



TOGOLESE REPUBLIC

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**AGENCY FOR PROMOTION AND
DEVELOPMENT OF AGROPOLES IN TOGO**

**STAPLE CROPS PROCESSING ZONES (SCPZ)
PROGRAMME: PROMOTING SUSTAINABLE
AGRICULTURAL VALUE CHAINS**

TOGO

**ENVIRONMENTAL AND SOCIAL IMPACT
ASSESSMENT (ESIA)**

VOLUME 1

CONTEXT SETTING, STUDY METHODOLOGY, POLITICAL, LEGAL,
NORMATIVE AND INSTITUTIONAL FRAMEWORKS, DESCRIPTION OF THE
RECEIVING ENVIRONMENT AND PRESENTATION OF THE PROJECT

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LIST OF ACRONYMS AND ABBREVIATIONS

| | |
|-----------|--|
| AFAT | : Agriculture, Forestry and other Land Use |
| AfDB | : African Development Bank |
| AMC/CMA | : Army Medical Centre |
| ANGE | : National Environmental Management Agency |
| ANSAT | : National Food Safety Agency |
| APRM | : Ministry of Agriculture, Livestock and Fisheries |
| BOAD | : West African Development Bank |
| C.I.T.E.S | : Convention on International Trade in Endangered Species |
| CCD/CDC | : Comité Cantonal de Développement (Cantonal Development Committee) |
| CEET | : Compagnie Energie Electrique du Togo |
| CEG | : Collège d'Enseignement Général |
| CFCs | : Chlorofluorocarbons |
| CHR | : Regional Hospital Centre |
| CHU | : University Hospital Centre |
| CILSS | : International Committee for Drought Control in the Sahel |
| CIP | : Common Industrial Policy |
| COOPEC | : Cooperative Savings and Credit Cooperative |
| COP | : Conference of the Parties |
| CRN | : Centre de Récupération Nutritionnel |
| CS | : Case de Santé (Health Centre) |
| CS | : Cooperative Societies |
| CSIGERN | : Strategic Investment Framework for the Management of the Environment and Natural Resources |
| DA | : Directorate of Agriculture |
| DAER | : Direction de l'Aménagement et de l'Equipement Rural |
| DAF | : Direction de l'Administration Financière (Directorate of Financial Administration) |
| DCN | : Second National Communication |
| DE | : Livestock Directorate |
| DEEES | : Division of Economic, Environmental and Social Studies |
| DFV | : Direction des Filières Végétales de l'agriculture |
| DGMG | : Directorate General of Mines and Geology |
| DGSCN | : General Directorate of Statistics and National Accounts |
| DGTP | : General Directorate of Public Works |
| DLDD | : Desertification, Land Degradation and Drought |
| DPA | : Direction des Pêches et de l'Aquaculture (Directorate of Fisheries and Aquaculture) |
| DPCA | : Directorate for Planning and Agricultural Cooperation |
| DPPSE | : Planning and Monitoring and Evaluation Policies |
| DPV | : Plant Protection Directorate |
| DRAEP | : Direction Régionale de l'Agriculture, de l'Elevage et de l'Hydraulique |
| DRH | : Direction des Ressources Humaines |
| DSID | : Direction des Statistiques, de l'Informatique et de la Documentation (Directorate of Statistics, Informatics and Documentation) |
| DSP | : Directorate for Agricultural Seeds and Plants |
| DWS | : Drinking Water Supply |
| ECOWAS | : Economic Community of West African States |
| ECP | : Environmental Commitment of the Promoter |
| EDF | : European Development Fund |

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| EDIL | : Ecole d'Initiative Locale |
| EDST | : Demographic and Health Survey of Togo |
| ESIA | : Environmental and Social Impact Assessment |
| EV | : Voluntary Teaching |
| FAO | : Food and Agriculture Organisation of the United Nations |
| FCFA | : Franc of the African Financial Community |
| FUCEC | : Fédération des Unions de Coopérative d'Epargne et de Crédit |
| GCF | : Green Climate Fund |
| GDP | : Gross Domestic Product |
| GDPA | : Gross Domestic Agricultural Product |
| GEF | : Global Environmental Facility |
| GHG | : Greenhouse gases |
| GMOs | : Genetically Modified Organisms |
| HBFC | : Hydrobromofluorocarbons |
| HCFC | : Hydrochlorofluorocarbons |
| HCH | : Hexachlorocyclohexan |
| HP | : Prefectural Hospital |
| ICAT | : Institute for Counselling and Technical Support |
| ICDMP | : Integrated Disaster and Land Management Project |
| IEC | : Information, Education and Communication |
| IFAD | : International Fund for Agricultural Development |
| IFC | : International Finance Corporation |
| ILO | : International Labour Organisation |
| INC/CNI | : Initial National Communication |
| IPPC | : International Plant Protection Convention |
| IPPC | : International Plant Protection Convention |
| IsDB | : Islamic Development Bank |
| ISO | : International Standards Organisation (International Organisation for Standardisation) |
| IUCN | : International Union for Conservation of Nature |
| IWRM | : Integrated Water Resources Management |
| MDGs | : Millennium Development Goals |
| MEC | : Mutuelle d'Epargne et de Crédit (Savings and Credit Union) |
| MERF | : Ministry of the Environment and Forest Resources |
| MFI | : Micro-Finance Institution |
| MIT | : Ministry of Infrastructure and Transport |
| MSC/CMS | : Medical and Social Centre |
| NAP | : National Action Programme |
| NAPA | : National Adaptation Programme of Action |
| NAPA | : National Adaptation Planning |
| NAP-CD | : National Action Programme to Combat Desertification |
| NBSAP | : National Biodiversity Strategy and Action Plan |
| NFAP | : National Forest Action Plan |
| NGO | : Non-Governmental Organisation |
| NSCT | : Nouvelle Société de Coton du Togo |
| ODS | : Substances that deplete the ozone layer |
| PAP | : Priority Action Programme |
| PCAE | : UEMOA's Common Policy for the Improvement of the Environment |
| PCU | : Peripheral Care Unit |
| PGES | : Environmental and Social Management Plan |
| PICAO | : Common Industrial Policy for West Africa |
| PMH | : Human-powered pump |

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| PMI | : Maternal and Child Protection |
| PNACC | : National Planning for Adaptation to Climate Change |
| PNAE | : National Action Plan for the Environment |
| PNE | : National Environmental Policy |
| PNEEG | : National Policy for Gender Equity and Equality |
| PNIASAN | : National Plan for Agricultural Investment and Food and Nutritional Security |
| PNIERN | : National Investment Programme for the Environment and Natural Resources |
| POPs | : Persistent Organic Pollutants |
| PPP | : Public-Private Partnerships |
| PPS | : Public Primary School |
| PRODAT | : Programme de Développement des Agropoles du Togo |
| PRSP | : National Poverty Reduction Strategy Papers |
| PRSP-WA | : Regional Poverty Reduction Strategy Paper-West Africa |
| PUDC | : Emergency Programme for Community Development |
| PVC | : <u>Polyvinyl chloride</u> |
| QUIBB | : Unified Questionnaire of Basic Indicators of Well-Being |
| RAP | : Resettlement Action Plan |
| RMP | : Risk Management Plan |
| RN | : National Roads |
| SCAPE | : Strategy for Accelerated Growth and Employment Promotion |
| SDO | : Sustainable Development Objectives |
| SNDD/NSSD | : National Strategy for Sustainable Development |
| SOTOCO | : Société Togolaise de Coton (Togolese Cotton Company) |
| SRAP-CD/WA | : Sub-regional Action Programme to Combat Desertification in West Africa |
| SRAP-RV/AO | : Sub-regional Action Programme for Vulnerability Reduction in West Africa |
| TCNCC | : Third National Communication on Climate Change |
| ToR | : Terms of Reference |
| UEMOA | : West African Economic and Monetary Union |
| UNCCD | : United Nations Convention to Combat Desertification |
| UNCED | : United Nations Conference on Environment and Development |
| UNDP | : United Nations Development Programme |
| UNFCCC | : United Nations Framework Convention on Climate Change |
| VDC/VDC | : Village Development Committee |
| WHO | : World Health Organization |
| WTO | : World Trade Organisation |
| ZAAP | : Zone d'Aménagement Agricole Planifié |
| ZIC/ICT | : Zone de Convergence Intertropicale (Intertropical Convergence Zone) |

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INTRODUCTION

Togo is an essentially agricultural country where the agricultural sector brings together 60% of the total population with a workforce of about 87%, often family workers. In a somewhat constraining international economic context, agriculture contributed 4.1% to the country's growth in 2015 and represents 30.9% of GDP. The GDP growth rate in 2014 was estimated at 5.9%. According to Togo's agricultural policy document, drawn up in 2015, the GDP at constant price per agricultural worker was CFAF 315 378, which is roughly equal to the GDP per capita (CFAF 326 689).

However, in spite of these achievements, this progress is proving to be too slow and insufficient to significantly reduce the level of poverty in Togo. The latter, which is already too high at national level (55.1% according to the QUIBB 2015 survey), is even higher in rural areas. On the basis of its new Vision focusing on accelerated growth and inclusion, the Government of Togo intends to give new impetus to the last phase of the SCAPE (2016-2017) and the decade that follows.

Thus, it was jointly decided to implement during the next CSP, an integrated project for the development of agropoles in Togo (PRODAT) including the agropole of the Kara basin which includes the rehabilitation and development of infrastructures (Component B), notably the rehabilitation and maintenance of rural tracks (included in Sub-component B2), hydro-agricultural developments (Sub-component B3) and the supply of drinking water.

Indeed, the problem of landlockedness is a major constraint for the development of agropoles. To this end, the project plans to rehabilitate and develop a significant number of priority agricultural tracks in order to facilitate the transport and evacuation of products. The rehabilitation and maintenance of rural tracks will be integrated into the developed agricultural sites and markets, the aim being to enable the evacuation of products in all seasons as well as the processing infrastructures envisaged within the framework of private investments.

At the level of agricultural production, water management is an essential element for the promotion of agropoles and the securing of agricultural production. Emphasis will therefore be placed on the evaluation of surface and underground water resources in order to effectively support the development of the Kara basin agropole, in the context of increased water exploitation.

With regard to the supply of drinking water, in addition to hydro-agricultural developments and the rehabilitation of tracks, it will also be necessary to provide the various areas with infrastructures that can meet the drinking water and sanitation needs of the neighbouring rural populations in order to guarantee the health of the populations and maintain good productivity within the framework of the agropole. This component will focus on the development of mini-water supplies consisting of boreholes, water towers, canals for irrigation, supply networks and standpipes.

All these developments will have an impact on the ecosystems and social environment of the project area. This is why, according to Togolese regulations and the operational safeguards of the donor, the Project is classified in Category 1 and must be subject to an Environmental and Social Impact Assessment (ESIA). In order to ensure that the rehabilitation and development work on the infrastructure of the Kara Basin agropole complies with international standards and guidelines on sustainability, the APRM has undertaken a full Environmental and Social Impact Assessment (ESIA), which focuses on sub-component B3 "Infrastructure to support agricultural production" of component B (Agro-park and market access infrastructure).

In addition to complying with national environmental regulatory requirements, the ESIA also complies with international standards set by donors (AfDB, GCF, BOAD and the Saemaul Foundation for Globalisation).

The objectives of this study are :

- Define the ecological, socio-economic and political issues related to the overall development of the project's human activities;
- Describe and analyse the initial state of the project area from a biophysical and socio-economic point of view in order to obtain a global environmental vision of the project context;
- Identify and evaluate the project's direct and indirect impacts, positive and negative, from an environmental and socio-economic point of view;
- Identify and assess the environmental and technological risks associated with the project ;
- Define and propose measures to mitigate negative impacts ;
- Define and propose measures to prevent the risks associated with the project;
- Drawing up an Environmental and Social Management Plan (ESMP) and a Risk Management Plan (RMP);
- Propose an environmental monitoring and follow-up programme for the project

To carry out the Environmental and Social Impact Assessment (ESIA), the methodological approach is structured in 4 main phases: Review of the Terms of Reference (ToR), Preliminary Data Collection and Documentary Analysis, Field Diagnostic Survey and Identification of Impacts and Risks, Detailed Analysis and Assessment of Impacts and Risks. The diagnostic survey consisted of indirect ex situ observation, direct in situ observation, a questionnaire survey, interviews and public consultations.

After the description and analysis of the initial state of the project area, the Consultant proceeded to the identification of the impacts based on the checklist coupled with a matrix of potential interaction types that allowed him to visualise the different relationships between the sources of impacts (the different project activities planned) and the receptors (the environmental components that should be disturbed in relation to the initial state of the project area). The Consultant had to distinguish between the initial impacts of the project, both negative and positive, and those that will be induced. For this purpose, the Consultant used the Matrix of Leopold et al (1971) for potential interactions and the network diagram for induced impacts.

Impact assessment is carried out according to a methodology that integrates the parameters of the duration, extent, intensity of the impact and the value of the affected component (Fecteau's impact assessment method (1997)). The first three parameters are aggregated into a summary indicator to define the absolute importance of the impact. The fourth parameter is added to the absolute importance of the impact to give the relative importance of the impact. The significance of an impact is therefore an indicator of synthesis, a global and non-specific judgement of the effect that a given element of the environment undergoes as a result of an activity in a given host environment. This analysis must take into account the level of uncertainty affecting the assessment and the probability that the impact will occur.

The results of the ESIA are presented in five (05) volumes corresponding to the different activities related to the different sub-components:

- I. Volume 1 deals with the project's background, the working methodology, the political, legal, normative and institutional frameworks, the description and analysis of the project's initial receiving environment;
- II. Volume 2 deals with the identification, the evaluation of environmental impacts and the ESMP of the "hydro-agricultural developments" component: construction of dams and

development of irrigated perimeters;

- III. Volume 3 presents the identification, environmental impact assessment and ESMP of the "runway rehabilitation" component;
- IV. Volume 4 deals with the identification, environmental impact assessment and ESMP of the drinking water supply component;
- V. Finally, Volume 5 summarises the annexes.

1- SETTING THE PROJECT IN CONTEXT

1.1. PRESENTATION OF THE PROMOTER

The promoter of the project is the Ministry of Agriculture, Animal Production and Fisheries (MAPAH). It is located in Atchanvé, near the Presidency of the Republic, B.P. 341 Lomé - Togo, Tel: (+228) 22 21 10 62 / 22 21 55 63.

MAPAH is in charge of the country's agricultural, pastoral and fisheries policy. It is decentralised over the whole of the national territory into Regional Directorates for Agriculture, Livestock and Fisheries. At the central level MAPAH includes technical services such as the Directorate of Agriculture (DA), Directorate of Planning and Agricultural Cooperation (DPCA), Directorate of Human Resources (DRH), Directorate of Rural Development and Equipment (DAER), the Directorate of Statistics, Computing and Documentation (DSID), the Directorate of Livestock (DE), the Directorate of Fisheries and Aquaculture (DPA), the Directorate of Financial Administration (DAF), the Directorate of Seeds (DS) and the Directorate of Plant Protection (DPV).

MAPAH is supported in the field by ICAT and ITRA, which help people in rural areas in their daily activities in agriculture, livestock and fisheries. It is the guarantor of agricultural, pastoral and fisheries production, thus ensuring food self-sufficiency in Togo.

1.2. PRESENTATION OF THE PROJECT

The project subject of the ESIA concerns connection tracks (Sub-component B2), mini-dams and irrigated perimeters (gravity and solar powered), developed lowlands and works in rainfed farming areas (Sub-component B3), "Support infrastructures for agricultural production" (Biodigester) and drinking water supply (DWS) .

1.2.1. CONNECTION TRACKS

The connecting track works concern the rehabilitation and development of 130 km of tracks, including works for a good connection between the agro-park and the production and storage areas. This involves the rehabilitation of 80 km of main tracks and 50 km of secondary tracks.

1.2.2. MINI-DAMS, IRRIGATED PERIMETERS AND LOWLAND AMENITIES

The mini-dams and irrigated perimeters involve the construction of two mini-dams (which can also be used for fish farming) *and gravity-fed/solar powered to irrigated perimeters located downstream (about 15,428.0 ha)*. One of the dams will also be used to supply drinking water to the Broukou agro-park besides its use for irrigation.

The other developments in the area are: lowland developments for 2,500 ha; water and soil conservation (CES) developments for 6,500 ha, *GCF support for the creation and management of at least 10,000 ha of agro-forestry including 15,428 ha for use in climate resilient agriculture (CRA) practices to generate additional streams of income for the local communities*. It will also constitute secure production blocks of 100-200 ha for a total of 30,000 ha for dry crops production.

1.2.3. DRINKING WATER SUPPLY AND RENEWABLE ENERGY PROVISIONS

The drinking water supply in the project area consists of two systems: a zone-wide large locality level mini-DWSS (Six (6) and a borehole supply system in small localities and hamlets (60 mixed pumps (PMH and solar powered). *Through GCF support, the project will support selected Energy Service Companies (ESCOs) on the basis of a public procurement process, to Design, Construct, Operate and Maintain (DCOM) bio-gas based generators and digesters*. The project is expected to finance the installation about 19,000 m³ of biogas digester to treat livestock manure and produce biogas for power generation.

1.3. PROJECT OBJECTIVES AND JUSTIFICATION

1.3.1. OBJECTIVES OF THE PROJECT

1.3.1.1. General objective

The main objective of the project is to operationalize in a concerted and decentralized approach, the country's new agricultural policy for an inclusive and strong economic growth through the establishment of agropoles in three zones of the national territory, particularly in the Kara basin.

1.3.1.2. Specific objectives

As defined by the terms of reference, the specific objectives of the project are :

- to sustainably increase productivity and agricultural production by promoting promising sectors;
- developing agricultural and other infrastructure, market access and processing;
- to structure the actors of the agricultural sectors with a view to their professionalization and their close involvement with the various segments of the private sector and ;
- promote small and medium enterprises, agribusiness through increased private sector involvement, the revitalisation of value chains and the promotion of the private sector.
- the emergence of partnerships between stakeholders ;
- promote integrated development centres including access to basic services (health, education, water, sanitation, energy), in particular through
- the intensive use of information and communication technologies.

