



**TERMS OF REFERENCE OF THE MASTER PLAN FOR THE  
INTEGRATED DEVELOPMENT OF THE GAMBIA,  
KAYANGA-GEBA AND KOLIBA-CORUBAL RIVER BASINS**

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## 1 BACKGROUND

The Gambia River Basin Development Organisation (OMVG) was created in 1978 and its member States comprise The Gambia, Guinea, Guinea-Bissau, and Senegal. The High Commission is the implementing agency of integrated development programmes adopted by member countries for the rational and coherent exploitation of shared resources in the Gambia, Kayanga/Geba and Koliba/Corubal river basins.

The study area covers the Gambia, Kayanga/Geba and Koliba/Corubal river basins. The Gambia river basin covers a surface area of 77,054 km<sup>2</sup> and is shared by three States:

the Republic of Guinea (11,866 km<sup>2</sup>) where it takes its source at an altitude of 1,125 m near the town of Labé, the Republic of Senegal (54,631 km<sup>2</sup>) where it drains most parts of the administrative region of Kédougou, the Haute Casamance region and the southern part of Sine Saloum, and the Republic of The Gambia (10,556 km<sup>2</sup>).

The most elevated part of the river basin is in the Futa Jallon highlands where certain tributaries of the Gambia, Kayanga/Geba, Senegal, Konkouré and Koliba/Corubal rivers originate. The highest point, where the drainage divide with the Corubal river is located, is in Mount Loura (Massif du Tamgué or Mali) which is also the peak of the Futa Jallon highlands.

The river Gambia leaves Guinean territory to meander through a region with hills and plains culminating at a maximum height of 400 m and 200 m respectively. The region of Senegal Oriental accounts for more than half of the basin. The river flows practically at sea level prior to entering the Republic of The Gambia: its water level, up to Goulombou located at 492 km from the river mouth, varies with the tide. The salinity level increases as it approaches the sea and can be detected up to 220 km from the river mouth.

The river Gambia is 1,150 km long with 205 km in Guinea, 485 km in Senegal and 460 km in The Gambia.

The Kayanga/Geba river basin (15,000 km<sup>2</sup> in Guinea, Senegal and Guinea-Bissau) and the Koliba/Corubal river basin (26,000 km<sup>2</sup> in Guinea and Guinea-Bissau) cover a total surface area of 41,000 km<sup>2</sup> and stretch across 3 areas: the eastern part of Guinea-Bissau (18,800 km<sup>2</sup>), the southern part of Senegal (4,400 km<sup>2</sup>) and the north-eastern part of Guinea (17,200 km<sup>2</sup>).

The climate in the two basin areas is characterized by a dry and wet season. Average annual rainfall varies between 1,000 mm in the North and 2,200 mm in the South. Rainfall is affected by climate variations.

Vegetation in this region is varied. Forest areas can be found in parts of Guinea and the south-eastern part of Guinea-Bissau while savannah areas are mainly found in the north-eastern part of Guinea-Bissau and the southern part of Senegal.

Surface water resources are either concentrated in the riverbeds of main waterways (Kayanga/Geba and Koliba/Corubal), or dispersed in the thalwegs and on the sides of the valleys. These resources are irregular even during the rainy season. A sustainable or seasonal use of these resources will require the construction of a reservoir to regulate flow for irrigation and energy production purposes.

The water level is below the riparian lands and the systematic use of pumps is therefore necessary for irrigation.

The effects of climate change and climate variability cause major disruptions to water systems in these basin areas and have an impact on all activity sectors including agriculture, livestock and fisheries as well as on fragile ecosystems and ecological habitats.

The rural population in the three basin areas is estimated at nearly 8.5 million inhabitants: 7.225 million in the Gambia river basin area and 1,275,000 in the Koliba/Corubal and Kayanga/ Geba river basin areas. Fifty percent (50%) of this population lives below the poverty line. There is a high growth rate (2.7%) among this population which is unequally distributed across the basin areas. They consume the food they produce through traditional and shifting subsistence farming alongside relatively rudimentary irrigation practices. Agriculture is the dominant economic activity. The agricultural system is characterized by a slash and burn method of farming with the constant search of new land for cultivation.

Food crops (maize, millet, sorghum, rice and fonio) and cash crops (groundnuts and cotton) are grown. The banana market has a predominant position in the horticultural field, and in light of the irrigation possibilities as well as the interest of private operators, will certainly develop further.

The region is also an extensive livestock-breeding zone with the practice of transhumance farming on domestic sites. Livestock mainly comprises sheep, goats and cattle of adapted breeds and there are vast areas for grazing.

The sector is faced with several issues including poorly organised livestock breeders, bush fires and straying of animals, which creates conflict between farmers and livestock breeders, as well as issues between livestock-breeding activities and nature conservation actions.

Fishing activities are carried out in the main rivers on a permanent basis from December to June, and to a lesser extent at the mouths of tributaries and in ponds during flood periods from July to August. Cast net fishing is the most commonly used method of fishing.

Over 110 species belonging to 48 families have been identified. Mangroves provide a space for the reproduction and growth of many species.

Construction of the Sambangalou dam will result in hydrological and bio-ecological changes which shall certainly have an impact on fisheries production and on conditions for fishing. Behaviour changes in populations are also to be expected with reconversions of fishermen and the arrival of new fishermen.

Forestry: there are several gallery forests. Intensive forestry operations in non-isolated areas, including bushfires, wood fuel harvesting and charcoal and timber harvesting, will lead to overexploitation. Very little is known of production levels and this results in a poor assessment of the quantities harvested and the actual impact of harvesting on the state of forest resources.

OMVG river basins also have a very rich biodiversity. There are several national parks and a large number of aquatic birds.

The area has mining resources, particularly in Senegal, Guinea-Bissau and Guinea with its two flourishing sectors: the bauxite reserves of Tougué, Gaoual and limestone, bauxite, lead copper and zinc in the Prefecture of Mali. However, harnessing of these resources is hampered by the geographic isolation of the regions and the non-existence of energy sources as well as variations in international prices.

The industrial sector is very underdeveloped and is mainly limited to Banjul and Labé.

Several sites with significant hydroelectric potential have been identified. Related studies have been completed or are underway. These include the Digan, Madina Kouta, Saltinho, Kourawel and Fello-Sounga sites. The Kaléta dam was commissioned on 28 September 2015 and the Sambangalou dam is in the construction phase.

This brief overview shows the existence of water resources in sufficient quality and quantity, a significant hydroelectric potential, as well as enormous potential in terms of natural resources and agriculture. However, OMVG Member States are yet to make optimal use of

all the possibilities for sustainable basin development and management making it possible to significantly contribute to their economic growth and improve the livelihoods of populations. The main objectives of the OMVG, which was created in 1978 by Senegal and The Gambia and subsequently joined by Guinea and Guinea Bissau, include:

- The creation of economic development opportunities encouraging the populations to remain in their communities;
- Construction of infrastructure likely to promote development and which are aligned with ECOWAS and AU infrastructure projects;
- Integrated management of resources and ecosystems based on a sustainable development approach; and
- Promotion of large-scale agricultural and rural development programmes to significantly improve the income and food security of populations.

