstreaming gender; and, inadequate personnel, other resources and capacity-building projects[47]. Further in the regional countries, sectoral legislation and strategies that are relevant to issues addressed by the Project such as environment, water resources management and sustainable development are, in some instances, gender neutral[48].

IX. Gender Issues

The Project will engage stakeholders at two distinct levels to address climate change and disaster risk reduction in the context of the increased incidence of flooding in the DRB, i) working with national institutions to build the institutional capacity of national and local agencies and ii) working with local communities to increase the resilience of households and livelihoods. Gender issues arise at both levels, based on the information compiled in the Gender Assessment.

Women have demonstrated that they bring unique experiences and valuable skills that benefit the formulation of strategies to prevent and reduce risks as well as the preparedness and response of communities to increased flooding and other impacts of climate change. Women and their children are often at greater risk than men of injury or death due to flooding; formal and informal communication channels that reach men more easily than women may deprive women of early warnings; women's traditional reproductive roles place greater burdens on their shoulders when flooding results in displacement, food shortages and family illness; and, these demands often curtail or prevent women from their economic activities that are essential for long-term recovery of households and communities. By recognizing and promoting the participation and unique capacities of women, institutions and communities can strengthen their resilience as well as gender equality.

In the context of the Project, some of the key gender issues that can be identified from the preliminary assessment include:

i) There are very few women presently in the workforce who have the academic qualifications to assume or advance to senior technical or management positions in areas related to water resource management, climate change and disaster risk management;
ii) Young women who pursue higher education and aspire to work as professionals are encouraged by family and other to choose other fields that are considered more appropriate for women; and,
iii) At the community level, the demands of women's family responsibilities, their limited mobility and, as well, cultural, social and religious norms mean that women are less likely and are not encouraged to participate in community affairs and, when they do, they are not recognized as leaders or decision-makers.

[47] Ibid.
[48] Browne, 2012. Op cit.

X. Recommendations

For gender mainstreaming to be effective and efficient, it must be considered throughout all stages of the project cycle. The following are recommendations have been incorporated into the design of the project and are also indicated as part of the project's gender action plan for ensuring that the Project in its implementation optimizes the opportunities to that the actions to meet objectives are gender responsive and socially inclusive.

1.5 Gender analysis

The project is committed to ongoing participatory gender analysis required to translate existing conditions, opportunities and constraints identified at national levels into the Gender Assessment, to continue to mainstream gender-responsiveness into development of methods, tools and institutional capacity-building for the Project. As a starting point for gender-responsiveness, the following can be used to supplement the Gender Action Plan provided below:

i) An engendered institutional analysis of key partner institutions at the regional, national and sub-national levels, to identify the participation and roles of women and men in management, professional and technical positions and administration; and, the policies, procedures, methods and other resources that are relevant to the Project design, implementation and monitoring. Currently gender-disaggregated data is lacking in regards to gender representation within the relevant institutions in the Drin Basin.

ii) As training and capacity building are key components of the project, a participatory training and capacity-building needs assessment can be carried out to identify the needs, priorities and preferred modalities to increase knowledge, capacity and skills among both women and men in partner institutions particularly at management, professional and technical levels, to develop and adopt gender-responsive strategies, methods and tools for the work of the Project at institutional and community levels; The can also include training of local institutions in the collection of gender-disaggregated data in regards to flood impacts and,

XI. Stakeholder engagement

The Project includes a stakeholder engagement plan (SEP), which demonstrated the participatory process through which the project was designed, and ensures continued engagement of beneficiaries at the institutional and communities levels in implementation and monitoring of activities, in particular the voices of local communities and groups that are vulnerable due to gender, religion, ethnicity or economic well-being. Among key stakeholders, gender experts familiar with the national gender context were consulted, integrating as well concerns of intersectional marginalization, of beneficiaries (the poor and/or ethnic and religious minorities), and hence intervention locations have been chosen to minimize the impacts of floods where populations are most vulnerable, including Roma populations in the project area.

XII. Monitoring and evaluation

Consistent monitoring of policies and project including the identification and tracking of gender performance indicators is not a strength among regional countries[49]. Where it has occurred, for instance, in case of monitoring of the national gender strategy in Albania, the support of donor agencies and international NGOs has been important; in general, the governments of the regional countries do not yet have sufficient experience and capacity[50]. It is recommended therefore as part of the project's monitoring and evaluation (M&E) plan, key gender performance indicators and targets as identified below bring focus on the outcomes and impacts of Project activities for women and men, as well as Project outputs; and, includes participatory methods and tools to engage the women and men who are beneficiaries in the evaluation process. This approach can also serve as a model to enhance the capacity of the institutional partners of the Project.

[49] CSF, 2018. Op cit.
[50] Ibid.

XIII. Gender Action Plan

The following Gender Action Plan (GAP) constitutes an identification of actions, indicators and targets associated with each of the outcomes of the Project, to strengthen opportunities or gender mainstreaming and greater gender responsiveness of activities.

<table>
<tr><th>Component/Outcomes
Outputs</th><th>Actions</th><th>Indicator and Targets</th></tr>
<tr><td colspan="3">Component 1: Hazard and Risk Knowledge Management Tools
Outcome: Improved climate and risk informed decision-making; availability and use of climate risk information</td></tr>
<tr><td>Output 1.1. Strengthened hydrometric monitoring networks in all riparian countries based on a unified optimized basin-scale assessment of monitoring needs</td><td rowspan="3">1- Develop methods, tools and guidelines for conducting socio-economic surveys to collect, disaggregate, analyze and record data by sex, age, ethnicity, poverty levels and other relevant parameters.
2- Mainstream gender and social inclusion (GSI) into socio-economic and vulnerability assessments of CC-induced flood risks i) by using Participatory Vulnerability Approach (PVA) tools in order to ii) identify relevant GSI dimensions of existing vulnerability, e.g., damages/losses, perceptions of climate change, existing adaptation strategies, coping capacities, etc. and ii) define gender-responsive and socially inclusive adaptation options to reduce vulnerability.</td><td rowspan="3">1- Socio-economic databases are established and maintained that include data disaggregated by sex, age, ethnicity, poverty levels and/or other relevant data.
2- Improved knowledge sharing of GSI dimensions of CC-induced flood risks and adaptation strategies
3- GIS-based vulnerability assessment tools comply with EUFD standards for addressing GSI dimensions (receptors, exposure, infrastructure, etc.)(</td></tr>
<tr><td>Output 1.2. Improved knowledge of CC-induced flood risk and risk knowledge sharing through the introduction of modelling tools and technologies for strategic flood risk assessment based on EUFD and development of basin flood hazard maps</td></tr>
<tr><td>Output 1.3. GIS-based vulnerability, loss and damages assessment tools and database established to record, analyse and predict flood events and associated losses</td></tr>
<tr><td colspan="3">Component 2: Transboundary FRM institutional, legal and policy framework
Outcome 2: Improved 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.</td></tr>
<tr><td>Output 2.1: Drin River Basin FRM Policy Framework and improved long term cooperation on FRM</td><td>1- Develop TOR and/or guidelines to address GSI dimensions as integral parts of the review and development of basin-wide FRM policy framework and policies for priority sectors.
2- Develop TOR and/or guidelines for to address GSI dimensions in assessments of the institutional capacity of all stakeholders, not just women's organizations, including mandates (policies, governance, procedures, etc.),</td><td>1- Basin-wide and sectoral FRM policies mainstream GSI dimensions.
2- Stakeholder and Governance Analyses document the GSI interests, influence, capacity and outstanding issues of different stakeholders.
3- Institutional capacity development and training project(s) i) increase knowledge of and capacity to use GSI methods and tools, ii) relevant to the geographic and/or functional</td></tr>
</table>

Component/Outcomes Outputs	Actions	Indicator and Targets
Output 2.2. Regional, national and sub-national institutions (including meteorological and hydrological sectors) are trained in climate-resilient FRM, responsibilities clarified and coordination strengthened Output 2.3. Drin River basin Integrated CCA and FRM Strategy and Plan developed	resources (personnel, budget, etc.), capacity development needs (staff recruitment, training etc.) 3- Develop institutional capacity development and training plan(s) that i) strengthen knowledge and use of methods, tools to address GSI dimensions of CCA, FRM and related issues, ii) align capacity development activities with the geographic and/or functional mandates of different stakeholders/institutions and iii) encourage the participation of women and men, particularly among practitioners and communities. 4- Review and, as relevant, revise TOR for the Drin EWG Floods to strengthen its capacity to address GSI dimensions.	mandates of different stakeholders. 4- Increased participation of women as well as men in institutional capacity development and training activities, particularly among practitioners and community participants.
Component 3: Priority community-based climate change adaptation and FRM interventions Outcome 3: Strengthened resilience of local communities through improved flood forecasting and early warning, implementation of structural and non-structural measures and the strengthened capacity for CCA ad FRM at the local level.		
Output 3.1. Improved flood forecasting and early warning at the transboundary level through the establishment of a DRB FFEWS Output 3.2. Design and construction of structural risk reduction measures in prioritized areas using climate risk information and cost-benefit appraisal methods Output 3.3. Strengthened community resilience to flooding through the participatory design and implementation of non-structural community-based resilience, adaptation and awareness measures	1- Develop TOR and/or guidelines for development of transboundary flood forecasting and EWS systems that mainstreams relevant GSI dimensions, particularly as it relates to i) dissemination and communication and ii) response capabilities. 2- Develop TOR and/or guidelines to ensure that GSI dimensions are fully integrated into all feasibility assessments, detailed design, impact assessments and mitigation and monitoring measures for structural and non-structure FRM measures. 3- Develop guidelines and/or projects for training for municipalities/communities that i) raise awareness of community-level GSI dimensions of FRM and EWS and ii) provide methods and tools to strengthen GSI dimensions and the participation of women as well as men in the design, implementation and maintenance of non-structural FRM measures.	1- Gender is mainstreamed in regional flood forecasting and EWS in terms of i) addressing GSI needs, priorities and capabilities and ii) increased participation of women and women's organizations. 2- Structural and non-structural FRM measures are gender-responsive and socially inclusive. 3- Local communities have increased knowledge of GSI dimensions of FRM and EWS including the needs, priorities and contributions of women and other social groups.

Annex 9: Stakeholder Consultations and Stakeholder Engagement Plan

Integrated climate-resilient transboundary flood risk management in the Drin River basin in the Western Balkans

1. Introduction

The preparation of the Adaptation Fund (AF) proposal "Integrated climate-resilient transboundary flood risk management in the Drin River basin in the Western Balkans" was carried out in collaboration and close consultation with a range of stakeholders, drawing on the expertise of the United Nations Development Program (UNDP) staff at the Regional and National levels, and a team of International and National experts, National government stakeholders, as well as a variety of other actors including local government representatives, and community members in targeted project areas in all three countries implicated in the project, including Albania, the Former Yugoslav Republic of Macedonia and Montenegro.

At Concept development stage, stakeholder consultations missions were conducted in each Riparian country to meet with key stakeholders. The aim of the missions was as follows:

1) To gain an understanding of the current status of the institutional frameworks and capacities for FRM in each country
2) To determine requirements within each country to strengthen FRM, particularly within the Drin Basin and identify national priorities
3) To gain an understanding of current regional/basin cooperation on FRM and identify areas for strengthening cooperation in line with the proposed project outcomes.
4) To identify and collect necessary data for the development of the project proposal
5) To understand previous and ongoing initiatives on FRM by institutions and partners, to ensure synergy and avoid duplication/overlap of effort
6) To identify potential co-financing

Furthermore, the project idea was presented to the Drin Core Group in June 2018 and the national delegations from the DCG countries supported the further development of the proposed project.

During full proposal development, the following consultations were held (please see Annex 9 for the records and reports on the below consultations):

1) Presentation of the Concept at the Drin Core Group meeting in November 2018
2) Mission to all Riparian countries by the UNDP Safeguards and Stakeholder Engagement Consultant.
3) Mission to Macedonia by Project Formulation lead which included Skype call with Drin Core Group
4) A series of consultations with GIZ to discuss coordination and synergy between the two projects and to ensure that any risk of overlap in the project design is avoided
5) Field consultations with community beneficiaries in all three countries (at the future structural risk reduction sites).

Two missions of the international consultant on climate change adaptation and flood risk management project development, Mrs. Margaretta Ayoung, took place to Albania, FYRM and Montenegro with the participation of UNDP Regional Technical Advisor, and UNDP Environment Portfolio staff in the three riparian countries, to meet with key stakeholders, both primary and secondary. During these missions there were consultations with variety of stakeholders, including with other bilateral and multilateral actors to maximize synergies, build on existing experience and to get insights for project activities and outputs. An International Environmental & Social Safeguards and Gender Consultant also undertook a mission to the region, meeting with a range of national and local stakeholders, and undertook site visits, where structural measures for flood control were proposed in the river basin, as well as validate the technical aspects of the

project design, in regards to the scoping and avoidance of environmental and social risks. This field mission also included site visits to environmentally sensitive areas, protected areas, and areas in which vulnerable groups (such as the Roma community) were settled in flood-prone areas targeted by the project. A summary record of the stakeholder consultations, with dates and participants is provided below.

2. Summary of stakeholder engagement activities

Mission of the International Expert on Environmental and Social Safeguards and Gender:

ALBANIA, 5-8 NOVEMBER 2018

Meeting #1 with UNDP Albania country office, Environment and Climate Change team and experts
Attendees: Sohinee Mazumdar, International Expert on Social and Environmental Safeguards, UNDP; Elvita Kabashi, Head of Environment and Climate Change UNDP Albania CO; Eglanti Bruci, Consultant responsible for vulnerability and adaptation chapter of the Albanian national communications, former member of the national hydromet institute, previous coordinator of Drini Mati river deltas climate change adaptation project; Mirela Kamberi, Project Manager of the fourth National Communication and 1st BUR provided insights of the process related to the policy Strategic Environment Assessment of Small Hydro Development and stakeholder engagement; Odeta Cato, Project Coordinator briefed on the environmental information management system in Albania and elaborated on indicators and protocols, focusing on climate related indicators; Violeta Zuna, Project Manager on marine and coastal protected areas; Eno Dodbiba, Technical Expert in the area of waste and marine and coastal pollution. The meeting was focused on ongoing initiatives; main problematics related to resources management and UNDP Albania best practices and Lessons learned from participatory risk assessments with communities in Drin- Mati.

Meeting #2 with Ministry of Environment and Prof. Dr. Pellumb Abeshi, General Director of Environmental Policies

- Discussed the specific issues that need to be integrated into the project design including the communities that are living in these areas for direct consultation and engagement.
- It is an obligation according to Albania law that every river needs to have a water management plan (including agriculture, urban area, energy) and they - the main focus in in terms of having water quality and use calculations. Watershed and river basin levels are accounted for, as well as the municipality and urban areas, at the same time it accounts for water, erosion and forests, they are also starting to look water availability to integrate with biodiversity, pasture, and agricultural land use
- National policy related to adaptation: they are preparing the national strategy on climate change, and they have a draft already available
- Shared information on protected areas: a national unit is responsible for the management of the protected areas according to the law and with the support of IPA - European Union program, they are improving and enforcing the capacity of the management of Pas. Discussed needs of the wetland and coastal protected areas in the area that the project will be implemented. Every protected area has a management plan, and they also have a RAMSAR sites, and the Shkodra lake is a national protected area.
- Noted importance of issues of water management with the energy sector and that flooding has implication of the integrity of the wetland areas
- Seek synergies with the ecosystem-based adaptation project GEF UNEP “Drini mate delta river” addressing adaptation for the wetlands

Meeting # 3 With GIZ on the Flood Risk Assessment and Climate Change Adaptation Project

- The meeting focused on avoiding any duplication and maximizing synergies between the GIZ and AF projects
- GIZ noted that all structural measures were designed as part of a participatory process

- The measures for the particular plan for the Shkodra area, were planned looking at the aspect of biodiversity, particularly given that another GIZ project is looking at conservation and sustainable use in the three lakes they have a very good picture of the biodiversity situation in those lakes.
- GIZ has also undertaken in depth stakeholder engagement
- The project should also refer to the diagnostic transboundary report and find synergies with the Western Balkans Gender Mainstreaming Strategy for the GEF Drini project.
- Discussed issues of the Roma minorities living in the flood areas and how to ensure involvement in the decision-making processes, they are certainly living in some of the most vulnerable flood risk areas, and that needs special attention, can draw on lessons from the EU Roma project.
- Discussed the flood early warning forecasting system with the 4 national hydromet services, still need training, data quality etc.
- Implementing the list of measures related to the EU Flood Directive, natural infrastructure preparedness, GIZ had a working group for the development of the document with representatives from the local level, the people from the prefecture also gave inputs and feedback, including representation from academia and NGOs and representatives from the local communities,
- GIZ has also included stakeholders from the Ministry of Agriculture, Ministry of Environment, and geosciences, active in the entire technical working group. During the period of 18 months they did 7 technical working group meeting and published outreach activities. While presenting the project in the city they invited all the stakeholders that might be interested in the topic, also making sure there was involvement of elderly experts on hydrology, elderly people of the communes that are affected from floods
- Most of the local damages -for the flood extent they had satellite images from Copernicus, as well as the assets at risk. They then put up the risks maps in the public places in terms of knowledge people are at least are of the flood extent, which belongs to the soft measures part of the plan
- Also noted the problem of waste plants, lack of maintenance, how to update the maps, how they can use the maps in local land use planning
- They referred to the Mott Macdonald report of 2012, comes up with measures of how floods can be dealt with in the long term. The potential costs of the measures were there. The analysis included what flood control measures would save in the long term and in this report proposed opening another channel to the sea directly “can be shared in electronic form”
- Discussed the 2010 post-flood assessment of the Drini River Basin
- Also the proposal for dredging of the Buna river, although the safeguards expert advised against this – noted that dredging of the river is proposed as flood control but may also be for the purposed of commercial transport.
- The land use that is contributing to filling the Buna up isn’t that big, but there is a relatively small area that is effected by erosion

DAY 2 Meeting and Field Visits in Albania: Shkoder

Meetings #1 with Local government officials, focal point from UNDP and national coordinator of the Albania portion of the flood risk assessment project

Institution	Participants
Shkodra Prefecture	Vehbi Gruda, Specialist for urban planning and water basin within Shkodra Prefecture
Expertise	Sohinee Mazumdar- International Expert Jak Gjini, Expert with previous experience in local coordination and technical inputs in UNDP and UNEP projects in Drini Mati River Deltas; Agim Shimaj, Expert with previous experience in Drini Mati River Deltas;
UNDP	Ornela Balla, UNDP CO Representative Eriola Keçi, Project Coordinator- “Enabling Transboundary Cooperation and Integrated Water Resources Management in the Extend Drin River basin”

Objectives and Introduction: Briefing on the objective of the project and the programme components with stakeholders, followed by a discussion on the prefecture priorities and needs in order to inform project design and siting. Moreover, discussion on structure measures to be taken in order to ensure less impact on biodiversity and no affect on Protected Areas.