1.3.2. PROJECT JUSTIFICATION

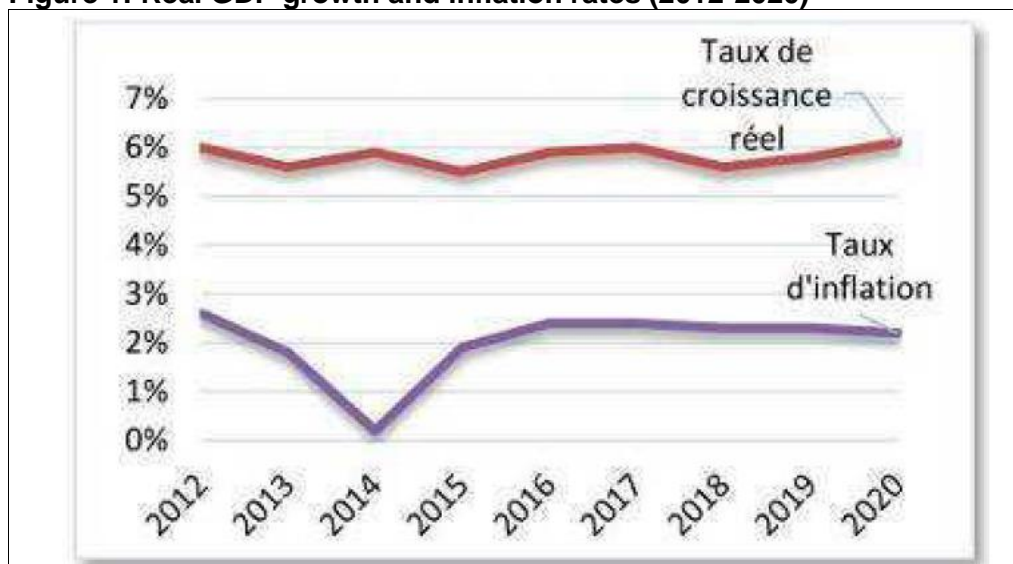
1.3.2.1. Contribution of agriculture

Togo is a country dominated by agriculture in terms of the number of people whose main activity is farming. Indeed, according to the results of QUIBB-TOGO, 2015, "Togolese workers work mainly in the agriculture, forestry and fishing branch, which occupies more than half (54.1%)".

Togo's average GDP growth over the 2011-2015 period was 5.3% against 2.7% over the 2006-2010 period. According to the African Development Bank (ADB), it should evolve between 5.5% and 6.1% between 2016 and 2020 (Figure 1). The main drivers of this growth will be the reforms carried out to strengthen the rules of competition in the hotel, electricity, banking and telecommunications sectors, combined with support for the modernisation of agriculture and the extractive industries.

The inflation rate, which was 0.2% in 2014, rose slightly to 1.9% in 2015. According to projections, it will remain at less than 3% until 2020, which is the convergence threshold of the WAEMU.

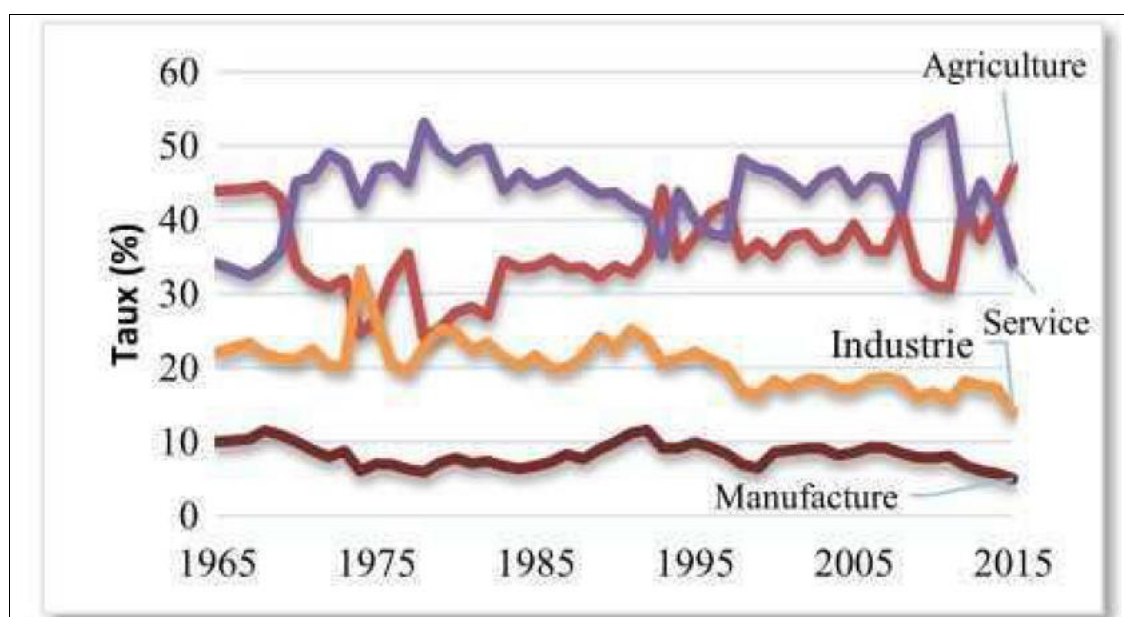
Figure 1: Real GDP growth and inflation rates (2012-2020)



Source: Togo, Country Strategy Paper_2016-2020, AfDB, September 2016

According to ADB data, the country is characterised by a weak transformation of the economy which is dominated by agriculture with 47.6% of GDP, followed by services (36.2%) and industry (16.2%) with only 6.4% for manufacturing (Figure 2). According to the ADB, the progressive decrease over the last five decades in the share of industry and services in GDP accompanied by the increase in the share of agriculture is an indication of the weak structural transformation of the Togolese economy.

Figure 2: Share of sectors in GDP from 1965 to 2015



Source: Togo, Country Strategy Paper_2016-2020, AfDB, September 2016

The output in the different sectors of economic activity measures economic growth across sectors to determine the growth rate and then GDP (Table 1).

Table 1: Contribution of economic sectors to GDP

| Sectors | Location |
|-----------|---|
| Primary | <ul style="list-style-type: none"> - For the period 2012-2016, the average contribution of the primary sector to real GDP is 27.1%. - 24.4% of GDP in 2018, 23.6% in 2019 |
| Secondary | <ul style="list-style-type: none"> - For the period 2012-2016, the average contribution of the secondary sector to real GDP is 21.2% in 2015 and 21.3% in 2016. - 15.6% of GDP in 2018, 6.6% of nominal GDP in 2019 |
| Tertiary | <ul style="list-style-type: none"> - Apart from banking, insurance and port activities, the Togolese tertiary sector is mainly made up of wholesale and retail trade. - For the period 2012-2016, the average contribution of the tertiary sector to real GDP is 37.1%. - Its growth went from 56.1% in 2011 to fall to -10% in 2012, before rising by 10.6% in 2013, 43.9% in 2018. - It contributed up to 3.2 points to the 5.9% growth rate announced for 2014. - Contribution of nearly 60% of wealth creation in Togo in 2019 with an evolution of its services from 59.1% to 59.9% of GDP at the end of June, a small increase of 0.8 percentage points over the period. - According to the WB, Togo is the second largest tertiary sector in the West African Economic and Monetary Union (WAEMU). |

Source: WB 2019, Treasury, PND 2018-2022

In Togo there are three main sectors of activity that contribute to the growth of the economy: the primary sector, the secondary sector and the tertiary sector.

Looking at this table, it can be seen that growth rates in the different sectors change significantly over the 2011 and 2019 period.

From 2012 to 2019, the contribution of the primary sector to GDP declined in favour of the secondary and tertiary sectors. The high rate of this sector in previous years is partly due to the high number of people engaged in agriculture, livestock, forestry and fishing activities and the investments made in these activities a few years ago. Indeed, nearly 70% of the Togolese population is involved in the primary sector, which is mostly dominated by agricultural activity.

1.3.2.2. Employment situation

Unemployment is declining while underemployment is increasing. Many Togolese are active in indecent work below their capabilities. The unemployed and the actors with underemployment are those who are likely to end up with low consumer spending. Table 2 presents the different variables related to employment.

Table 2: Employment and unemployment

| Variables | Location |
|--|---|
| Unemployment | <ul style="list-style-type: none"> - Decrease in the unemployment rate from 6.5% in 2011 to 3.4% in 2015. - Youth unemployment and underemployment rates over this period were 8.1% and 20.5% respectively. |
| Underemployment | <ul style="list-style-type: none"> - The underemployment rate, which rose from 22.8% in 2011 to 25.8% in 2015 |
| Consumption | <ul style="list-style-type: none"> - -Consumer spending by the richest 25% is 2.5 times higher than that of the poorest 25% in 2015 |
| Public actions in favour of employment | <ul style="list-style-type: none"> - Adoption in 2014 of a national employment policy and a national strategic plan for youth employment (PSNEJ) - Establishment of a national coalition for youth employment (CNEJ) - Between 2013 and 2017, actions carried out within the framework of the promotion of entrepreneurship have enabled more than 60,000 young people to be trained in micro-enterprise creation and management techniques, leading to the creation of 7,000 small and medium-sized enterprises which have contributed to the creation of almost 40,000 sustainable jobs. - Creation of more than 250,000 temporary jobs over the same period 2013-2017 for women and young people through the high-intensity work piloted by ANADEB and projects such as PDC, PDC-plus, etc. - Mobilisation of 13,500 young people as national volunteers throughout the country during the same period. |

Sources : (IBD 2015), PND 2018-2022

The data show that the consumer spending of the richest 25% is 2.5 times higher than that of the poorest 25% in 2015. The large proportion of the unemployed and underemployed will find themselves excluded from the traffic and transport opportunities provided by the motorway. But if the motorway increases investment, the creation of jobs will be a job opportunity that will reduce unemployment and underemployment.

1.3.2.3. Poverty profile

The specific data that define the economic situation of the population provide information on the level of development of certain non-monetary SDG indicators and on the different degrees of poverty in the regions (Table 3).

Table 3: Poverty profile

| | |
|--|---|
| Income poverty | <ul style="list-style-type: none"> - Decrease in the incidence of poverty at the national level by 3.6 percentage points over the period 2011-2015 (QUIB, 2011) from 58.7% in 2011 to 55.1% in 2015 - Poverty will be more marked in 2015 in rural areas (68.7%) than in other urban areas (37.9%) and in Lomé (34.8%). |
| Extreme poverty | <ul style="list-style-type: none"> - It fell nationally between 2011 and 2015 from 30.4% to 28.7%. - Its increase in the agglomeration of Lomé, from 4.6% to 13.7%, due among other things to the rural exodus, the precariousness in the city and high unemployment rate (7.8%). |
| Depth of poverty | -It has been reduced by about half, from 41.6% in 2011 to 22.1% in 2015. |
| Poverty and gender disparity | <ul style="list-style-type: none"> - Incidence of poverty is lower in the category of male-headed households than in the category of female-headed households; - Poverty in male-headed households decreased between 2011 and 2015 (from 59.6% to 54.6%) while poverty in female-headed households increased over the same period, from 54.3% to 57.5%. ((QUIBB 2015) |
| Poverty and social groups | <ul style="list-style-type: none"> - Public sector employees have the lowest incidence of poverty with 28.1% in 2015. - Employees in the private sector and other self-employed are the groups socio-economic conditions in which poverty rates increased between 2011 and 2015 (respectively from 44.1% to 49% and from 39.7% to 46.2%) |
| Gini Index | -The Gini index is 0.380 in 2015 against 0.393 in 2011. |
| The index human development (HDI) | -It increased from 0.426 in 2000 to 0.484 in 2014 (Human Development Report, UNDP 2016). |

Sources: QUIBB 2015, NDP 2018-2022

All dimensions of poverty are declining. Income poverty, extreme poverty, depth of poverty, gender poverty and social differentiation of poverty are positively affected by the development measures experimented since 2011. These declines express an impact of growth and improve the socio-economic context in which the motorway will be built.

1.3.2.4. Reminder of SDOs

It should be pointed out that at the United Nations Conference on Sustainable Development in 2012 (known as Rio+20 in reference to the Earth Summit held in Rio in 1992), the international community launched a process to draw up Sustainable Development Objectives (SDOs), applicable to both developing and industrialised countries and covering the three pillars (economic, social and environmental) of sustainable development. The 2015 United Nations Summit for Sustainable Development (New York, 25-27 September) marks the culmination of this vast and particularly inclusive process, which resulted in the Agenda 2030 for Sustainable Development, a genuine roadmap for sustainable development for the next 15 years, being officially adopted in New York, two months before COP21. The Sustainable Development Goals form the core of this Agenda 2030. There are 17 of them and they are themselves broken down as follows 169 targets or sub-objectives. There are SDOs respectively dedicated to water and sustainable energy, sustainable consumption and production patterns, climate, terrestrial and aquatic ecosystems. Those that concern the project are in particular :

The different SDOs implemented in Togo are presented in table 4 with their level of implementation.

Table 4: Achievement of Sustainable Development Goals in Togo

| SDG | Togo's achievements in SDOs |
|--|--|
| SDG 1: Poverty Eradication | - The country has a cereal and tuber surplus, which enables it to export cereals and tubers to the sub-region and thus contributes to improving the incomes of small-scale producers. |
| SDG2: fight against hunger | - Reduction in the number of people suffering from hunger from 32.8% to 16.4%) between 2011 and 2015 - -excess of cereals and tubers |
| SDG3: Good health and well-being | - According to the QUIB 2013-2014 survey, slightly more than six households out of ten (64%) consume water from improved sources, 84% of which are in the middle of the country. urban and 48% in rural areas. |
| SDG4: Access to quality education | - The net enrolment rate in primary education has increased significantly, from 87.8% in 2009/2010 to 94.3% in 2014/2015. |
| SDG5: Equality between sexes | - The equality of men and women enshrined in Article 11 of the Constitution - The adoption of the National Equity and Equality Policy (PNEEG) - The double revision of the Individuals and Family Code in 2012 and then in 2014 - The revision of the Penal Code by Law No. 2015-10 of 24 November 2015 on the rights of the child - Out of the 169 SDO targets, the economic dimension of the NDP takes into account 39.5% of the targets, the social dimension 37.2%, the environmental dimension 9.3% (except for the environmental targets), included in the other dimensions) and the governance dimension 14.0%. |
| SDG6: Access to safe water and sanitation to sanitation | - Updating of the national water and sanitation plan in 2017 to match the sustainable development objectives (SDOs) by 2030. - The targets the country has set for MDG 6 include: "increase the proportion of the population using food services by drinking water within 30 minutes from 62% in 2015 to 100% in 2030 100%, by 2030, end open defecation (52% to 0%) |
| SDG7: reliable energy, sustainable and modern at affordable cost | - Adoption of a law for the promotion and development of energies renewable energy sources, law 2018-010 08/08/2018 relating to the promotion of electricity production based on renewable energy sources in Togo |
| SDO 8: Access to decent jobs | - Adoption in 2014 of a national employment policy and a national strategic plan for youth employment (PSNEJ) - Decrease in the unemployment rate from 6.5% in 2011 to 3.4% in 2015. - Youth unemployment and underemployment rates over this period were 8.1% and 20.5% respectively. - Establishment of a national coalition for youth employment (CNEJ |
| SDG9 : Building resilient infrastructure, promote a resilient sustainable industrialisation that benefits everyone and encouraging innovation | - Training seminar organised by the Réseau des Médias Engagés pour le Développement Durable (RéMEDD) on 24 April 2018, in Lomé, for media managers in Togo. |
| SDG10 :Reduction of Inequalities | - Creation of the National Fund for Inclusive Finance to strengthen the social inclusion mechanisms through youth employment projects, etc.). |
| SDG11 : Cities and sustainable communities | -Dimensions taken into account by the National Development Programme |

| | |
|--|--|
| SDG12 : Consumption and production officials | -Dimensions taken into account by the National Development Programme |
| SDG 13: Fight against changes climate | -Dimensions taken into account by the National Development Programme |
| SDO 14: Conserve and sustainably use oceans and seas for developm sustainable | - Creation in 2014 of the National Agency in charge of State Action at Sea (ONAEM), whose objectives are specifically to preserve maritime interests, to fight effectively against insecurity in its maritime areas and to develop the blue economy. |
| SDG 15: Life on Earth | -Dimensions taken into account by the National Development Programme |
| SDG 16: Justice and Peace | -Dimensions taken into account by the National Development Programme |
| SDO 17: Partnerships for the realisation of the objectives | -Dimensions taken into account by the National Development Programme |

PND 2018-2020, IBD 2015

Despite some progress in the implementation of SDOs in Togo, particularly in macroeconomics, weaknesses in the sustainable development process have been noted and relate more to the primary sector. These weaknesses lie in the following observations, among others:

- The low productivity of the agricultural sector due to the low level of professionalism of the actors in the sector, the weak structuring of value chains and that of the valorisation of productions, the low quality of agricultural products in relation to the requirements of export and processing, the strong dependence of the sector on climatic conditions, the low quality of investment in the sector in terms of outlets and jobs, the low availability of national technical skills necessary for the transformation of economic potential, problems of identification of beneficiaries and accounting of jobs (impact analysis); -a lack of farmer organisation (only 8% of farmers are grouped in 2,500 cooperatives) and low access of women to factors of production (land, finance, technology) among the farming population.
- Low livestock production, which covers less than 50% of national needs.
- The gap between production and consumption in the fisheries and aquaculture sub-sector, where total production including all segments of the sub-sector (sea fishing, inland fishing and fish farming) is around 25,000 tonnes per year, while consumption is around 80,000 tonnes per year, with an average annual fish consumption estimated at 13 kg per person.
- The weak articulation between the different sub-sectors of the agro-food, manufacturing, craft and extractive industries: weak development of the agro-food industry characterised by the small-scale processing of agricultural products which is carried out by small units with limited capacities. As for manufacturing industry, it is characterised by high production costs which do not allow the development of a large-scale processing industry in order to enhance the value of the products and achieve economies of scale (water, electricity, imported raw materials).
- An undeveloped tourism sector currently faces several constraints that hinder its development: insufficient tourism supply, limited connectivity, lack of a mechanism to facilitate the financing of the value chain and difficulties in preserving protected areas.

- The development of the trade sector is hampered by certain constraints, including: disruptions in the supply of the internal market, the poor diversification and competitiveness of exports, the lack of marketing support, the inadequacy of the means of intervention and monitoring of distribution channels, the inadequacy of commercial infrastructures, the quantitative and qualitative inadequacy of the supply of goods and services for both the internal and external markets and a bottleneck in marketing channels.

According to the Agricultural Policy Document, the Directorate of Economy estimates that for Togo to be on the list of emerging countries by 2030, the average annual GDP growth rate should be at least 10% over a ten-year period. Furthermore, to fight poverty, the various activities of the different sectors of the national economy should therefore be increasingly developed.