## 2 ACCOMPLISHMENTS OF THE OMVG

The OMVG, in a bid to realise the objectives set by its Member States, conducted several studies which facilitated the pre-selection of sites of relevance for agricultural production and hydroelectricity. Six sites of regional interest were selected.

The Kaleta dam on the river Kounkouré, with an installed capacity of 240 MW, was constructed by Guinea. The latter decided to transfer 30% of the output, i.e. 289 GWh, to the other three States to maintain the regional character of the facility. Furthermore, Guinea is currently constructing the Souapiti hydropower plant on the same river Konkouré with an installed capacity of 450 MW, and plans to transfer 885 GWh to the other three countries. Studies have been completed for the 128 MW Sambangalou hydropower plant (HPP) on the Gambia river with an annual production of 402 GWh as well as for the 225 kV interconnection network. Construction works on the 1,677 km long interconnection line, the 15 MV/HV substations and 2 dispatching centres is under way within member State territories for a period of 18 months. Sambangalou HPP construction works will be carried out over a 42-month period based on a phased contract. The feasibility study of the Saltinho HPP is in progress.

Other sites that can be developed include: Digan on the river Gambia, Fello-Sounga and Kourawel on the river Koliba/Corubal. Developing these sites will contribute to agricultural and energy development.

In addition to these hydroelectric development projects, the OMVG also implemented a Natural Resources Development and Management Project (NRDMP) which contributed to alleviating poverty and improving the living conditions of populations. Its main components were: improvement of agricultural productions, improvement of road infrastructures, accompanying measures, studies and technical assistance.

The Kayanga/Geba Master Plan resulted in the pilot phase of the NRDMP and the development of an Integrated Water Resources Management (IWRM) Plan for the Kayanga/Geba river basin as well as the drafting of detailed design studies and tender documents for hydro-agricultural projects, including the development of lowlands, banks, river sources, water regulation structures and strengthening of governance instruments.

Development of the Gambia, Koliba/Corubal and Kayanga/Geba river basins is expected to offer significant opportunities for growth and hence create employment, reduce immigration, rural exodus and poverty. Another objective is to improve the health and living conditions of populations while preserving the environment.

At the institutional level, the Organisation has established the following:

- Permanent organs including the Council of Ministers and the High Commission which implements the decisions of the Council of Ministers.
- Advisory organs including the Permanent Water Commission in charge of defining the principles and modalities for the utilisation of the waters between the sectors concerned (industry, agriculture, etc.) and the Consultative Committee of partners in charge of providing support to the OMVG in its efforts to mobilize financial and human resources.
- Legal texts: Convention on the Status of the River Gambia, Convention on the creation of the OMVG, Agreement relating to the immunities and privileges of the OMVG, Convention on the legal status of common works, Fiscal and customs regulations governing contracts for studies and works or common structures, Staff Regulations, OMVG Financial Regulations, Regulations of the special allocated account for the development of the resources of the Gambia river basin, Rules of Procedure of the OMVG Council of Ministers, Regulations governing the Consultative Committee, Regulations governing the Permanent Water Committee, and Conventions on the status of the Kayanga/Geba and Koliba/Corubal rivers. These texts define the provisions that govern, at the institutional, organizational and regulatory levels, the planning and operation of joint infrastructures for the control and use of the river waters.

## 3 PRIORITIES OF THE OMVG

### 3.1 AGRICULTURAL DEVELOPMENT

Although the policies of Member States have a strong social content, they are yet to bring tangible results on the ground. As a result, poverty, social inequalities and territorial disparities remain a concern in the basin areas.

Despite the significant potential of natural resources, the economies of Member States suffer from the lack of new growth drivers. This growth is dependent on economic resources which in turn heavily rely on the primary sector. The latter accounts for 30% of GDP and employs 70% of the workforce in The Gambia, 16% of GDP and 70% of the workforce in Guinea, 57% of GDP in Guinea-Bissau, 18% of GDP and 49.5% of the workforce in Senegal. More than 50% of agricultural households grow rainfed crops whereas irrigated farming is hardly developed.

The inhabitants of the area are predominantly rural with agriculture as their main activity. They suffer from poverty, food insecurity, poor access to sustainable energy services, insufficient access to safe drinking water, poor road infrastructure, poor education and poor health.

Improving the living conditions of these populations is a stated objective in all policy documents of Member States. Agricultural development is essential in this regard.

In the OMVG zone, the sector is faced with many severe constraints due to the geographic isolation of production areas and the effects of rural exodus in areas with high potential. Salt water intrusion, shortcomings in land use planning, low rainfed crop yields and lack of organisation among farmers have a major impact on agricultural development. The consequences of this poor performance include lower income, increased poverty and rural exodus.

### 3.2 ENERGY INDEPENDENCE

Energy independence is also sought by Member States to help reduce the import of oil on which the economies of OMVG member countries remain heavily dependent. The area has significant untapped hydroelectric, solar and wind potential. The commissioning of the Kaléta and Sambangalou HPPs and the interconnection line, as well as the harnessing of other significant energy potential, should lead to a qualitative transformation of rural life in light of the opportunities created to develop production activities (mining, processing of agricultural products) at the local level.

### 3.3 OPENING UP OF HIGH POTENTIAL AREAS

One of the main constraints to the development of activities in this area is its isolation as a result of impassable road networks during the rainy season. The distance from major urban consumption centres is a barrier to industrial and mining development.

The opening up of isolated regions and of cross-border areas to facilitate inter-state trade remains a priority for the OMVG.



### 3.4 PRESERVING BALANCES AND THE ECOSYSTEM

OMVG Member States are confronted with the effects of climate variability and climate change, which have led to significant disruptions in basin hydrosystems and have impacted all sectors of agriculture, livestock, and fisheries, including fragile ecological habitat ecosystems.

Environmental issues also include soil degradation and its consequences (deforestation, erosion, overgrazing and desertification), inappropriate agricultural practices, etc. Water and soil conservation, mainly in the Futa Jallon highlands, is a major challenge for it is about safeguarding the West African water tower.

The inconsistent and inefficient management of water resources and the lack of consultation between States with regard to the implementation of national programmes do not contribute to an integrated management of resources.

In order to address these issues, the OMVG is deploying considerable efforts to implement environmental programmes within the framework of the Master Plan for the integrated development of the Kayanga/Geba, Koliba/Corubal and Gambia river basins.

## 4 RATIONALE OF THE MASTER PLAN

An integrated development strategy is required in light of the variability of the resource, the need to minimize risks, the development of future infrastructure, the need to balance needs and resources, economic, social and environmental functions and the need for the coordination of actions.

The effective implementation of this strategy for the integrated development of shared resources in the Gambia, Kayanga/Geba and Koliba/Corubal river basins requires taking into account the threats facing them and the capacity to respond to these threats.

The highest priority will therefore be placed on efforts aimed at developing capacities in basin planning and management and creating a conducive environment for the implementation of appropriate policies and measures. This requires the mobilization and participation of all stakeholders involved in natural resources management. The establishment of a coherent planning framework as well as the development of adapted decision-making tools are also required to address transboundary and international issues specific to basin management.