The impacts of the climate-induced flooding are exacerbated by the anthropogenic pressures including rapid urbanization; deforestation; poor solid waste management; unsustainable use of land and water resources; intensive agriculture, forestry and mining activities; unsustainable tourism. 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 DRB to climate-induced floods.

Topics of Discussion

- Discussion on structure measures and other types of interventions already in place.

In the framework of "Enabling Transboundary Cooperation and Integrated Water Resources Management in the Extend Drin River basin" the following reports were developed: (i)Reports covering different subjects as institutional, socio-economic, biodiversity and legal aspects. (ii) Draft on pollution and hydrology, (iii) DDA chain analysis in development process. The bed of river Drini i Lezhes is being cleaned approximately once in three years in order to avoid flood in Lezha Municipal

- Discussion on structure and other physical measures proposed to be implemented during the project implementation.

The aim for the structure measures is to have less impact on biodiversity. It is important to highlight that the structure measures and type of interventions: (i) Do not affect the Protected Areas; (ii) Community themselves help to identify the interventions and to be covered on the measures; (iii) Institutional dynamics challenges. The local experts advice was to: (i) Transfer water from the lake of Spathara to the river branches. (ii) A continuous cleaning of the riverbeds. However it was noted that dredging has severe ecological impacts and that diversions also may carry unintended impacts on water availability to wetlands

- Discussion on what causes floods in Lezha and Shkodra Municipality and argumentation of problematic areas:

The main causes that bring to floods are considered to be (i) Lack of availability of water and interruption of river branches, (ii) Climate- change, (iii) Bad management of upstream dams (iv) Deforestation, (v) High levels of sedimentation (vi) Erosion. The international expert emphasized that upstream water management was a key to mitigating someone these issues, including releases from dams with a transboundary perspective, maintaining upstream forest cover, careful consideration of dredging, diversions and interventions along banks so as not to further exacerbate erosion, as well as a better commitment to manage solid waste to minimize blockages and improve drainage.

- Discussion on the areas, which are most prone to flooding, damage and socio-economic vulnerability:

According to the experts and the specialist for urban planning and water basin within Shkodra Prefectur, the main areas at risk are: (i) Obot, (ii) Belaj, being the most narrow part of the river where the water capacity is around 1800-2000 m3/sec, (iii) Shirsh, where flood control structures are already present, (iv) Beltoje, reaching the Marsh of Multensa and the Lagoon of Vilun.

Recommendations and Follow up:

- Consultation with Buna Water Agency for specific information regarding the structures used for the interruption of water branches.
- Consultation with "Enabling Transboundary Cooperation and Integrated Water Resources Management in the Extend Drin River basin" project, in sharing the developed reports and progress.
- Consultation with the Ministry of Agriculture and AMBU regarding the structures already installed.

For the sites visits the following areas were discussed and prioritized:

1. Areas where the most vulnerable populations are present including: Egyptian community/ Roma community in the urban areas
2. Where the Drini and the Buna branch, and maximum flooding occurs
3. Where physical structures are proposed for Drini 2 until the Marsh
4. Villages along the banks most vulnerable to flooding such as Obot
5. The structural measures that were previously built on Drini Leja

Meeting #2 with the Deputy Mayor Mr.Arben Gjuraj of the prefecture of Shkroder
gjuraj.arben@bashkiashkoder.gov.al +355 69 89 14 005

Institution	Participants
Shkodra Municipality	Arben Gjuraj, Deputy Major
Expertise	Sohinee Mazumdar- International Expert Jak Gjini, Expert with previous experience in local coordination and technical inputs in UNDP and UNEP projects in Drini Mati River Deltas; Agim Shimaj, Expert with previous experience in Drini Mati River Deltas;
UNDP	Ornela Balla, UNDP CO Representative Eriola Keci, Project Coordinator for "Enabling Transboundary Cooperation and Integrated Water Resources Management in the Extend Drin River basin"

Objectives and Introduction: Briefing on the objective of the project and the programme components, followed by discussion on the municipality priorities and needs. Moreover, discussion on structure measures to be taken in order to ensure less impact on biodiversity and does not affect Protected Areas. The impacts of the climate-induced flooding are exacerbated by the anthropogenic pressures including rapid urbanization; deforestation; poor solid waste management; unsustainable use of land and water resources; intensive agriculture, forestry and mining activities; unsustainable tourism. 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 DRB to climate-induced floods.

Topics of Discussion

- Discussion on the most vulnerable areas according to Shkodra Municipality, with a special interest on Roma and Egyptian population.

- Discussion on the main reasons that cause flooding in Shkodra territory: (i) Rain, (ii)Climate-change, (iii) Massive deforestation, (iv)Decentralization and lack of founds of the municipality, (v) Lack of control on the territory and lack of municipality competences, (vi) Poverty, also the major reason that brings to deforestation.

- Discussion on the lack of information and collaboration with decision-makers: (i) Lack of information in the framework of monitoring the water balance, and early warning system. (ii) Issue of declaring the alarm state. (iii) Lack of cooperation with decision-makers on passing information- Since by law, the municipality is not allowed to declare the alarm state.

- Discussion of flood management plan and mapping of flood risk area.

- From the perspective of the prefecture the main problem in the area is the flooding and one of the principle impacts is not only damage to infrastructure but considerable impacts on livelihoods from the agriculture affected by flooding
- At the prefecture level, that are responsible for developing the territorial plans, and it is very important for the businesses around, to develop an appropriate water balance for the territories
- One of the main causes for flooding have been the measures that have been taken to store water in the dry period for use and so this needs to be taken into account in the water balance
- Discussed three main reasons they have floods in the Shkodra area, 1) one is the location of the river, the topography and 2) anthropogenic factors to do with management of the water (including the dams) and 3) the unusual precipitation regime, which is rapidly changing (huge increases of volume) with climate change
- Challenge is that they have been planning based on previous years precipitation but they find there is high variability (for example previous monthly averages have occurred in one week) or the weekly amount have become daily amounts
- Estimates about 15,000 people affected by floods of 2010 and discussed detailed maps from the communities/ infrastructure etc. that was most affected by the floods
- Within the flooded area there is an Egyptian and Roma community that are marginalised that are affected by the flooding, the Egyptian community have some permanent living structure but the Roma community cannot be established permanently there because they are extremely vulnerable to the floods. Did not have accurate/verified numbers, but estimated about 1000 Egyptians and the noted that the Roma community is very dynamic and changing – to the extreme that sometimes in a 24 hour period hey may double in numbers
- All people are affected in terms of livelihoods, shelter and businesses, there are also indirect effects, for example those that are employed by those flood effected areas (often mainly in agriculture) , so when the floods occur everyone is effected not only for 2-3 weeks but for 2-3 months
- All of the local level institutions are effected as well because every time there is a flood the local level institutions need to be in emergency mode and in the assessment of the damages they have found they the biggest impacts have been the indirect affects
- Due to climate change the snow is melted immediately and this is one of the major risks of floods
- Another one of the major issue is the significant deforestation of the alps area upstream
- Forest management is a new area/capacity for local authorities and although the decentralisation has been necessary it has meant a transfer of these problems to the local authorities, rather than a transfer of competency
- From the other side the lack of territorial control by local authorities is due to the lack of human resources as well as the poverty of those communities in the alps which are quite poor
- Those communities in the alps that are most isolated use the forest wood to live, it is there only income source for sale
- There was a moratorium set by this govt. (but was also already there under the IUCN category) on hunting
- Emphasized that the community has always expressed that they want to maintain the integrity of the wetlands, but there is a tension with central government decision makers that have to to decide on the approach water balance distribution which takes into account the water balance in the wetlands and not strictly with a focus for availability of water for hydropower
- This should be done with the involvement of ecologists and biologists so they can properly evaluate the environmental impacts of various possible schemes
- Discussed how the proper distribution during the year of the water resources can improve the general development of the territory and even reduces the flood risks
- The Drin - Buna basin council is responsible for deciding the distribution of the water within the basin and issue permits for the use of water and they can make decision to avoid the floods within the basin territory
- Emphasized opinion that should be improvement and maintenance of activities in terms of the existing structures
- Sees the need to rehabilitate the bank construction that will reduce the flow of the water

Minutes pf the Shkoder community discussion on the structural and non-structural measures, 6 November 2018, Shkoder, Albania:

- Mr Arben Gjuraj, Deputy Mayor of Shkodra Municipality provided an overview of historical floods and the problematics around the most vulnerable areas according to Shkodra Municipality as well as the municipality priorities and needs in the area emphasising the focus on Roma and Egyptian population.
- Mr. Vehbi Gruda, Specialist for urban planning and water basin management, Shkodra Prefecture presented the role of the prefecture in the emergency context. Mr. Guda also focused on the main causes of floods due to the heavy rainfalls in the winter season on the one hand and the limited discharge potential on the other hand, flooding is a regular natural phenomenon in the Drin-Buna lowland but other factors that are exacerbating the situation such as, bad management of upstream dams; deforestation, erosion, high levels of sedimentation, human induced Climate- change.
- Mr. Shimaj referred to the last state of emergency in the region impacting 15,000 people related to floods where continuous heavy rains during November and December 2010 had increased the water levels of Buna, Kiri, Prroi Thate and Drini rivers as well the water level of Shkodra Lake. Furthermore, the water level in three artificial lakes (Fierza, Koman and Vau i Dejes) on Drini River were also risen and the emergency dam gates were opened and release the water to avoid further damages. The water flow released was approximately 3,500 cubic metres per second, while the operative capacity of the dam is 800 cubic metres per second. The consequences of releasing this quantity of water into the Shkodra Lake caused floods in a large area of Shkodra town and its surroundings. The Dajc, Oboti, Darragjati, Berdice, Ana Malit, Velipojë, Bushat,Gur i Zi Communes were totally surrounded by water. Water had reached 30% of Shkodra town, flooding the areas of Livadhe, Ajasem, Xhabije and Bahcallek and inundating houses, business establishments and gas stations. The main road to Shkodra town was flooded as well as Berdicës Arch, part of Shkodra-Tirana axis. The increasing water level was threatening to break the Torrovice dam which is a key barrier protecting Lezha Prefecture and the neighbouring communes. Mr Shimaj stressed that all the situation proved that prevention and mitigation activities were needed to be addressed in order to reduce the vulnerability in the area, also as someone the flat Shkodra he mentioned the importance of timely information on releasing water from dams during the emergency and the necessary measures to be taken into consideration before the flooding happens. Mr. Shimaj highlighted that the above-mentioned areas are the high-risk ones that the structural measures serve to through a direct and indirect effect.
- Mr. Jak Gjini referring also to the latest floods in Lezha in 2014 mentioned the need for a thorough feasibility study of the selected structural measures proposed so that the impact (direct and indirect) on the population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage is evaluated and preventive measures are taken keeping in mind the principle do no harm.
- Ms. Etleva Luli, mentioned the effect of above mentioned floods in Roma Egyptian population in Shkodra, and the consequences of the latest floods and lessons learned. Mr Luli emphasised the importance for these communities to be prioritised in the targeted interventions prior, during and after the occurrence given the vulnerability related to their location and difficulties in obtaining information.
- Mr. Gjuraj thanked everybody for their contribution and highlighted that the Shkodra Municipality stands ready to further engage in the process.

DAY 3 Attendance of Meeting Transboundary GIZ Preliminary Flood Risk Assessment Stakeholders Meeting Thursday Nov 7th

- Presentation of Preliminary Flood Risk Assessment for the Drin/Drin-Buna/ Bojana River Basin
- 2nd Workshop of the technical working group on Preliminary Flood Risk Assessment 7-8 with stakeholders from Montenegro, Macedonia, Albania and Kosovo
- GIZ shared the flood risk maps for each area and then decided in a participatory way the flood risk management plan, based on the approach of the European flood directive

- For the 2 way evaluation of PFRA, 1)For each flood risk map they have accounted for past events, flood documentation, expert knowledge as well as local knowledge 2) GIS-based analysis with available DEMs, max flood level estimation max flood area outline, critical land use at risk

DAY 4 Afternoon Visiting Field Sites in Albania: Shkoder, 8 November 2018

- Extensively discussed the anthropogenic factors - all of the waste of the municipality goes into the river 100,000 people both the solid waste and organic going in where the Roma community is – KfW wants to fund a plant with Swiss cooperation
- Management plan for the Shkodra protected landscape as well as an action plan also look into IUCN management plan also a fish stock assessment
- Notes that EU project form the basis of much of the environmental policy
- Also discussed public health impacts of floods and the fact that the water supply stations also get flooded and people rely on buying water during the acute flooding periods.

MONTENEGRO, 9-12 November

DAY 5

Meeting #1 Visiting Field Sites with UNCP CO and Representatives from Ministry of Environment

- Discussed challenges with deterioration infrastructure and lack of adequate investment including the fact that the embankments built before are very old and inadequate for new flood volumes, before the infrastructure was preserved in quite good shape, some time in the 90s but since 200's there has been low maintenance of the structures, since the declaration of independence in 2006
- Discussed that the World Bank project touched on the lake in term of structural measures and also refereed to the Lake Skhoder integrated ecosystem management project
- Discussed challenges of quantifying flood damages, as In the municipalities that are most affected by the floods they have stories from the field and reports they can share with us - but
- The local government have working with the Ministry of Agriculture (line ministry) to identify 1 million in terms of the structural measures
- Field sites visits accompanied by Momcilo Blagojevic the General Director of the Ministry of Agriculture and Rural Development
- Discussed the proposed dredging of the Buna River and the implication in terms of it being a short tem solution, potential severed ecological impacts and possibility of maladaptation by actually increasing river bed and bank erosion rates.

Meeting#2 Meeting the Municipality authorities and the local community representatives,

- Opening remarks by the Chief of staff of the mayors office, and then the person appointed boy the mayor in terms of the flood issues
- They are most concerned by the area along Bojana river, which is subject to catastrophic floods, mentioned the destruction caused by the floods of 2010
- Participants discussed the fact that the previous embankment were built a long time ago is now no longer functioning
- Participants from the directorate of water spoke as well speaking of the current dredging of the Bojana and they want to both create an embankment as well as a road along the embankment
- Discussed the UNDP safeguards and Adaptation Fund requirements and standards, as well as the need for a robust Stakeholder engagement plan, Gender strategy, avoiding maladaptation caused by structural measures and the sustainability of the investment.
- Embedding a community based adaptation approach and also an ecosystem based adaptation approach, wetland conservation and ensuring water availability to the critical ecosystems with the local communities will also give a more forward-looking innovative and inclusive approach then past interventions.
- Representative of the local police that was a member of the team that worked on flood prevention on the municipal level and was there for the floods of 2010, mentioned historically natural zoning restrictions meant no construction right by the river because they were aware of the flooding hazard

- Discussed issues of poor maintenance of embankments and that it is important to keep the embankment accessible, not to be covered with invasive plants etc. so there was some possibility for the embankment to collapse due to this removal of the soil by one individual removal soil from the excavator, that had to be prohibited
- Before a local municipal authority representative (from the hunting association) was in charge that had support from the police - now it is the directorate of water for the maintenance of the embankments
- Representative of the water directorate emphasized that what they want is the structural measures for flood control and a less of a focus on the biodiversity aspects (they see as coming from NGOs and external actors)
- Discussion on needs for better design of embankments in the past inappropriate material used to raise the levels of the embankment, but previously it was built more robustly - because of the type of contractor engaged by the govt. and issues of lack of maintenance, find most of the construction is done ad hoc without a s strategic approach
- Discussed need to oblige the government and local municipality to provide funds for the maintenance of the embankment - the govt. needs to commit solo co-financing for the maintenance f the embankment

Local Community Consultations Meeting

Location: Ulcinj Municipality, Montenegro
Date 12th November 2018, Time: 10-15h

The meeting was organized in order to present planned intervention on the flood risk management to be submitted for consideration to the Adaptation Fund. The meeting was held in the in the municipal premises, hosted by Mr. Vaso Radovic, Chief of Cabinet of Mayor of Ulcinj and Djordjije Dabovic, adviser for local development. Present at the meeting were: Momcilo Blagojevic, Deputy Minister for Water Management in Ministry of Agriculture and Rural Development-MARD (line ministry in Montenegro) and Danilo Globarevic, adviser in Water Administration (executive body for implementation of protection of adverse impact of waters at national level). UNDP CO Montenegro was presented by Viktor Subotic, project coordinator and Sohinee Mazumdar, safeguards expert. Three local communities' representatives were present, from most floods most vulnerable communities of Stoj, Rec and Fraskanjel.