"The Project for the Development of Agropoles in Togo (PRODAT) is part of the new agricultural policy that aims to create more added value through production, processing and exports, while ensuring social inclusion and environmental protection. It advocates a development approach based on the promotion of agropoles, coupled with the use of innovative financing mechanisms, particularly in the form of private investment and public-private partnerships (PPPs). »

The agropole of the Kara basin will bring together in "one place and under one operational organisation focused on developing local agricultural potential, the various levers that can boost the rural economy and lift people out of poverty. It will gradually integrate the development of various support infrastructures (water management, energy, transport, etc.), the promotion of agro-industry as well as the development of services (finance, etc.)".

By supporting the efforts of the populations of the area, the project will undoubtedly contribute to the development of agriculture in the area and to the achievement of the objectives set out in Togo's Agricultural Policy Document. The sub-components of the project, which is the subject of an Environmental and Social Impact Assessment (ESIA) study, concern the connection tracks, the mini-dams and irrigated lowland perimeters developed and the supply of drinking water.

1.4. MAIN STAKEHOLDERS AND DIFFERENT ISSUES RELATED TO THE PROJECT

1.4.1. PROJECT STAKEHOLDERS

The different actors in the ESIA are : Ministry of Environment and Forest Resources (guarantor of environmental management in Togo) through its Directorate of Environment, its Directorate of Forest Resources and its Agency for Environmental Management (ANGE), the Ministry of Agriculture, Fisheries and Rural Development (Promoter), the Minister of Trade, of Industry and Local Consumption, the Ministry of Water and Village Hydraulics, the Ministry of Opening-up and Rural Tracks, the Ministry Delegate to the President of the Republic, in charge of Energy and Mines, and the Ministry of Territorial Administration, Decentralisation and Territorial Development.

1.4.2. ISSUES RELATED TO THE PROJECT

The issues related to the project are socio-economic, cultural, environmental and political.

1.4.2.1. Socio-economic and cultural issues

The socio-economic and cultural issues are as follows:

- The economic and social situation of the area
- The living environment of the localities concerned in relation to the concerns of the populations,
- The conditions of transport of people and goods,
- Promotion of the development of the area,
- The fight against poverty,
- The rural exodus,
- Hygiene, sanitation and safety conditions,
- Preserving the health of the population.
- The preservation of the land,
- Respect for customs and habits,
- Compensation for the property of people affected by the project,
- The change in people's lifestyles.

1.4.2.2. Environmental issues

The environmental issues are as follows:

- The preservation of vegetation and plant biodiversity,
- The preservation of fauna and animal biodiversity,
- The preservation of water resources both quantitatively and qualitatively,
- The preservation of air quality,
- Soil preservation, both quantitatively and qualitatively,
- The production and management of solid and liquid waste.

1.4.2.3. Political issues

These are mainly :

- Achieving the objectives of the agricultural policy document
- Food security,
- Food self-sufficiency,
- The fight against poverty in rural areas,
- The industrial policy which is part of the revival of economic growth by the productive sectors,
- The respect of national and international environmental texts: The Togolese Republic, by adhering to international texts, must, through the actions taken on its territory, respect its commitments towards the international community and towards its own legal instruments and its populations. Among other commitments, we can cite the following:

- Constitution of the country ;
- Framework law on the country's environment ;
- Various international conventions and treaties including the United Nations Convention on Biological Diversity of June 1992, the United Nations Framework Convention on Climate Change (UNFCCC) of 9 May 1992 (New York), the Ramsar Convention on Wetlands of International Importance, adopted in 1971 in Ramsar, Iran, as amended, in 1982 then in 1987 the Vienna Convention for the Protection of the Ozone Layer (Vienna, 1985), the African Convention on the Conservation of Nature and Natural Resources (Algiers 1968) and Maputo 2003, the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, March 1989, the Vienna Convention on the Protection of the Ozone Layer, March 1985, etc.

2- STUDY METHODOLOGY

In order to achieve the objectives of the ESIA, the methodological approach is structured in two (02) main steps, namely a general methodology and a specific methodology.

2.1- GENERAL METHODOLOGY

In order to achieve the objectives of the ESIA, the methodological approach is structured in 4 main phases: review of the terms of reference (ToR), preliminary data collection and literature review, information and discussion with the authorities and officials of the relevant services. Diagnostic field survey and identification, Detailed impact analysis and impact assessment.

2.1.1. REVIEW OF THE TERMS OF REFERENCE

The Consultant read the terms of reference for the Environmental and Social Impact Assessment (ESIA), as well as the project presentation document in order to assess the outline and the tasks incumbent upon him within the framework of the environmental aspects of the said project.

2.1.2. RESEARCH AND LITERATURE REVIEW

At the level of documentary research, it was possible to take stock of the policies, conventions, laws and other regulatory texts applicable in the sectors concerned by the project. It was also useful in the analysis and synthesis of methodologies for determining and assessing the project's environmental impacts and risks. The Consultant collected documents and other data related to the project area and then proceeded to the multi-criteria literature review. This analysis provided preliminary information on the general ecology of the project area, in particular :

- physical elements (relief, hydrology, geology, geomorphology, pedology, climate, etc.),
- biological elements (fauna, flora, endangered species, natural habitats and sensitive habitats), and
- socio-economic elements (population size, habitat, habits and customs, health, education, main activities, use and ownership of land, control of the use of natural resources in the area, etc.).

From the preliminary data collection and literature review, the Consultant also drew information on the Policy and Legal Framework which enabled him to recall national conventions, regulations and standards in the environmental field.

2.1.3. FIELD DIAGNOSTIC SURVEY

The diagnostic survey consisted of direct *in situ* observation, indirect *ex situ* observation, participatory consultation with the people in the project area and interviews with certain personalities.

2.1.3.1. Comments

As far as *in situ* observation is concerned, it consisted of a visual analysis of the elements of the study environment in the field, because knowing a landscape in order to describe it in a detailed and coherent way, implies not only looking at it from a distance, but also and above all going through it by observing the immediate environment. The geographical and naturalistic approach to the environment studied has made it possible to understand its evolution and its enhancement by man.

For this purpose, the Consultant was provided with ecological descriptor sheets for the identification of the various biophysical elements of the environment.

The areas identified to house mini-dams, possible irrigated perimeters, human-powered pumped boreholes, boreholes for mini-WTPs, as well as the sites of water towers and standpipes, and the tracks to be rehabilitated were also visited.

During this field observation, elements of the physical environment (relief, hydrography, geology, geomorphology, pedology, etc.), biological elements (fauna, flora, endangered species, natural habitats and sensitive habitats), were identified, listed and described. Socio-economic elements, in particular the main activities, land use and ownership, and the main speculations on the plots were also identified, listed and described.

The *ex situ* observation consisted of consultation and analysis of existing maps and satellite images covering the project area and the elaboration of thematic maps.

2.1.3.2. Study of flora and vegetation

An inventory system was set up in the various land use vegetation units and, on the basis of random sampling of phytosociological observations, the dendrometric characteristics of plant formations containing trees and shrubs were determined.

➤ Floristic survey

A floristic list of plant species found in the vegetation or land use unit was noted, with particular emphasis on VEEs (Valued Ecosystem Elements), i.e. rare or endangered species or those used by populations. The Consultant will use the nomenclature of Brunel et al (1984) and the abundance/dominance method.

➤ Survey of species variables

For the survey of species variables, the consultant followed Raunkiaer's (1934) classification with some nuances to tropical environments (Aké Assi, 1984), for each species, in order to determine biological types. These are :

- Phanerophytes: plants with a perennial aerial apparatus whose buds are located above 50 cm; they are divided into nanophanerophytes (np) which are woody 0.5 m to 2 m high; microphanerophytes (mp) 2 to 8 m high; mesophanerophytes (Mp) 8 to 30 m high; megaphanerophytes (MP) above 30 m ;
 - the chamephytes (Ch): woody with a terminal bud no more than 50 cm high;
 - hemicryptophytes (Hé): perennial plants whose buds are on the surface of the soil;
 - geophytes (Gé): perennial plants with buds buried in the soil;
 - the therophytes (Th): annual plants;
 - lianas: climbing plants that can take all biological forms;
 - epiphytes (E): plants attached to the aerial organs of other plants without any direct relationship with the soil.

➤ **Survey of plant community variables**

After the surveys of species variables, the consultant recorded the variables relating to plant communities by giving the physiognomy of plant formations according to the Yangambi definition. The consultant classified the plant formations in the field by distinguishing between savannah, crops, fallow land, gallery forests and agroforestry. Each species encountered was mentioned in the stratum where it was sampled. For the stratification of the training courses, the consultant used the conventionally used floor size scale, which is as follows:

- stratum 1: < 2 m high;
- stratum 2: 2 to 5 m;
- stratum 3: 5 to 10 m;

➤ **Ethno-botanical characterization**

In order to determine the use of certain plant species by the population, Ethno-botanical surveys were carried out in the localities concerned by the project. Following the results of these surveys, the consultant carried out field observations and analysed the losses incurred by the populations in terms of loss of income, food or medicinal resources.

2.1.3.3. Study of the fauna

The study of the fauna was carried out on the basis of three distinct indices which are attributed to the different species observed: Rarity and Status (R), Biotope Fidelity (F) and Geographical Distribution.

1) *Loyalty to the biotope (F)*

It was a question of seeing whether the species identified are infested with the biotope or only passing through. The analysis of the index of feudality of the species is done on a scale that also varies between 1 and 5 and takes into account the following meaning for each species:

- species without special requirements, even in highly artificial environments (e.g. *Papilio demodocus* for butterflies);
- species present in many types of environments different (typological macrostructures), but absent from highly artificial environments;
- species linked to two different types of environment (typological macrostructures), or to several facies of a single type of environment;
- species linked to a few specific facies of a single type of environment;
- species linked to a specific facies of a single type of environment.

2) *Rarity and status (R)*

The consultant studied the rarity of wildlife species. The analysis of this index was made on the basis of the literature and field observations is made on a scale ranging from 1 to 5 according to the following meaning :

- non-endangered, very common and migratory species ;
- non-endangered, relatively common or uncommon species ;
- endangered species in the region ;
- Nationally threatened species (vulnerable, rare or of undetermined status);
- nationally endangered species.

3) *Geographical distribution*

The geographical distribution relates to the frequency of occurrence of the different species. This index is analysed on a scale also oscillating between 1 and 5 and reflecting the occupation of the territory.

- throughout Togo and over a wide range of altitude
- throughout Togo, but with limited scope,
- in one or two wildlife regions of Togo, or in a fragmented distribution.
- in part of a single wildlife region of Togo
- endemic

➤ **Estimation of the value of the environment (VM)**

The value of the environment was estimated from the product of the three indices used to calculate the value of each species, using the formula:

(Vs = specific value) = **F x R x D.**

The value of each medium was then calculated using the formula: $VM = \sum Vs$

Finally, an assessment of the ecological environment in terms of wildlife was made using the Hertig scale, 1999, which is as follows:

| Ecological value | Appreciation | Score (in points) |
|-------------------------|--|--------------------------|
| 1-30 | Very low value medium (SVP) | 1 |
| 31 – 60 | Limited value medium (VIL) Interesting | 2 |
| 61 – 150 | value medium (VAL) | 3 |
| 151 – 600 | High Value Environments | 4 |
| > 601 | (HVL) Exceptional Environments (EXC) | 5 |

2.1.3.4. Noise level measurement

The noise assessment data presented are the result of observations and surveys carried out in the field. The consultant carried out a noise level measurement campaign using a type 1 precision integrating sound level meter, in accordance with ICE 651 (1979).

2.1.3.5. Interview

The interview is one of the most widely used means of investigation in the humanities. Depending on the fact that a certain level of information is aimed at, a particular strategy to reduce the conscious and unconscious defences of the interviewees has been developed.

The method that was adopted for the interview was that of a non-directive interview. This method is an in-depth qualitative interview during which the consultant's participation remained minimal and the respondent was therefore left free to structure his or her answers as he or she wished. The consultant proposed a theme for the survey and only intervened to stimulate and encourage, while maintaining a non-directive approach and encouraging the respondent to express himself within the limits of the problem posed.

The individual interviews involved the heads of institutions, technical and administrative services, officials and customary authorities in the project area.

At the level of the heads of institutions, technical and administrative services, it was a question of informing them about the project and/or collecting certain data relating to agricultural and pastoral activities and environmental management in the project area. Sources of information in these structures were exploited and institutional information was collected on different aspects of the diagnostic study.

2.1.3.6. Public consultation and information

Public consultations were organised in the form of a participatory survey with the populations of the area. Different social groups are directly or indirectly concerned by the project. The attitudes, perceptions and methods of mitigating the perceived social impacts among the population will then vary according to the interests linked to the specific activities. Knowledge of the population's social environment based on an analysis of different opinions led to the implementation of a participatory survey in the form of public consultation.

The intervention was therefore a public consultation with the method of interactive interviews with the populations of the project area. The localities concerned are indicated as follows in Table 5. The minutes of the different consultations are attached in the appendix.

Table 5: Public consultation of the population including land owners and operators in the project area

| Canton | Place of consultation | Villages consulted | Number of participants |
|--------|-----------------------|--------------------|------------------------|
| Léon | Léon-Yaca | Bidjandé | 26 |
| | | Léon | |
| | | Misséoata | |
| | | Léon-Yaca | |
| | | Agbandé | |
| | | Anima | |
| Alloum | Alloum | Broukou | 31 |
| | | Akar-Toundé | |
| | | Akar-Gnaka | |
| | | Akar-Sika | |
| | | Landa Ankolom | |
| Tchoré | Tchoré-Centre | Tchoré-Centre | 34 |
| | | Tchoré-Nacoco | |
| | | Ayiga | |

Source: Fieldwork, Dr Tcheinti-Nabine Tchandikou, Consultant, September 2020

The consulting team presented a description of the stakes of the project as well as the constraints it implies in terms of modification of the status of the land to be developed, land compensation to be granted to the State in return for the investments made and in terms of land distribution in the area to allow access to it. In this process of public consultation proper, the communities gathered, after the customary welcome and greetings, are first of all invited to follow the description of the project by the socio-economist expert. For the attention of the community assembly, the project in its various components was presented.

Then, with the help of a group interview guide, the local authorities, communities and women were asked to take part in discussions with the expert on the interest of the project, the problems that could constitute obstacles to its implementation and exploitation in the area, the concerns felt, and ways of solving the problems raised. This consultation was an exchange of points of view on the socio-cultural data and the position of the population with regard to the project, especially in relation to land management and the transfer of part of their land to the State. At these public consultations, the populations felt valued and considered because they were given a voice; they were listened to and their points of view will be taken into account in the development of the project and during its implementation.

2.2- SPECIFIC METHODOLOGY

2.2.1. IDENTIFICATION, DESCRIPTION, ANALYSIS AND EVALUATION OF IMPACTS

2.2.1.1. Identification and description of impacts

After the description and analysis of the initial state of the project sites, the Consultant proceeded to the identification of the impacts from the checklist coupled with a matrix of potential interaction types which allowed the Consultant to visualise the different relationships between the sources of impacts (the different activities of the project components) and the receptors (the components of the environment to be disturbed in relation to the initial state of the project area). The Consultant had to distinguish between the initial impacts of the project, both negative and positive, and those that will be induced.

The impacts have been identified and described according to the different phases of the project: development, construction, operation and end of project. Leopold's matrix made it possible to identify the interactions between the issues, components and project phases in order to identify the impacts (Table 6).

Table 6: Leopold's matrix for the identification of potential impacts

| | | | Activities Sources of impact | | | | | | | | | | | | | | | |
|---------------------------------|--|---------------------------------|----------------------------------|--|--|--|--------------|--|--|--|-----------|--|--|--|----------------|--|--|--|
| | | | Phases of project implementation | | | | | | | | | | | | | | | |
| | | | Fitting out | | | | Construction | | | | Operation | | | | End of project | | | |
| Bio-physical environment | Floor | Surface and quality of the soil | | | | | | | | | | | | | | | | |
| | Air | Air quality | | | | | | | | | | | | | | | | |
| | Water | Water quality | | | | | | | | | | | | | | | | |
| | Flore | Vegetation | | | | | | | | | | | | | | | | |
| | Wildlife | Species | | | | | | | | | | | | | | | | |
| Human Environment | Dwellings, populations | | | | | | | | | | | | | | | | | |
| | Economic activities | | | | | | | | | | | | | | | | | |
| | Hygiene, health and safety of workers and the public | | | | | | | | | | | | | | | | | |
| | Composition of the field of view | | | | | | | | | | | | | | | | | |

2.2.1.2. Evaluation of identified impacts

Impact assessment is carried out according to a methodology that integrates the parameters of the duration, extent, intensity of the impact and the value of the affected component (Fecteau's impact assessment method (1997)).

The first three parameters are aggregated into a summary indicator to define the absolute importance of the impact. The fourth parameter is added to the absolute importance of the impact (Table 7) to give the relative importance of the impact (Table 8).

The significance of an impact is therefore an indicator of synthesis, a global and non-specific judgement of the effect that a given element of the environment undergoes as a result of an activity in a given host environment. This analysis must take into account the level of uncertainty affecting the assessment and the probability that the impact will occur.

- **Duration of impact**

The duration of the impact specifies the period of time during which the changes to the environmental components will be felt. This duration factor is subdivided into three classes :

It is **short**, when the effect of the impact is felt at a given moment, especially when the action is carried out.

- It is **average**, when the effect of the impact is felt continuously but for a period of time after the activity has taken place.

- It is **long**, when the effect of the impact is felt at a given time and for a period of time equal to or longer than the life of the project.

- **Extent of impact**

The extent is punctual, local and regional; it expresses the spatial scope or radiation of the effects generated by an intervention on the environment. This notion refers either to a distance or an area over which the modifications suffered by a component will be felt, or to the proportion of a population that will be affected by these modifications.

- It is **punctual** when the impacts are limited to any point on the project site.

- The extent is **local** when it extends over the whole area of the site.

- It is **regional** when the impact extends outside the site.

- **Intensity**

The intensity or degree of disturbance generated corresponds to the magnitude of the changes that affect the internal dynamics and function of the affected environmental element. Generally, three degrees are distinguished: strong, medium and weak.

The following parameters are to be considered :

- Disruption is **strong** when the impact profoundly compromises the integrity of the affected element, very strongly alters its quality or significantly restricts its use or cancels any possibility of its use.

- It is **medium** when the impact somewhat compromises the use, quality or integrity of the affected element.

- It is **low** when the impact does not perceptibly alter the integrity, quality or use of the affected element.