Another priority, which falls in line with those of member States, is the consolidation of the sub-regional approach to development so as to ensure enhanced socio-economic integration of member States.

The aim is to promote economic growth and food security in the Member States through the efficient and concerted use of water resources in the Gambia, Kayanga/Geba and Koliba/Corubal river basins. Objectives also include protection of the environment, poverty alleviation and improvement of human health.

The challenges related to the shared management of resources and the necessary integration have prompted the OMVG to retake control of planning activities at the basin level.

The OMVG does not have sufficient capacities to address the specific issues of basin management with a view to promoting a regional approach and coherent coordination.

The objective is therefore to attain this goal within the framework of a Master Plan which will serve as a reference framework and ensure coherence while taking into account all aspects of integrated management.

This reference framework, in compliance with the objectives of Member States in terms of planning, shall specify the terms and conditions for the implementation of activities and use of natural resources in the area as well as the management rules for the realisation of the OMVG's fundamental objectives.

## 5 MASTERPLAN FOR THE INTEGRATED DEVELOPMENT OF OMVG RIVER BASINS

### 5.1 OVERALL OBJECTIVE

The objective is to develop a strategic planning framework for the sustainable development of these river basins and to initiate a coherent basin-wide development programme for the integrated and concerted management of water resources and ecosystems.

### 5.2 SPECIFIC OBJECTIVES

- Identify strategic policy areas for the development and management of water resources in the Gambia, Kayanga/Geba and Koliba/Corubal rivers;
- Propose a programme containing short, medium and long term integrated multisectoral development action plans; and
- Identify accompanying measures to be put in place and the terms and conditions for implementation.

### 5.3 STUDY AREA

The geographic focus of the study includes all the three river basin areas (the Gambia river basin, the Kayanga/Geba river basin and the Koliba/Corubal river basin) in the four member countries: The Gambia, Guinea, Guinea-Bissau and Senegal.

The study area thus defined must be understood in a broad sense. It is understood that those in charge of conducting the studies must have a clear understanding of the linkages between the study area and surrounding areas.

### 5.4 CONDUCT OF THE STUDY

The Master Plan will be developed in three phases.

#### **Phase 1: Diagnostic study, assessment of the current situation**

This phase will result in a comprehensive assessment of the natural potential of the study area, an assessment of the current situation in terms of natural resources,

ecology and socio-economic aspects in the three basins and an analysis of ongoing OMVG programmes, as well as the policies and programmes of Member States.

This phase will highlight:

- A comprehensive assessment of all resources: water resources and land potential (including land for flood recession agriculture, forest areas and pasture land) and their current state of utilization;
- An inventory of on-going socio-economic activities and the economic opportunities afforded;
- The status of resources, in particular water resources, and areas that experience shortages or under- and/or over-exploitation;
- Major constraints impeding the exploitation, development and enhancement of resources;
- Resource use conflicts;
- Dominant trends in activities being developed in the basin areas, seeds of change and related structural constraints;
- Assessment of costs and services relating to the use of resources (water and land resources in particular);
- Key issues likely to present a risk for the basin areas and an analysis of their evolution.

### **Phase 2: Development of sectoral plans**

Sectoral plans will be developed during this phase. The study will take into consideration the master plans of the two basins (Kayanga/Geba and Koliba/Corubal) as well as that of the Gambia river basin, development planning papers of Member States, sectoral policies and all development projects planned or in progress.

The studies thus carried out will make it possible to establish the trend up to 2040. On the basis of this analysis, outlines of sectoral plans will be drawn up: Master plan for energy, industrial, mining and artisanal development.

- Master plan for agro-sylvo-pastoral and fisheries development including irrigated and rainfed agriculture, lowland development, extensive breeding and aquaculture, agroforestry and fisheries (fish farming) – this plan will form the basis for the development of the river basins.
- Master plan for transport development specifying all transport (roads and feeder roads) and communication infrastructures for the opening up of isolated regions and the development of inter-state trade.
- Master plan for drinking water supply, sanitation, health and education.
- Master plan for the management and protection of the environment and ecosystems.

### **Phase 3: Drafting of the master plan for the integrated development of OMVG river basins**

During this phase, consistency will be ensured between the five sectoral plans and an integrated development and natural resource development policy formulated to achieve the following objectives:

- Rational, harmonious and concerted use of joint resources in the Gambia, Kayanga/Geba and Koliba/Corubal river basins;
- Agricultural development in basin areas to achieve food self-sufficiency and reduce the vulnerabilities of Member State economies to climate-related hazards;
- Economic growth of the Organisation's Member States;

- Preservation of the balance of ecosystems in the sub-region and particularly in the catchment areas; and
- Protection and improvement of economies in the basin areas.

On the basis of the previous analyses, the different strategies and possible development scenarios for harmonious development will be considered.

On this basis and with guidance from Member States, a strategic policy framework for the development of the river basins will be prepared outlining the general guidelines and development options for 2040.

This framework, focusing on an overall basin management plan and accompanying measures, will include:

- A multi-sectoral development action programme dealing with agro-sylvo-pastoral development, fisheries, energy, industrial development and mining, transport and communications, environmental protection, drinking water supply, health and education;
- Accompanying measures including support to help organise rural areas, support measures for production (training, supervision), institutional strengthening, research and development;
- A global investment programme for sectors in which studies have been carried out;
- A global analysis of investment costs, accompanying measures and operating costs;
- Scheduling of actions to be carried out; and
- An economic analysis to assess the results in terms of costs/benefits.

The study will also identify measures for an optimal management of water resources, institutional arrangements for the joint management of resources (organisation, operation), the mechanism for monitoring water quality and quantity, criteria for measuring pollution, measures to fight against pollution, risk management, and environmental management and protection.

## 5.5 DESCRIPTION OF ACTIVITIES

### 5.5.1 Diagnostic study – Assessment of the current situation:

This phase will consist exclusively of conducting an assessment of the current situation in terms of resource management and the physical state of the resources in the basin areas as well as an assessment of the current socio-economic situation in the study area using a holistic approach.

Activities will focus on:

#### 5.5.1.1 Demographic aspects

The consultant will highlight the following:

- The demographic situation, population structure and distribution, migration flows and population growth;
- Population change and its impact on social requirements (health, education, drinking water supply);
- Socio-economic constraints related to people's perceptions and attitudes.

## 5.5.1.2 Natural Resources

### 5.5.1.2.1 Water resources

#### 5.5.1.2.1.1 Surface water resources

The consultant, on the basis of existing documentation, shall review:

- the location and characteristics (regime, physical, chemical and biological quality) of surface waters;
- current uses of these waters (drinking water supply, industrial, mining or tourism-related needs, irrigation, farming in lowland areas and all other instream uses such as hydroelectricity);
- current management methods (valuation, protection and its consequences); and
- analyses of pollution risks and identification of protection actions.

#### 5.5.1.2.1.2 Groundwater resources

The consultant, on the basis of existing documentation, shall:

- identify and characterize (physical, chemical and bacteriological) water tables;
- describe the current uses of these waters (drinking water, agriculture, etc.);
- describe the current status of water tables: changes in their levels, supply and drainage as well as the effects of irrigation;
- analyse pollution risks and identify protection actions; and
- assess current management methods (valuation, protection and its consequences).