The meeting was opened by Mr. Vaso Radovic, who stated that flood protection and flood risk assessment on Bojana River are one of the main priorities of the municipality, taking into account floods' adverse impacts on people and properties, being recognized as one of the key barriers for economic development of the municipality, heavily depending on tourism and agricultural development. Municipal administration is ready to cooperate in long term solution of floods in Ulcinj Municipality and assistance from donor community is strongly supported.

Mr. Momcilo Blagojevic stated that MARD is fully dedicated to the permanent solution of the flood risks in Ulcinj Municipality. The overall process in rather complex and lies within hydrological network of Drin River in Albania, Skadar Lake (shared between Montenegro and Albania) and most downstream Bojana River, which is in its 25 km border river between two countries. He stated out recent signing of the framework agreement between two countries on joint cooperation in management of shared water bodies. Also, due to the low riverbed of Bojana and constant sediment inflow from Drim River, Government of Montenegro provided funds for clean up of mount of the river and sustaining its regular flow. Regarding the flood protection system, Mr. Blagojevic stated that Government of Montenegro adopted several official documents on scaling up embankment system, however there is critical need to fundraise in order to establish full scale embankment system along Bojana River in Montenegro. Also, support of the local level is important, from municipal administration to local population that should take specific roles in maintenance of the system.

Mr. Danilo Globarevic from Water Administration presented the efforts of the state agency for securing of the floods prevention and certain ad hock interventions on the current embankment system along Bojana

River. He confirmed the need to develop adequate technical documentation, including engineering calculations as main preconditions to execute civil works.

Mr. Djoka Djonovic and Mr. Rudolf Elezovic from Stoj community, which counts app. 2000 inhabitants and about 5000 residential and tourism houses and buildings stressed out experiences from 2010, when Ulcinj Municipality was affected with catastrophic floods, causing huge damages on properties, luckily without lost lives. The situation was extremely serious as besides private properties were affected, number of infrastructure was damaged (roads, public buildings, electricity and telecommunication systems). Due to the immediate response from local population, municipality, Government, Rescue and Protection service, Red Cross and other organizations more harmful consequences were avoided. Embankment Rec-Sveti Nikola (6 km long) sustained not to collapse, which would completely change the flow of the Bojana River and create of new right branch of the river through salt plant and Ulcinj Field, which would result in most serious impacts on human lives and overall development of the municipality, with forced resettlements and destruction of the centuries' heritage. Current state of the embankments is not satisfactory and local communities are ready to support the planned solution within their mandate.

Further, Mr. Elezovic stated that every year during heavy rainfalls, groundwaters in Ulcinj lowlands raise causing problems with atmospheric water system and flooding of the area, which is of lesser scale but should be taken into account in overall process. Both representatives confirmed that long term solution of the fully functional embankment system will significantly reduce or eliminate floods risks in Ulcinj Municipality and create preconditions for tourism and industrial development.

Mr. Skender Tahiri from Fraskanjel settlement also recalled upon floods in 2010 and stated on the damages caused on the agricultural areas, houses and ground sources of drinking waters. The current practice on the maintenance of embankments is poor due to the low investments in rehabilitation of the system and constructing of the new embankments. Also, due to the urgent reconstructions, in some cases, non-adequate materials were used, while there is low level of control of accessibility of the embankments. Long term solution must include these aspects into account, creating functional flood protection system and precondition for land use and rural development of the municipal hinterlands. Also, transboundary cooperation is of vital importance.

Mr. Nika Selcanin from Rac settlement also stressed out urgency on creating of functional embankment system, as current formations are in non-adequate conditions, despite interventions from the state and municipality. He confirmed that due to the enormous efforts in 2010 embankments did not collapsed, but ad hoc actions cannot lead to the increase of safety for local communities.

After the meeting was finished, field visits were organized to the right branch of Bojana River for showcasing of the sediments removal and flow maintenance and embankments of Sveti Nikola-Rec and Sutjel-Sveti Djordje.

The main conclusions are:

- The current state of embankments system is not adequate and require systematic approach. Namely, there is clear lack of proper technical documentation developed based on which the actual works can be executed;
- The project should focus on priority flood areas and upgrade or construct embankments in order to assure long term sustainability of the local communities and enhance municipality development;
- Cooperation with Albania is important in order to have functional and sustainable solution for both countries and preservation of the its ecological values;
- National and local authorities have to work together to assure proper maintenance of the full scale embankment system;
- Local communities will benefit from functional flood protection system and are ready to assists in their capacities.
- Regular communication with local level and community representatives must be established practice.

List of participants

Upravljanje rizicima od poplava u basenu rijeke Drim
Konsultativni sastanak

Datum: 12. novembar 2018
Opstina Ulcinj

Ime i prezime	Institucija	Kontakt	Potpis
NUA DEDAJ	MJEŠTANIN	069/332-770	
DUMA DANOVIĆ	OTO	067/527-807	
Rudolf Elezović	MZ Štoj	069/025-149	
SKENDER TAHIR	M.Z. BASHKIMI	069/187-942 067/040291	
Dorotić Dabović	SEKRETARIJAT ZA KOMUNALNE DJELATNOSTI, UL.	069/033-182	
VASO RADOVIĆ	OPŠTINA ULCIM	069 030 316	
Momčilo Blagojević	Min. Poljoprivrede i šum.	020/482-108	
DALILO GLOZAKEVIĆ	UPRAVA ZA VODE	020/224-543	
VIKTOR SUNOTIĆ	UNDP	067/231-142	
NIKA SELEANIN	Rec	069.062-425	

FORMER YUGOSLAV REPUBLIC OF MACEDONIA

MINUTES OF THE LOCAL STAKEHOLDER CONSULTATIONS
19 December 2018, Struga, FYR Macedonia

On 19 December 2018 in the town of Struga which is on the shore of the Ohrid Lake and the River Crn Drim, UNDP Country Office Skopje organized local consultations/public presentation of the planned activities within the regional project “Integrated climate-resilient transboundary flood risk management in the Drin River basin in the Western Balkans”, with focus on the planned infrastructural work.

The meeting was attended by: high representatives from the local governments of Struga, Ohrid and Debarca and local communities (villages of Volino, Livada, Moroista) within the River Sateska sub-basin that are at high flood risk, Director of the local branch of ELEM (Elektrani na Makedonija), the state company that manages the hydropower plants on the River Crn Drim, and technical expert staff from the company, representatives of the local branch of the Public Enterprise for Water Economy that is responsible for maintenance of riverbeds and irrigation/drainage channels, CSOs, and Centre for Development of South-West Region.

At the beginning of the meeting, Anita Kodzoman from UNDP presented the objectives and components of the regional project, funding and initial project timeline, and mechanisms for regional cooperation and involvement of the national and local stakeholders. She also presented current and planned activities in the River Sateska basin which are part of UNDP project aimed at improvement of protected areas and are complementary with planned activities within the regional Drini river project. In the previous period, UNDP financed geodetic survey of the river Sateska and the river Crn Drim, as well as a preliminary modelling of the flood risk in this area.

Mr. Angel Panov from PointPro, a consulting company engaged by UNDP to carry out a preliminary risk assessment and modelling in Sateska and Crn Drin basins, presented the main findings of the assessment

and the modelling, as well as concrete proposals for priority interventions and actions (structural and non-structural measures).

During the discussion, all attendees expressed strong support for the project and particularly for the proposed measures that are expected to mitigate the flood risk in the region.

Representatives of ELEM expressed interest to continue their support to the local governments in the region and to be even directly involved in the maintenance of the diversion structure in the village of Volino (the point where the River Sateska is diverged in its old riverbed whenever the water level in the Ohrid Lake is very high and there is a risk of flooding of the towns of Ohrid and Struga). Every year, ELEM is providing certain amount of funding for the cleaning of the riverbed of Crn Drim and they will continue to do it, but the company's management is interested in finding a more sustainable way of maintenance of the riverbed of Crn Drim and Sateska.

Sustainability of the interventions, regular maintenance of the built infrastructure, and regular maintenance of the riverbeds and the drainage channels was also highlighted by other participants.

The representatives of the Public Enterprise for Water Economy informed that the Ministries of Environment and Physical Planning, the Ministry of Agriculture, Forestry and Water Economy together with the Public Enterprise have established a working group that is mandate by the government to propose changes in the respective laws that will resolve some of the issues that are preventing the efficiency and effectiveness of the PE in regards to regular maintenance of the irrigation and drainage channels, and the riverbeds, as well as issuance of permits from the respective ministries responsible for water management.

Representatives of the local communities indicated the need to construct at least two new bridges on Sateska and Crn Drim River that will enable them to better access their agricultural land. They are aware that such interventions are costly and that the project does not have sufficient funding to cover these costs, but they asked for support to jointly mobilize additional resources from other sources (government, other donors)

Attendees also stressed the need to invest in flood prevention and public awareness of all relevant stakeholders, and in strengthening of capacities of the institutions, particularly HydroMet.

A g e n d a
19 December 2019, Struga
Presentation of the proposed activities in the river basins of Crn Drim and Sateska

12.00 – 12.10	**Introductory address** **Anita Kodzoman, Head of Enery, Environment and Disaster Risk Management Unit in UNDP Macedonia**
12.10 – 12.30	**Presentation of the current and planned activities relate to the River Sateska within the project "Improvement of the management of protected areas"** **Anita Kodzoman, UNDP**
12.30 – 13.00	**Presentation of the planned activities within the regional project "Integrated climate-resilient transboundary flood risk management in the Drin River basin in the Western Balkans"** **Anita Kodzoman, UNDP** **Angel Panov, PoinPro consultants**
13.00-14.00	**Discussion**

3. Ongoing Stakeholder Engagement

The Stakeholders engagement in transboundary management in the Drin River Basin, has been a long-term ongoing process based on which the project has been designed, and will continue to strengthen and support. Stakeholder engagement has been central in the establishment of coordinated action in the Drin Basin, with the Drin Dialogue Process (2009-2011) beginning almost 10 years prior to the present project development, and providing a coordinated and structured consultation process among the Ministries of the riparian countries, in regards to integrated and cooperative water resources management and harmonizing the existing joint commissions/committees in the sub-basins.

Furthermore, 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 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. Finally the project also builds on the experience of the 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). The previous GEF project included an entire component on (Component 5) on Stakeholder Involvement, Gender Mainstreaming and Communication Strategies as well as a component (Component 6) on generating 'Public support and participation to IWRM and joint multi-country management enhanced through stakeholder involvement and gender mainstreaming'. These ongoing processes of stakeholder engagement, multi-stakeholder dialogue and gender mainstreaming in flood control will be enhanced and strengthened through the currently proposed project.

4. Grievance Mechanism

As part of the project, a project-level grievance mechanism will be established that can be accessed in each of the three project countries by project stakeholders. In addition to a project level Grievance Redress Mechanism (GRM), all stakeholders of the project will have access to UNDP's Accountability Mechanism (Stakeholder Response Mechanism, SRM, and Social and Environmental Compliance Unit, SECU) as additional avenues of grievance redress, the access to which is described in the Annex.

Complaints regarding projects/programmes supported by the Fund can also be filed with the secretariat at the following address: Adaptation Fund Board Secretariat Mail stop: MSN P-4-4001818 H Street NW, Washington DC, 20433 USA. Tel: 001-202-478-7347 afbsec@adaptation-fund.org

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Guidance for Submitting a Request to the Social and Environmental Compliance Unit (SECU) and/or the Stakeholder Response Mechanism (SRM)

Purpose of this form

- **If you use this form, please put your answers in bold writing to distinguish text**
- **The use of this form is recommended, but not required. It can also serve as a guide when drafting a request.**

This form is intended to assist in:

(1) Submitting a request when you believe UNDP is not complying with its social or environmental policies or commitments and you are believe you are being harmed as a result. This request could initiate a 'compliance review', which is an independent investigation conducted by the Social and Environmental Compliance Unit (SECU), within UNDP's Office of Audit and Investigations, to determine if UNDP policies or commitments have been violated and to identify measures to address these violations. SECU would interact with you during the compliance review to determine the facts of the situation. You would be kept informed about the results of the compliance review.

and/or

(2) Submitting a request for UNDP "Stakeholder Response" when you believe a UNDP project is having or may have an adverse social or environmental impact on you and you would like to initiate a process that brings together affected communities and other stakeholders (e.g., government representatives, UNDP, etc.) to jointly address your concerns. This Stakeholder Response process would be led by the UNDP Country Office or facilitated through UNDP headquarters. UNDP staff would communicate and interact with you as part of the response, both for fact-finding and for developing solutions. Other project stakeholders may also be involved if needed.

Please note that if you have not already made an effort to resolve your concern by communicating directly with the government representatives and UNDP staff responsible for this project, you should do so before making a request to UNDP's Stakeholder Response Mechanism.

Confidentiality If you choose the Compliance Review process, you may keep your identity confidential (known only to the Compliance Review team). If you choose the Stakeholder Response Mechanism, you can choose to keep your identity confidential during the initial eligibility screening and assessment of your case. If your request is eligible and the assessment indicates that a response is appropriate, UNDP staff will discuss the proposed response with you, and will also discuss whether and how to maintain confidentiality of your identity.

Guidance

When submitting a request please provide as much information as possible. If you accidentally email an incomplete form, or have additional information you would like to provide, simply send a follow-up email explaining any changes.

Information about You

Are you…

1. A person affected by a UNDP-supported project?

Mark "X" next to the answer that applies to you: Yes: No:

2. An authorized representative of an affected person or group?

Mark "X" next to the answer that applies to you: Yes: No:

If you are an authorized representative, please provide the names of all the people whom you are representing, and documentation of their authorization for you to act on their behalf, by attaching one or more files to this form.

3. First name:
4. Last name:
5. Any other identifying information:
6. Mailing address:
7. Email address:
8. Telephone Number (with country code):
9. Your address/location:
10. Nearest city or town:
11. Any additional instructions on how to contact you:
12. Country:

What you are seeking from UNDP: Compliance Review and/or Stakeholder Response

You have four options:

- Submit a request for a Compliance Review;
- Submit a request for a Stakeholder Response;
- Submit a request for both a Compliance Review and a Stakeholder Response;
- State that you are unsure whether you would like Compliance Review or Stakeholder Response and that you desire both entities to review your case.

13. Are you concerned that UNDP's failure to meet a UNDP social and/or environmental policy or commitment is harming, or could harm, you or your community? Mark "X" next to the answer that applies to you: Yes: No:

14. Would you like your name(s) to remain confidential throughout the Compliance Review process?

Mark "X" next to the answer that applies to you: Yes: No:
If confidentiality is requested, please state why:

15. Would you like to work with other stakeholders, e.g., the government, UNDP, etc. to jointly resolve a concern about social or environmental impacts or risks you believe you are experiencing because of a UNDP project?

Mark "X" next to the answer that applies to you: Yes: No:

16. Would you like your name(s) to remain confidential during the initial assessment of your request for a response?

Mark "X" next to the answer that applies to you: Yes: No:
If confidentiality is requested, please state why:

17. Requests for Stakeholder Response will be handled through UNDP Country Offices unless you indicate that you would like your request to be handled through UNDP Headquarters. Would you like UNDP Headquarters to handle your request?

Mark "X" next to the answer that applies to you: Yes: No:
If you have indicated yes, please indicate why your request should be handled through UNDP Headquarters:

18. Are you seeking both Compliance Review and Stakeholder Response?

Mark "X" next to the answer that applies to you: Yes: No:

19. Are you unsure whether you would like to request a Compliance Review or a Stakeholder Response? Mark "X" next to the answer that applies to you: Yes: No:

Information about the UNDP Project you are concerned about, and the nature of your concern:

20. Which UNDP-supported project are you concerned about? (if known):

21. Project name (if known):

22. Please provide a short description of your concerns about the project. If you have concerns about UNDP's failure to comply with its social or environmental policies and commitments, and can identify these policies and commitments, please do (not required). Please describe, as well, the types of environmental and social impacts that may occur, or have occurred, as a result. If more space is required, please attach any documents. You may write in any language you choose

-
-
-
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23. Have you discussed your concerns with the government representatives and UNDP staff responsible for this project? Non-governmental organisations?

Mark "X" next to the answer that applies to you: Yes: No:
If you answered yes, please provide the name(s) of those you have discussed your concerns with
Name of Officials You have Already Contacted Regarding this Issue:

First Name	Last Name	Title/Affiliation	Estimated Date of Contact	Response from the Individual

24. Are there other individuals or groups that are adversely affected by the project?

Mark "X" next to the answer that applies to you: Yes: No:

25. Please provide the names and/or description of other individuals or groups that support the request:

First Name	Last Name	Title/Affiliation	Contact Information

Please attach to your email any documents you wish to send to SECU and/or the SRM. If all of your attachments do not fit in one email, please feel free to send multiple emails.

Submission and Support
To submit your request, or if you need assistance please email: project.concerns@undp.org

Annexure Two: Drin Core Group Consultations, November 2018

16th Meeting of the Drin Core Group
7th Meeting of the Steering Committee of the GEF Drin Project

Agenda

Thursday 15 November 2018

1. Welcome
2. Adoption of the Agenda
3. Review and adoption of the report of the 15th Meeting of the Drin Core Group (DCG)/6th Meeting of the Steering Committee (SC) of the GEF Drin Project
4. Drin CORDA Report 2018
5. Transboundary Diagnostic Analysis – Thematic reports
6. Thematic report on Hydrology / Hydrogeology

Friday 16 November 2018

7. Thematic report on Pollution
8. Thematic report on Nexus
9. TDA Synthesis Report
10. Information management System IMS
11. **Floods**
12. Workplan
13. Any other business

Annotade agenda of the Session on Floods, 16 November 2018

Background
Conditions for the implementation of the provisions of the Drin MoU in relation to flood risk management are being created. The floods issue is reaffirmed as of priority in the TDA. Decisions of the DCG in this regard include among others: (i) establishing an EWG on Floods; (ii) one of the demonstration activities of the Drin project focusing in the field of flood risk management; (iii) enabling the involvement of energy sector in the sustainable management of the Drin Basin including flood; (iv) having under its auspices and be the Steering Committee of the Project on Floods should the proposal currently prepared is approved by the Adaptation Fund (AF). A Concept Note was prepared after consultation with the key stakeholders in the Drin Riparians through missions undertaken in June by the consultant hired by UNDP to prepare the floods project proposal to be submitted for financing to the Adaptation Fund. the Pre-Concept Note was approved by the AF Board.The Concept Note included among other a preliminary assessment of the state of play in the Drin Basin in the domain of floods management. According to current planning, the Project Document will be prepared within Q4 and be submitted so as to be considered for approval by the Adaptation Fund board of March 2019. Action is taken by UNDP for the realization of the advice of the DCG that activities be complimentary to and build upon those of the GIZ project on adaptation not Climate Change.
Action
The DCG will be presented the Concept note of the AF Floods project.
Background Documents
Concept note of the AF Floods project.