• **Value of the affected component**

The value associated with an impact refers to the social, economic and/or cultural importance that the population attaches to a resource as well as the ecological importance of this resource in the dynamics of the affected ecosystem at local, regional or national level. This value will be considered low, medium and high.

- The value is **low** if the impact affects a resource that is seasonally or all-seasonally abundant but not threatened with extinction.
- It is **medium** if the impact affects a resource with a relatively long regeneration and mutation time (about five years).
- The value is **high** if it affects a resource with a long time to regenerate and mutate, more than five years, a sensitive area or if it is a resource threatened with definitive extinction.

Table 7: Absolute Importance Determination Grid (Fecteau, 1997)

| Intensity | Scope | Duration | Absolute importance |
|-----------|----------|----------|---------------------|
| Strong | Regional | Long | Major |
| | | Average | Major |
| | | Short | Major |
| | Local | Long | Major |
| | | Average | Average |
| | | Short | Average |
| | Punctual | Long | Major |
| | | Average | Average |
| | | Short | Minor |
| Average | Regional | Long | Major |
| | | Average | Average |
| | | Short | Average |
| | Local | Long | Average |
| | | Average | Average |
| | | Short | Average |
| | Punctual | Long | Average |
| | | Average | Average |
| | | Short | Minor |
| Low | Regional | Long | Major |
| | | Average | Average |
| | | Short | Minor |
| | Local | Long | Average |
| | | Average | Average |
| | | Short | Minor |
| | Punctual | Long | Minor |
| | | Average | Minor |
| | | Short | Minor |

Table 8: Impact Significance Determination Matrix

| Absolute importance of the impact | Relative value of the affected component | Relative importance of the impact |
|-----------------------------------|--|-----------------------------------|
| Major | Strong | Strong |
| | Average | Strong |
| | Low | Average |
| Average | Strong | Strong |
| | Average | Average |
| | Low | Average |
| Minor | Strong | Average |
| | Average | Average |
| | Low | Low |

The combination of the absolute importance with the value of the affected component gives the relative importance or total severity of the impact.

- Probability criteria**

A probability of occurrence is associated with the manifestation of impacts in order to take a more realistic approach to their severity. The different probability thresholds are presented in Table 9.

Table 9: Threshold of probability of occurrence associated with impacts

| Level of probability | Definition |
|----------------------|---|
| Very low | The probability of the impact occurring is 1 to 2 per cent; the impact has not occurred in the past under identical circumstances. |
| Low | The probability of the impact occurring is between 2 and 20% ; The impact has occurred under similar conditions in the past, but very rarely |
| Average | The impact could occur infrequently. It does not occur in a systematic way, but the likelihood of it happening could be between 20 and 70% due to a failure of security and control measures. |
| Strong | The probability of the impact occurring is over 70%. The impact occurs in a systematic way and there is a strong chance that impact occurs. |

2.2.1.3. Elaboration of mitigation measures and the environmental and social management plan for negative impacts

Following the previous step, which is the impact assessment, the list of actions, devices, corrective measures or alternative management methods that will have to be applied to mitigate the negative impacts of the project is proposed. An environmental and social management plan for the negative impacts of the project has been proposed. It is a set of specifications for the promoter. It defines, among other things, the conditions and means as well as the period of implementation of measures to mitigate the project's impacts of average relative importance.

2.2.2. IDENTIFICATION OF RISKS AND PROPOSAL OF PREVENTIVE MEASURES

2.2.2.1. Identification of risks

A risk identification matrix was used to cross-reference the major families of risks and the different stages and activities of the project. These cross-references led to the identification of the interactions of each activity with each family of risks. The activities that may cause dangerous situations and present risks to the health and safety of employees have been identified. These include handling, storage and transport, where appropriate, these activities will be linked to the hazardous materials involved.

Table 10: Risk identification matrix

| Receiving media | | Biophysical environment | | | | | | Human Environment | | |
|-----------------|---|-------------------------|------------------|--------------------|--------------------|-------------------|---------------------|----------------------------------|---|--------------------------|
| Risks | Activities and equipment that are sources of risk | Risks on the floor | Risks in the air | Risks on the water | Risks to the flora | Risks to wildlife | Risks to ecosystems | Employee health and safety risks | Risks to the health and safety of residents | Risks to product quality |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| Project phase | Activity 1 | | | | | | | | | |
| | Activity 2 | | | | | | | | | |
| | Activity n°... | | | | | | | | | |

Once the risks have been identified, a narrative description is made to characterise each of these risks.

The risks of technological accidents likely to occur during the project's operating activities have also been identified on the basis of book knowledge in the field.

In terms of risk assessment, it was done using the probability and severity indicators in Table 11. An acceptability scale will be constructed from increasing levels of severity and probability (probability expressed in ENS per hour. Exple: Rare event = $10^{-8} < P < 10^{-6}$).

Table 11: Assessment of acceptable/unacceptable risks

| PROBABILITE | | Risque inacceptable | | | | |
|-------------------------|----------|--------------------------------|---------------|----------|---------------------|---------------------|
| Fréquente | 5 | 1 5 | 2 5 | 3 5 | 4 5 | 5 5 |
| Peu fréquente | 4 | 1 4 | 2 4 | 3 4 | 4 4 | 5 4 |
| Rare | 3 | 1 3 | 2 3 | 3 3 | 4 3 | 5 3 |
| Très rare | 2 | 1 2 | 2 2 | 3 2 | 4 2 | 5 2 |
| Extrêmement rare | 1 | 1 1 | 2 1 | 3 1 | 4 1 | 5 1 |
| GRAVITE | | 1 | 2 | 3 | 4 | 5 |
| | | Mineure | Significative | Critique | Catastrophe interne | Catastrophe externe |

Source: Project 4, Institut National de l'Environnement Industriel et des Risques (INERIS), Paris

Risks whose PxG indicator is greater than or equal to 15 will be considered unacceptable. Preventive measures will be applied to unacceptable risks.

2.2.2.2. Proposal of preventive measures and risk management plan for the project

Following the risk assessment, preventive measures are proposed. These measures make it possible to reduce the occurrence of each risk to the lowest possible level or to quickly control the risk when it occurs in order to limit its damage. All the measures to mitigate negative impacts and prevent risks are summarised in an Environmental and Social Management Plan (ESMP) and a Risk Management Plan (RMP) for the project, which constitutes the project promoter's specifications.

2.2.3. DETERMINING THE SIGNIFICANCE OF RESIDUAL IMPACTS

The assessment of the absolute significance and severity of the impacts has made it possible to distinguish the most important impacts that will be subject to mitigation measures. In practice, only impacts of moderate and high severity are taken into account.

Mitigation measures should address the criteria of significance, namely: intensity, duration, extent and value. The objective of the methodological approach is to reduce them through the recommended measures to an acceptable (low or negligible) level of relative or residual significance.

The relative importance of the project's residual negative impacts is assessed using the same methodological approach as for the relative importance of impacts with criteria modified by the supposed implementation of mitigation measures. This implementation of the recommended measures will be associated with a new very low, low, medium or high probability of success in implementing the measure as defined in Table 12.

N.B. Compensation measures are applied to the residual impacts of the project.

Table 12: Criteria for the probability of success of mitigation measures

| Level of probability | Criteria |
|----------------------|--|
| Very low | The chances of good and correct implementation of measures are 1 to 2 per cent with no change in the impact significance criteria. |
| Low | The chances of a good and correct implementation of the measures are between 2 and 20%. The change in importance criteria is very low. |
| Average | The chances of a good and correct implementation of the measures could increase between 20 and 70%. The criteria of major, moderate and minor importance become moderate, minor and negligible respectively. |
| Strong | The chances of a good and correct implementation of the measures are more than 70%. Criteria of importance become mostly minor or negligible. The impact is sufficiently mitigated. |

3- POLITICAL, LEGAL, NORMATIVE AND INSTITUTIONAL FRAMEWORKS

3.1. POLITICAL FRAMEWORK

3.1.1. INTERNATIONAL POLICIES, STRATEGIES AND PROGRAMMES

3.1.1.1. ECOWAS Agricultural Policy

The agropole of the Kara Basin falls within the framework of the ECOWAS agricultural policy whose main orientations were adopted by the Conference of Heads of State and Government of ECOWAS Member States at its 28th session held on 19 January 2005 in Accra. This policy aims at curbing the major trends in West African agriculture by attempting to remove obstacles to productive investment, improve productivity and create a favourable business environment for producers in the region.

The general objective of the agricultural policy of the Economic Community of West Africa is to contribute in a sustainable manner (i) to the satisfaction of the food needs of the population, (ii) to economic and social development and (iii) to the reduction of poverty in the Member States, as well as inequalities between territories, areas and countries of the region. Its first axis aims at increasing the productivity and competitiveness of agriculture through, among other things (i) modernisation of farms (inputs and equipment, agricultural research and dissemination of results, human capacity building), (ii) promotion of agricultural and agri-food chains, (iii) strengthening of information systems, (iv) organisation of stakeholders and promotion of dialogue, and (v) financing of agriculture.

Project implementation must comply with the provisions of the said policy in order to enable Togo to contribute to the achievement of its various objectives.

3.1.1.2. ECOWAS Environmental Policy

The ECOWAS Environmental Policy was adopted on 19 December 2008 in Abuja by Supplementary Act A/SA.4/12/08 by the ECOWAS Heads of State.

It has set itself the overall objective of reversing the serious trends of degradation and reduction of natural resources, environments and living conditions, with a view to ensuring a healthy, easy-going and productive environment in the sub-region, thus improving the living conditions of the populations of the sub-region. Its strategic axes are organised into four units which are :

- The strengthening of environmental governance (establishment of a sub-regional mechanism) and the promotion of capacities to this effect;
- The promotion of the sustainable management of resources for the improvement of the sub-regional economy in respect of the environment;
- The organised fight against pollution and nuisance, urban waste and for the control of the flow of dangerous products in the economy;
- The promotion of information, education and communication for a better environment.

It has taken into account the dimensions of sustainable development, the Convention to Combat Desertification, as well as the Climate Change Convention. It is fully consistent with the ECOWAS Treaty and contributes to regional integration. For the time being, no activity report of the ECOWAS Commission allows to measure the level of implementation of the action plan of this policy.

Project implementation must comply with the provisions of the said policy in order to enable Togo to contribute to the achievement of its various objectives.

3.1.1.3. Water Resources Policy in West Africa

Adopted in December 2008, the West African Water Resources Policy includes the strategic challenge of water, the main policy orientations and implementation modalities. Generally speaking, it presents the vision and challenges of a regional water policy and sets out its objectives, guiding principles, main strategic lines of intervention and implementation modalities.

After having presented the general context of the water management issue, the West African Water Resources Policy presents its strategic challenge which is to ensure that water resources are managed in a sustainable manner:

"better water management". As such, this policy sets out the ECOWAS vision on water, the West African vision for 2025 and conducts a strategic analysis of the West African context before listing the various challenges that ECOWAS should face in order to meet regional socio-economic development objectives in a sound environment. These challenges include the following:

- better knowledge of surface and ground water resources,
- to make better use of water to support the socio-economic development of the region,
- anticipating crises and preserving water resources and associated ecosystems,
- establish participatory management mechanisms for better water governance,
- ensure the financial sustainability of the water sector.

The second part of the Policy concerns the main orientations where the general and specific objectives were first presented and the guiding principles of the policy were defined before setting out the main strategic lines of intervention.

As strategic axes, it is a question of :

- reform water governance,
- promote investment in the water sector,
- promote regional cooperation and integration.

The Policy in its third and last part refers to the implementation modalities which can be summarised as follows:

- an institutional mechanism to be consolidated,
- mobilisation of public and private financial resources,
- a monitoring and evaluation mechanism to be set up in consultation with ECOWAS, UEMOA and CILSS.

The project must comply with the provisions of the said policy and its strategic issue of "better water management" in order to contribute to the achievement of its various objectives.

3.1.1.4. ECOWAS Forest Policy

The elaboration of the ECOWAS forest policy in 2005 was based on the relevant international conventions and agreements resulting from the Rio Janeiro Conference in 1992 (UNCED). The general objective of the forest policy is the conservation and sustainable development of genetic, animal and plant resources, and the restoration of degraded forest areas for the benefit of ECOWAS populations.

ECOWAS forest policy is in line with sustainable development and the revised ECOWAS Treaty. It is in line with the fight against poverty and is in relation with the Conventions on combating desertification and climate change. In spite of its seniority, no activity report of the ECOWAS Commission allows to assess its implementation.

Project implementation must comply with the provisions of the said policy in order to enable Togo to contribute to the achievement of its various objectives.

3.1.1.5. WAEMU Agricultural Policy

The overall objective of WAEMU's Agricultural Policy (APU) is to contribute in a sustainable manner to the satisfaction of the population's food needs, to the economic and social development of member states and to the reduction of poverty in rural areas. The three main areas of intervention of the PAU are : (i) the adaptation of production systems and the improvement of the production environment, (ii) the deepening of the common market in the agricultural sector and the management of shared resources, and (iii) the integration of national production into the regional and world markets. The scope of WAEMU's Agricultural Policy includes agriculture, livestock, fisheries and forestry.

Project implementation must comply with the provisions of the said policy in order to enable Togo to contribute to the achievement of its various objectives.

3.1.1.6. WAEMU's Common Policy for the Improvement of the Environment

The overall objective of WAEMU's Common Policy for the Improvement of the Environment (PCE) is: To reverse the heavy trends of degradation and reduction of natural resources, environments and living environments, with a view to ensuring a healthy, easy-going and productive environment in the sub-region, thus improving the living conditions of the populations of the sub-regional space.

The PCE was adopted by Additional Act N° 01/2008/CCEG/UEMOA of 17 January 2008. It responds to the orientations contained in the WAEMU Treaty, particularly its Additional Protocol No. II on Sectoral Policies which establishes the environment as a sector of intervention of the Organisation.

The PCE complies with the dimensions of sustainable development and has an integrating character. It refers to the conventions on combating desertification and climate change, and to a number of development policies and programmes under way in the sub-region. At present, thanks to the funding mobilized by the WAEMU Commission, the PCE is being implemented through 14 programmes in the areas of agricultural hydraulics, biosafety, the fight against coastal erosion, the fight against the silting up of the Niger River, and support to the parks of the Entente.

The implementation of the project will have to comply with the provisions of the said policy in order to enable Togo to contribute to the achievement of its various objectives.



3.1.1.7.

Regional poverty reduction strategy for West Africa

Poverty is known to be the "greatest scourge" in West Africa. Thus, in December 2006 in Ouagadougou, UEMOA and ECOWAS adopted a Regional Poverty Reduction Strategy Paper (WA-PRSP). The RRSP-WA is a complement to the National Poverty Reduction Strategy Papers (PRSPs) of member states. It aims to better focus regional programmes and increase their benefits for the poor, to improve their visibility and usefulness for countries and to make regional integration a real catalyst in the fight against poverty in the sub-region. It reflects Member States' awareness of the weaknesses of their national poverty reduction policies, particularly with regard to the transnational nature of most sustainable development issues and constraints.

The WA-PRSP is in line with the dimensions of sustainable development, in conformity with the objectives pursued by ECOWAS and WAEMU through their respective Treaties, the document par excellence for the fight against poverty in the sub-region. It has an integrating character for the sub-region and contributes to the attainment of the MDGs. To operationalise the WA-PRSP, ECOWAS and UEMOA agreed to develop separate, but complementary and convergent Priority Action Programmes. These are the following programmes: the WAEMU Regional Economic Programme (REP) and the ECOWAS Priority Action Programme (PAP). These two programmes are being implemented in ECOWAS and UEMOA Member States.

In Togo the NDP is the equivalent of the PRSP. To this end, project implementation will have to comply with the provisions of the NDP in order to enable Togo to contribute to the achievement of the various objectives of the WA PRSP.

3.1.1.8.

Regional strategy for the promotion of fertilizers in West Africa

This strategy was adopted on 13 April 2006 by the Summit of ECOWAS Heads of State held in Abuja. It aims at productive agriculture through the promotion of the use of fertilizers. Its overall objective is to promote the increased and efficient use of fertilizers in order to sustainably improve agricultural productivity to ensure food security and fight against poverty in West Africa.

The implementation of the project will have to respect the provisions of the said policy in order to enable Togo to contribute to the achievement of its various objectives. The Kara Basin Agropole is a modern project of intensive cultivation which will require the use of fertilizers in order to be a productive agriculture that takes into account the regional strategy for the promotion of fertilizers. However, provisions will have to be made to ensure that the use of fertiliser is truly efficient.

3.1.1.9.

Sub-regional action programme to combat desertification in West Africa and Chad

The Sub-regional Action Programme to Combat Desertification in West Africa and Chad, known as SRAP/WAS, first went through a first phase before being recently reviewed and updated.

The second phase, the PASR/AO 2, under discussion, covers the period 2011-2018. It also constitutes the response of the countries of the subregion to decision 3/COP 8, the recommendations of CRIC 7 and decision 2/COP 9 calling for the alignment of National Action Programmes (NAPs), Subregional Action Programmes (SRAPs) and Regional Action Programmes (RAPs) with the operational objectives of the United Nations Convention to Combat Desertification (UNCCD) Ten-Year Strategy 2008-2018.

The SRAP/AO 2 is intended to be both a federating framework for the fight against desertification, land degradation and drought (DLDD) in the West African sub-region and an operational tool to contribute to the implementation of the ECOWAS Environment Policy (EP) and the WAEMU Common

Policy for the Improvement of the Environment. It is defined as a programme that pursues the search for sustainable development and complies well with the revised ECOWAS Treaty. During its elaboration, PASR/AO 2 sought to establish convergence with the main programmes underway in West Africa. It is accompanied by a sub-regional support programme for 2008-2018.

Project implementation must comply with the provisions of the said policy in order to enable Togo to contribute to the achievement of its various objectives.

3.1.1.10. Sub-regional Action Programme for Vulnerability Reduction in West Africa (SRAP)

ECOWAS has recently adopted a vision for 2020. This vision consists of the abolition of borders and the transformation towards a borderless region where all peoples can access and exploit the countless resources. In this vein, the overall vision adopted by the Sub-regional Action Programme for Reducing Vulnerability in West Africa (SRAP-RV/AO) is: "By 2030, West African countries together have sufficient human, technical and financial capacities to shield their human and natural systems from the adverse effects of climate change". The overall objective of the Programme is "To develop and strengthen resilience and adaptation capacities in the sub-region to cope with climate change and extreme weather events".