#### 5.5.1.2.2 Wetlands

The consultant, on the basis of existing documentation, shall take stock of:

- Major wetland areas. The consultant will present each wetland according to the following parameters: surface area, (density and composition of flora, fauna, biological diversity of birds, fish resources, aquatic plants, etc.) and their land values;
- The different characteristics of each site identified, specifying: the natural heritage value, harmful or beneficial changes, their causes and likely evolution in the absence of specific measures, local conflicts related to the use of natural resources (land, water in surrounding areas). Particular attention will be paid to the most important sites;
- Existing projects and infrastructures at these different sites as well as the analysis of operational constraints;
- Development projects as well as the direct or indirect enhancement of sites.

#### 5.5.1.2.3 Soil and subsoil resources

The consultant shall take stock of:

- the inventory, typology, location and characteristics of soils;
- current agricultural land use and the appraisal of degraded arable land;
- protection actions currently being implemented or planned in the medium term; and
- Mining potential and current use.

#### 5.5.1.2.4 Animal resources (fish and wildlife)

The consultant shall:

- take stock of populations (biological diversity, geographic location per season and per species);
- identify species that serve as an indicator of the state of the environment and the typology of threats related to the management and exploitation of resources; and
- identify actions to safeguard and protect this resource.

#### 5.5.1.3 Economic activities

Studies will also focus on economic activities related to the use of natural resources. Particular emphasis will be placed on the economic analysis of costs and services related to water use in order to assess the degree of cost recovery and thereby ensure sustainability.

##### 5.5.1.3.1 Agro-sylvo-pastoral, fishing and aquaculture activities

In light of the fact that agro-sylvo-pastoral and fishing activities are essential components of the Master Plan in terms of the spatial planning policy, economic development and land use, it is important to conduct an analysis of the situation in these sectors. Thus, the consultant shall:

- describe the situation for each activity concerned (irrigation, rain-fed agriculture, livestock, fisheries and aquaculture, forestry) based on the natural development zones of these sectors;
- analyse the situation for each sector concerned and the trends regarding the management of natural resources as well as the pressures on the sector;
- identify the critical factors that must be controlled in order to guarantee coherent agro-sylvo-pastoral and fishing development; and
- identify specific constraints per zone.

##### 5.5.1.3.2 Irrigation

Based on the literature review as well as the outcome of field visits and direct discussions with the relevant specialists, the consultant shall draw up a report on the status of irrigation in the OMVG's geographic focus area.

- potential and strengths (physical potential, irrigable potential based on the probable scenarios of water use);
- irrigation development (type of irrigation schemes, size of areas developed, development rate, yield, speculative production, etc.);
- outcome and impact of hydro-agricultural developments in the area;
- populations practising irrigated farming and analysis of their perception of irrigation;
- regulatory and institutional context (land tenure, water management);
- major constraints (institutional, regulatory, organisational, economic, technical and environmental) and environmental consequences; and

- policies and strategies implemented (vision, objectives, strategic guidelines). Weaknesses will be highlighted.

#### 5.5.1.3.3 Rainfed agriculture

Farming in the study area is practised during rainy seasons and rainfed rice produced in lowland areas. Production is affected by water stress. Development is characterised by primitive crop management techniques and low yields. The level of supervision of farmers is low. In light of the importance of these crops for the food security of populations, particular attention should be paid to this sector.

In this regard, the consultant shall assess the potential, the land and cultivated areas, farming practices and size of populations engaged in this activity as well as the key sociological parameters. Further, the consultant shall:

- identify constraints relating to the development of lowland farming and other types of farming practices, the problems faced and effects on resource management;
- describe measures to optimise farming in lowland areas and to develop other crops;
- review the map on the delimitation of crop diversification areas; and
- conduct a review of organizations of farmers operating in the sector and their level of supervision.

#### 5.5.1.3.4 Livestock

Based on the literature review as well as the outcome of field visits and direct discussions with the relevant specialists, the consultant shall draw up a report on the status of livestock breeding in the basin area, focusing on:

- the evolution of pastoral and resource conservation systems and the linkages between livestock farming and other sectors;
- the characteristics of production systems (numbers, breeds, productivity, animal production chains, fodder resources, etc.);
- policies, development strategies and the institutional framework;
- the different local strategies initiated by livestock farmers and their impact on the environment;
- the potential impacts on livestock of water management in the different rivers;
- the constraints and main obstacles to livestock development in the study area (land management, livestock feeding and watering, animal health, socio-economic constraints, etc.) and assess their interactions with agricultural production chains; and
- the potential for the development of beekeeping, production characteristics, constraints and main obstacles.

#### 5.5.1.3.5 Fisheries and aquaculture

Based on the literature review on fish resources and fishing activities in the three basins, the consultant shall:

- describe the characteristics (species, production zones and annual catches, biological diversity) of fish resources and fishing activities in the river basins (fishing effort, fishing techniques and marketing);
- highlight zones where overfishing occurs;
- analyse fisheries policies, institutional frameworks and regulatory conditions;
- analyse the impacts of water-related infrastructures on fisheries in the three rivers and other watercourses;
- highlight the main constraints and adverse effects of water-related infrastructures on fisheries and aquaculture.
- analyse the strategy and actions initiated and highlight the constraints that inhibit the development of fishing activities (water management constraints, technical and regulatory constraints, etc.) and aquaculture; and
- analyse fisheries policies, institutional frameworks and regulatory conditions.

#### **5.5.1.3.6 Forestry**

Based on the literature review as well as the outcome of field visits and discussions with professionals and the relevant officials in Member States, the consultant shall assess the state of the forestry sector in the area and propose measures and actions to be undertaken to improve agro-sylvo-pastoral integration as part of efforts to ensure a coherent management of the study area:

- description of the characteristics of forest resources (forest potential, production of woody vegetation, consumption and trends, state of degradation of forest formations, domains and protected areas, etc.);
- analysis of the impact of wood harvesting and the management of water structures on forest resources;
- analysis of forest development actions carried out by States as well as legislative and regulatory measures (classified forests, protected forests and areas) implemented in the study area; and
- identification of major constraints to the development of forest potential and trend analysis.

#### **5.5.1.3.7 Energy, Mining, Industry, Crafts**

The consultant shall:

##### **5.5.1.3.7.1 At the energy level:**

- describe and review national and regional programmes;
- carry out an assessment of the overall impact of the OMVG's proposed developments and their impact;
- take stock of the different systems put in place to meet energy (hydroelectricity, photovoltaic solar, wind), and wood needs;
- review national policies and constraints relating to rural electrification (regional balance, technical, financial and institutional constraints and integration into master plans; and assess their linkage with plans to produce and transport electricity between countries);



- analyse changes in the institutional, regulatory and legal framework of the electricity sector;
- take stock of the different strategies developed in the member countries and analyse the results in the light of the set objectives; and
- analyse the causes of negative variances, with particular emphasis on obstacles and constraints to a wider access to electricity: institutional, legal and regulatory frameworks, tariff policies, financing, etc.