Annexure Three: Stakeholder Consultations at Concept Development Phase

Albania

Albania 11-12 June 2018			
Time	**Institution**	**Participants**	**Notes**
11-Jun-18			
9.00- 10.00	UNDP CO/Project office	Eglantina Bruci, Climate Change adaptation Expert; Mirela Kamberi Project Manager UNFCCC National Communications; Odeta Cato, project Coordinator Environmentall Information and Monitoring; Vladimir Stavric Drini Project Manager; Erjola Keci Drini Local Project Coordinator	Overview of UNDP ongoing and past work on Climate Change and DRR
10.00- 11.00	Environmental Indicators Management and Monitoring	Climate and Hydrologist experts	Briefing on the Scope of the mission - The needs and current status of data gathering and processing realeted to environmental indicators;
11.30-12.30	Ministry of Tourism and Environment	Klodiana Marika - Director, MoTE	Briefing on the Scope of the mission- Overview of GIZ ongoing and past work on Climate Change
12.30-13.30	Technical Water Secretariat	Gerta Lubonja, Head of Technical Water Secretariat; Arduen Karagjozi, Director - Technical Water Secretariat Drini project focal point	Briefing on the Scope of the mission - Secretariat ongoing work and involvment in Drini project discussion on institute needs and current status of data gathering and processing
14.30-15.30	GIZ	Gerrit Bodenberder and Merita Meksi - GIZ Climate Change Adaptation, Western Balkans	Briefing on the Scope of the mission - Discussion on the ministry priorities in the area ongoing interventions
15.30-16.30	Ministry of Energy and Infrastructure	Laureta Dibra-chief of sector Renewables and Energy Efficiency, Ministry of Energy and Infrastructure	Briefing on the Scope of the mission - Discussion on the ministry priorities in the area ongoing interventions
12-Jun-18			
9.00-10.00	Ministry of Agriculture and Rural Development	Deputy Minister Of Agriculture and Rural Developemnt	Briefing on the Scope of the mission - Discussion on the ministry priorities in the area ongoing interventions
10.00-11.00	Ministry of Tourism and Environment	Ornela Cuci-Deputy Minister of Environment	Briefing on the Scope of the mission - Discussion on the ministry priorities in the area ongoing interventions
11.00-12.00	PRO NEWS - DRR project	Antonio Barbera PRO NEWS Programme Manager Programme for Improving National Early Warning System and Flood Prevention in Albania	Briefing on the Scope of the mission- Overview of the projects ongoing and past work on Climate Change and DRR
12.00- 13.00	ADA	Etleva Martiri- Austrian ADA EU IPA Project on Waters	Briefing on the Scope of the mission- Overview of the projects ongoing and past work on waters
13.00-14.00	UNDP CO/Project office	Debriefing and follow up	

Montenegro

Montenegro			
13-Jun-18			
Time	**Institution**	**Participants**	**Notes**
9.30-11.00	Ministry of Agriculture and Rural Development	Directorate for Water Management responsible for overall water management, water protection and protection from water	Momcilo Blagojevic, Deputy Minister for Water Management and colleagues
11.15-13.00	Institute for Hydrometeorology and Seismology	Institution on charge for water monitoring and main source of technical data	Biljana Kilibarda, Deputy Director Darko Novakovic, main hydrologist
15.00-16.00	UNDP CO	Debriefing and follow up	tbc
14-Jun-18			
9.30-11.00	Ministry of Interior - Directorate for Emergences	In charge for rescue and protection, cooperation with local level and strategic and legislative framework for disaster risk reduction	Ljuban Tmusic, Head of Department for Civil Protection and collogues
11.15-12.15	Ministry of Sustainable Development and Tourism	Ministry in charge for overall environmental protection and international cooperation, including Adaptation Fund	Igor Gradjevic, Deputy Minister for EU Integration and International Cooperation (tbc)
13.00-	Departure		

Kosovo

	Kosovo 25-26 June 2018			
	Time	**Institution**	**Participants**	**Notes**
	25-Jun-18			
	9.00- 10.00	UNDP CO/Project office	Shkipe Deda Gjurgjiali, Portfolio Manager, Environment Climate and Disaster Resilience ; Xheva Berisha Rexhepi, Project Manager	Overview of UNDP ongoing and past work on Climate Change and DRR
	10.30- 11.30	Ministry of Environment and Spatial Planning	Muhamet Malsiu Head of Environmental Protection Depratment at Ministry of Environment and Spatial Planning	Briefing on the Scope of the mission - The needs and current status of data gathering and processing realeted to environmental indicators;
	11.30-12.30	Kosovo Environmental Protection Agency/ Ministry of Environment	Afrim Berisha, Head of Directorate for the State of Environment	Briefing on the Scope of the mission- Overview of KEPA on Monitoring, environmental information and effective reporting, for a healthy environment and sustainable economic growth.
	12.45-13.30	LUNCH		
	13.45-14.45	Institute of Hydrometeorology	Letafete Latifi, Head of Kosovo Institute of Hydrometeorology	Briefing on the Scope of the mission - Discussion on the Institue of Hydrometerology in the are ongoing interventions
	15.00-16.00	Ministry of Economic Development	Nezir Myrtaj, Head of Division for Energy Efficiency and Renewable Energy Source	Briefing on the Scope of the mission - Discussion on the ministry priorities in the area ongoing interventions
	26-Jun-18			
	9.00-10.00	Emergency Management Agency	Shefki Abdullahu, Deputy Director, Emergency Management Agency; cc: Fadil Kodra	Briefing on the Scope of the mission - Discussion on the Emergency Management Agency priorities and ongoing areas of interventions
	10.30-11.30	Ministry of Environment and Spatial Planning	Manduha Gojani, Head of river basin Drini I Bardhë	Briefing on the Scope of the mission - Secretariat ongoing work and involvment in Drini project discussion on institute needs and current status of data gathering and processing
	12.00-12.45	Lunch	Lunch	
	13.00.14.00	Technical Water Secretariat	Baton Begolli, Water Policy Advisor at Kosova Office of Prime Minister	Briefing on the Scope of the mission - Discussion on the ministry priorities in the area ongoing interventions
	14.00-14.30	UNDP CO/Project office	Debriefing and follow up	
	14.30-16.00	Taxi	Travel to Skopje, Macedonia	

FYR Macedonia
AGENDA
Scoping mission for the regional project
"Integrated climate-resilient transboundary flood risk management in the Drin River basin in the Western Balkans"
Margaretta Ayoung, International Consultant
27/28 June 2018

27 June 2018, Wednesday	
09:00 – 09:45	Introductory briefing Anita Kodzoman, Head of Energy, Environment and Disaster Risk Reduction Unit Venue: UNDP premises
10:00 – 12:00	Meeting with the Ministry of Environment and Physical Planning (MoEPP) (Teodora Obradovic Grncarovska, UNFCCC Focal Point, Ljubica Teofilovska, Cabinet of the Minister, Pavlina Zdraveva, Climate Change Project Manager, Dejan Panovski, UNDP GEF Drini River project) Venue: MoEPP premises
12:00 – 13:00	Launch break
13:30 – 16:00	Meeting with the Cabinet of the Deputy Minister in Charge of Economic Affairs (Sandra Andovska, Daniel Josifovski, Ana Tunevska) Venue: Government premises
16:00 – 17:30	Meeting with the Energy, Environment and Disaster Risk reduction team Venue: UNDP premises, Conference room

28 June 2018, Thursday	
09.30 – 11.00	Meeting with the Ministry of Agriculture, Forestry and Water Economy Lidija Cadikoska, Director of the Water Economy and his team) Venue: UNDP premises
11:00 – 12:00	Work on consolidation of the MKD input
12:00 – 13:00	Meeting with Ljupka Zajkov, Ministry of Environment and Physical Planning, Water Department
13:00 – 14:00	Launch break
14:30 – 16:30	Meeting with HydroMet Service Ivica Todorovski, Nina Aleksova, Vasko Stojov Accompanied by Anita Kodzoman and Pavlina Zdraveva Venue: HydroMet Service premises
16:30 – 17:15	Debriefing with Louisa Vinton, UNDP Resident Representative Narine Sahakyan, Deputy Resident Representative Anita Kodzoman, Head of Unit Venue: UNDP premises

Annex 10. Key relevant projects for cooperation

Project Title	Brief Description	Linkages/cooperation with the proposed AF project
Enabling transboundary cooperation and integrated water resources management in the extended Drin River Basin	The GEF-funded UNDP Drin Project promotes joint management of the shared water resources of the transboundary Drin River Basin, including coordination mechanisms among the various sub-basin joint commissions and committees. The Project is implemented by UNDP and executed by the Global Water Partnership-Mediterranean (GWP-Med)	The proposed AF project will work closely with the existing Drin Project and will benefit from and build upon the outcome of the project including in the following areas: 1) The Monitoring and Information Management System (IMS) being development by the project will form the basis of the flood risk information sharing to be established with the proposed AF project. In effect, a flood component may need to added to the platform being developed. In addition the Transboundary Diagnostic Analysis (TDA) of the existing project will form the basis of the flood risk-specific analyses to be undertaken by the proposed AF project; 2) The Drin Integrated CCA and FRM Plan to be developed under the proposed AF project (Output 2.3) will be embedded as a sub-plan of the Strategic Action Program (SAP) of the GEF project; 3) Proposed AF project will use the existing Core mechanisms for coordination and cooperation at the basin level through the Drin Core Expert Working Group on Floods; 4) Outcome 4 - output 11 of the GEF project "A program of on the ground pilot demonstrations focusing on: water use efficiency measures, reduction of nutrients, land use planning, groundwater protection, floods and droughts, sustainable tourism and flood risk management" will provide a pilot project to the proposed AF project.
South-East European Multi-Hazard Early Warning Advisory System	The project includes development of a regional multi-hazard early warning advisory system – consisting of information and tools for forecasters at National Meteorological and Hydrological Services (NMHSs) and harmonized national early warning systems. The first phase of the project will provide operational forecasters with effective and tested tools for forecasting hazardous weather events and their possible impacts in order to improve the accuracy of warnings and their relevance to stakeholders and users. The project is supported by the U.S. Agency for International Development (USAID), Office of U.S. Foreign Disaster Assistance	The proposed AF project will establish a partnership with this project to ensure cooperation and avoid duplication of effort. This would be particularly important with regards to the information tools to be developed by the South-***East European Multi-Hazard Early Warning Advisory System,*** which are likely to be complimentary to the AF project objectives

IPA DRAM – Programme for Disaster Risk Assessment and Mapping in Western Balkans and Turkey	IPA DRAM is addressing the need to further strengthen capacities in the field of civil protection and general risk management in the Western Balkans region, and coordination both within the region and with sister agencies in EU-countries. The Programme for Disaster Risk Assessment and Mapping (IPA DRAM) further contributes to enhancing the capabilities of the partner countries to strengthen disaster risk management by creating an open platform for the development and improvement of national disaster loss databases, enhancing the coherence among the national systems and methodologies, and consistency with existing EU regulations, guidelines and good practices.	The proposed AF project will aim to work closely with the IPA DRAM project which is implementing best practice and harmonizing methodologies, tools and databases for damage and loss. This will be particularly relevant for proposed Output 1.3.
Adaptation to Climate Change in transboundary Flood Risk Management, Western Balkans (See Annex 8 for more detail.)	The project is a planned extension of current GIZ activities on flood risk management of the Drin basin to include the following: 1. Further implementation of the EU Flood Directive. The project will support pilot experiences on generating flood hazard and risk maps, and replication of the hazard and risk mapping process in other parts of the Drin basin, and in other risk areas of the countries. 2. The project will support the Drin riparian countries in delivering effective and timely end-to-end early warnings. In addition to further refinement and training on the use of the Flood Forecasting Model developed for the basin (PANTA RHEI), the project will strengthen capacities at local, national and regional levels to improve end-to-end, people-centered flood early warning (including institutional arrangements, roles and responsibilities, SOPs, etc.). Simulation exercises in vulnerable communities will be carried out. 3. Furthermore, the project will support the partner institutions at local and national level, on strengthening their capacities to better	The AF project will build upon the extensive work already undertaken by GIZ on flood risk management in the Drin basin, and will aim to work closely with GIZ on the Implementation of flood hazard mapping for the Drin Basin under their new project and under proposed AF Output 1.2.

	coordinate flood risk management. Systematic strategic and institutional advice, exchange of expertise, among different level actors (local, national and regional), together with expert advice on the EU Flood Directive, will be in the focus of the project. Flood risk management measures as have been identified and prioritized by the partners will be implemented.	
GEF IW “Danube River Basin Hydromorphology and River Restoration (DYNA)” project	This project is implemented/executed by WWF/ICPDR and plays a key role advancing flood risk management across the East European non-EU member states and focuses on cost effective restoration of the natural functions of wetlands and floodplains, with their ability to retain floodwaters and reduce the flood pulse.	The AF project will exchange knowledge and experience with the DYNA project with the view of applying effective non-structural flood risk reduction measures (Output 3.3.) in the Drin River Basin.

Annex 11. GIZ Project Brief

Climate Change Adaptation through Transboundary Flood Risk Management in the Western Balkans – CCAWB

Funded by:	German Federal Ministry for Economic Cooperation and Development (BMZ)
Implemented by:	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
Objective:	Improved transboundary flood risk management in the face of a changing climate in the Western Balkans
Countries and political partners:	Albania: Ministry of Tourism and Environment Kosovo: Ministry of Environment and Spatial Planning Macedonia: Ministry of Environment and Physical Planning Montenegro: Ministry of Sustainable Development and Tourism
Executing agencies:	National and local institutions of Water Resource Management, national Hydro-Meteorological Services (NHMS), Disaster Risk Management, Municipalities
Overall term:	2012 to 2021, currently in its third phase (2018-2021)

CONTEXT

The Drin River Basin is home to 1.6 million people in the Western Balkans, who depend on the river's resources including for agriculture, fishing, drinking water, electricity generation and recreational activities. Increasing flood risk poses an ever greater threat to the livelihoods, the economy and health of the riparian population of the river basin. The mostly rural risk areas are often inhabited by low-income, disadvantaged population groups. Areas of high flood risk include the lowland border area of Albania and Montenegro, but also Lake Ohrid in Albania and Macedonia, and others in the four countries. Severe flood events in 2010, 2013, 2015 and 2018 caused massive damages in the tens of millions of € in all four partner countries. The current flood risk is the result of an upward trend in floods combined with a lack of flood-resilient planning. According to climate projections, hydrometeorological risks, including floods and droughts, will increase in the future as a result of changing patterns of precipitation and temperature.

For most project areas, meaningful flood risk assessments and thus the foundations for technical, financial and political decisions in flood risk management are currently lacking. Necessary data is incomplete. The requirements for technical standards and the methodical approach as well as capacities in institutions responsible for such assessments are missing. In many cases, flood warnings are insufficient and often reach the population in risk areas informally and not on time. The institutional capacities for sufficient flood mitigation and preparedness as well as response and recovery are very limited. Thus, the ability for transboundary flood risk management as a necessary prerequisite for dealing with current threats and future risks is not yet sufficient in the four partner countries.

All riparian countries (Albania, Kosovo, Macedonia and Montenegro) recognise the need for joint action to better manage the risk of flood events in a transboundary basin, and adapt to projected changes. This is reflected in the ongoing development of appropriate national strategies and plans, e.g. National Adaptation Plans (NAP) and disaster risk management strategies. The prospect of further EU approximation motivates governments to implement the EU Directive on the assessment and management of flood risks (EU Flood Directive, 2007/60/EC) and move towards other EU mechanisms such as the European Flood Awareness System (EFAS). In the area of water resource management, the riparian states of the Drin catchment have set up the Drin Core Group (DCG) as a possible forerunner of a future river basin commission, defining "improved transboundary flood risk management" as a common strategic goal.

PROJECT RESULTS SO FAR

Between 2012 and 2018, in the first two phases of the project, the following results have been achieved:

Flood forecasting

- State of the art **Flood Forecasting System** for the Drin Basin, operated by the four NHMS;
- **Memorandum of Understanding on Data Exchange** among the four countries, as a basis for transboundary flood forecasting, signifying the political will for regional cooperation;
- **Continuous collaboration among NHMS** in a transboundary Technical Working Group on Flood Forecasting, meeting 3 to 4 times per year;
- **Trained operators** of the Flood Forecasting System in all NHMS;
- Installation and rehabilitation of a total of **35 online hydrometric and meteorological stations** in the basin, vital for providing real-time hydrological and meteorological data for the Flood Forecasting System;
- Hydrological and meteorological **data management system**, including trained operators;
- **Hydraulic model** of Lake Skadar/ Shkoder and Bojana/ Buna flood plains, to be used for flood forecasting as well as hazard and risk mapping.