The PASR-RV/AO has given a prominent place to sustainable development in its vision. It addresses the fundamentals of poverty and contributes to the achievement of MDGs 1 and 7. It is in perfect harmony with the ECOWAS Treaty and has an inclusive character.

This programme has not yet been implemented. In principle, however, this will be the case in the near future due to the growing regional and international awareness of the phenomenon of climate change and variability and the momentum created around the United Nations Convention on Climate Change.

The implementation of the project will have to take climate change into account in order to propose adaptation and resilience measures so that populations can cope with climate change.

3.1.2. NATIONAL POLICIES, STRATEGIES, PROGRAMMES AND PLANS

3.1.2.1. National Development Plan 2018-2022

Validated by the Togolese Government on 3 August 2018, the National Development Plan (PND) 2018-2022 is a plan that reveals the government's medium-term vision, objectives and actions to be carried out for the promotion of employment, the empowerment of women, wealth creation and infrastructure development. The National Development Plan, which will cover the period 2018-2022, is based on a paradigm shift and is structured around three major axes, namely the establishment of a logistics hub of excellence and business centre, the creation of centres for agricultural processing, manufacturing and extractive industries, and the consolidation of social development and the strengthening of inclusion mechanisms.

According to this reference document, Togo has the ambition to reach a target growth rate of 7.6%, in particular through flagship projects with a high potential for massive job creation and a predominant involvement of the private sector. Togo therefore aims to structurally transform the economy for strong, sustainable, resilient, inclusive, job-creating growth that creates jobs and improves social well-being while respecting the environment.

On the agricultural front, "the government is convinced that it is necessary to promote an "agribusiness" oriented agriculture that will attract private investment, increase yields, professionalise the actors, and create thousands of jobs in the sector and related services. Thus, the government has set up an agency for the promotion of agribusiness development whose role is to establish public-private partnerships based on the National Agricultural Investment and Food and Nutritional Security

Plan (PNIASAN) covering the period 2017-2026".

On the environmental level, the expected effect 12 of strategic axis 3 "consolidate social development and strengthen inclusion mechanisms", the strategic objective is to ensure multi-sectoral coordination and good governance of the environment sector, with a view to contributing significantly to the national economy. To this end, the government will focus on : (i) preserving, restoring and sustainably exploiting ecosystems; (ii) reducing the degradation of the natural environment and protecting endangered species; (iii) reducing greenhouse gas emissions and the vulnerability of people and property to extreme climatic events and other shocks and disasters; (iv) improving the rational management of waste and chemical products and the prevention of biological, radiological and nuclear risks; and (v) adopting the practices necessary for sustainable development and a lifestyle in harmony with nature.

At the level of the expected effect 12 of the strategic axis "consolidate social development and strengthen inclusion mechanisms", the strategic objective is to ensure multi-sectoral coordination and good governance of the environment sector, with a view to contributing significantly to the national economy. To this end, the government will focus on : (i) preserving, restoring and sustainably exploiting ecosystems; (ii) reducing the degradation of the natural environment and protecting endangered species; (iii) reducing greenhouse gas emissions and the vulnerability of people and property to extreme climatic events and other shocks and disasters; (iv) improving the rational management of waste and chemical products and the prevention of biological, radiological and nuclear risks; and (v) adopting the practices necessary for sustainable development and a lifestyle in harmony with nature.

The promoter will have to take all measures to manage the destruction of the trees and follow the compensatory reforestation provided for in the Environmental and Social Management Plan and that, in the exploitation phase, the project does not release enough methane, a greenhouse gas, through the development of the practice of the Intensive Rice Growing System (SRI), a system that consumes little input and water. It will also have to take all measures to preserve natural resources and reduce greenhouse gas emissions.

It will also have to take all measures to use water resources rationally by setting up an awareness-raising programme to define water needs, training and raising the awareness of operators on the rational use and good management of water resources that depend on rainfall.

The promoter will have to take the NDP into account in this project by combating poverty through the recruitment of local labour that is gender-sensitive and raising awareness against the contamination and spread of HIV/AIDS.

3.1.2.2. Agricultural policy document for the period 2016-2030

Adopted on 30 December 2015, the vision set out in the Agricultural Policy Document for the period 2016-2030 is to achieve: "modern, sustainable and high value-added agriculture at the service of national and regional food security, a strong, inclusive and competitive economy that generates decent and stable jobs by 2030".

The overall objective to be achieved in its interactions with other sectors is to contribute to the acceleration of economic growth, poverty reduction and the improvement of living conditions while ensuring social inclusion and respect for the environment.

The specific development objectives for the agricultural sector are to ensure sustainable :

- food security,
- the rebalancing of the agricultural trade balance,
- improving the level of agricultural incomes,
- the creation of decent agricultural jobs and the reduction of drudgery,
- maintaining a high rate of agricultural growth in a sustainable manner.

The implementation of the project will contribute to the implementation of Togo's agricultural policy

and develop the capacities of all stakeholders in the agricultural sector by improving the productivity of farms and promoting sustainable and inclusive agricultural development and reducing the rate of dependence on imports for food products.

3.1.2.3. National water and sanitation policy

The Water and Sanitation Policy (PNEA) formulated by the Government through the Ministry of Agriculture, Livestock and Hydraulics (MAEH) on 7 April 2017 takes into account the new changes that influence the development of the water and sanitation sector in particular: (i) the evolution of the national context marked by galloping demography, the rapid increase in urbanisation, the poverty level of the population, the effects of climate change, the various reforms carried out in the field or in connection with the sector and the country's vision by 2030 (ii) changes at regional level via the new concepts contained in the provisions of the WAEMU directive and changes at international level relating to the sustainable development objectives (SDOs) by 2030 as well as the various global commitments and declarations to which Togo has subscribed.

Taking into account the major issues, stakes and challenges identified from the diagnostic analysis and the strategic orientations for the sector, the vision of the NAEP is as follows: "By 2030, Togo's water resources are known, mobilised, exploited and managed while guaranteeing equitable, sustainable and affordable access to efficient drinking water and sanitation services for the entire population and for all uses, in a protected environment, contributing to the sustainable development of the country".

In order to establish the vision, three missions are assigned to the water and sanitation sector: (i) To ensure the availability of water in quantity and quality to contribute to the development of water supply, agriculture, hydropower, industries, mining, transport, tourism and leisure, wildlife etc.; (ii) To improve access to drinking water services; (iii) To improve access to adequate sanitation services.

The overall objective of the sector is to contribute to the sustainable socio-economic development of the country, through the satisfaction of the needs of all water users, in a healthy living environment, taking into account the preservation of the environment, social equity and the mitigation of the effects of climate change.

These specific objectives are :

- strengthen the implementation of Integrated Water Resources Management (IWRM) through a better knowledge of our resources and their equitable and sustainable use for all purposes
- Ensure universal, equitable and sustainable access to safe, affordable and sustainable drinking water;
- Ensure equitable access to adequate sanitation and hygiene services for all and end open defecation;
- Improve governance of the water sector, in particular through : (i) sustainable financing of the water sector; (ii) promotion of research and capacity building of stakeholders.

The NAEP is structured around the following three strategic axes:

- i) Preserving water resources for the development of all socio-economic activities;
- ii) Improve access to safe drinking water and adequate sanitation services;
- iii) Improve governance, the institutional framework and develop support instruments adapted to the new vision.

The project will have negative impacts on water resources. To this end, the promoter will have to take all measures to use the resource rationally by setting up an awareness and technical support programme to develop the practice of the Intensive Rice Growing System (IRS), a system that consumes little input and water; defining water needs; training and raising the awareness of farmers on the rational use and good management of water resources that depend on rainfall.

3.1.2.4. Togo's industrial policy

Validated on 20 October 2015, Togo's Industrial Policy is a document based on the Strategy for Accelerated Growth and Employment Promotion (SCAPE), the Togo 2030 Vision, the WAEMU Common Industrial Policy (CIP) and the West African Common Industrial Policy (PICAO). Its general objective is to improve the contribution of the industrial sector to economic growth and job creation. At the specific level, the objectives pursued by the industrial policy are :

- to ensure the optimal management of the department in charge of industry ;
- promote the quality of industrial products with a view to their competitiveness ;
- promote industrial development and agribusiness.

Togo's industrial policy aims to transform the Togolese economy into a modern, dynamic, competitive economy that is highly integrated into the regional economy. To achieve this, it is built around six (06) guiding principles hereafter constituting the major challenges resulting from the diagnosis of the industrial sector:

- the densification of the industrial sector;
- the valorisation of local products ;
- quality, competitiveness and capacity building;
- synergy;
- partnership;
- sustainable development

Three (03) axes and orientations underpin the formulation of the present industrial policy, namely :

- Axis 1: Steering and support of the department
- Axis 2: The quality of industrial products and their competitiveness
- Axis 3: Development of industry and promotion of agribusiness

The agropole of the Kara basin falls under axis 3 of the policy. The promoter will have to implement all actions that can increase the added value of local products through the promotion of the harmonious exploitation of promising sectors, the encouragement and development of synergies between agriculture, livestock farming, crafts and industry.

3.1.2.5. National Policy for Physical Cultural Resources

Togo's Cultural Policy is adopted on 30 March 2011. This text of law enables the Government to act in cultural matters in synergy with professionals and populations to preserve and promote the country's heritage and cultural expressions. Its overall vision is to "build a united nation on a diversified and rehabilitated foundation" while seeking to "develop culture so that it contributes to building together in peace and sustainably enriching the life of the national community in all its components, meeting the challenges of the present, while opening up, on the basis of immediate and future opportunities and prospects, to the future world". The objectives of this text are: to promote development rooted in the fundamental values of heritage and the diversity of cultural expressions; to safeguard and promote this heritage and diversity in order to forge a dynamic of knowledge and understanding, mutual respect and tolerance, factors of peace; to integrate the objectives of cultural policy into the priorities of the national development strategy and the fight against poverty; to strengthen intercultural dialogue and cultural cooperation based on principles of equality and sharing for mutual enrichment".

The implementation of the activities of the agropole of the Kara basin will have to be in line with the orientations defined by the national policy on physical cultural resources.

3.1.2.6. National Policy for Gender Equity and Equality

Adopted by the government in January 2011, the National Policy for Gender Equity and Equality (PNEEG) has the major objective of making Togo an emerging country, without discrimination, where

men and women will have the same opportunities to participate in its development and enjoy the benefits of its growth. This policy aims to promote, in the medium and long term, gender equity and equality, women's empowerment and their effective participation in decision-making at all levels of Togo's development process.

Its objectives are to establish an institutional, socio-cultural, legal and economic environment conducive to the achievement of gender equity and equality in Togo and to ensure the effective integration of gender in development interventions in all sectors of economic and social life.

The project is in line with one of the main objectives of the PNEEG, which focuses on the empowerment of women by revitalising and modernising agricultural and commercial activities, which are the main vehicle for women's empowerment in Togo. The promoter will have to ensure that the provisions of the PNEEG objectives that relate to the empowerment of women are taken into account and respected during the implementation of the project.

3.1.2.7. Spatial planning policy

The National Spatial Planning Policy (PONAT), adopted in May 2009, aims, among other challenges, to plan the territory for any intervention. Environmental management is one of the fundamental orientations of this policy. This includes (i) improving national governance of environmental management, (ii) protecting natural resources. The State's commitment in this area is a great asset and Togo's willingness to play a leading role in the sub-region, due to its geographical location, makes it an imperative in the context of regional integration.

The non-rational implementation of development actions in the space, the weak consideration of the potential of the environments, the inefficiency in monitoring land use, the inadequacy of the urban and housing policy and the inappropriate management of space are all factors which justify the implementation of the spatial planning policy. The commitment of the State in this area is a great asset and the willingness of Togo to play a leading role in the sub-region, due to its geographical location, makes it an imperative in the context of regional integration.

Conceptually, the national spatial planning policy comprises the following essential parts: context and rationale, vision and objectives, guiding principles, strategies, instruments, actors and means.

The implementation of the project will contribute to the implementation of Togo's agricultural policy by helping to balance the various hydro-agricultural developments in the country. The promoter will have to comply with the provisions of the said policy in order to enable the structuring of the rural and professional world of agriculture and the sustainable improvement of access to productive resources.

3.1.2.8. National Environment Policy in Togo

Adopted by the Government on 23 December 1998, the National Environment Policy (PNE) in Togo provides the various national and international development actors with a global orientation framework to promote rational environmental management with a view to sustainable development in all sectors of activity. In order to promote sound management of the environment and natural resources and to stimulate the economic, ecological and social viability of development actions, the government's policy orientations are focused, among others, on :

- the integration of environmental concerns into the national development plan;
- the elimination and/or reduction of negative environmental impacts of public or private development programmes and projects;
- improving the living conditions and environment of the population.

The activities of the Kara Basin agropole will damage the environment and natural resources; hence the need for an environmental and social impact study that will contribute to compliance with the country's national environmental policy. The promoter will have to comply with the provisions of the said policy

3.1.2.9. National health policy

Adopted in September 1998 by the Togolese government, the fundamental objective of the National Health Policy (PNS) is to reduce mortality and morbidity rates linked to transmissible and non-communicable diseases through a reorganisation and better management of the health system and a continuous improvement in the accessibility of all, particularly the most vulnerable, including the mother-child couple, to good quality health services.

The new national health policy is the result of an inclusive and consensual process of all parties involved in health. This national health policy serves as a basis for national planning and as a frame of reference for all stakeholders in the health sector. It is in line with the priorities of the Global Health Action Programme 2006-2015, the Health for All Policy in the African Region for the 21st Century: Agenda 2020 and the Strategic Directions 2010-2015 of the African Region of the World Health Organization.

The vision of the national health policy is to ensure the highest possible level of health for the entire population by doing everything possible to develop an efficient health system based on public and private, individual and collective, accessible and equitable initiatives, capable of satisfying the right to health of all, particularly the most vulnerable.

In order to do so, it has set itself five objectives which are : Reduce maternal and neonatal mortality and strengthen family planning, Reduce mortality in children under 5 years of age, Combat HIV/AIDS, malaria, tuberculosis and other diseases (1) Non-communicable diseases: diabetes, hypertension, sickle cell disease, mental illness, cancer, obesity, oral diseases, chronic respiratory diseases; (2) Diseases with epidemic potential; (3) Neglected tropical diseases, etc.(3) Neglected tropical diseases, etc.), Promoting health in an enabling environment for health, Improving the organisation, management and delivery of health services

The promoter will have to take account of national policy in the context of this project by combating any damage to the health of staff and the population as a result of the execution of its project.

3.1.2.10. Strategic Investment Framework for Environment and Natural Resources Management (2018-2022)

The National Investment Programme for the Environment and Natural Resources (PNIERN), adopted in May 2011 by the Togolese Government, came to an end in 2015 and is replaced by the Strategic Investment Framework for the Management of the Environment and Natural Resources (CSIGERN, 2018-2022), which responds to the need for sustainable management of the environment and natural resources over the period 2018 to 2022. It is a framework document of the Ministry that will contribute to the improvement of the forest resources management framework, the strengthening of food security and the economic growth of the country, particularly poverty reduction. Axis 3 of CSIGERN is devoted to disaster reduction and the fight against climate change.

Some sub-components of the Kara Basin agropole, notably the mini-dams and irrigated perimeters as well as the drinking water supply infrastructure, will strengthen the communities' resilience to climate change.

3.1.2.11. National Biodiversity Strategy and Action Plan

Drawn up in 2003 and revised in 2012, the National Biodiversity Strategy and Action Plan (NBSAP) is intended to be a framework for broad consultation with all stakeholders. The new 2011-2020 strategy aims to be implemented not only by the State, but also by local authorities and the various actors of civil society. This is also why, when defining the national objectives, an effort was made to ensure synergy and consistency between the different national strategies and the different existing action plans in the field of biodiversity, with the aim of improving their coordination and making them more effective. Its objectives are specifically to :

- develop the strategy and action plan to provide a response to the threats facing biodiversity in Togo;
- develop an implementation plan and a communication plan.

With these objectives, the new NBSAP 2011-2020 aims to produce greater engagement of the various stakeholders. It sets the common ambition of preserving and restoring, strengthening and enhancing biodiversity, ensuring its sustainable and equitable use, and to achieve this, successfully involving all stakeholders from all sectors of activity. It is cross-sectoral, participatory and inclusive. The fundamental issue at stake in the new NBSAP is that the way biological diversity is managed and exploited must prioritise the survival of various genes, species and ecosystems and their continued provision of ecological services, human well-being in its broadest sense, and the survival of the economic sectors and populations directly dependent on them.

The NBSAP 2011-2020 will be achieved through a series of measures under 9 priority themes including participation and awareness, terrestrial biodiversity, freshwater biodiversity.

The project will affect the biodiversity of the project area; hence the need for an environmental and social impact study in order to comply with the national biodiversity strategy. The Promoter will have to be in line with the vision of this strategy by avoiding any action harmful to biodiversity. To this end, it must take measures to limit as far as possible the destruction of the plant cover that constitutes the habitat of fauna.

3.1.2.12. National Strategy for Sustainable Development (SNDD)

Togo's National Sustainable Development Strategy (SNDD) document will be validated in September 2011 in Lomé and is a valuable tool for planning the country's development. This document contains several axes, including good governance, sustainable development etc. It is based on four strategic axes, namely: consolidation of economic recovery and promotion of sustainable modes of production and consumption; revitalisation of the development of the social sectors and promotion of the principles of social equity; improvement of environmental governance and sustainable management of natural resources and education for sustainable development.

The promoter will therefore have to take steps to ensure that its activities comply with the various strategic axes of sustainable development.

3.1.2.13. National Strategy for Information, Education and Communication (IEC) on the Environment in Togo 2011 - 2012

The national Information, Education and Communication (IEC) strategy on the environment in Togo was developed in 2010. Its overall objective is to harmonise and improve the performance of IEC actions on the environment in order to facilitate a change in practices and behaviour conducive to environmental protection. The elaboration of the national IEC strategy is one of the projects of component 1 relating to *"Institutional support, policies, strategies and instruments for environmental management"*. This component essentially aims to contribute to the improvement of the performance of the administration, the strengthening of intersectoral consultation and a very strong harmonisation between the central level and the decentralised structures, as well as to promote a better visibility of the MERF and a better consideration of environmental issues in policies, strategies, projects and programmes.

Information and awareness-raising are fundamental in this process, firstly because of the persistent ignorance among a section of the population of the usefulness of the environment and the importance of protecting it, as well as of the consequences of environmental threats on humanity; and secondly because of the neglect in some places and the survival concerns faced by populations in others.

Within the framework of the implementation of the agropole of the Kara basin, the promoter will have to participate in the implementation of the strategy by adapting certain strategic axes in its actions, notably axes 7 and 9.