#### **At the mining and industrial level**

The consultant, in collaboration with the OMVG High Commission and each Member State, shall collect all documentation, data and background information on:

- Mining resources and industries located in the area. Mining reserves located in peripheral areas will only be taken into consideration to the extent that they may influence the development potential and existing or planned infrastructure in the study area;
- The status and assessment of initiatives, projects and studies carried out in the area relating to the mining and industrial sectors.

This literature will be presented in the form of a bibliography annexed to the report as well as a detailed description of the current status with regard to the exploitation of mining resources and the situation of the industry in the basin area.

The consultant shall draw up a map of the area, using an appropriate scale and identifying the location of mining resources and industries. Significant deposits in peripheral areas will also be shown on this map in light of their importance for the energy and transport sectors.

The consultant will conduct a situational analysis of the industrial and mining sector and highlight the major constraints and opportunities for processing agricultural and livestock products.

The consultant shall carry out a detailed analysis of current policies, strategies and regulations in the industrial and mining sectors (achievements, weaknesses, reform needs) in Member States. The consultant shall draw up a complete list of major constraints to the development of resources and to existing regional and national markets (institutional, legal, technical and economic constraints, with specific reference to financing related constraints) that must be overcome in order to create an environment that is conducive to industrial development and mining.

#### **At the artisanal level**

The consultant shall carry out a complete survey of activities in the study area:

- An analysis of the artisanal sectors developed;
- Identification and evaluation of opportunities to develop agri-food processing sectors; and
- Analysis of constraints in the sub-sector.

#### 5.5.1.4 Other activities

##### 5.5.1.4.1 At the tourism-ecotourism level:

The existence of historic sites, protected areas, classified forests, hunting areas and wildlife reserves offers the possibility to develop tourism. The consultant shall therefore be required to:

- review the situation of this sector in the study area (policies, tourism infrastructure, accommodation facilities, measures and actions);
- identify the negative and positive impacts as a result of tourism-related actions;
- identify the main constraints to tourism development; and
- identify the key areas of intervention taking into account the requirements for environmental protection, biodiversity conservation and integrated management of wildlife areas.

##### 5.5.1.4.2 In terms of trade and exchange:

The study will make it possible to determine the volume of food (plant, animal) and industrial production to be traded.

The consultant shall therefore be required to:

- estimate trade flows and structures (regulatory and organisational) within the OMVG zone;
- identify the main constraints to the development of trade; and
- propose guidelines and measures to promote trade.

##### 5.5.1.4.3 Transportation

One of the major obstacles to the development of high-potential areas is geographic isolation. In order to support the objectives of food security and energy independence, the OMVG considers this sector as high priority. The consultant shall therefore be required to:

- collect and analyse key documents relating to spatial planning at the regional level (national and regional development plans) and identify the major demand trends for the future (population, agriculture, industry, mining, tourism, infrastructure) while providing the best possible information per geographic territory in the study area;
- Make a precise assessment regarding the issue of isolation of production zones and large urban areas;
- Provide a detailed inventory of all sectoral plans and technical studies relating to the transport sector;
- Describe the status and assess policies, projects and studies on the various transport systems;
- Collect and analyse basic data on traffic and trade flows; and
- Analyse prevailing regulations in the four member States.

The consultant shall make a precise assessment of the state of the transport sector (road and river network) on the basis of this literature review in addition to meetings with

professionals in the sector and with the relevant technical services of Member States. This assessment will include a detailed inventory of road networks, infrastructures to improve access, the river network and the problems encountered. The consultant shall analyse the main reasons for the inadequacies of physical infrastructures and sub-regional imbalances. The consultant shall specify, for each of the transport systems, the current costs and tariffs.

#### 5.5.1.5 Socio-economic activities

##### 5.5.1.5.1 Drinking water supply

The consultant shall:

- make an inventory of and map out all village and urban water supply infrastructures;
- take stock of the various village and urban water supply programmes implemented to meet drinking water needs;
- analyse the results achieved in relation to the objectives set, the WHO objectives and Sustainable Development Goals (SDGs), and assess the rate of accessibility; and
- identify deficit areas and analyse the causes.

##### 5.5.1.5.2 Sanitation

The consultant shall:

- make an inventory of and describe existing sanitation infrastructures in rural and urban areas;
- analyse the situation in respect of the SDGs;
- assess the rate of accessibility to a sustainable sanitation system; and
- take stock (results and achievements) of the various programmes implemented.

##### 5.5.1.5.3 Health

The consultant shall:

- provide an inventory and a description of health facilities;
- analyse the situation in respect of the SDGs;
- determine the supervision ratio (doctors, nurses, midwives) of populations in the area;
- assess accessibility to health care;
- identify major health problems;
- determine the prevalence rate of major diseases (schistosomiasis, malaria, onchocerciasis, etc.), identify the areas where they are prevalent and analyse the causes; and
- take stock (results and achievements) of the various programmes implemented to combat these diseases.

##### 5.5.1.5.4 Education

The consultant shall:

- draw up an inventory and description of school infrastructures;

- analyse the situation in relation to the objectives of member States;
- identify problems in the education sector (access, infrastructure, staffing, etc.) and analyse the causes.

#### 5.5.1.5.5 Institutional aspects

The consultant shall review all legislation relating to water (water acts, regulations, etc.), land (land acts), environmental protection and conservation of natural resources (forestry, farming, fisheries, etc.) and shall review the legal status of protected sites and their adaptation to problems being faced.

These texts will be considered in parallel with the legal texts of the OMVG.

#### 5.5.2 Phase 2: Development of sectoral plans

Based on the findings of Phase 1 (inventory and diagnosis), the consultant shall will prepare five sector-based development plans:

- agro-sylvo-pastoral and fisheries development plan,
- energy, mining and artisanal development plan,
- transport and communications development plan,
- environment and ecosystems development plan, and
- drinking water, sanitation, health and education development plan.

Each of these sectoral plans must indicate the risks associated with the proposed water and environmental development scenarios and include solutions to reduce or eliminate the anticipated impacts.

Outlines of these plans shall be included in the master plan.

##### 5.5.2.1 Agro-sylvo-pastoral and fisheries development plan

###### 5.5.2.1.1 Context

In an effort to meet their development objectives, the OMVG and member States developed master plans detailing sectoral policies and strategies as well as related investment programmes.

Programmes identified in the Master plan for the integrated development of the Kayanga/Geba and Koliba/Corubal river basins cover the fisheries, agriculture, livestock, beekeeping and forestry sectors. The objective is to revive the agricultural sector in order to achieve food security through the diversification of cereal crops, the promotion of exports by incentivizing the private sector, the protection of natural resources with the introduction of intensive farming practices and the enhanced development of agriculture and livestock practices.

Most of these programmes, with the exception of the Natural Resources Development and Management Project, are yet to commence.

And for this reason, agricultural development falls short of the set objectives. Irrigation infrastructures are poorly developed and the persistence of multiple constraints, including geographic isolation and rural exodus, technical, economic, legal and institutional constraints and the limited capacities of farmers' organizations hinder the development of this important potential.