Flood risk assessments

- **Continuous collaboration** in a transboundary Technical Working Group for Flood Risk Management, meeting 3-4 times per year;
- **Preliminary Flood Risk Assessment**, delineating Areas of Potentially Significant Flood Risk, in accordance with the standards of the EU Flood Directive;
- A **catalogue of transboundary measures in flood risk management** (submitted to DCG), as a result of the collaboration in the working group.

Flood preparedness in high risk areas

- Participatory development and approval of **Local Flood Risk Management and Emergency Response Plans** in high risk areas of Albania and Montenegro;
- **Increased public awareness** of flood risk and appropriate behaviour, through outreach activities for sensitization of the local population;
- **Cleaning of drainage channels** in cooperation with the affected municipalities, benefiting more than 300 individuals (through cash for work), and mitigating the effects of the floods in March 2018, reducing damages.

STRATEGIC APPROACH

The project contributes to the BMZ strategy "Focus Europe" by supporting the four partner countries in regional and European integration, in particular with the introduction and implementation of European directives in the field of water, climate and environmental management. The project also contributes to regional stability and cooperation. It builds on longstanding bilateral cooperation and is anchored in the regional program of German Development Cooperation on "Environmental and Climate Protection in the Western Balkans".

All four cooperation countries are seeking EU membership and have committed themselves to the gradual implementation of the *acquis communitaire*. In addition to the EU Water Framework Directive (2000/60/EC, Ensuring water quality in river basins), the EU Floods Directive (2007/60 / EC, on the assessment and management of flood risks) is considered as a framework, but is only partially incorporated in the national legislation, and is not yet being systematically implemented. This is the entering point for this project.

There is a strategic reference framework in the orientation towards the global Sustainable Development Goals (SDGs), in particular SDG 13 (climate action) and SDG 6 (water management, in particular 6.5 for integrated and transboundary water resource management), and SDG 1 (poverty reduction) and 11 (Sustainable Cities and Settlements). All four partner countries have the SDGs largely integrated in their

national development strategies and the project contributes to their implementation in the above-mentioned fields.

The partner countries have also committed themselves to the *Sendai Framework for Disaster Risk Reduction* (2015-2030), to which the project contributes.

CCAWB will continue to focus on the Drin River Basin, by supporting national institutions in Albania, Kosovo, Macedonia and Montenegro, while providing support to the Drin Core Group (DCG) as a regional structure that could be the precursor of a Drin River Basin Commission. The mode of delivery will include technical and organisational advisory services by international, regional and national experts, in-service training measures, and (to a limited extent) procurement of equipment.

GIZ's approach to capacity development will guide project implementation. The responsible partner institutions will be supported in fulfilling their mandates, with external expertise and process advice as they require.

The project pursues a bottom-up and multi-level approach. At the local level, actors in selected pilot areas in all four countries will be strengthened in the practical management of flood risk. Potential pilot areas include the northern part of Lake Ohrid, and areas around Lake Skadar/Shkoder and the Bojana/Buna river, plus others in Kosovo. Results from pilot experiences – both in terms of participatory process and outputs – will be showcased at national and regional level in order to provide model approaches for replication in other risk areas and strengthen regional cooperation. At the national level, the project strengthens relevant institutions, incl. civil protection, in their capacities to provide required technical guidelines and services for flood risk management to other relevant entities, including local authorities. In regional and transboundary exchange, positive examples are used to demonstrate the advantages and importance of regional cooperation for effective flood risk management.

FIELDS OF WORK AND EXPECTED RESULTS

Building on previous achievements, CCAWB, in its third phase, will consolidate the results in flood forecasting, risk assessments and local preparedness with a view to supporting the four elements of early warning according to the UNISDR definition (see below). In order to achieve this, the project will work in the following fields:

Output 1 – Flood Hazard and Risk Mapping

Strengthening capacities for meaningful (including transboundary) flood risk assessments will provide the information necessary for prioritising technical, financial and policy decisions in the area of flood risk management – thus strengthening adaptive capacities of institutions and the affected population. All activities in this area of work will be conducted in accordance with the EU Flood Directive, focusing on Step 2 of the directive: the development of flood hazard and risk maps (FHRM). The FHRM will provide the basis for the review and development of local Flood Risk Management Plans (FRMP). The actual FHRM will be conducted by the partner institutions themselves. GIZ will support them with technical, methodological expertise and process facilitation, bring in experiences from other European countries, and provide capacity building and training. This process will include the following activities:

- Consultation with partners in the four countries and at regional level for the selection of pilot areas for FHRM, a road map and the mode of cooperation (incl. roles and responsibilities),
- Joint development of guiding principles and technical standards, ideally harmonized across borders;
- Assessment of partners' capacity needs for FHRM as a prerequisite for building adequate capacities required for future self-reliant FHRM processes in the partner countries;
- Joint, participatory FHRM in selected risk areas, building on intense participatory processes to reflect needs of different end users of maps;
- Simultaneous capacity building for FHRM;
- Documentation of lessons learned and refinement of methodological approach;
- Collaboration in national and regional Technical Working Groups as a platform for cooperation;
- Support for up- and broadscaling and replication in other risk areas.

- **Expected results:**
  - Hazard and risk maps for selected risk areas, reflecting user needs, ideally harmonised across borders,
  - Recommendations for risk management,
  - Documentation of lessons learned,
  - Field-tested and agreed methodology and approach for participatory FHRM, documented in a guideline/ step-by-step manual, incl. policy recommendations,
  - Increased capacities of users of maps (e.g. civil protection, spatial planning, etc.),
  - Training-of-Trainers concept and national/ regional pool of trainers for FHRM,
  - Replication of successful approaches in other risk areas.
- **Potential fields of cooperation with other projects:** FHRM will be conducted based on available topographic, bathymetric and hydrological data. Though data gaps pose a significant challenge, the project's resources for generating additional data, e.g. through topographic surveys and bathymetry, are very limited. GIZ will support its partners in seeking opportunities to improve the data situation, e.g. through contributions by other development partners' initiatives (e.g. the proposed project of the Adaptation Fund).

  CCAWB will accompany mapping processes in selected high risk areas, jointly develop a regionally harmonised methodological approach for FHRM, and provide initial support for its replication in other risk areas There will still be many risk areas in the basin which cannot be covered by the GIZ project, but for which the agreed methodology will be available.

Output 2 – Early Warning

The project applies the approaches of end-to-end and people centred early warning by working on four interrelated key elements (in line with the UNISDR definition of early warning systems):

(1) Risk knowledge based on the systematic collection of data and flood risk assessments (see output 1);
(2) Monitoring, analysis and forecasting of floods by the National Hydrometeorological Services (NHMS);
(3) Dissemination and communication, by official sources at national and local levels, of authoritative, timely, accurate and actionable warnings;
(4) Preparedness at all levels to respond to the warnings received.

CCAWB will work with local authorities and civil society organisations in selected pilot areas to improve local warning and response mechanisms, i.e. the so-called 'last mile'. It will provide technical and organisational advice to NHMS to further improve the forecasting system while strengthening their capacities as warning service providers. Key players in warning dissemination and response, i.e. entities in charge of civil protection and disaster management, will also be strengthened. The concrete work in pilot areas will be used to engage all relevant actors of the national warning chain in the individual countries. CCAWB will bring the different stakeholders of the warning chain together to jointly review and improve, i.a., Standard Operating Procedures (SOPs), warning content and channels, as well as dissemination technology, for meaningful and timely early warning and effective response. While formal early warning falls within the exclusive mandate of a nation-state, regional cooperation and information exchange can benefit national action, and eventually the population at risk. Therefore, the project will encourage transboundary cooperation, e.g. in the border areas of Albania and Montenegro. Output 2 will include the following activities:

- Refinement of the Flood Forecasting System through continuous capacity building, technical advice and maintenance support;
- Technical support and capacity building for data management;
- Support for procurement of equipment;
- Definition of flood scenarios and warning levels, based on risk assessments and the Panta Rhei model;

- Analysis of national warning chains (gap analyses) as well as opportunities for transboundary information sharing for effective and consistent response;
- Technical advice and organizational consulting on the improvement of warning chains and the dissemination of warnings;
- Clarifying the roles and processes of national, regional and local decision-makers in early warning, including SOP review and refinement;
- Simulation exercises in selected risk areas, including as joint exercises in border areas;
- Documentation of lessons learned and showcasing of experiences at national and regional levels;
- Development and application of trainer modules and a Training-of-Trainers concept;
- Development of manuals/ guidelines for improvement of warning chains.

➲ **Expected results:**

- o Continuous, improved flood forecasting based on the Panta Rhei model,
- o Jointly developed recommendations for warning levels, for flood early warning in the four countries,
- o Effective SOPs for early warning applied in selected risk areas, as validated in simulation exercises,
- o Step-by-step manual for improving early warning at the local level, incl. policy recommendations,
- o Training modules and Training-of-Trainers concept as well as national/ regional pool of trainers.

➲ **Potential fields of cooperation with other projects:** A major bottleneck for early warning is still the limited network of hydro-meteorological stations in the four countries. The project's resources for the procurement of additional stations is very limited. Additional stations, especially at high altitudes, feeding data into the Panta Rhei model, would improve the quality of the monitoring and forecasting capabilities of the NHMS significantly. – Forecasts, especially of the spatial extent of floods, could also be greatly improved by more accurate digital terrain models, including up to date bathymetry, of the main risk areas: Lake Skadar/Shkoder, Bojana/Buna flood plains, and others.

Output 3 – Institutional development

Sustainably improving flood risk management requires strengthening the institutions that are in charge. The project will support actors at national and local levels, including the authorities in charge of water resources management, the NHMS, disaster risk management and civil protection agencies, as well as local authorities. It will provide organisational and strategic advice for selected stakeholders, strengthening the institutions' capacity for coordination and cooperation, e.g. in the field of early warning. As a cross-cutting issue, Output 3 is closely related to the activities for the other two outputs. Concrete activities depend on further consultation with the partners in the four countries and a joint organisational analysis in the coming months.

TARGET GROUP

The project benefits the population in the catchment area of the Drin-Buna/ Bojana system, mainly the inhabitants of the flood risk areas. In particular, the the coastal, flood-prone areas in the Skadar /Shkoder region (Albania and Montenegro) as well as around Lake Ohrid and in the White Drin sub-basin will benefit from the project's measures. Other populations in other catchment areas will benefit from the transfer and scaling up of experience and successful approaches. Other beneficiaries are the staff of partner institutions at national and local levels.

SYNERGIES WITH OTHER PROJECTS:

The project actively initiates donor coordination in order to avoid duplication of efforts. It maintains close relationships with the following projects and initiatives:

The EU-funded project "Disaster Risk Assessment and Mapping in the Western Balkans and Turkey" (IPA DRAM) pursues the goal of improving data collection on damage and losses caused by disasters, as well as risk assessment and mapping. IPA DRAM's results are being incorporated into GIZ's activities wherever possible, especially with regards to FHRM and the development of standard methodology.

Furthermore, the EU is financing the "Program for Improving National Early Warning System and Flood Prevention in Albania" (PRONEWS) with the aim of increasing the capacity of the Albanian General Directorate for Civil Emergencies, and of the Albanian HMS. CCAWB supports the creation of flood hazard maps in the catchment area of the Drin, while PRONEWS promotes such maps for other river basins of Albania. In order to avoid the introduction of potentially conflicting approaches to FHRM, GIZ will closely coordinate its activities with PRONEWS.

Two projects funded by the Global Environment Facility (GEF), including “Enabling Transboundary Cooperation and Integrated Water Resources Management in the Extended Drin River Basin” (Cooperation with Albania, Macedonia and Montenegro) and “Enabling Transboundary Cooperation and Integrated Water Resources Management in the White Drin and the Extended Drin Basin” (co-operation with Kosovo), are implemented by the United Nations Development Program (UNDP) in partnership with the Global Water Partnership - Mediterranean (GWP-Med) and the UN Economic Commission for Europe (UNECE). CCAWB supports a transboundary Technical Working Group (TWG) in the area of flood risk management, which contributes to the work of the Expert Working Group on Floods of the DCG, supported by the GEF project. Thus, both projects are complementary and require close coordination.

The project “Integrated climate-resilient transboundary flood risk management in the Drin River basin in the Western Balkans”, currently in preparation by UNDP and GWP-Med, is planned to work in Albania, Macedonia and Montenegro. It aims at improving flood forecasting by NHMS (i.a. through strengthening the hydrometeorological observation network) and supporting risk-informed decision making through risk assessments. It aims to contribute to improved institutional arrangements, legislative and policy framework for climate-resilient flood risk management, and development of adaptation and flood risk management strategy and plans at the basin, sub- basin, national and sub-national levels. Strengthened community resilience through improved flood forecasting and early warning, implementation of structural and non-structural measures and enhanced local capacity for adaptation and flood risk management are also part of the project’s objectives. The planned project shows significant potential for synergies with CCAWB, so close coordination between the two projects and the involved partner institutions is vital for making best use of the projects’ contribution to flood risk management in the Western Balkans.

Annex 12: Proposed list of hydrometric equipment to be purchased and installed by the project Montenegro

1.1. Establishment of new hydrological and rainfall stations in the basin of Lake Skadar and the Adriatic Sea							
No.	**Station**	**River**	**Basin**	**Description**	**Amount (€)**	**Quantity**	**Total (€)**
1	Djudjevina	Kostanica	Moraca	Automatic hydrological stations with solar power, sensor for water level, temperature, and GPRS data transmission and water-level staff with carriers	10.500,00	1	10.500,00
				Construction of hydrologic stations with the hoppers for the installation of the measuring equipment (metal structure and the sandwich panels). Construction of a reinforced concrete foundation to set up cell. Concreting iron piles in the river bed to set up hydrological slats. Digging of channels and installation of pipes for probes for measuring the water level and water temperature.	6.500,00	1	6.500,00
2	Sreteska Gora	Sjevernica	Moraca	Automatic hydrological stations with solar power, sensor for water level, temperature, and GPRS data transmission and water-level staff with carriers	10.500,00	1	10.500,00
				Construction of hydrologic stations with the hoppers for the installation of the measuring equipment (metal structure and the sandwich panels). Construction of a reinforced concrete foundation to set up cell. Concreting iron piles in the river bed to set up hydrological slats. Digging of channels and installation of pipes for probes for measuring the water level and water temperature.	5.500,00	1	5.500,00
3	Orahovo	Orahovstica	Skadar lake	Automatic hydrological stations with solar power, sensor for water level, temperature, and GPRS data transmission and water-level staff with carriers	10.500,00	1	10.500,00
				Construction of hydrologic stations with the hoppers for the installation of the measuring equipment (metal structure and the sandwich panels). Construction of a reinforced concrete foundation to set up cell. Concreting iron piles to set up hydrological slats. Digging of channels and installation of pipes for probes for measuring the water level and water temperature.	6.500,00	1	6.500,00
4	Sasko lake	Sasko lake	Bojana	Automatic hydrological stations with solar power, sensor for water level, temperature, and GPRS data transmission and water-level staff with carriers	10.500,00	1	10.500,00
				Construction of hydrologic stations with the hoppers for the installation of the measuring equipment (metal structure and the sandwich panels). Construction of a reinforced concrete foundation to set up cell. Concreting of piles of iron to set up hydrological slats.	3.500,00	1	3.500,00

5	Manastir Moraca	Moraca	Automatic rainfall stations (all-weather precipitation gauge that uses weight-based technology to measure the amount and intensity of rain, snow, and haill), with solar power and GPRS data transmission	10.500,00	1	10.500,00
6	Traboin	Cijevna	Automatic rainfall stations (all-weather precipitation gauge that uses weight-based technology to measure the amount and intensity of rain, snow, and haill), with solar power and GPRS data transmission	10.500,00	1	10.500,00
7	Crkvice	Adriatic Sea	Automatic rainfall stations (all-weather precipitation gauge that uses weight-based technology to measure the amount and intensity of rain, snow, and haill), with solar power and GPRS data transmission	10.500,00	1	10.500,00
Total:						**95.500,00**
1.2. Equipment for hydrological stations						
1	OTT netDL 500	Data logger with integrated GPRS modem		2.000,00	10	20.000,00
2	OTT PLS (Pressure Level Sensor)	Sonde to measure the water level and water temperature		1.300,00	10	13.000,00
3	OTT FAD-5	Moisture Absorber for PLS sonde		200,00	10	2.000,00
4	OTT RLS (Radar Level Sensor)	Sensor for measuring the water level (radar)		3.500,00	3	10.500,00
5	Modem GSM/GPRS	Modem for data transmission		500,00	10	5.000,00
6	OTT PCU-12	Control unit power supply		350,00	10	3.500,00
7	Solar panels 12V/50W	Solar panel to power the instrument		760,00	10	7.600,00
8	Overvoltage protection	Surge protection for solar power 12V/50W		220,00	10	2.200,00
9	Overvoltage protection	Overvoltage protection for network power 230V		220,00	10	2.200,00
Total:						**66.000,00**
1.3. Instruments for measuring, maintenance and improvement of work						
1	OTT MF pro	Electromagnetic hydrometric wing with a measuring range of 0 - 6 m / s and a depth of 0 - 3 m.		12.500,00	2	25.000,00
2	RDI StreamPro ADCP	The ultrasonic instrument for measuring the flow of the open flows of up to 2 m depth.		32.000,00	1	32.000,00
3	OTT C2	Mini hydrometric wing 6 elisa		8.000,00€	1	8.000,00