3.1.2.14. National Strategy for the Implementation of the United Nations Framework Convention on Climate Change

By ratifying the United Nations Framework Convention on Climate Change on 8 March 1995 and the Kyoto Protocol on 2 July 2004, Togo committed itself to take actions that contribute to the achievement of the Convention's global objectives. In accordance with its commitments to the UNFCCC, it developed its National Strategy for the Implementation of the UNFCCC in 2004 and updated in 2011. This strategy aims to mobilise the different categories of actors around the axes of development that take climate change into account. Within the framework of the implementation of this strategy, certain actions have been carried out by the country's authorities in order to enable Togo to honour its commitments to the international community.

These are: the Initial National Communication (INC) on Climate Change in 2001, the Second National Communication (NCC) on Climate Change in 2010, the Third National Communication on Climate Change (TCNCC) in 2015 on Climate Change and its First Biennial Updated Report (BURR) on Climate Change which was submitted on 28 September 2017 to the Secretariat of the Convention.

The construction of certain sub-components of the Kara basin agropole, notably the mini-dams and irrigated perimeters as well as the drinking water supply infrastructures, will contribute to strengthening the resilience of the populations concerned by the project to climate change through the control of water for agriculture.

However, the developer will have to take all the necessary measures to manage the destruction of the trees and follow the compensatory reforestation planned in the Environmental and Social Management Plan. The promoter will also have to take steps to ensure that the project does not emit enough methane, a greenhouse gas, during the operational phase.

3.1.2.15. National Action Programme to Combat Desertification (NAPCD)

Togo ratified the United Nations Convention to Combat Desertification on 4 October 1995 and published its National Action Programme to Combat Desertification (NAP/CD) in March 2002. The PAN/LCD aims to strengthen national natural resource management capacities for the promotion of sustainable development. Through its sub-programme IV, it advocates the sustainable management of natural resources by promoting the management of wetlands and protected areas, the protection of fragile ecosystems and the fight against bush fires.

The project will damage natural resources. It is therefore essential to carry out an environmental and social impact study in order to comply with the programme. During all phases of the project, the promoter will have to take action to contribute to the implementation of the programme

3.1.2.16. National Action Plan for the Water and Sanitation Sector - 2018-2030

The elaboration of a new PANSEA 2018-2030 which derives from the National Water and Sanitation Policy (PNEA) allows the implementation of this new vision declined in three phases (2018-2022, 2023-2027 and 2028-2030). The PANSEA 2018-2030 is perfectly consistent with national, regional and international orientations related to the sector. It aims to achieve the development objectives of the PNEA, namely (i) the preservation of water resources in order to optimise social and economic benefits and (ii) equitable and sustainable universal access to adequate drinking water, hygiene and sanitation services. It is broken down into 4 programmes which are : Integrated Water Resources Management (IWRM), Drinking Water Supply and Sanitation (DWS) and Governance of the Water and Sanitation Sector.

In terms of integrated water resource management (IWRM) (Programme 1), the implementation of the programme will make it possible to preserve water resources and guarantee their permanent availability for all uses and aquatic ecosystems. The strategy to achieve these results will consist of : (i) promoting a framework favourable to good water governance according to the IWRM approach, (ii) ensuring knowledge and monitoring of water resources (iii) controlling withdrawals and controlling discharges.

In the area of drinking water supply and sanitation (WASH) (Programme 2), sub-programme 2.3 (Hygiene and basic sanitation, The objective of this sub-programme by 2030 is to ensure equitable access for all to adequate sanitation and hygiene services and to end open defecation.

The project will have negative impacts on water resources. To this end, the promoter will have to take all measures to use the resource rationally by setting up an awareness and technical support programme to develop the practice of the Intensive Rice Growing System (IRS), a system that consumes little input and water; defining water needs; training and raising the awareness of farmers on the rational use and good management of water resources that depend on rainfall.

3.1.2.17. National Health Development Plan (2017- 2022)

The National Health Development Plan (PNDS 2017-2022) aims to provide appropriate solutions to the problems identified in the evaluation of the previous PNDS and its alignment with the Sustainable Development Goals in the context of universal health coverage.

The National Health Development Plan is divided into five strategic areas, in particular the acceleration of the reduction of maternal, neonatal and infant and child mortality and the strengthening of family planning and adolescent health; the strengthening of the fight against communicable diseases; the improvement of health security and the response to epidemics and other emergencies; the strengthening of the fight against non-communicable diseases and health promotion and the strengthening of the health system towards universal health coverage, including community health.

The PNDS document will serve as a roadmap for all the activities of the Ministry of Health and its partners in order to adopt a synergistic and efficient approach.

The promoter will have to take into account the PNDS within the framework of this project by fighting against any damage to the health of the personnel and the population as a result of the execution of its project.

3.1.2.18. National Plan for Agricultural Investment and Food and Nutritional Security

The National Agricultural Investment and Food and Nutritional Security Plan (PNIASAN) was drawn up by Togo in 2016 for the period 2016-2025 in order to build modern, sustainable and high value-added agriculture in the service of national and regional food and nutritional security, a strong, inclusive, competitive economy that generates decent and stable jobs by 2030 and the reduction of poverty and rural vulnerability.

The major objective in the implementation of the PNIASAN is to achieve a growth rate of at least 10% in agricultural gross domestic product (GDPA) by 2026, to improve the agricultural trade balance by 25%, to double the average income of farm households, to contribute to the reduction of malnutrition through the fight against food insecurity and to halve the poverty rate in rural areas to 27%.

The Project will enable better agricultural production which will contribute to the improvement of the GDPA growth rate. All provisions will have to be implemented to contribute to the achievement of the PNIASAN objectives.

3.1.2.19. National climate change adaptation planning

In order to contribute to limiting global warming to below 2°C by 2100, the increased adaptation efforts of the most vulnerable developing countries are very important. Thus, aware of these challenges, Togo, after having developed its National Adaptation Action Plan (NAPA) in 2009, has been engaged since 2014 in the process of national planning for adaptation to climate change (NAP), in order to prevent and limit the negative consequences of climatic changes on its development in the medium and long term. The analysis of vulnerabilities reveals that all sectors of economic growth are vulnerable to climate change and the sectors concerned are as follows: Energy, Water Resources, Agriculture, Forestry and other sectors, Land Use Planning Human Settlements and Health sector, the coastal zone.

The implementation of the agropole of the Kara basin will contribute to achieving the objectives of the major issues and challenges of the PNACC. The Promoter will have to take appropriate measures for adaptation and resilience to climate change. These include: the design and dimensioning of drainage and sanitation works, taking into account the centennial rains (source of floods) which are increasingly frequent.

However, the developer will have to take all the necessary measures to manage the destruction of the trees and follow the compensatory reforestation planned in the Environmental and Social Management Plan. The promoter will also have to take steps to ensure that the project does not emit enough greenhouse gases during the work phase or the operational phase.

3.1.2.20. National Plan for the Implementation of the Stockholm Convention on Persistent Organic Pollutants in Togo

Aware of the extent of the harmful consequences of POPs on human health and the environment and the need to combat them at the global level, Togo participated from 1998 to 2000 in the negotiations that led to the adoption of the Stockholm Convention on Persistent Organic Pollutants (POPs) which it signed on 23 May 2001 and ratified on 22 July 2004. Therefore, Togo carried out for the first time, an

analysis of the POPs situation in Togo through the inventories of their sources and quantities of releases, the exposure of human health and the environment to POPs. These inventories and evaluations provide indicators on POPs in Togo and on the companies that have them.

In addition, a National Profile to assess national chemicals management infrastructure and capacity was developed, which highlighted gaps in this area.

The agropole of the Kara basin will have to prohibit itself from importing and using persistent organic pollutants that are not registered in Togo in order to contribute to the preservation of the health of the country's populations and environment.

3.1.2.21. National Action Plan for the Environment

The National Action Plan for the Environment (PNAE) adopted by the Government on 6 June 2001, requires in its strategic orientation 3, to "effectively take environmental concerns into account in the planning and management of development". Objective 1 of Orientation 3, which aims to operationalise environmental assessment procedures, specifies that "the acuteness of environmental problems in the various sectors of economic activity requires the country to use environmental impact assessment procedures instituted by Section II of Law 88-14 of 3 November 1988¹, as a privileged instrument for the prevention of environmental damage".

With regard to guideline 4 of the NAPE, it calls for "promoting sound and sustainable management of natural resources and the environment". To this end, its objective 1 is to

"promote environmentally friendly sectoral policies". As for paragraph 6, it recommends "the conduct of environmental impact assessments for new projects and environmental audits for ongoing activities with potential or actual negative environmental impacts and ensure the implementation of identified mitigation measures".

The project will have negative impacts that run counter to the PNAE; hence the need for an environmental and social impact study that will enable the promoter to take measures that will contribute to compliance with the strategies and orientations of the said plan.

¹ Replaced today by Law No. 2008-005 of 30 May 2008 on the Framework Law on the Environment.

3.1.2.22.

National Forest Action Plan

Faced with the continuous and exponential degradation of forest resources, the Government of Togo, after carrying out a diagnostic analysis of the forest sector, drew up a National Forest Action Plan (NFAP) in 2011 which aims to reach 2035 :

- to reach a forest cover of 30%,
- manage natural resources, especially forests, sustainably to meet the needs of present and future generations for forest products and services.

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The specific objectives of the PAFN are :

- to ensure optimal and conservative use of the forest resource, taking into account the economic deficit situation and the country's future needs for forest products,
- increase the forest cover rate from 8% to 30% as recommended by the FAO and thereby increase timber production by 20,000 ha of plantations in ten (10) years,
- ensure national self-sufficiency in wood products and also contribute to the development and strengthening of the country's presence on the international market of the wood.

The agropole in the Kara basin, which will have negative impacts, could damage the environment and natural resources. In order to achieve the objectives of the PAFN, the project will have to avoid cutting down trees as much as possible and provide for compensatory reforestation.

3.1.2.23.

National profile to assess chemicals management

infrastructure and capacity

Developed in June 2008, the National Profile document to assess chemicals management infrastructure and capacity is Togo's action plan to achieve the objectives of the Stockholm Convention in accordance with its Article 7 and other chemicals-related agreements.

The development of the National Profile is thus a fundamental step in the search for ways and means to make the Government's actions in the area of environmentally sound management of chemicals more effective in ensuring the safety of human health and the protection of the environment. These actions consist of :

- provide practical information on chemical management programmes and activities in the country;
- Establish a process to facilitate dialogue and information exchange between National Agencies and other institutions (sub-regional, regional and international). international) involved in chemicals management ;
- building the capacity of national institutions involved in chemicals management;
- facilitate dialogue and information exchange between the government and other actors such as industries, workers' organisations, communities, etc. and local NGOs
- to make available to all actors in the sector a reference document facilitating environmentally sound management of chemicals.

The agropole of the Kara basin will have negative impacts on the environment because of the use of different inputs. It will therefore have to refer to the National Profile document to assess the infrastructure and capacities for chemicals management in order to have information on access to and use of data, technical capacities in relation to chemicals management, registered chemicals and those banned in the agricultural sector in Togo.

3.2. LEGAL FRAMEWORK

The present study is carried out in accordance with the legislative and regulatory texts adopted by the Government since 1988 which prescribe the carrying out of an environmental impact study in the event of the preparation and implementation of projects having an impact on the environment and the international conventions to which Togo is a Party.

3.2.1. INTERNATIONAL LEGAL FRAMEWORK

3.2.1.1. Stockholm Convention on Persistent Organic Pollutants

The Stockholm Convention on Persistent Organic Pollutants (POPs), which was negotiated from June 1998 to 21 December 2000, was adopted as an international legally binding instrument on 23 May 2001 and entered into force on 17 May 2004. Togo ratified this Convention on 22 July 2004.

The Stockholm Convention represents a major step towards the global protection of human health and the environment from the dangers resulting from the use of POPs. The main objective of the Stockholm Convention on POPs is to control POPs, with a view to their elimination and to protect human health and the environment from persistent organic pollutants by reducing or eliminating their release into the environment. Twelve POPs are initially identified and listed in Annexes A, B and C of the Stockholm Convention, and it is these POPs that are the target of control measures.

The project will damage the environment; hence the need for an environmental and social impact study that will enable Togo to meet its commitments to the international community. The promoter will therefore have to prohibit the import and use of persistent organic pollutants that are not approved in Togo in order to contribute to the preservation of the health of the country's populations and environment and to enable Togo to meet its commitments to the international community.

3.2.1.2. Rotterdam Convention on International Trade in Certain Hazardous Chemicals

It was adopted in Rotterdam on 10 September 1998 and entered into force on 24 February 2004. Togo signed the Convention on 9 September 1999 and ratified it on 23 June 2004.

The purpose of this Convention is to promote shared responsibility and cooperation among Parties in the international trade of certain hazardous chemicals in order to protect health and the environment from potential harm and to contribute to the environmentally sound use of such chemicals by facilitating the exchange of information on their characteristics, by establishing a national decision-making process for their import and export and by ensuring that these decisions are communicated to Parties.

The Convention applies to banned or severely restricted chemicals and severely hazardous pesticide formulations.

The activities of the Kara Basin agropole will have negative impacts on the environment because of the use of different inputs. The promoter will therefore have to prohibit the import and use of dangerous chemicals not registered in Togo in order to contribute to the preservation of the health of the country's populations and environment and to enable Togo to respect its commitments to the international community.

3.2.1.3. United Nations Framework Convention on Climate Change

The United Nations Framework Convention on Climate Change was adopted in Rio de Janeiro by 154 States plus the European Community. It entered into force on 21 March 1994.

It recognises three main principles:

- the precautionary principle,
- the principle of common but differentiated responsibilities,
- the principle of the right to development.

The Convention provides the overall framework for intergovernmental efforts to address climate change. It establishes a goal and principles, commitments for different groups of countries based on the principle of differentiated but differentiated responsibilities. It establishes a set of institutions to enable governments to monitor implementation and to continue their negotiations on how best to address the problem. The Convention does not contain any legally binding objectives.

Togo ratified the United Nations Framework Convention on Climate Change on 8 March 1995 and the Kyoto Protocol to the United Nations Framework Convention on Climate Change on 2 March 2004.

At the Paris Climate Conference (COP21) in December 2015, 195 countries adopted the first-ever universal, legally binding climate agreement that sets out an international action plan to put the world on track to avoid dangerous climate change by keeping global warming well below 2°C. This Paris agreement is a bridge between current policies and the climate-neutral target set for the end of the century.

The countries agreed:

- in the long term, to keep the rise in global temperature well below 2°C compared to pre-industrial levels;
- to continue efforts to limit the rise in temperature to 1.5°C, which would greatly reduce the risks and consequences of climate change;
- to aim for a peak in global emissions as soon as possible, recognising that this will be slower in developing countries;
- to then achieve a rapid decrease in emissions, based on the best available scientific data.

Since the project must produce smoke emanations through the operation of construction equipment, the promoter must take all measures to limit greenhouse gas emissions. Moreover, the development of irrigated perimeters and their exploitation can be a source of methane emissions, a very powerful greenhouse gas through rice cultivation. The agropole of the Kara basin will have to take all measures to limit greenhouse gas emissions.

3.2.1.4. Phytosanitary Convention for Africa

The Phytosanitary Convention for Africa was approved on 13 September 1967 to repeal the Phytosanitary Convention for Africa south of the Sahara done at London on 29 July 1954 and amended by the Protocol done at London on 11 October 1961.

It is applicable to the entire African continent and comprises eleven (11) articles, the most important of which are articles 2, 3, 4 and 5 on "Protective Measures".

The supply of new seeds to be used by the project will have to respect the provisions of the said convention in order to enable Togo to meet its commitments to the international community.

The activities of the Kara Basin agropole will have negative impacts on the environment because of the use of different inputs. The promoter will therefore have to prohibit the import and use of dangerous chemicals not registered in Togo in order to contribute to the preservation of the health of the country's populations and environment and to enable Togo to respect its commitments to the international community.

3.2.1.5. International Plant Protection Convention

The International Plant Protection Convention (IPPC), which Togo acceded to on 2 April 1986, was adopted in 1951 by the Conference of the Food and Agriculture Organization of the United Nations (FAO) at its Sixth Session and entered into force on 3 April 1952. In 2001, there were 117 Contracting Parties to the IPPC. It was revised in 1997 to bring it into conformity with the Agreement on the Application of Sanitary and Phytosanitary Measures (the SPS Agreement) of the World Trade Organization (WTO).

The International Plant Protection Convention (IPPC) is an international treaty relating to plant health. The objective of the IPPC is to ensure common and effective action to prevent the spread and introduction of organisms harmful to plants and plant products, and to promote appropriate measures for their control.

The activities of the Kara Basin agropole will have negative impacts on the environment because of the use of different inputs. The promoter will therefore have to prohibit the import and use of dangerous chemicals not registered in Togo in order to contribute to the preservation of the health of the country's populations and environment and to enable Togo to respect its commitments to the international community.

3.2.1.6. Revised African Convention on the Conservation of Nature and Natural Resources

The African Convention on the Conservation of Nature and Natural Resources, revised and adopted in Maputo on 11 July 2003, at the second summit of the African Union, is a revision of the African Convention on the Conservation of Nature and Natural Resources concluded in Algiers in 1968 (the Algiers Convention). The Algiers Convention was the first regional convention providing a basis for African states to conserve their environment and natural resources, and to address issues of regional importance. Togo ratified it on 24 October 1979.

The Maputo Convention reflects Africa's specific response to changes in attitudes, legal and policy perspectives, scientific developments and international law. It addresses a range of issues of interest to the continent, from sustainable management of land and soil, water, air and biological resources, and seeks to integrate environmental conservation and management strategies with social and economic development aspirations. The Maputo Convention provides stronger institutional tools for its implementation. It establishes an independent Secretariat, a Conference of the Parties and a financial mechanism for its effective implementation at the regional level, in collaboration with the Parties.

The project will damage the natural resources of the project area. To this end, the promoter will have to avoid as far as possible the destruction of vegetation which could lead to the degradation of these resources in order to enable Togo to meet its commitments to the international community.



3.2.1.7. Convention on Biological Diversity. December 1993

It came into force on 29 December 1993. Togo signed this convention, and ratified it on 4 October 1995. It enshrines the commitment of States to conserve biological diversity, to use biological resources in a sustainable manner, and to share equitably the benefits arising from the use of genetic resources. It is a framework agreement because it leaves each State Party free to determine the measures to be implemented. It therefore sets out objectives and policies rather than strict and precise obligations. This has led to many reflections and studies on the national modalities for implementing the provisions of the convention.