Livestock and beekeeping are other important sectors in terms of development. Their linkage with agriculture should be considered from a complementarity and integration perspective, particularly with regard to key aspects such as the management of pastoral lands, ecological balances and forage resources.

All master plans identified forest development programmes for the management and protection of natural resources and enhanced resource management. Specific programmes on fisheries and aquaculture also highlighted the importance that should be given to such activities in the area.

#### **5.5.2.1.2 Content of the study**

Based on the diagnostic assessment and review of the studies carried out (master plan), and the objectives of Member States, the consultant shall prepare an outline of an agro-sylvo-pastoral and fisheries development plan, including various development scenarios.

This agricultural development plan shall include the following sectors: agriculture (irrigated, rainfed), livestock and beekeeping, reforestation, fisheries and aquaculture.

In order to implement the proposed development strategies, the consultant shall propose a development plan for each major natural unit with potential for hydro-agricultural development, rainfed agriculture, livestock, fisheries and reforestation. The integration of all these elements will depend to a large extent on the actual possibilities which exist in each area.

For the identification and delimitation of natural areas on the one hand, and economic areas on the other hand, the consultant shall rely on:

- A holistic vision of development opportunities for irrigation, livestock, forestry, fisheries and aquaculture.
- A set of criteria as follows:
  - Criteria for the use of water resources (availability, usability, sustainability, location and distribution according to the different types of water resources) and land (suitability)...
  - Development criteria;
  - Demographic and regional mapping criteria.

The delimitation of these natural units (or development areas) on a map using an appropriate scale, supplemented by the various analyses, will help to assess the potential and constraints for each sector and analyse them in relation to the spatial distribution. On this basis, the consultant shall design and apply a multi-criteria filter with a view to identifying realistic development scenarios.

In the light of the priorities of Member States as well as economic, social and ecological criteria, the consultant shall prepare an outline of the agro-sylvo-pastoral and fisheries development plan comprising:

- An analysis of the physical environment (topography, pedology, hydrology and hydrometry);
- An analysis of the human environment (size and distribution and population growth trends);
- A needs/resource assessment per development sector;
- The preparation of land potential maps and land use and occupation maps (irrigation, pastures and livestock grazing, fish farming areas, forests, wetlands, protected reserves, natural passages for the drainage of floodwater);
- Diagrams of hydraulic structures showing the water supply and drainage systems in the area to satisfy the activities identified in the land occupation and use plan;
- The preparation of an integrated agricultural development action programme, including the crops to be grown and related projects. This programme will concern rainfed agriculture, irrigation, lowland development, livestock, beekeeping, forestry, fisheries and aquaculture;
- The identification of investment needs up to 2040 (development of lowlands and floodplains, hydro-agricultural development and water-related structures);
- The identification of related actions and accompanying measures at the legal, economic, institutional and environmental level so as to transform these areas into real development centres;
- An economic analysis including an estimate of investment costs, maintenance and renewal costs;
- Investment planning up to 2040;
- Programming of accompanying measures.

#### 5.5.2.2 Energy, Industrial and Mining development plan

##### 5.5.2.2.1 Energy

The aim of the River Basin Development Programme of the OMVG, initiated by its Member States, is to boost economic activity, in particular, through the intensification of irrigated agriculture and the subsequent development of related industries.

In this regard, electrical energy, including hydroelectricity produced by infrastructure planned in the area, will play an essential role. In addition, the positive impact of the OMVG interconnection network on the electrification of the sub-region, particularly in rural areas, will be crucial for the development of individual or collective economic activities to improve incomes in the rural world.

The OMVG is implementing its Energy project with the threefold objective to: (i) partially meet the demand for electricity in the Member States, (ii) reduce the cost of energy and (iii) improve existing infrastructures at dam sites.

Within the context of developing the Master Plan, it has proven essential to develop an electricity development plan for the basin to ensure synergy between all existing initiatives and data in order to establish, at the regional level, a coherent framework for action in harnessing the hydroelectric potential of the area and developing renewable energies, taking into account the impact on water resources both in terms of quantity and quality.

#### 5.5.2.2.2 Content of the study

Based on the findings of the diagnostic assessment, the consultant shall prepare an outline of the energy development plan, which should be consistent with national and regional policies (ECOWAS West African Power Pool (WAPP)). The plan shall ensure complementarity between the various development possibilities in relation to hydroelectricity as well as thermal and renewable energy supported by small distribution networks. The consultant shall therefore focus on the following aspects:

- Conduct an analysis of the potential demand for electricity in the area and in neighbouring Member States, and possibly describe the typology of the demand that will have to be met by conventional and alternative means (renewable energies).
- Identify the hydroelectric potential and opportunities for diversification of energy sources (solar, wind, biomass) in the study area.
- Propose development strategies, compared in economic and financial terms, that take into account the reinforcement/rehabilitation of existing HV/MV networks or construction/extension of new MV/LV networks or installation of individual photovoltaic systems for domestic needs;
- Define medium- and long-term objectives for rural and urban electrification taking into account universal access to sustainable energy services;
- Establish and structure a sequential hydropower development programme and a rural electrification programme up to 2040.
- Identify the actions to be implemented in terms of investment, institutional measures, pricing policies and financing for the construction of the infrastructures.

#### 5.5.2.2.3 Industry and mining

On the basis of the diagnostic assessment, the consultant shall examine all industrial activities related to the development of agriculture, livestock and mining, and which will benefit greatly from new conditions regarding transport and the availability of energy.

Following this inventory, the consultant shall perform a cost analysis of the main factors of production in the four Member States (land, infrastructures, buildings, civil engineering works, water, electricity, fuel, wages) and identify the existing relationships between the costs of benchmarks in the sector.

The consultant shall analyse, in the light of the sectoral policies developed in Member States and regional and international conventions (EU, AU, UEMOA, ECOWAS, UMA), the potential markets for the various industrial and mining activities in the basin area.

Also, based on the long-term development objectives (2040), the consultant shall propose an industrial and mining development programme. The proposed industries will take into account the opportunities afforded, the development objectives set by OMVG Member States as well as other technical, economic and financial criteria.

For each type of activity selected, the consultant shall carry out a short economic evaluation to justify its internal profitability.

Depending on the evolution of the OMVG programme (irrigation, transport infrastructure, extension of the electricity grid), the consultant shall propose a programme for the establishment of industrial and mining units.

The consultant shall assess the indicative investment needs.

The consultant shall propose measures to limit the nuisances caused by industrial and mining development (industrial discharges, dust and smoke emissions, air pollution), etc.

### 5.5.2.3 Transport and communications plan

#### 5.5.2.3.1 Context

Efficient and reliable cross-border transport and communications networks are essential to:

- attract investment and optimize the distribution and use of land;
- improve the reliability of service delivery and minimize the uncertainties associated with long-term infrastructure investments;
- strengthen sub-regional coordination and use of investment.

Transport and communications are therefore among the most important sectors. Their development however depends not only on the growth of other sectors, but also on socio-economic integration and the promotion of intra- and extra-trade in the study area.

Efforts have been made by the OMVG and Member States for the setting up of a rural, national and sub-regional transport network to facilitate trade relations between Member States and the various localities in the area.