4	OTT Z400	Digital signal counter with wings equation	1.000,00	2	2.000,00
Total:					**67.000,00**
1.4. Hardware and software					
1	Esri ArcGIS Desktop Basic Single	ArcGIS Desktop Basic Single Use License (2nd-3rd license)	4.660,00	1	4.660,00
		ArcGIS 3D Analyst for Desktop Single Use License (2nd-3rd license)	8.280,00	1	8.280,00
		ArcGIS Spatial Analyst for Desktop Single Use License (2nd-3rd license)	8.280,00	1	8.280,00
	Esri ArcGIS Desktop Basic Concurrent	ArcGIS Desktop Basic Concurrent Use License (2nd-3rd license)	10.350,00	1	10.350,00
		ArcGIS 3D Analyst for Desktop Concurrent Use License (2nd 3rd license)	8.280,00	1	8.280,00
		ArcGIS Spatial Analyst for Desktop Concurrent Use License (2nd-3rdlicense)	8.280,00	1	8.280,00
2	Laptop	PC for performing HM measurements and configuration of equipment (field)	1.700,00	2	3.400,00
3	Tablet	PC for performing HM measurements ADCP OTT Q-liner (field)	3.200,00	1	3.200,00
4	Dekstop PC	The workstation and monitor (for modelling)	1.700,00	2	3.400,00
5	Printer (koloritni)	Printer, Laser, Print Speed B / W 18 ppm, Color Print Speed 18 ppm	800,00	1	800,00
6	Scaner A_3 / A_4	Scansnap sv600 scanner (kolorit)	1.400,00	1	1.400,00
Total:					**60.330,00**
1.5.Trainings					
1	RiverSurveyor M9 ADCP	The engagement of experts from the UK, the authorized representative of the company Sontec from San Diego, USA. Training for working on the rivers due to the specifics of the hydrological regimes and adapting to our rivers.	1.500,00	6 days	9.000,00
2	Esri ArcGIS	Esri Course ArcGI Desktop (arrival of trainer, rental of premises and equipment, etc.) Introduction to GIS / Basic workflow / Implementation analysis	1.200,00	5 days	6.000,00
3	OTT AHS	Training for maintenance of equipment and instruments. Arrival of authorized representatives of OTT-a. Field and cabinet work.	1.000,00	5 days	5.000,00

Total					**20.000,00**
1.6.Equipment for staff					
1	Jacket	Technical three-layer jacket Gore Tex® Pro Shell® Khumbu material which gives extra durability and Gore Tex® Pro Shell®. Waterproof, windproof and excellent '' breathe '', has welded seams and waterproof zippers. Size: S - XXXL	800,00	8	6.400,00
2	Pants	Lightweight, waterproof and elastic pants made of Gore-Tex® Pro material. Size: S - XXXL	600,00	8	4.800,00
3	Sweatshirt	Polar, made of POLARTEC®POWERGRID HIGH EFFICIENCY material, elastic, vapor-permeable Size: S – XXXL	100,00	8	800,00
4	Shoes	Type: ankle shoes; Material: Gore-tex® membrane, waterproof; Size: 37 – 46	150,00	8	1.200,00
5	Life vest	Safety vest used for measuring from the boat and at greater depths	100,00	6	600,00
6	Helmet	Lightweight helmet made of durable plastic on the outside of the inner part of the EPS foam. Highly configurable and with the possibility of attaching headlamps	100,00	6	600,00
Total:					**14.400,00**

1.7. Costs for performing one series of hydrometric measurements and control of instruments

	Station	River	Basin	Number of days	Staff	Daily subsistence allowances (€)	Total (€)
	Vezirov most	Moraca	Skadar lake	1	8	18,00	144,00
	Zlatica	Moraca					
	Pernica	Moraca		1	8	18,00	144,00
	Medjurijecje	Mrtvica	Moraca				
	Sreteška gora	Sjevernica		1	8	18,00	144,00
	Đuđevina	Koštanica		1	8	18,00	144,00
	Gornjepoljski vir	Sušica	Zeta	1	8	18,00	144,00
	Nikšić	Bistrica					

	Dučice	Gračanica		1	8	18,00	144,00
	Duklov most	Zeta	Moraca				
	Rošca	Zeta					
	Danilovgrad	Zeta					
	Vranjske njive	Zeta					
	Podgorica	Ribnica	Moraca	1	8	18,00	144,00
	Trgaj	Cijevna					
	Brodska Njiva	Rijeka Crnojevića	Skadar lake	1	8	18,00	144,00
	Orahovo	Orahovštica					
	Plavnica	Skadar lake		1	8	18,00	144,00
	Vranjina						
	Ckla	Skadar lake		**1**	**8**	18,00	144,00
	Fraskanjel	Bojana					
Total				**10**	**8**	**18,00**	**1.440,00**

Former Yugoslav Republic of Macedonia

I. Hydrologic Stations Measurement Equipment

No	Type	Qty	Price/unit ($) from SEBA	Total ($)
1	SEBA Automatic Hydrological Station (Main ElPower)	2	5,518.92	11,037.84
	SEBA pressure and temperature sensor DST 22 Cable	2	1,135.53	
	SEBA data logger UnilogCom 3G+	2	2,073.48	
	Angle rod antenna, dual band 5 dB	2	116.55	
	Interface cable RS232 - USB	2	192.03	
	Software SEBA Config	2	205.35	
	Protection housing	2	367.41	

	Mains transformer 230 V / 12 V	2	308.58	
	solar gel accumulator 12V / 27Ah	2	231.99	
	necessery accessories	2	888.00	
2	SEBA Automatic Hydrological Station (Main ElPower)	6	5,523.36	33,140.16
	SEBA pressure and temperature sensor DST 22	6	1,135.53	
	Cable			
	SEBA data logger UnilogCom 3G+	6	2,073.48	
	Angle rod antenna, dual band 5 dB	6	116.55	
	Interface cable RS232 - USB	6	192.03	
	Software SEBA Config	6	205.35	
	Protection housing	6	367.41	
	Solar panel 12 V / 10 W	6	411.81	
	solar gel accumulator 12V / 27Ah	6	231.99	
	solar charger 5 A	6	123.21	
	necessery accessories	6	666.00	
2	Digital mesuring device	14	999.00	13,986.00
	SEBA Pressure and temperatur sensor + logger	14	888.00	
	Cable 10m	14	55.50	
	necessery accessories	14	55.50	
3	H&T Sensor (replacement)	11	1,135.53	12,490.83
	SEBA pressure and temperature sensor DST 22	11	1,135.53	
4	Data Logger (replacement)	12	2,073.48	24,881.76
	SEBA data logger UnilogCom 3G+	12	2,073.48	
5	Spear parts			
	Angle rod antenna, dual band 5 dB	5	116.55	582.75
	Mains transformer 230 V / 12 V	4	308.58	1,234.32
	Solar gel accumulator 12V / 27Ah	2	231.99	463.98
	Solar panel 12 V / 10 W	8	411.81	3,294.48
	Solar charger 5 A	8	123.21	985.68
6	Complet Cable Way System with Torpedo&Current Meter	1	35,199.21	35,199.21
	SEBA universal current meter F1	1	2,862.69	
	Plastic propeller	1	197.58	
	SEBA signal counter Z6	1	1,065.60	
	Torpedo sinkers	1	4,911.75	
	Connection piece	1	239.76	
	Stabilizer tail piece 1,4 m	1	1,354.20	
	Instrument case	1	905.76	

SEBA mechanical double drum winch SDW-M	1	13,788.42
Connection cable for SDW-M, 5 m	1	117.66
Suspension conductor cable for SDW-M	1	14.43
Remote controller with display	1	3,516.48
Necessary accessories	1	5,994.00

Total $137,297.01

Hydrometric Equipment				**$63,825.00**
No	Type	Qty	Price/unit ($) from SEBA	Total ($)
1	RiverPro ADCP	1	61,050.00	61,050.00
	RiverPro ADCP without Trimaran 3	1	38,744.55	
	USB-Bluetooth 300-Adapter	1	190.92	
	GPS-Kit for RiverPro HighSpeed-RiverBoat	1	1,984.68	
	TrimbleSPS 356 DGNSS Beacon Receiver	1	6,378.06	
	High-Speed-RiverBoat for RiverPro	1	9,129.75	
	RiverPro Guarantee Prolongation	1	5,113.77	
			Total	61,050.00
No	Type	Qty	Price/unit ($)	Total ($)
2	FieldTrip Laptop	1	2,775.00	2,775.00
	Windows			
			Total	**2,775.00**
			Total 1+2	**63,825.00**

Meteorological Stations Measurement Equipment TOTAL: 116,707.41 USD

No	Type	Qty	Price/unit ($) from Campbell	Total ($)
	Automatic Meteorlogical station Type 1 (New instalation)			66,660.78 USD
1	UT30, Aluminium Tower, 10 m, Guying kit, Lighting rods grounding	5	951.5	4757.5
2	UTGUY Universal Tower Guy Kit	5	209	1045
3	UTGND Universal Tower Grounding Kit	5	66	330
4	05108-45-37 RM Young Heavy Duty Wind Monitor, Alpine) wind speed and direction sensor, 10 m cable	3	1800	5400
5	034B-L - Wind Speed and Wind Direction Sensors /	2	850	1700
6	CM220 Right Angle Mounting Kit	5	33	165
7	Type HMP155A-9, sensor for air temperature and humidity, 3 m cable	5	806.63	4033.15
8	14-Plate Solar Radiation Shield for the HMP155A-L	5	220	1100
9	Type LP02-L33 PT, sensor for global solar radiation, 10 m cable, Mounting kit	5	1033.1	5165.5
10	CM225 Solar Sensor Mounting Stand	5	33	165
11	Type CM202, 2 ft. Crossarm with CM210 Mounting Kit	5	81.4	407
12	Type CM204 Crossarms with One CM210 Mounting Kit	5	96	480
13	Type SR50A, sensor for snow depth, 3 m cable,	5	959.3	4796.5
14	Mounting kit 19517 for SR50A	5	25.3	126.5
15	Type CR1000 -ST-SW-NC, data logger	5	1644.5	8222.5
16	Type CR1000KD, display	1	320	320
17	Type CS106, barometric pressure sensor	5	704	3520
18	Type CH150-SW, 12 V Charging Regulator	5	250	1250
19	29796 -IP, Power Supply 24Vdc 1.67A Output, 100-240Vac 1A Input, 5ft Cable	5	40	200

20	10075 BP24 24Ah 12V Sealed Rechargeable Battery w/o Mounting Hardware	5	137.5	687.5
21	Type SP20 20W Solar Panel, solar panel, 20 W , Mounting kit	5	320	1600
22	Type 107-17-PT, sensor for soil temperature,(2, 5, 10, 20, 30, 50 and 100 cm) , ground temperature	21	117.69	2471.49
23	Type 107-17-PT, sensor for air temperature	6	117.69	706.14
24	Type 41303-5A, 6-Plate Solar Radiation Shield for 107, Mounting kit , air temperature at 5 cm	6	132	792
25	Total Rain weighing Sensor, TRwS214 (MPS System, Bratislava, Slovakia)	3	3500	10500
26	Raingauge TE525MM , 6 m cable	2	430	860
27	29796 -IP, Power Supply 24Vdc 1.67A Output, 100-240Vac 1A Input, 5ft Cable	5	40	200
28	NL121-ST-SW Ethernet module	2	214.5	429
29	28033 Ethernet ESP-100-POE In-line Surge Protection (2 per 1 NL121)	4	33	132
30	GPRS modem,COM 111 & CS-GSM/GPRS RS-232 kit,data and power cable, antenna	5	500	2500
31	31317 Surge Protection Kit, Type N to SMA, 700- 2700MHz, 18 inches	3	231	693
32	Type NL241-ST-SW, Wireless Network Link Interface	3	407	1221
33	16755 2.4GHz 13dBd Yagi Enclosed Antenna w/Type N-F & Mounting	3	145	435
34	Digital time switch SHT-1, with daily and weekly program (for datalogger reset	5	50	250

No Automatic Meteorlogical station Type 2 (Upgrade & Reconstruction)

1	034B-L - Wind Speed and Wind Direction Sensors /	1	850	850	7,098.10 USD
2	CM220 Right Angle Mounting Kit	1	33	33	
3	Type HMP155A-33, sensor for air temperature and humidity, 10 m cable	1	820	820	
4	14-Plate Solar Radiation Shield for the HMP155A-L	1	220	220	
5	Type LP02-L33 PT, sensor for global solar radiation, 10 m cable, Mounting kit	1	1033.1	1033.1	
6	CM225 Solar Sensor Mounting Stand	1	33	33	
7	Type CR1000 -ST-SW-NC, data logger	1	1644.5	1644.5	
8	Type CS106, barometric pressure sensor	1	704	704	

9	Type CH150-SW, 12 V Charging Regulator	1	250	250	
10	29796 -IP, Power Supply 24Vdc 1.67A Output, 100-240Vac 1A Input, 5ft Cable	1	40	40	
11	10075 BP24 24Ah 12V Sealed Rechargeable Battery w/o Mounting Hardware	1	137.5	137.5	
12	GPRS modem,COM 111 & CS-GSM/GPRS RS-232 kit,data and power cable, antenna	1	500	500	
13	31317 Surge Protection Kit, Type N to SMA, 700- 2700MHz, 18 inches	1	231	231	
14	Type NL241-ST-SW, Wireless Network Link Interface	1	407	407	
15	16755 2.4GHz 13dBd Yagi Enclosed Antenna w/Type N-F & Mounting	1	145	145	
16	Digital time switch SHT-1, with daily and weekly program (for datalogger reset	1	50	50	

No Automatic Raingauge station

1	Dattaloger CR300	7	635	4445	22,070.53 USD
2	Type HMP155A-9 sensor for air temperature and humidity,	5	806.63	4033.15	
3	14-Plate Solar Radiation Shield for the HMP155A-L	5	220	1100	
4	Type 107-9-PT, air temperature	2	117.69	235.38	
5	Type 41303-5A, 6-Plate Solar Radiation Shield for 107, Mounting kit	2	132	264	
6	Type SR50A, sensor for snow depth, 3 m cable,	5	959.3	4796.5	
7	Mounting kit 19517 for SR50A	5	25.3	126.5	
8	10075 BP12 12Ah 12V Sealed Rechargeable Battery w/o Mounting Hardware	7	110	770	
9	Raingauge TE525MM , 6 m cable	7	430	3010	
10	Type SP20 20W Solar Panel, solar panel, 20 W , Mounting kit	7	320	2240	
11	GPRS Modem (Price from local provider)	7	150	1050	

Spare Parts

No

1	Datalogger Type CR1000 -ST-SW-NC	1	1644	1644	15,878.00 USD
2	Dataloger Type CR300	2	1270	2540	
3	Solar panel Type SP20 20W Solar Panel,, 20 W , Mounting kit	2	960	1920	
4	Charging Regulator Type CH150-SW, 12 V Charging Regulator	2	250	500	
5	Type CS106, barometric pressure sensor	1	704	704	
6	034B-L - Wind Speed and Wind Direction Sensors /	1	850	850	
7	Type HMP155A-33 sensor for air temperature and humidity,	1	820	820	
8	GPRS Modem (Price from local provider)	2	150	300	
9	Callibration tool,l CMP11-L10-PT Secondary Standard Pyranometer	1	3100	3100	
10	Barometric Pressure Transfer Standard PTB330TS, calibration tool	1	3500	3500	

Tools and accessories

No					
1	Analog station for soldering	1	500	500	5,000.00 USD
2	Digital multimeter, FLUKE	1	500	500	
3	Special clothes set for work in field conditions, (3 sets)	3	500	1500	
4	Laptop for work on field condition	1	2500	2500	

Annex 13. A breakdown of the IE management fee

UNDP Fees for Support to Adaptation Fund Project for "Integrated climate-resilient transboundary flood risk management in the Drin River basin in the Western Balkans"

Category	Services Provided by UNDP	UNDP Fee (8.5%)
Identification, Sourcing and Screening of Ideas	Provide information on substantive issues in adaptation associated with the purpose of the Adaptation Fund (AF). Engage in upstream policy dialogue related to a potential application to the AF. Verify soundness & potential eligibility of identified idea for AF.	$38,887
Feasibility Assessment / Due Diligence Review	Provide up-front guidance on converting general idea into a feasible project/programme. Source technical expertise in line with the scope of the project/programme. Verify technical reports and project conceptualization. Provide detailed screening against technical, financial, social and risk criteria and provide statement of likely eligibility against AF requirements. Determination of execution modality and local capacity assessment of the national executing entity. Assist in identifying technical partners. Validate partner technical abilities. Obtain clearances from AF.	$116,663
Development & Preparation	Provide technical support, backstopping and troubleshooting to convert the idea into a technically feasible and operationally viable project/programme. Source technical expertise in line with the scope of the project/programme needs. Verify technical reports and project conceptualization. Verify technical soundness, quality of preparation, and match with AF expectations. Negotiate and obtain clearances by AF. Respond to information requests, arrange revisions etc.	$155,550
Implementation	Technical support in preparing TORs and verifying expertise for technical positions. Provide technical and operational guidance project teams. Verification of technical validity / match with AF expectations of inception report. Provide technical information as needed to facilitate implementation of the project activities. Provide advisory services as required. Provide technical support, participation as necessary during project activities. Provide troubleshooting support if needed. Provide support and oversight missions as necessary. Provide technical monitoring, progress monitoring, validation and quality assurance throughout. Allocate and monitor Annual Spending Limits based on agreed work plans. Receipt, allocation and reporting to the AFB of financial resources. Oversight and monitoring of AF funds. Return unspent funds to AF.	$349,988
Evaluation and Reporting	Provide technical support in preparing TOR and verify expertise for technical positions involving evaluation and reporting. Participate in briefing / debriefing. Verify technical validity / match with AF expectations of all evaluation and other reports Undertake technical analysis, validate results, and compile lessons. Disseminate technical findings	$116,662
Total		$777,750