In line with the principle of anticipation and the precautionary principle, the 1992 Rio Convention on Biological Diversity emphasises in its Preamble Point 8 that: "It is of utmost importance to anticipate, prevent and address the causes of the reduction or loss of biological diversity". It states in Principle 15 that: "In order to protect the environment, precautionary measures shall be widely applied by States according to their capabilities. To this end, Article 14 of the Convention requests Contracting Parties to adopt appropriate EIA procedures for projects that could significantly affect biological diversity and mechanisms to take into account the impacts of programmes and policies on biological diversity.

The project will affect the biodiversity of the project area. The promoter will be prohibited from capturing, hunting any animal species and cutting down any plant species at any stage of the project without the prior authorisation of the competent services. It will have to implement provisions that will contribute to the management of the national biodiversity strategy in order to enable Togo to meet its commitments to the international community.

3.2.1.8. Convention on International Trade in Endangered Species of Wild Fauna and Flora (C.I.T.E.S.) Washington. 1973

This convention was signed by Togo on March 3, 1973, ratified on October 23, 1978, and entered into force on January 21, 1979. Through its provisions, the Contracting States recognised that "wild fauna and flora, by virtue of their beauty and variety, constitute an irreplaceable element of natural systems, which must be protected for present and future generations".

». As a result, they advocate international cooperation to protect some of their species from over-exploitation through international trade.

Trade in specimens of these species is therefore subject to particularly strict regulations and should only be allowed under exceptional conditions.

The promoter shall refrain from capturing, hunting any animal species and cutting down any plant species at any stage of the project without the prior authorisation of the competent services.

3.2.1.9. Convention on Wetlands of International Importance especially as Waterfowl Habitat. Ramsar. 1971

Togo ratified the Ramsar Convention on 04 November 1995. This Convention enshrines the need to protect wetlands. Therefore, it is the main international commitment for the promotion of international cooperation in the field of wetlands conservation. The signatory States thus undertake to take into consideration their wetlands in the elaboration of their development policies and to provide the International Union for the Conservation of Nature (IUCN), which acts as Secretariat, with a list of their wetlands of international importance.

Article 3.2 of the Ramsar Convention requires each Contracting Party to "arrange to be informed at the earliest possible time of any change in the ecological character of wetlands in its territory and included in the List which has occurred, is occurring or is likely to occur as a result of technological developments, pollution or other human interference. "This requires the ability to predict the effects of certain actions on wetland ecosystems and, presumably, to undertake a process such as an ESIA.

The project will affect species living in rivers, particularly the Kara and its tributaries and sub-tributaries, which are : Kpélou, Mabo, Nangboa, Naham. The promoter will have to make arrangements for the management of watercourses in order to contribute to the preservation of wetland species.

3.2.1.10. Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal

The Basel Convention was drawn up and adopted on 22 March 1989 to deal with a new kind of environmental crisis that emerged in the 1980s, namely the use of developing countries as a dumping ground for industrialised countries. It is a matter of defending a kind of ecological but also economic equity, since the export of hazardous wastes to developing countries meant that they bore the costs of industrialisation in the rich countries without obtaining any benefits.

This convention establishes a legal framework within which waste shipments between countries can be carried out. Although it cannot claim to prohibit all excesses, it is a significant step forward and a legal basis for a global solution. It includes a preamble, 29 articles, 14 of which relate to the control of hazardous waste, 6 annexes which specify its scope of application, and finally resolutions for the implementation of the convention and the study of the relationship with other international conventions.

The main provisions are articulated between the 13 paragraphs of Article 4 on general obligations and the 11 paragraphs of Article 6 on transboundary movements of hazardous wastes. The Basel Convention contains a fairly precise set of rules on the transboundary movement of hazardous wastes. Article 4 specifies that illegal traffic in hazardous wastes is a criminal offence which must be prohibited and severely punished.

However, this rather complex system, which recognizes the right of any Contracting Party to prohibit the import of hazardous wastes into its territory, does not provide for an outright ban on such movements.

In order to implement the principle of prohibition enshrined in the Convention, the Basel Convention provides for a series of provisions of an institutional nature, namely the Conference of the Parties and the Secretariat.

During its execution, the project will have to refrain from importing or accepting any product or object that may constitute a hazardous waste for the environment and the population.

3.2.1.11. Vienna Convention on the Protection of the Ozone Layer

The Vienna Convention on the Protection of the Ozone Layer, adopted on 22 March 1985, aims to protect human health and the environment from adverse effects resulting from the depletion of the ozone layer. It encourages research, cooperation and exchange of information between States, as well as national legislative measures, without requiring concrete measures.

It established a general obligation for nations to take appropriate measures to protect the ozone layer and a process by which regulations could be imposed by national governments to establish control measures. Indeed, according to the convention, chlorofluorocarbons (CFCs) used for refrigeration, solvents and sterilants, dispersing agents for aerosols, etc. have an extremely long lifespan and their emissions, which reach the stratosphere, are partly responsible for the depletion of the ozone layer. This depletion of the ozone layer was confirmed by the discovery in 1984 of the "ozone hole" over the Antarctic. Since then, ozone depletion has also been observed in the middle and northern latitudes.

Most importantly, the Vienna Convention established the outline of the Protocol on Substances that Deplete the Ozone Layer. Through this instrument, governments committed themselves to protect the ozone layer and to cooperate in the development of scientific research to better understand atmospheric processes. To this end, it recognises the need for increased international cooperation to limit the risks that human activities may pose to the ozone layer. However, the Convention does not contain any binding provisions, but provides that specific protocols may be annexed to it.

The project, during its execution, will have to prohibit itself from importing or accepting any ozone-depleting substances.

3.2.1.12. Montreal Protocol

The Montreal Protocol is an international agreement to reduce and eventually eliminate ozone-depleting substances. It was signed on 16 September 1987, ratified by 193 countries and entered into force on 1 January 1989.

The Montreal Protocol requires Parties to phase out their production and consumption of a range of ozone-depleting substances (ODS). To this end, it classifies the substances in several annexes, subject to a specific timetable. Initially, only certain CFCs and halons were regulated, but Article 6 of the Protocol nevertheless provided for an evaluation of the effectiveness of the measures taken, based on scientific, environmental, technical and economic data, to be carried out as early as 1990. Simplified and accelerated procedures also allow for the rapid updating of the annexes to the Protocol.

Originally, the Protocol called for a 50% reduction in the production and consumption of chlorofluorocarbons (CFCs) over about 10 years. But successive amendments and adjustments (in 1990, 1992, 1995, 1997, 1999, 2007) have increased the number of substances and reduced the timetables, with the objective of eliminating the production of most controlled substances altogether. Many CFCs, halons, carbon tetrachloride, methyl chloroform and so-called transitional substances must now be phased out. These are hydrochlorofluorocarbons (HCFCs) and hydrobromofluorocarbons (HBFCs), which are substitutes for CFCs but have some potential to destroy the ozone layer.

In terms of implementation controls, the Protocol is in theory the most innovative. It provides for the approval by the First Conference of the Parties of procedures in the event of non-compliance with the Protocol. Indeed, if a Party encounters difficulties in fulfilling its commitments, or has reservations about their implementation by another Party, it can inform the Secretariat, which can initiate a procedure in the light of the Parties' reports.

The project, during its execution, will have to prohibit itself from importing or accepting any ozone-depleting substances.

3.2.1.13. International Labour Organization Conventions

The ILO's constituents, governments, employers and trade unions worldwide, have identified eight conventions as "fundamental", covering subjects that are considered fundamental principles and rights at work: freedom of association, effective recognition of the right to collective bargaining, elimination of all forms of forced or compulsory labour, effective abolition of child labour, and elimination of discrimination in respect of employment and occupation. These include :

- *The Forced Labour Convention, 1930 (No. 29)*

Its purpose is the suppression of forced or compulsory labour in all its forms. It authorises certain exceptions such as military service, work by convicts under appropriate supervision, and cases of force majeure (wars, fires, earthquakes, etc.).

- *The Freedom of Association and Protection of the Right to Organise Convention, 1948 (No. 87)*

Guarantees the right of workers and employers to form and join organisations of their own choosing without prior authorisation from the public authorities. Protects the right to strike, including for the majority of public servants.

- *The Right to Organise and Collective Bargaining Convention, 1949 (No. 98)*

Provides guarantees against acts of anti-union discrimination and the protection of employers' and workers' organizations against mutual interference, and calls for the promotion of collective bargaining.

- *The Equal Remuneration Convention, 1951 (No. 100)*

Enshrines the principle of equal pay for women and men for work of equal value.

- *The Abolition of Forced Labour Convention, 1957 (No. 105)*

Provides for the abolition of all forms of forced or compulsory labour as a measure of coercion or political education, as a means of punishment for expressing certain political or ideological opinions, as a method of mobilising the workforce, as a measure of labour discipline, as a punishment for participating in strikes, as a measure of discrimination.

- *The Discrimination (Employment and Occupation) Convention, 1958 (No. 111)*

Provides for a national policy to eliminate discrimination based on race, sex, colour, religion, political opinion, national extraction or social origin in respect of employment and working conditions and to promote equality of opportunity and treatment.

- *The Minimum Age Convention, 1973 (No. 138)*

It aims to abolish child labour by regulating the minimum age for admission to employment, which should not be less than the age of completion of compulsory schooling or the age of 15 in industrialized countries. It covers all economic sectors.

- *The Worst Forms of Child Labour Convention, 1999 (No. 182)*

Provides for the prohibition of the worst forms of child labour such as the elimination of slavery and forced labour of children, the offering of children for prostitution or illicit activities such as the drug trade, hazardous work for children and their forced recruitment for use in armed conflict. The convention sets

the age of protection at 18.

- *The Promotional Framework for Occupational Safety and Health Convention, 2006 (No. 187)*

It obliges any Member State that ratifies it to :

- promote the continuous improvement of occupational safety and health to prevent work-related injuries, diseases and deaths through development, in consultation with the most representative employers' and workers' organizations, a national policy, a national system and a national programme.
- take active steps to progressively achieve a safe and healthy workplace through a national safety and health system and national safety and health programmes at work, taking into account the principles set out in the International Labour Organization (ILO) instruments relevant to the promotional framework for occupational safety and health.

During the course of the work, the project will have to take all necessary steps to ensure that all ILO fundamental conventions are respected in the recruitment and management of personnel and workers on the site.

3.2.1.14. Revised FAO Code of Conduct on the Use of Pesticides

It was adopted in November 2002 in Rome, Italy. The objectives of the Code are to establish voluntary rules of conduct for all public and private bodies concerned with, or intervening in, the distribution and use of pesticides, in particular where national legislation regulating pesticides is non-existent or insufficient.

It also proclaims a common obligation for different sectors of society to work together to ensure that the benefits of disposing of the necessary and acceptable use of pesticides are not obtained at the cost of excessively damaging effects on human health or the environment. Article 5 of the Code enshrines the responsibilities of governments to reduce the health and environmental risks of pesticides.

The International Code of Conduct (revised version) for the Distribution and Use of Pesticides is a set of updated and globally accepted guidelines for the distribution and use of pesticides. Adopted in 2002, the revisions to the Code of Conduct have strengthened the guidance to be implemented to reduce the harmful effects of pesticides on health and the environment and to support sustainable agricultural practices.

The agropole of the Kara basin will have negative impacts on the environment because of the use of different inputs. It is therefore important to carry out an environmental and social impact study that will enable Togo to meet its commitments to the international community. The promoter will have to prohibit the import and use of pesticides that are not registered in Togo.

3.2.2. NATIONAL LEGAL FRAMEWORK

3.2.2.1. Basic law: the Constitution of the Togolese Republic

The Constitution of the Togolese Republic was adopted by constitutional referendum on 27 September 1992 and promulgated by the President of the Republic on 14 October 1992.

It has 16 titles, the second of which deals with the rights, freedoms and duties of citizens. The recognised rights are subdivided into civil and political rights, economic, social and cultural rights and solidarity rights. Among these numerous rights, some have a more or less direct relationship with the environment. They include the right to development (art. 12), the right to property (art. 27), the right to health (art. 34), the right to education (art. 35), etc.

The right to the environment for the benefit of citizens is explicitly enshrined in Article 41 in particular. It states that "Everyone has the right to a healthy environment". This right recognised to every person and to the people places obligations on the State, because according to article 41, "the State shall

ensure the protection of the environment".

With regard to land tenure, the Constitution of Togo, adopted in 1992, provides in its article 27 that "The right of ownership is guaranteed by law. It can only be infringed on the basis of a legally established public interest and after fair and prior compensation".

In accordance with the provisions of the Constitution relating to the environment, the work must avoid as far as possible any pollution that could harm the health of the population. In addition, the agropole of the Kara basin will have to compensate all the people affected by the project (PAP) at their fair value so that they can resettle before the works start.

3.2.2.2. Law n°2018-005 of 14 June 2018 on the Land and State Code

Law n°2018-005 of 14 June 2018 on the Land and State Code includes 724 articles divided into eleven (11) titles.

Article 3 of Title 1 - General Provisions - states that: "The purpose of this Code is to determine the fundamental rules and principles applicable to land and State property and to govern the organisation and functioning of the land and State property system in the Togolese Republic.

Article 5 specifies that "The land tenure system in force in the Togolese Republic is that of the registration of buildings, determined by the provisions of Title III of this Code. It governs all rural, peri-urban and urban land and is based on publication in land registers. As for Article 6, it emphasises that: "In the Togolese Republic, the State holds the national territory in sight:

- 1- preservation of its integrity ;
- 2- the guarantee of the right of ownership of the State and local authorities, natural persons and legal entities of private law acquired in accordance with the law and regulations ;
- 3- the guarantee of property rights of individuals and communities acquired according to customary rules;
- 4- the guarantee of its sustainable use and development.

To this end, Article 7 reinforces the above-mentioned provisions in the following terms: "No one shall may not be forced to transfer its property or real property rights, except for the implementation of development policies or for reasons of public utility, and in any case in return for fair and prior compensation".

With regard to the modes of access to property, Article 151 of subtitle 3 states that: "Without prejudicing the acquired property rights of the first occupant, property is acquired and transmitted by succession, by will or by donation inter vivos and by the effect of sale or exchange or any other mode of transfer free of charge or against payment. Article 152 specifies that "Property is also acquired by accession or incorporation and by acquisitive prescription mentioned in

Articles 412 to 417 of this Code for the latter case. The Land Code also distinguishes special land tenure regimes in its Section 2. These are de facto expropriation, referred to in paragraph 1¹ and planned agricultural settlements in its paragraph 2.

According to Article 338, "Agricultural colonisation of planned origin occurs when the administration moves a displaced population or farmers to settle on a delimited perimeter or in an area with agricultural potential". To this effect, Article 339 emphasises that "the delimited perimeter or the zone with agricultural potential may be the object of an emphyteutic lease".

Sub-title 3 of Title 6 refers to the national land domain through Article 560 which states that: "The national land domain includes all land that cannot be classified either in the category of land held by customary

communities and individuals by virtue of a land title or under customary land law or in the category of land constituting the public and private domains of the State and local communities. It is definitively constituted, within its limits, scope and consistency, on the date of publication of this Code in the Official Gazette of the Togolese Republic. It may no longer incorporate any new building".

"The management of the national land estate is ensured by the State, which can proceed to the redistribution of land in all forms that it is up to it to determine according to national objectives and according to modalities that are defined within the framework of rural, urban and industrial development programmes" (Article 561). However, according to Article 562, "Communities shall retain their traditional rights of use, including hunting, gathering, grazing, etc., on all the land making up the national land estate, as long as the exercise of these rights is not incompatible with the new purpose given to them by the State".

Article 563 specifies that: "Land forming part of the national land estate allocated in accordance with the provisions of this Code for public utility purposes with a view to the implementation of rural, urban or industrial development programmes entrusted by the State on the initiative of the Government to any public or private body under its control, shall be registered in the name of the State in the general forms and conditions set out in the act declaring public utility taken in accordance with the applicable rules on expropriation and designating the area necessary for the implementation of the project".

Prior to the start of project works, land held by customary communities and individuals will have to be identified and negotiated in order to reach a consensus on the amicable transfer of land by its owners and the management of the land as a whole in the project area. To this end, the promoter will have to comply with the provisions of the law establishing the land code in order to secure its project.

3.2.2.3. Law no. 2010-004 of 14 June 2010 on the Water Code

Made up of 10 titles and 183 articles, the Water Code sets out in its first article, "the general legal framework and the basic principles of integrated water resources management (IWRM) in Togo. It determines the fundamental principles and rules applicable to the allocation, use, protection and management of water resources. As for Article 2, it defines the terms relating to water. The various basic principles of integrated water resources management to which the code adheres are also defined in Article 3.

Title III is devoted to the "Regime for the protection of water, installations and hydraulic works". To this end, Article 54 declares that: "Systems for the abstraction of water from a river, lake or borehole or well must maintain a minimum flow that guarantees the aquatic life of the ecosystems located in the corresponding hydrographic basin. When they are installed in watercourses frequented by migratory fish, they must also be equipped with crossing devices".

Within the framework of the fight against pollution (Section 4), Article 56 stipulates that "the dumping, flow and discharge of polluting substances into surface or ground water, directly or indirectly, are either prohibited or subject to prior authorisation in accordance with the laws and regulations in force in Togo". To this effect, Article 57 lists eleven prohibitions of water protection.

As the works will require the use of surface water, or even drilling, both in the construction phase and in the exploitation phase. The promoter is subject to the obligations of this law in order to avoid misuse and pollution of said waters.

3.2.2.4. Law N°2009-007 of 15 May 2010 on the Public Health Code in the Togolese Republic

Environmental protection is taken into account by the public health code in Togo. Indeed, in its Article 17, this law sets out the obligations of the Minister of Health and the Minister in charge of the Environment in the following terms: "the Ministers in charge of Health and Environment shall take, by joint order, the necessary measures to prevent and fight against all polluting elements in order to protect the natural environment, the environment and public health".

Also, it specifies in its articles 23 and 24 that the dumping and burial of toxic industrial, biomedical or hospital waste are prohibited and that they must imperatively be eliminated, in accordance with the

provisions of national and international texts applicable in Togo.

It being understood that the works, as part of the implementation of this project, will generate waste of all kinds, the promoter will take the necessary steps to ensure the proper management of this waste.