In terms of hydroelectric power transmission, the OMVG is constructing an interconnected network linking the national power grids of Guinea Bissau, Guinea, The Gambia and Senegal. This will pave the way for linkages with the OMVS, CLSG and WAPP regional networks.

Regarding the road network, transportation is primarily by land, mainly consisting of roads and feeder roads in poor condition. River crossing infrastructures are almost non-existent and crossing is most often done by ferries which are in poor condition.

A road infrastructure programme has been developed by OMVG to address this problem.

In terms of communications, the four Member States have relatively efficient telephone networks covering a large part of the area. These systems must however be strengthened to take into account the increase in agricultural, industrial and mining production.

#### 5.5.2.3.2 Content of the study

The consultant shall conduct a critical analysis of the situation and prospects in the transport, communications and energy fields. S/he shall provide an overview of the transport plan which will contribute to opening-up economic zones, strengthening trade between countries, promoting economic activity and cross-border trade, developing agricultural areas and harnessing unexploited potential.

The consultant shall analyse the main causes of the lack of physical infrastructures and sub-regional imbalances.

Based on the expected development prospects, the consultant shall examine trade trends (expected traffic), the evolution of transport costs and legislation.



The consultant shall thus propose a master plan for the development of transport and communications networks in the basin area. This master plan shall include the following development programmes:

- a regional road network (interconnected roads) and feeder roads;
- a river transport network;
- inter-State, intra-basin and rural telecommunications network to open up the basin area;
- complementary hydroelectric power transmission network.

#### 5.5.2.4 Plan for the management and protection of the environment and ecosystems

Recent studies on environmental issues and the preservation of natural environments have shown that dams will change the hydraulic regime of rivers. They also highlight risks of pollution, increased salinity levels in water and soils, increased desertification and a decrease in biodiversity.

These disruptions and negative effects on the environment as a result of changes in the situation were analysed in the first part of the study. The same applies to the effects associated with climate change.

Based on the results of the diagnostic assessment of the various issues addressed, the consultant shall identify the corrective actions and measures for the effective protection of ecosystems and the environment. These measures and actions will revolve around:

- the management and development of estuaries, floodplains and reservoirs of the Sambangalou dam and of second-generation structures;
- The improvement of identified ecological sites (draft development and management plan of the main sites) and the protection of wildlife;
- Restoring forest potential and forest balances (reforestation, restoration of forest formations, improvement and management of forest cover, irrigated forestry, implementation of actions to regenerate gonakier trees (*Acacia nilotica*), management of pasture lands and enhancement of new forage resources, ecosystem monitoring system);
- the protection and development of fish resources (restoration of floodplains, flood management, monitoring systems, soil conservation);
- soil conservation (combating soil degradation due to high salinity levels, alkalinisation, acidification, protection against water and wind erosion, etc.);
- monitoring and management of hydraulic structures and hydro-agricultural perimeters;
- health and hygiene: disease control measures (bilharzia, malaria), drinking water supply, epidemiological surveillance.

The consultant shall make proposals with regard to each of these themes to:

- correct the negative effects in areas where the damage is significant;
- develop a monitoring system and a study and research programme in order to enhance the knowledge base in these areas;
- formulate development projects, regulatory and institutional measures and public awareness actions.

These proposals should lead to the establishment of integrated action programmes. The action programmes should be evaluated, to the extent possible, in terms of costs, practical arrangements, implementation and expected results.

#### 5.5.2.5 Drinking water supply, sanitation, health and education master plan

Based on the elements and conclusions of Phase 1, this plan should provide guidelines for a priority equipment programme in terms of drinking water (boreholes for village water supply and animal drinking supply), sanitation (village latrines), health (infrastructures) and education (school infrastructures). These actions shall be prioritized according to the needs of the populations (drinking water, education) and the impact on their health or on the quality of the environment (sanitation).

The consultant shall make a distinction between rural and urban areas, and define the objectives, quantify equipment requirements and determine the resources to be made available to the populations with a view to achieving the SDGs defined by the international community.

The consultant shall also provide a cost estimate for the effective protection of the quality of water resources throughout river basins under OMVG jurisdiction.

Based on the findings of the diagnostic assessment, the consultant shall propose a public health programme to combat diseases (malaria, schistosomiasis and onchocerciasis) and an education programme to address the needs of the population.

These programmes should be presented in terms of actions, costs, implementation modalities and results.

#### 5.5.3 Phase 3: Drafting of the Master Plan for the Integrated Development of OMVG River Basins

Based on the previous analyses, the consultant shall review the different possible development strategies and scenarios for the integrated and harmonious development of the OMVG river basins.

The consultant shall assess the impact of each scenario in terms of food security, employment, environmental protection and migration flows.

The consultant shall perform a cost/benefit analysis of these different scenarios and propose the most appropriate strategy.

Based on these analyses, the consultant shall define the regional strategic framework for the development of the basins, specifying the main orientations and development options up to 2040:

- the broad outlines of the water development and management policy as well as the actions to be undertaken (recalibration of ponds, developments for improved lowland farming, flood protection dykes, irrigation schemes, development of protected wetlands, etc.);
- a multisectoral development action programme integrating: agro-sylvo-pastoral development, industrial and mining development, energy development, environment and tourism, transport and communications, drinking water supply, health and education;
- a programme of accompanying actions including measures to support production (research, supervision, etc.), economic and financial measures (taxation, investment aid) and institutional measures (land, etc.);
- A programme on the prevention, protection and management of flood risks;
- a global and regional investment programme covering these sectors (water-related infrastructures, transport, hydroelectric infrastructures, telecommunications, drinking water infrastructures, sanitation, health, education, industry, mining, etc.);
- an overall analysis of investments costs, the cost of accompanying actions and operating costs;
- programming of actions to be carried out up to 2040;
- a computerized planning tool integrating monitoring and evaluation and hydraulic management models, etc.

In addition, the consultant shall describe measures to ensure the effective management of the basin's natural resources, in terms of quantity and quality. These measures will ensure coherence between development programmes and the sustainable management of the resources in the basin. To this end, the consultant shall determine:

- minimum flow targets, flow targets during the dry season and in crisis situations at strategic points to be specified and sampling methods;
- low-flow management plans including flow target values during the dry season and crisis situations, consumption limit volumes and their distribution among users;
- the conditions for restricting water abstraction and discharges in crisis situations;
- the institutional arrangements for the collective management of water abstraction charges and resources (organisation, operation of the PWC, pricing, etc.);
- measures to improve water management (regulatory measures, water police);
- The water quality monitoring system and evaluation criteria (standards to be defined);
- Measures to combat water pollution.

The elaboration of the master plan implies a progressive preparation process based on permanent, structured and extended consultations with all stakeholders in the river basin areas. Systematic information campaigns will also have to be conducted. This iterative process between experts from member countries, the High Commission and basin partners underpins the legitimacy to the final document.

To ensure the effective implementation of these different tasks, the consultant shall analyse the extensive documentation available in the various areas mentioned. The OMVG will provide an indicative bibliography which will be completed as the study progresses. The

consultant shall take into account the various official planning documents (land use plans, master plans, etc.).