Annex 14. Project Timetable

	Activity	Y1Q1	Y1Q2	Y1Q3	Y1Q4	Y2Q1	Y2Q2	Y2Q3	Y2Q4	Y3Q1	Y3Q2	Y3Q3	Y3Q4	Y4Q1	Y4Q2	Y4Q3	Y4Q4	Y5Q1	Y5Q2	Y5Q3	Y5Q4
1.1.1	Review the existing coverage, physical condition and data collection procedure including the quality of data. Collect data from the relevant Riparian Institutions to get the current station coverage, equipment installed, data period and data collection procedure																				
1.1.2	Review the monitoring network requirements for effective monitoring for strategic flood risk management, flood forecasting and early warning in the future and optimize the stations coverage. Develop the optimised hydrometric network plan																				
1.1.3	Undertake an assessment of the existing telecommunications infrastructure to support the telemetered and automated stations																				
1.1.4	Digitize all relevant historical paper format data for DRB and systematize and store within the hydrometric database. Establish guidelines, procedures, data sharing protocols and user's manuals for the new hydrometric database																				
1.1.5	Assess the institutional arrangements and capacity for the operation and maintenance of the hydrometric network and develop Institutional capacity development plan for hydrometric network O&M detailing manpower and financial requirements, and training needs, for the efficient O&M of all the stations in each Riparian country. Assess existing roles and responsibilities and the capacity of staff responsible for operating and maintaining the hydrometric network. Assess the existing protocols for the collection, transmission, sharing, storage, management and use of the observed																				
1.1.6	Establish mechanisms for population and maintenance of centralized basin hydrometric database																				
1.1.7	Prepare an operational plan for the hydrometric network including transmission of data, data management, data analysis and reporting procedures. The maintenance plan will cover manpower, technical capacity, material and finance requirements																				
1.1.8	Provide detailed specification and design including costs of all equipment and each component of the hydrometric network specified including the detailed design and bid document for the stations for future rehabilitation / new installation																				
1.1.9	Provide technical and financial assistance to improve hydrometric monitoring network (undertake procurement and installation of equipment																				
1.1.10	Review existing financing of hydrometric network O&M in each riparian country. Identify resourcing, and training needs as well as institutional arrangements for the management of the proposed new hydrometric network. Develop and implement O&M financing mechanisms for the hydrometric network																				
1.2.1	Establish Spatial Data Initiative and data management system for project																				
1.2.2	Undertake detailed topographic surveys of the river channel through high risk areas including all major infrastructure across the river (e.g. bridges, dams etc.) and along river banks (e.g. flood walls, levees etc.) for the Crn Drim in Macedonia																				
1.2.3	Acquire/purchase/commission high resolution topographic data for the floodplain areas through high risk areas of the Crn Drim in Macedonia. Aerial photographs or LiDAR sources would be recommended in order to obtain a high-resolution DEM covering the whole basin. Coarser DEM and topographic data will be used for the rest of the basin for basin wide modelling																				
1.2.4	Using the most appropriate modelling techniques, establish numerical high-level basin wider hydrological and hydraulic models of the DRB in Macedonia based on detailed surveys of the physical characteristics of the river basin, and produce high resolution flood hazard inundation maps suitable for use in land use planning, development zoning, flood risk mitigation design, establishment of flood insurance criteria, raising public awareness, and emergency planning. Maps will be produced for a number of different return periods and for a range of climate change scenarios. Flood modelling and mapping will cover all relevant flooding mechanisms within the basin																				
1.2.5	Integrate detailed hydrological and hydraulic modelling for other Areas for further assessment (AFAs) being modelled by GIZ and riparian governments into the high-level river basin model, as and when they become available																				
1.2.6	Undertake capacity assessment of relevant institutions for flood risk assessment and modelling and develop a long-term capacity development plan and training needs																				

1.3.1	Develop and codify methods and tools for undertaking socio-economic surveys to collect necessary information to fully map the socio-economic conditions of within the basin.																				
1.3.2	Undertake socio-economic and vulnerability assessment to fully map existing vulnerability within the DRB, in order to identify the most appropriate adaptation options to reduce vulnerability within the s basin.																				
1.3.3	Develop a GIS-based flood risk model which integrates various spatial socio-economic data with the flood hazard maps, calculates flood risk, performs vulnerability assessment, produce vulnerability maps which will include damages and loss of life estimates and to test flood management options.																				
1.3.4	Implement the DisInventar database in Riparian countries for the systematic recording of damage and loss.																				
1.3.5	Develop harmonized methods, guidelines and procedures in line with Sendai Framework, for recording flood events, undertaking post-event surveys and assessing vulnerability to flooding as well as assessing the effectiveness of flood mitigation measures in reducing vulnerability and																				
1.3.6	Undertake cost-benefit options analysis using the vulnerability loss and damages model to identify options that maximize benefits as the basis for the development of the Integrated FRM strategy and plan for the basin																				
1.3.7	Monitoring and Evaluation - Component 1																				
2.1.1	Review existing FM policy and enabling environments in each riparian country and develop basin FRM policies for the implementation of FRM legislative and policy framework in line with relevant EU directives.																				
2.1.2	Develop basin risk financing and risk transfer mechanisms. To include: Development of risk financing and risk transfer mechanisms strategy to include private sector engagement strategy for long-term implementation of risk financing and risk transfer mechanisms for national-level flood risk financing and resilience strategy. Also, to include identification or public-sector risk financing mechanisms for flood risk management. Risk financing and transfer mechanisms products and tools identified (if existing) and/or developed based on detailed socio-economic risk, damages and losses assessment (to be undertaken in Output 1.3). Undertake feasibility studies of all identified and shortlisted risk financing mechanisms, development of a basin flood insurance model for the assessment of premiums and payouts of flood events of different return periods. Development of basin flood insurance scheme.																				
2.1.3	modelling) on climate change impacts on the identified sectors (energy and agriculture) in the DRB. Consult with national sector leaders and relevant stakeholders on findings of study and invite comments on recommendations through the floods working group. Develop and codify detailed methodologies for incorporating climate-change responsive flood risk considerations into risk assessments, strategies, policies and plans for the energy and agriculture sectors. Develop and finalize robust sector FRM policies and any necessary enabling guidelines and/or tools for effective implementation of new policies.																				
2.2.1	Institutional mapping to identify the current relevant national and sub-national government departments with functions in flood risk management in each Riparian country.																				
2.2.2	Institutional capacity assessment and gap analysis to include functional, resourcing, technical and financial capacity assessment. Development of long-term Institutional capacity development plan addressing resourcing, technical, and financial needs in each Riparian. Develop training programme for climate risk management and flood risk management and embed in relevant national/regional institutions to improve the technical capacity and knowledge base for climate risk management and a long-term adaptation planning for flood risk management.																				
2.2.3	The ToR of the Drin EWG Floods will be revisited in terms of mandate, membership, resource requirements, technical capacity and technical enabling environment; data sharing and data access and technical means and tools for coordination. In consultation with riparian countries and the DCG a strategy and a five-year work program of the Drin EWG Floods will be developed and implemented.																				
2.2.4	Deliver prioritized training to practitioners, decision-makers and communities to include the following:																				
2.3.1	Development of an integrated basin flood risk management plan for the DRB with participation of all relevant stakeholders. The plan will take a bottom-up, multi-stakeholder, consensus-based approach. This activity will be mainstreamed into the national on-going work on the development of the river basin management plans through the relevant national authorities. From the basin plan, and sub-national plans will be developed.																				
2.3.2	Monitoring and Evaluation - Component 2																				

3.1.1	Undertake optionnering for long-term FRM measures for DRB. Feasibility, outlined design and indicative costing																					
3.1.2	Undertake detailed design structural measures to be implemented by project (for which feasibility, outline design and costing was done at PPG stage) - Albania																					
3.1.2	Undertake detailed design structural measures to be implemented by project (for which feasibility, outline design and costing was done at PPG stage) - Montenegro																					
3.1.2	Undertake detailed design structural measures to be implemented by project (for which feasibility, outline design and costing was done at PPG stage) _ Macedonia																					
3.2.1	Investment in implementation of structural measures in Albania																					
3.2.2	Investment in implementation of structural measures in Montenegro																					
3.2.3	Investment in implementation of structural measures in Macedonia																					
3.3.1	Undertake detailed design non-structural measures to be implemented by project																					
3.3.2	Investment non-structural measures in Albania																					
3.3.3	Investment non-structural measures in Montenegro																					
3.3.4	Investment non-structural measures in Macedonia																					
3.3.5	Monitoring and Evaluation - Component 3																					

SESP Attachment 1. Social and Environmental Risk Screening Checklist

Checklist Potential Social and Environmental Risks		
Principles 1: Human Rights		**Answer (Yes/No)**
1.	Could the Project lead to adverse impacts on enjoyment of the human rights (civil, political, economic, social or cultural) of the affected population and particularly of marginalized groups?	No
2.	Is there a likelihood that the Project would have inequitable or discriminatory adverse impacts on affected populations, particularly people living in poverty or marginalized or excluded individuals or groups? [1]	No
3.	Could the Project potentially restrict availability, quality of and access to resources or basic services, in particular to marginalized individuals or groups?	No
4.	Is there a likelihood that the Project would exclude any potentially affected stakeholders, in particular marginalized groups, from fully participating in decisions that may affect them?	Yes
5.	Is there a risk that duty-bearers do not have the capacity to meet their obligations in the Project?	No
6.	Is there a risk that rights-holders do not have the capacity to claim their rights?	No
7.	Have local communities or individuals, given the opportunity, raised human rights concerns regarding the Project during the stakeholder engagement process?	No
8.	Is there a risk that the Project would exacerbate conflicts among and/or the risk of violence to project-affected communities and individuals?	No
Principle 2: Gender Equality and Women's Empowerment		
1.	Is there a likelihood that the proposed Project would have adverse impacts on gender equality and/or the situation of women and girls?	No
2.	Would the Project potentially reproduce discriminations against women based on gender, especially regarding participation in design and implementation or access to opportunities and benefits?	Yes
3.	Have women's groups/leaders raised gender equality concerns regarding the Project during the stakeholder engagement process and has this been included in the overall Project proposal and in the risk assessment?	No
4.	Would the Project potentially limit women's ability to use, develop and protect natural resources, taking into account different roles and positions of women and men in accessing environmental goods and services? *For example, activities that could lead to natural resources degradation or depletion in communities who depend on these resources for their livelihoods and well being*	No
Principle 3: Environmental Sustainability: Screening questions regarding environmental risks are encompassed by the specific Standard-related questions below		
Standard 1: Biodiversity Conservation and Sustainable Natural Resource Management		
1.1	Would the Project potentially cause adverse impacts to habitats (e.g. modified, natural, and critical habitats) and/or ecosystems and ecosystem services? *For example, through habitat loss, conversion or degradation, fragmentation, hydrological changes*	Yes

[1] Prohibited grounds of discrimination include race, ethnicity, gender, age, language, disability, sexual orientation, religion, political or other opinion, national or social or geographical origin, property, birth or other status including as an indigenous person or as a member of a minority. References to "women and men" or similar is understood to include women and men, boys and girls, and other groups discriminated against based on their gender identities, such as transgender people and transsexuals.

1.2	Are any Project activities proposed within or adjacent to critical habitats and/or environmentally sensitive areas, including legally protected areas (e.g. nature reserve, national park), areas proposed for protection, or recognized as such by authoritative sources and/or indigenous peoples or local communities?	Yes
1.3	Does the Project involve changes to the use of lands and resources that may have adverse impacts on habitats, ecosystems, and/or livelihoods? (Note: if restrictions and/or limitations of access to lands would apply, refer to Standard 5)	No
1.4	Would Project activities pose risks to endangered species?	No
1.5	Would the Project pose a risk of introducing invasive alien species?	No
1.6	Does the Project involve harvesting of natural forests, plantation development, or reforestation?	Yes
1.7	Does the Project involve the production and/or harvesting of fish populations or other aquatic species?	No
1.8	Does the Project involve significant extraction, diversion or containment of surface or ground water? *For example, construction of dams, reservoirs, river basin developments, groundwater extraction*	Yes
1.9	Does the Project involve utilization of genetic resources? (e.g. collection and/or harvesting, commercial development)	No
1.10	Would the Project generate potential adverse transboundary or global environmental concerns?	No
1.11	Would the Project result in secondary or consequential development activities which could lead to adverse social and environmental effects, or would it generate cumulative impacts with other known existing or planned activities in the area?	No
Standard 2: Climate Change Mitigation and Adaptation		
2.1	Will the proposed Project result in significant[2] greenhouse gas emissions or may exacerbate climate change?	No
2.2	Would the potential outcomes of the Project be sensitive or vulnerable to potential impacts of climate change?	Yes
2.3	Is the proposed Project likely to directly or indirectly increase social and environmental vulnerability to climate change now or in the future (also known as maladaptive practices)? *For example, changes to land use planning may encourage further development of floodplains, potentially increasing the population's vulnerability to climate change, specifically flooding*	Yes
Standard 3: Community Health, Safety and Working Conditions		
3.1	Would elements of Project construction, operation, or decommissioning pose potential safety risks to local communities?	Yes
3.2	Would the Project pose potential risks to community health and safety due to the transport, storage, and use and/or disposal of hazardous or dangerous materials (e.g. explosives, fuel and other chemicals during construction and operation)?	No
3.3	Does the Project involve large-scale infrastructure development (e.g. dams, roads, buildings)?	No
3.4	Would failure of structural elements of the Project pose risks to communities? (e.g. collapse of buildings or infrastructure)	Yes
3.5	Would the proposed Project be susceptible to or lead to increased vulnerability to earthquakes, subsidence, landslides, erosion, flooding or extreme climatic conditions?	No
3.6	Would the Project result in potential increased health risks (e.g. from water-borne or other vector-borne diseases or communicable infections such as HIV/AIDS)?	No

[2] In regards to CO_2, 'significant emissions' corresponds generally to more than 25,000 tons per year (from both direct and indirect sources). [The Guidance Note on Climate Change Mitigation and Adaptation provides additional information on GHG emissions.]

3.7	Does the Project pose potential risks and vulnerabilities related to occupational health and safety due to physical, chemical, biological, and radiological hazards during Project construction, operation, or decommissioning?	No
3.8	Does the Project involve support for employment or livelihoods that may fail to comply with national and international labor standards (i.e. principles and standards of ILO fundamental conventions)?	No
3.9	Does the Project engage security personnel that may pose a potential risk to health and safety of communities and/or individuals (e.g. due to a lack of adequate training or accountability)?	No
Standard 4: Cultural Heritage		
4.1	Will the proposed Project result in interventions that would potentially adversely impact sites, structures, or objects with historical, cultural, artistic, traditional or religious values or intangible forms of culture (e.g. knowledge, innovations, practices)? (Note: Projects intended to protect and conserve Cultural Heritage may also have inadvertent adverse impacts)	No
4.2	Does the Project propose utilizing tangible and/or intangible forms of cultural heritage for commercial or other purposes?	No
Standard 5: Displacement and Resettlement		
5.1	Would the Project potentially involve temporary or permanent and full or partial physical displacement?	No
5.2	Would the Project possibly result in economic displacement (e.g. loss of assets or access to resources due to land acquisition or access restrictions – even in the absence of physical relocation)?	No
5.3	Is there a risk that the Project would lead to forced evictions?[3]	No
5.4	Would the proposed Project possibly affect land tenure arrangements and/or community based property rights/customary rights to land, territories and/or resources?	No
Standard 6: Indigenous Peoples		
6.1	Are indigenous peoples present in the Project area (including Project area of influence)?	No
6.2	Is it likely that the Project or portions of the Project will be located on lands and territories claimed by indigenous peoples?	No
6.3	Would the proposed Project potentially affect the human rights, lands, natural resources, territories, and traditional livelihoods of indigenous peoples (regardless of whether indigenous peoples possess the legal titles to such areas, whether the Project is located within or outside of the lands and territories inhabited by the affected peoples, or whether the indigenous peoples are recognized as indigenous peoples by the country in question)? If the answer to the screening question 6.3 is "yes" the potential risk impacts are considered potentially severe and/or critical and the Project would be categorized as either Moderate or High Risk.	No
6.4	Has there been an absence of culturally appropriate consultations carried out with the objective of achieving FPIC on matters that may affect the rights and interests, lands, resources, territories and traditional livelihoods of the indigenous peoples concerned?	No
6.5	Does the proposed Project involve the utilization and/or commercial development of natural resources on lands and territories claimed by indigenous peoples?	No
6.6	Is there a potential for forced eviction or the whole or partial physical or economic displacement of indigenous peoples, including through access restrictions to lands, territories, and resources?	No
6.7	Would the Project adversely affect the development priorities of indigenous peoples as defined by them?	No

[3] Forced evictions include acts and/or omissions involving the coerced or involuntary displacement of individuals, groups, or communities from homes and/or lands and common property resources that were occupied or depended upon, thus eliminating the ability of an individual, group, or community to reside or work in a particular dwelling, residence, or location without the provision of, and access to, appropriate forms of legal or other protections.