The consultant shall use available historical and satellite photographs and topographic maps developed within the framework of OMVG studies.

The necessary consultations, facilitated by the OMVG, will be carried out with the various government departments, research organizations, national and international institutions concerned.

The consultant shall carry out field visits and make contacts at the study site through meetings with the populations.

## 6 REPORTING AND IMPLEMENTATION SCHEDULE

The Consultant shall produce the following reports during the performance of the study:

⇒	Signing of contract	M-1
	Initial report and description of the methodology and Phase 1 schedule	M
⇒	Provisional report of Phase 1 (including validation)	M+3
⇒	Final report of Phase 1 (including validation)	M+4
⇒	Provisional report of Phase 2 (including validation)	M+7
⇒	Final report of Phase 2 (including validation)	M+8
⇒	Provisional report of Phase 3 (including validation)	M+11
⇒	Final report of Phase 3 (including validation)	M+12

These reports will be submitted in French, English and Portuguese.

The costs of printing, translating and shipping of all reports will be borne by the Consultant who will agree with the OMVG High Commission on the form of printing, type of cover and binding. The deadlines for the submission of reports will be determined in the contract to be concluded at a later date.

The Consultant will provide the OMVG with support to present the document at the 2021 World Water Forum in Dakar.

## 7 PROFILES OF THE TEAM OF EXPERTS

### 7.1 KEY EXPERTS

The team shall be led by a **project manager, a rural engineer for example with at least 15 years of experience in integrated water resources management and implementation of master plans**. It shall include international and national experts. The service provider is free to set up this team. However, the following specialists are required at a minimum:

- Economist – planning specialist
- Agro-pastoralist engineer
- Forestry-planning specialist
- Biologist specializing in aquatic ecology
- Soil science expert
- Naturalist - environmentalist
- Socio-economist

- Hydrologist / Modeler
- Geologist
- Institutional
- Industrial economist
- Hydraulic planner
- Agro-economist
- Epidemiologist
- Transport Specialist
- Industry expert
- Surveyor cartographer
- Electrical Engineer
- Engineer specializing in drinking water supply and sanitation
- Veterinary epidemiologist

These specialists shall each have excellent skills (university degree or adequate experience in their field of expertise) and extensive experience of 5 to 10 years minimum. They shall have participated in at least two similar missions in their respective field of expertise, preferably in sub-Saharan Africa.

The service provider shall select and hire experts whose profiles correspond with the requirements specified in its proposal under the section "Organisation and Methodology".

## 7.2 REPORTS

### 7.2.1 Mandatory reports

Each report will be submitted in ten (10) copies, in paper and electronic format.

#### **A / Initial report:**

The Initial Report shall be submitted one month after the entry into force of the contract. The methodology, work programme, division of labour among the team of experts, as well as the duration of interventions shall be indicated in this report.

#### **B / Report of Phase 1:**

"Analysis of the situation": This report shall cover all themes mentioned above.

- It shall present an analysis of the situation and the measures proposed to accelerate the development and protection of the natural heritage. This report shall include fact sheets (identifying and describing the watersheds and their importance, and development projects currently affecting these river basins).
- The consultant shall prepare a dynamic, tailored and concise presentation (graphic diagrams, summary maps).
- A summary of the report (not to exceed 10 pages) shall be produced for the purpose of communicating with partners.

#### **C/ Sectoral Master Plans**

Five reports shall be submitted by the consultant:

- Report on the master plan for agro-sylvo-pastoral and fisheries development (main report, annexes and maps);

- Report on the transport and communication development plan;
- Report on the industrial, mining and energy development plan;
- Report on the environmental management and protection plan;
- Report on the master plan for drinking water supply, sanitation, health and education.

A summary (not to exceed 10 pages) of each of the reports on the 5 sectoral plans shall be produced for communication with partners.

### **D/ Report of the master plan for integrated development**

A report shall be submitted including a consolidated map.

Using the appropriate scales, the consultant shall prepare maps with the data necessary for a visualization of the different information contained in the report. The following data shall be included (non-exhaustive list):

- key demographics and infrastructure,
- the agro-sylvo pastoral use of land and zoning of the territory, natural hydrographic units showing irrigated perimeters and planned extensions;
- forests and dune soils;
- protected and unprotected ecological sites and their main ecological characteristics and development projects;
- sensitive areas and mean points (soils with high salinity levels).

A summary of the Report on the Master Plan for the Integrated Development of River Basins under the jurisdiction of the OMVG shall also be produced for communication with partners.

The maps will provide an overview of the evolution of the basins up to 2040.

The consultant shall submit paper and electronic versions of each of the above-mentioned reports to the OMVG.

Ten (10) copies of the above-mentioned reports shall be submitted to the OMVG High Commission in French, English and Portuguese. Approval of these reports is the responsibility of the OMVG High Commission and Member States.

## **8 MONITORING AND EVALUATION**

### **8.1 Definition of indicators**

The following performance indicators will be used to monitor the progress of the work to be carried out by the service provider:

#### **General objective**

Master plan for water resources development and management adopted by the Member States and implemented by the relevant departments of Member States

#### **Specific objective 1 (situational analysis):**

Reports on the current status of water-related sectors (inventory)

Prioritization of issues faced throughout the basin

**Specific objective 2 (sectoral plans):**

Reports on sectoral plans adopted  
Local consultation meetings held  
National workshops held  
One regional workshop held  
Steering committee meeting held

**Specific objective 3 (Master Plan):**

Report on the master plan adopted by the Member States  
4 national workshops held  
One regional validation workshop held  
Steering committee meeting held

## 8.2 Special requirements

Consultation meetings, which are essential to the success of the master plan, shall be included by the consultant into his/her work plan. As such, the Consultant shall co-facilitate the following meetings in collaboration with the management unit of the master plan (the 3 phases are systematically integrated):

- one (1) regional kick-off meeting;
- one regional workshop to validate deliverables of each stage followed by a meeting of the Steering Committee;
- National workshops (12) to consider deliverables with the attendance of experts of Member States.

Costs relating to the material organisation of these stakeholder participation meetings shall be covered by the project. Therefore, the consultant's bid shall only take into account his/her hours worked to facilitate, co-facilitate and work on related assignments.

## 9 INSTITUTIONAL FRAMEWORK

### 9.1 Project management body

The Project will be managed by the Gambia River Basin Development Organisation (OMVG) through its High Commission based in Dakar with the support of national entities in the four member countries of the Organisation (The Gambia, Guinea, Guinea-Bissau and Senegal).

The High Commission, as the project owner, will be responsible for supervising the study.

The High Commission will ensure that Member States, through their experts, are involved in the design and implementation of this study.

### 9.2 Management structure

A Steering Committee of the Master Plan will be set up and composed of representatives of the OMVG and Member States, chaired by the OMVG High Commission.

The selected consultant shall work in close collaboration with the Management Unit set up by the OMVG High Commission under the supervision of the Steering Committee.

In this regard, the management unit will be required, as and when necessary, to call on specialists in various fields so as to obtain their opinions and recommendations.

The OMVG will provide the Consultant with all the necessary and available technical information for a successful performance of the assignment. It will also provide administrative support within the entire study area (within its four Member States).