6.8	Would the Project potentially affect the physical and cultural survival of indigenous peoples?	No
6.9	Would the Project potentially affect the Cultural Heritage of indigenous peoples, including through the commercialization or use of their traditional knowledge and practices?	No
Standard 7: Pollution Prevention and Resource Efficiency		
7.1	Would the Project potentially result in the release of pollutants to the environment due to routine or non-routine circumstances with the potential for adverse local, regional, and/or transboundary impacts?	No
7.2	Would the proposed Project potentially result in the generation of waste (both hazardous and non-hazardous)?	Yes
7.3	Will the proposed Project potentially involve the manufacture, trade, release, and/or use of hazardous chemicals and/or materials? Does the Project propose use of chemicals or materials subject to international bans or phase-outs? *For example, DDT, PCBs and other chemicals listed in international conventions such as the Stockholm Conventions on Persistent Organic Pollutants or the Montreal Protocol*	No
7.4	Will the proposed Project involve the application of pesticides that may have a negative effect on the environment or human health?	No
7.5	Does the Project include activities that require significant consumption of raw materials, energy, and/or water?	No

ADAPTATION FUND BOARD SECRETARIAT TECHNICAL REVIEW OF PROJECT/PROGRAMME PROPOSAL

PROJECT/PROGRAMME CATEGORY: Regional Project Concept

Countries/Region: **Albania, the Former Yugoslav Republic of Macedonia, Montenegro**
Project Title: **Integrated climate-resilient transboundary flood risk management in the Drin River basin in the Western Balkans**
Thematic focal area: **Disaster risk reduction and early warning systems**
Implementing Entity: **United Nations Development Programme (UNDP)**
Executing Entities: **UNDP, Global Water Partnership**
AF Project ID: **EE/MIE/DRR/2018/PPC/1**
IE Project ID: **PIMS 6215** Requested Financing from Adaptation Fund (US Dollars): **9,927,750**
Reviewer and contact person: **Daouda Ndiaye** Co-reviewer(s): **Martina Dorigo**
IE Contact Person(s): **Natalia Olofinskaya**

Review Criteria	Questions	Comments on 17 August 2018	Comments on 12 September 2018	UNDP Responses
Country Eligibility	1. Are all of the participating countries party to the Kyoto Protocol?	Yes.		
	2. Are all of the participating countries developing countries particularly vulnerable to the adverse effects of climate change?	Yes. Climate change is already having an impact in the Drin Riparian countries and is likely to intensify in the future. Historical flood data from the Western Balkans suggests a more frequent occurrence of flood events, characterized by more extreme and more rapid increase in water levels attributed to an uneven distribution of precipitation and torrential rain.		
Project Eligibility	1. Has the designated government authority for the Adaptation Fund endorsed the project/programme?	No. **CAR:** Please provide a letter of endorsement from designated authorities of the countries involved.	**CAR:** Partially addressed. LOE from Albania is missing.	

	2. Does the regional project / programme support concrete adaptation actions to assist the participating countries in addressing the adverse effects of climate change and build in climate resilience, and do so providing added value through the regional approach, compared to implementing similar activities in each country individually?	Yes. The project seeks to strengthen the current flood forecasting and early warning system to ensure an end-to-end fully-integrated flood forecasting and early warning system (FFEWS) is operational within the Drin River basin. The project will also develop and implement a transboundary integrated flood risk management (FRM) strategies providing the national authorities with robust and innovative solutions for FRM, DRR and climate adaptation, including ecosystem-based gender sensitive participatory approaches. In addition, the project will develop the underlying capacity of national and regional institutions to ensure sustainability and to scale up the results. It will support stakeholders by providing guidance, sharing climate information, knowledge and best practices. The project will also invest in the priority structural and community-based non-structural measures. The proposals states: "Based on a review of the status and adequacy of existing monitoring networks in riparian countries, the optimized network required for basin-scale flood risk monitoring and management will be identified, based on which, the project will design, purchase and implement new/rehabilitated monitoring network throughout the basin." Please confirm that the requested budget will be sufficient to cover the estimated gap. In case it is not, please explain the risk involved in terms of the optimization target and the potential mitigation measures. **CR1**	**CR1:** Addressed.	

	3.	Overall, the initial review finds that there is a significant risk for the project not to achieve its objectives in the event of a lack of interest from the private sector to pay for part of the costs of development, operations and/or maintenance of the systems and measures to be put in place. The fully-developed proposal should consider no-regret options that would help advance the agenda of a longer-term fully-fledged integrated system to address flood risks in the Drin River Basin, in synergy with and building on existing and planned initiatives in the riparian countries and at the regional level. The fully-developed project document should provide the scope and expected adaptation benefits of the structural and non-structural interventions, and determine the scalability of such interventions. In case those measures are taken as demonstration/pilot measures to be scaled up, the document should explain the approach to be taken during implementation to ensure that basin-wide impact will be achieved in the longer term or in synergy with parallel interventions.		Description of the prioritized project sites, proposed options for structural and non-structural flood risk reduction measures and project beneficiaries is provided in the full proposal (Outcome 3) and in the Annex 5 to the full proposal. Expected adaptation benefits are outlined in the Results Framework.

	4. Does the project / programme provide economic, social and environmental benefits, particularly to vulnerable communities, including gender considerations, while avoiding or mitigating negative impacts, in compliance with the Environmental and Social Policy of the Fund?	Yes. More information on the expected benefits should be provided at the fully-developed project document stage, including the target sites and beneficiaries in the riparian countries, including the most vulnerable groups and gender consideration.		Description prioritized project sites, proposed structural and non-structural flood risk reduction options and project beneficiaries is provided in the Annex 5 to the full proposal. Expected adaptation benefits are outlined in the Results Framework. Gender analysis and action plan is provided in Annex 8. Stakeholder analysis is provided in Annex 9.
	5. Is the project / programme cost-effective and does the regional approach support cost-effectiveness?	Yes. To be further demonstrated at the fully-developed project document stage, when the scope of interventions and target beneficiaries are identified, and structural and non-structural measures are identified and the rationale for their use defined. The fully-developed project document should also demonstrate that the planned activities will be sufficient to address the flood risks at the regional and national level. Also see CR1		Additional information on the relevant partner projects is provided. Detailed information on GIZ-implemented flood risk management project and cooperation arrangements is provided in the full proposal.

	6. Is the project / programme consistent with national or sub-national sustainable development strategies, national or sub-national development plans, poverty reduction strategies, national communications and adaptation programs of action and other relevant instruments? If applicable, it is also possible to refer to regional plans and strategies where they exist.	Yes. Please elaborate on potential regional plans and strategies, including through the Drin Core Group, that are relevant to the project. **CR2**	**CR2:** Addressed.	
	7. Does the project / programme meet the relevant national technical standards, where applicable, in compliance with the Environmental and Social Policy of the Fund?	Yes. Please clarify if the project is going to look at the national standards related to non-structural activities under output 3.3. **CR3**	**CR3:** Addressed.	

	8. Is there duplication of project / programme with other funding sources?	Not clear. Given the high number of relevant initiatives in the region, it would help to have a table showing how the listed projects are complementary or relevant to the proposed project and how it does not duplicate. **CR4** Also, the proposal does not mention the GEF IW "Danube River Basin Hydromorphology and River Restoration (DYNA)" project. This project is implemented/executed by WWF/ICPDR and plays a key role advancing flood risk management across the East European non-EU member states and focuses on cost effective restoration of the natural functions of wetlands and floodplains, with their ability to retain floodwaters and reduce the flood pulse. In addition, the project should at least show that potential relevant synergies with the International Commission for the Protection of the Danube River (ICPDR) and International Sava River Basin Commission (ISRBC) have been explored, including how their inter-regional coordination mechanisms may be leveraged. **CR5**	**CR4:** Addressed **CR5:** Addressed.	
	9. Does the project / programme have a learning and knowledge management component to capture and feedback lessons?	Yes. A detailed KM plan is provided. Please clarify under which component and expected output(s) these activities will take place. **CR6** Please explain how knowledge from structural and non-structural measures that will be implemented (piloted?) under outcome 3 will be captured and processed to achieve replicability and scalability of successful interventions. **CR7**	**CR6:** Addressed. **CR7:** Addressed. Please include the information provided by the response sheet in the fully-developed project document.	Information included in the full proposal (Section H).

	10. Has a consultative process taken place, and has it involved all key stakeholders, and vulnerable groups, including gender considerations?	Yes. However, the views of communities and particularly vulnerable groups do not seem to have been captured during the consultation process, especially to discuss elements under output 3.3. where community-based interventions are envisaged. It is also envisaged that the private sector will be more engaged with during the preparation of the fully-developed project document.		Additional stakeholders consultations, including consultations with beneficiary communities have been conducted (annex 9), gender assessment and action plan are provided in Annex 8.
	11. Is the requested financing justified on the basis of full cost of adaptation reasoning?	Partially. It is accepted that the project alone will not help address all flood risks in the riparian countries. However, the project will cover the full cost of adaptation in aspects such as policy and institutional frameworks, technology transfer, capacity development for promoting climate resilient transboundary flood risk management and demonstration of community-based low cost flood risk reduction. Further information on parallel adaptation actions and on the gap to address flood risks basin-wide is expected at the fully-developed project document stage.		Detailed information on the parallel adaptation project implemented by GIZ is provided (Annexes 9, 10, 11). An agreement on cooperation and coordination has been reached with the GIZ partners (Annex 9). Proposed structural measures in high-risk sites will be supported with co-financing. Please see an updated Section J. on full cost of adaptation intervention.
	12. Is the project / program aligned with AF's results framework?	Yes.		
	13. Has the sustainability of the project/programme outcomes been taken into account when designing the project?	Yes. However, please explain how the sustainability of investments in structural and non-structural measures will be achieved, including how successful pilot/demonstration measures will be replicated or scaled up. **CR8**	**CR8:** Addressed. Please include the information provided by the response sheet in the fully-developed project document.	Information included in the full proposal (Section K).
	14. Does the project / programme provide an overview of environmental	Yes. The global biodiversity significance of the DRB is described in the geographical context section. However, this is not		The full proposal is addressing the comment in

	and social impacts / risks identified?	reflected in the proposed design of project activities. The document states that “there are no direct environmental and social risks associated with capacity building, or training activities.” This is not substantiated and the screening of potential E&S risks against the 15 principles of the Environmental and Social Policy (ESP) of the Fund does not provide sufficient information on why capacity building and training activities could not be at risk of lack of access and equity, gender equity and women empowerment, for example. **CR9** The potential impacts and risks necessitating further assessment and management for some of the 15 principles are also not explained, albeit briefly. **CR10** For example, Output 1.2: “Using the most appropriate modelling techniques, the project will establish and/or amend existing numerical hydrological and hydraulic models of the basin based on detailed surveys of the physical characteristics of the river basin, and produce high resolution flood hazard inundation maps in line with the EUFD, suitable for use in land use planning, development zoning, flood risk mitigation design, establishment of flood insurance criteria, raising public awareness, and emergency planning.” By doing this in isolation of the **habitats and biodiversity conservation requirements**, a driver is created that is known to be a principal cause of wetlands loss globally. By	**CR9:** Partially addressed. The update is not reflected in the checklist table. **CR10:** Not addressed.	the Social and Environmental Screening Template (SESP, Annex 6), Environmental and Social Management Plan (ESMP, Annex 7) and Gender Assessment and Action Plan (Annex 8). More specifically: 1) The issues of gender sensitivity of training and capacity building activities is reflected in the Gender Assessment and Action Plan Annex 8. During the project implementation additional activities and data gathering i.e. gender disaggregated data at the institution level will be collected which is not readily available. 2) The issues of water availability to wetlands being considered in modelling of the basin and then in the management is key and is acknowledged and will be a key activity in the basin wide modelling - so as mitigation, incorporated into the modelling activity for future consideration of a more integrated approach, which also accounts for ecosystem functions. No insurance schemes will be created by the project based purely on economic losses

		facilitating the development of (private) flood insurance schemes, a driver is created that will affect and drive policy and planning to minimise insurance cost of flood events. The modelling needs to focus equally on understanding the hydrological regimes and requirements of the wetlands and aquatic habitats and biodiversity elements (ranging from populations to ecosystem processes) in the basin. The focus of the design is narrowly on flood as a disaster event, which ignores many other aspects of the hydrological cycles and variability in the DRB. Without adequate integration of other hydrological management goals, these activities imply ESP risks and impacts that might be difficult to mitigate or manage. The project would take an approach whereby the physical interventions of outcomes 3.2 and 3.3 will only be identified and designed during project implementation. It concerns a sizable portion of the project budget. It is unclear if this use of unidentified sub-projects (USPs) is justified. The ESP requires comprehensive identification of all environmental and social risks prior to submission of a funding request. The use of the GEF project outputs should allow identification of these climate change adaptation interventions prior to the submission of the full project funding application, and presumably these would not be substantially different from what would be identified based on the modelling that is envisaged under this project.		from floods. These risks are addressed in the SESP (and proposal text) by signalling the risk as follows: Risk 4: The proposed Project may directly or indirectly increase social and environmental vulnerability to climate change (also known as maladaptive practices) or the disturbance to critical habitats and/or sensitive environmental areas, including legally protection areas and the possibility that physical structures will exacerbate bank erosion processes. <u>Mitigation Measure:</u> Special attention will be given in the transboundary basin-wide hydrological modeling to understand and subsequent prioritize adequate hydrological flows to wetlands to maintain ecosystem functions. Furthermore, the location of all structural measures will avoid environmentally sensitive areas and all green infrastructures will use a diversity of native species for planting. An integrated landscape management approach will be emphasized for flood control

		UNDP will act both as IE and EE. **CR11:** Please clarify how UNDP, as an EE and IE at the same time will resolve potential conflict of interest with respect to ESP compliance.	**CR11:** Addressed.	without a narrow emphasis on structural measures that may decrease erosion in own areas while increasing erosion in another. Furthermore, all construction activities will be carried out with respect to national regulations, including Environmental and Social Impact Assessment (ESIA) as required.
	15. Does the project promote new and innovative solutions to climate change adaptation, such as new approaches, technologies and mechanisms?	Yes.		
Resource Availability	1. Is the requested project / programme funding within the funding windows of the pilot programme for regional projects/programmes?	Yes.		
	2. Are the administrative costs (Implementing Entity Management Fee and Project/ Programme Execution Costs) at or below 20 per cent of the total project/programme budget?	Yes.		
Eligibility of IE	3. Is the project/programme submitted through an eligible Multilateral or Regional Implementing	Yes. UNDP is an accredited Implementing Entity of the Fund.		

	Entity that has been accredited by the Board?			
Implementation Arrangements	1. Is there adequate arrangement for project / programme management at the regional and national level, including coordination arrangements within countries and among them? Has the potential to partner with national institutions, and when possible, national implementing entities (NIEs), been considered, and included in the management arrangements?	The project will be implemented by UNDP through the Direct Implementation Modality and executed in cooperation with the Global Water Partnership–Mediterranean (GWP-Med). UNDP, as Implementing and Executing Entity, will provide technical assistance and oversight. National activities will be implemented through the UNDP Country Offices in DRB countries. Please note the AF policy on Implementing Entities playing the role of Executing Entities (see Annex 7 to OPG) The fully-developed project document should provide further information on the rationale for UNDP playing an executing entity role.		Detailed information on implementation and management arrangements for this regional project is provided in the full proposal, Part III.
	2. Are there measures for financial and project/programme risk management?	Not required at Project Concept stage.		

	3. Are there measures in place for the management of for environmental and social risks, in line with the Environmental and Social Policy of the Fund? Proponents are encouraged to refer to the Guidance document for Implementing Entities on compliance with the Adaptation Fund Environmental and Social Policy, for details.	Not required at Project Concept stage.		
	4. Is a budget on the Implementing Entity Management Fee use included?	Not required at Project Concept stage.		
	5. Is an explanation and a breakdown of the execution costs included?	Not required at Project Concept stage.		
	6. Is a detailed budget including budget notes included?	Not required at Project Concept stage.		
	7. Are arrangements for monitoring and evaluation clearly defined, including budgeted M&E plans and sex-disaggregated data, targets and indicators?	Not required at Project Concept stage.		

	8. Does the M&E Framework include a break-down of how implementing entity IE fees will be utilized in the supervision of the M&E function?	Not required at Project Concept stage.		
	9. Does the project/programme's results framework align with the AF's results framework? Does it include at least one core outcome indicator from the Fund's results framework?	Not required at Project Concept stage.		
	10. Is a disbursement schedule with time-bound milestones included?	Not required at Project Concept stage.		

Technical Summary	The objective of the project is to assist the Drin 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 DRB to climate-induced floods. The countries will benefit from a basin-wide transboundary flood risk management (FRM) framework based on: improved climate risk knowledge and information; improved transboundary cooperation arrangements and policy framework for FRM and; concrete FRM interventions. It is expected that the project will improve the resilience of 1.6 million people living in the DRB (direct and indirect beneficiaries). The proposal includes three components: 1. Component 1: Hazard and Risk Knowledge Management Tools; 2. Component 2: Transboundary institutional, legislative and policy framework for FRM; and 3. Component 3: Community-based climate change adaptation and FRM interventions. The initial review found that the project's objectives and approach were very relevant to address flood risks in the Drin river basin. The concept document presented sufficient information to assess the relevance of the

	project. However, additional information was needed on elements related to knowledge management and learning, the sustainability of the project's outcomes, compliance with the Environmental and Social Policy of the Fund, among others. A few corrective action request (CAR) and clarification requests (CR) were made. The final technical review finds that the revised fully-developed project document has addressed most of the requests made by the initial review. However, a few issues remain to be addressed at the fully-developed project document stage. The following observations are made: a) The fully-developed project document should provide the scope and expected adaptation benefits of the structural and non-structural interventions, and determine the scalability of such interventions; b) The fully-developed project document should provide more information on the expected benefits at stage, including the target sites and beneficiaries in the riparian countries, including the most vulnerable groups and gender consideration; c) The fully-developed project document should further demonstrate the cost effectiveness of the proposed measures, once the scope of interventions and target beneficiaries are identified, and structural and non-structural measures are identified and the rationale for their selection defined; d) The fully-developed project document should demonstrate that the planned activities will be sufficient to address the flood risks at the regional and national level; e) The fully-developed project document should capture the views of communities and particularly vulnerable groups collected during the consultation process, especially on elements under output 3.3. where community-based interventions are envisaged. Engagement with the private sector should also be further undertaken during the preparation of the fully-developed project document; f) The fully-developed project document should provide further information on parallel adaptation actions and on the gap to address flood risks basin-wide; and g) At the fully-developed project document stage, a more comprehensive assessment and mitigation measures of potential environmental and social impacts and risks of the project should be undertaken. For instance, the document should elaborate on those potential impacts and risks requiring further assessment and management following the relevant 15 principles of the Environmental and Social Policy of the Fund, and present an Environmental and Social Management Plan to mitigate and manage the risks identified.
Date:	6 September 2018