3.2.2.5. Law No. 2009-001 of 6 January 2009 on the prevention of biotechnological risks

Law N° 2009-001 of January 6, 2009 voted to set the rules for the prevention of biotechnological risks in Togo (Article ¹⁾, aims, among others, at the prevention of risks related to the development, use, transit, production, storage, deliberate or involuntary release into the environment and the placing on the market of genetically modified organisms (GMOs) and their derived products (Paragraph 1 of Article 2). To this end, Article 22 stipulates that: "The import or export of any GMO and/or its derived products shall be subject to prior informed consent given by the competent national authority. The AIA procedure shall apply prior to the first intentional transboundary movement of GMOs and/or their products".

As regards food specifically, Section 4 of the Act is devoted to the procedure to be followed for GMOs intended for direct use as food or feed or for processing. Thus, Article 40 states: "The competent national authority may have recourse to a specific procedure for GMOs intended for direct use as food or feed or for processing on the national territory and which may be the subject of possible transboundary movements".

In the event that the project envisages the use of GMOs in agricultural production, the promoter shall take all necessary steps to comply with this law.

3.2.2.6. Law No. 2008-005 of 30 May 2008 on the Environment Framework Law

The Framework Law on the Environment is the basic text for environmental management and protection in Togo. Article 1 of the general provisions of the said law declares that it "sets the general legal framework for environmental management in Togo", and "aims to :

- preserve and sustainably manage the environment ;
- to ensure an ecologically sound and balanced living environment for all citizens;
- to create the conditions for rational and sustainable management of natural resources for present and future generations;
- establish the fundamental principles for managing and preserving the environment against all forms of degradation in order to enhance the value of natural resources, to fight against all kinds of pollution and nuisances;
- sustainably improve the living conditions of the population while respecting the balance with the surrounding environment. »

Of general interest, the Framework Law on the Environment is built on fundamental principles based on those of Agenda 21 and Article 41 of the Constitution of the Togolese Republic mentioned above and comprises 5 titles. The content of this law, which contains 163 articles in total, is divided into five (05) titles of which three (03) have two chapters, one (01) has three (3) chapters and one (02) has three (3) chapters. (03) chapters and the last one is without chapters.

The Framework Law imposes in its Title III, Chapter 1, Section 2 (environmental impact assessment and environmental audit), the environmental impact assessment, in particular in paragraph 1, Articles 38 to 40 of the said Section for a category of activities. Thus, article 38 states that "Activities, projects, programmes and development plans which, by the importance of their dimensions or their impact on the natural and human environments, are likely to harm the environment are subject to prior authorisation by the minister in charge of the environment.

This authorisation is granted on the basis of an impact study assessing the negative or positive

consequences on the environment that the planned activities, projects, programmes and plans may generate". Paragraph 3 of the same article stipulates that "the impact study report shall be prepared by the promoter taking into account the short-, medium- and long-term cumulative effects in the environment before any major decision or commitment is made".

With regard to waste, Article 107 of Section 8 of Chapter II (Measures for the protection of the environment) provides that "It is prohibited to keep or abandon waste in conditions conducive to the development of vermin, insects and other vectors of disease likely to cause damage to persons and property".

As for article 108, it specifies the responsibility of any person holding waste in these terms: "Any person who produces or holds waste in conditions that produce harmful effects on the soil, flora or fauna, degrade the landscape, pollute the air or water, generate odours and generally harm the health of humans, domestic animals and the environment, is required to dispose of it or have it disposed of or recycled in accordance with the provisions of the public hygiene code and the texts implementing this law". In order to enlighten the holder or the producer of waste, on the elimination of waste, paragraph 2 of the same article specifies the operations relating to it.

Article 121 of Section 10 recommends to this effect that "The persons who are the originators of the above-mentioned broadcasts shall take all necessary steps to suppress them. In cases of justified urgency, the competent authorities shall take all measures of their own motion to bring the demonstrations to an end". As for article 122, it prohibits the circulation of means of transport that spread polluting substances exceeding the regulatory thresholds.

Regarding discharges, they are dealt with in section 11, article 124 of which stipulates that "Any discharge, dumping, deposit, burial and any immersion in the atmosphere, soil, water and in general in the environment are subject to regulation.

By carrying out the environmental and social impact study, the project promoter complies with the framework law. It will ensure that all the above-mentioned provisions are complied with in the implementation of the project so that there is no release of polluting objects or substances that could harm or damage the environment and the health of the population.

3.2.2.7. Law No. 2008-009 of 19 June 2008 on the Forestry Code

Adopted on 19 June 2008, the Forestry Code "aims to define and harmonise the rules for the management of forest resources in order to achieve a balance between ecosystems and the sustainability of the forest heritage". It is divided into five titles. The first title deals with general provisions, the second concerns the definition of certain concepts used in the said law. A total of 28 concepts relating to forests and wildlife have been defined. The third title deals with the forest regime. Title 4 relates to the wildlife regime; while Title 5 contains measures to punish offences. Title 6, which is relevant to more than one aspect, deals with participation in the development of forest resources by establishing a national commission and regional, prefectural, communal, cantonal and village advisory commissions throughout the country to assist in decision-making on the management of forest resources. The same title sets up a special treasury fund called the National Forestry Development Fund, made up of various sources of revenue. The various provisions and those that are transitional and final are contained respectively in Chapter 7 and 8 of the said law. The Forestry Code also prohibits fires and bushfires which are punished in accordance with the provisions of the said Code (Article 64, Section 8 - Fires and bushfires).

With regard to fauna, which is also the subject of concern in Title 4 of the Forestry Code, Article 69, Section 1 states that: "Wild animals living in freedom in their natural environment or in managed areas and perimeters are divided into species ...":

- fully protected ;
- partially protected ;
- unprotected.

During the work, the developer must refrain from cutting down large trees without prior authorization from the Forest Resources Branch. The developer must also avoid poaching and burning waste on the construction site in order to prevent accidental bushfires and the destruction of plant and animal species.

3.2.2.8. Law n° 99-003 of 18 February 1999 on the Hydrocarbon Code

The purpose of the Hydrocarbon Code is to encourage the exploration and exploitation of oil and natural gas and to promote the investments necessary for the development of the oil sector in particular and the nation in general.

The Hydrocarbon Code applies to road projects through Article 2 in its paragraphs 6 and 8 relating to the transport and storage of fuels. It also provides in its articles 38 and 39 for provisions on health, safety and the environment.

During the course of the work, the project will have to take steps to comply with the requirements of Articles 2, 38 and 39 of the said Code.

3.2.2.9. Law N° 96 - 004 / PR of 26 February 1996 amended by Law N°2003- 012/PR of 04 October 2003 on the Mining Code of the Togolese Republic

Law N° 96 - 004 / PR of 26 February 1996 on the Mining Code of the Togolese Republic stipulates in its article 35 entitled "Protection of the environment" that: "The holder of a mining title shall avoid as far as possible any harmful impact on the environment, notably the pollution of land, atmosphere and water and damage to the destruction of flora or fauna, in accordance with the provisions of this law, the environment code and their implementing texts".

With regard to employment, training, provision of goods and safety, the Mining Code requires the following recommendations in Article 36:

- if they are equally qualified, the holder of a mining title will give priority to hiring Togolese citizens;
- the holder of a mining title ensures the training of its employees and will submit the training and periodic retraining programmes to the General Directorate of Mines and Geology (DGMG) ;
- provided that there is equivalent competition, the holder of a mining title has priority in using the goods and services of suppliers established in the Togolese Republic;
- the State shall establish safety zones around mines, buildings, cemeteries, historical monuments and sites, settlements, water sources and communication routes, public works and other infrastructure.

Law N°2003-012/PR of 04 October 2003 amending and supplementing the Mining Code provided for incentives, including tax and customs benefits for the holder of a research, exploitation or prospecting permit. Thus, the holder, its service providers and suppliers who are subject to the ordinary law tax regime may benefit from the advantages provided for in the Mining Code and/or the advantages contained in their investment agreements. Similarly, all holders of mining titles are exempt from business tax.

In carrying out this Environmental and Social Impact Assessment (ESIA) of its project, the promoter is already complying with the provisions of the text. The promoter will also have to take steps for the effective implementation of the environmental measures that will result from the ESIA's ESMP.

3.2.2.10. Law n°96-007/PR of July 3, 1996 on plant protection and its implementing regulations.

Composed of 50 articles grouped in 5 main chapters, the 1996 law prohibits the import, manufacture, packaging or repackaging, storage, testing, use or placing on the market of any unauthorised or registered plant protection product. A decree and orders implementing Law 96-007/PR, were signed to regulate the use of pesticides. They include the following in particular:

- decree No. 98-099/PR of 30 September 1998 implementing Law No. 96-007/PR of 3 July 1996 on plant protection ;
- Order No. 29/MAEP/SG/DA of 20 September 2004 setting the conditions for issuing different types of approval authorisations and registration of plant protection products in Togo;
- Order No. 30/MAEP/SG/DA of 21 September 2004 prohibiting the import and use of methyl bromide in Togo;
- Order No. 31/MAEP/SG/DA of 21 September 2004 prohibiting the import and use of organochlorines in Togo;
- Order n°24/MAEP/SG/DA of 30 October 1998 on the creation, attribution and composition of the Committee for Phytopharmaceutical Products. (CPP)
- Order n° 04/MAEP/SG/DA of 20 January 2000 relating to the composition of the application file for experimental authorisation, provisional sales authorisation and approval of plant protection products.
- Order n°03/MAEP/SG/DA of 20 January 2000 relating to the professional approval required for importing, placing on the market, formulating and repackaging plant protection products and their use by service providers.
- Order n°076/MAEP/SG/DA of 17 August 2007 fixing the rate and method of recovery of fees for compulsory phytosanitary controls of plants and plant products on import and export.

The agropole of the Kara basin will have negative impacts on the environment, especially in its exploitation phase, because of the use of different inputs. The promoter will therefore have to prohibit the import and use of dangerous chemicals that are not registered in Togo.

3.2.2.11. Law No. 2006-010 of 13 December 2006 on the Labour Code of the Togolese Republic

Title VI of this law defines the working conditions regarding working hours and the work of women and children.

Article 142 states that "in any undertaking, even of an educational or charitable nature, with the exception of an agricultural undertaking, the working hours of employees or workers, of either sex, of any age, working on time, on task or piecework, may not normally exceed forty (40) hours per week".

Article 148 states that "any pregnant woman, whose condition has been certified by a doctor, may leave work without notice and without having to pay compensation for breach of contract".

Article 150 stipulates that "subject to the provisions relating to apprenticeship, children of either sex may not be employed in any enterprise, nor perform any type of work, even on their own account, before the age of fifteen (15) years, unless an exemption is provided for by order of the Minister responsible for labour, taken after obtaining the opinion of the National Labour Council, taking into account local circumstances and the tasks that may be required of them".

Regarding occupational safety and health, Article 172 states that "the employer is obliged to declare to the Labour and Social Law Inspector within forty-eight (48) working hours any occupational accident that has occurred or any occupational disease that has been observed in the enterprise. The procedure for this declaration is laid down in the legislation on accidents at work and occupational diseases".

The project is obliged to comply with the legislation in force in the recruitment of its employees during the works.

3.2.2.12. Law n°2007-011 of 13 March 2007 relating to decentralisation and local liberties

It confers important attributions in environmental matters to local and regional authorities. Article 6 of the law stipulates that "the municipality, the prefecture and the region are competent to promote, together with the State, the economic, social, technological, scientific, environmental and cultural development within their territorial jurisdiction". The law on decentralisation sets up in each of these entities a permanent commission for state and environmental affairs. It thus enshrines the responsibility of local authorities in environmental matters.

Article 40 declares that "Within the framework defined by the present law, the State transfers to the communities, within their respective territorial jurisdiction, competences in the following matters: local development and land use planning; town planning and housing ...";

infrastructure, equipment, transport and communications; energy and hydraulics; management of natural resources and environmental protection; trade and crafts; education and vocational training; health, population, social action and civil protection; sports, leisure, tourism and cultural action.

The project will therefore have to involve local authorities (Prefectures, cantons) through a participatory approach in the implementation of these various activities for the benefit of

3.2.2.13. Ordinance No. 70-18 of 17 May 1978 on the creation and development of planned agricultural development zones.

Ordinance No. 70-18 of 17 May 1978 includes three (03) Securities relating respectively to

The Act provides for "land recognition and assessment", "land registration" and "development" and thirteen (13) articles.

It states in its article 1: "with a view to carrying out rural development works in the various regions of Togo, planned agricultural development zones (ZAAP) shall be created by decree. These establishments will be endowed with legal personality and financial autonomy".

Article 3 of Decree No. 78-18 of 17 May 1978 defines the objectives of the ZAAPs as follows:

"to allow the inventory and evaluation of the land included in the said perimeter; to authorise the establishment of new agro-land structures and the overall registration of land in the name of the owners and the State as regards the land in the national land estate; to make community exploitation of the land in the development zone compulsory ; to allow for the compulsory purging of all prior land rights on ZAAP land; to allow for the expropriation of land located on sites reserved for collective development work; to make land included in the development perimeters transferable to existing or future cooperatives, organisations or communities".

Prior to the start of project works, land held by customary communities and individuals will have to be identified and negotiated in order to reach a consensus on the transfer of land by its owners and the management of the land as a whole in the project area.

3.2.2.14. Decree No. 2017-040/PR of 23 March 2017 laying down the procedure for environmental and social impact studies

This decree, pursuant to Article 39 of Law No. 2008-005 of 30 May 2008 on the framework law on the environment, in accordance with Decree No. 2012 - 006 /PR of 7 March 2012 on the organisation of ministerial departments and Ministerial Order No. 001-2013/MERF on the organisation of the Ministry of the Environment and Forest Resources, specifies in its Article 1, the procedure, methodology and content of environmental and social impact assessments (ESIA) .

Section ¹ of the said decree, comprising 16 articles (art. 3 to 18), defines the projects subject to an in-depth environmental impact assessment. Article 3 provides that "Projects of a public or private nature likely to harm the environment must be subject to an ESIA, prior to any decision, approval or authorisation by the competent authority. ».

According to Article 6: "Projects relating to the activities listed below shall be subject to an ESIA:

- developments, structures and works that may affect sensitive areas ;
- developments, structures and works likely, due to their technical nature, their scale and the sensitivity of the environment in which they are to be built, to have harmful consequences on the environment ;
- the use or transfer of technology that may have harmful consequences on the environment;
- storage of hazardous chemicals ;
- the storage of any liquid above 50,000 m³;
- the regular and frequent or occasional commercial transport by road, rail, air, sea or river of dangerous (corrosive) materials, toxic, contagious or radioactive, etc.) ;
- any activities leading to displacement, involuntary resettlement or disruption of activities;
- Installation or the classified establishment including the opening is submitted with authorisation ;
- the modification of projects that have previously been subject to an environmental and social impact study.

Article 11 stipulates that: "Public or private projects likely to have major impacts on the environment and taken into account by this decree are subject to a thorough environmental and social impact study". Article 13 stipulates that: "Public or private projects whose negative impacts on the environment are limited or can be easily limited or avoided by the application of an environmental commitment by the promoter (EEP) are subject to a simplified environmental and social impact study. ».

Article 12 stipulates that: "Authorisation for the implementation of the projects referred to in Article 6 above by a public authority is conditional on the prior obtaining of an environmental compliance certificate issued by the Minister in charge of the environment following a favourable assessment of the environmental and social impact study report submitted by the developer".

In carrying out this Environmental and Social Impact Assessment of its project, the promoter is already complying with the provisions of the text.

3.2.2.15. Decree No 2011-041 of 16 March 2011 setting the terms of implementation of the environmental audit

This decree is issued pursuant to Law No. 2008-005 of 30 May 2008 on the framework law on the environment. It sets the terms and conditions for implementing the environmental audit.

The decree gave the objectives of the audit (art. 3) and defined its fields of application. ANGE is in charge of the control of the PGES. It ensures that the audited company respects, throughout the exploitation and cessation phases, the commitments and obligations defined in the GEP (art 21).

Indeed, under Article 4, projects subject to ESIAs are required to undergo an environmental audit. Audits will be carried out at 4-year intervals. However, in the event of the observation of proven environmental damage, the audit may be required before the regulatory 4-year period. The decree also deals with the types and forms of environmental audits, the procedure for drawing up and the content of the audit report and the procedure for evaluating the audit report.

During the operational phase of the project, the promoter will have to comply with the provisions of this text by carrying out an environmental audit of its structure every (04) years.

3.2.2.16. Order N° 0150/MERF/CAB/ANGE of 22 December 2017 setting the terms and conditions for public participation in environmental and social impact studies (ESIA)

This decree comprises 3 chapters and 34 articles, the first of which "sets the terms and conditions for public participation in environmental and social impact studies (ESIA) in accordance with the provisions of Decree No. 2017-040/PR of 23 March 2017 setting out the procedure for environmental and social impact studies".

Article 2 of the said decree defines participation as "any involvement of the public in the environmental and social impact study process aimed at obtaining its opinion on the project in order to provide the necessary elements for decision-making". "Its purpose is to inform the public about the existence of the project and to obtain its opinion on the various aspects of the design and execution of the said project. »

As for Article 3, it defines the term "public", which "under the terms of this decree, is the :

- whose interests are affected by decisions taken in the implementation of the project or ;
- who has interests to defend or assert in the decision-making process leading to the issuance of the environmental compliance certificate".

The different phases and forms of public participation are listed in Article 4 and are "consultation of the population concerned or its representatives on the project and consultation by public hearing".

During the implementation of the Environmental and Social Impact Assessment, the promoter should strongly involve the population in the process through popular consultations and participatory consultations. The minutes resulting from this participation of the populations will be annexed to the report.

3.2.2.17. Order No. 019/MERF of 1 June 2005 regulating the transport of solid waste, sand, oil and gas, laterite, gravel and other materials or materials likely to be released into the environment during transport

Article 1 of this Order of the Minister of the Environment sets the rules applicable to the transport of solid waste and materials or materials likely to be disseminated in the environment by the wind during their transport.

Article 2 of the said decree defines the materials and materials referred to in Article 1 of the decree which include: all forms of solid waste, with the exception of hazardous, toxic or contaminated waste, all kinds of scrap, rubble, sand, laterite, clay and assimilated, gravel and assimilated, and all kinds of solid materials or materials likely to be carried away by the wind and disseminated in the environment during their transport.

Article 3 requires drivers of motor or traction vehicles transporting the materials referred to in Article 2 "to avoid releasing them into the environment. »

As for section 4, it requires that "Transport by motor vehicle or by human or animal traction" be "obligatorily" done "in closed containers on all sides, sheltered from the wind in order to prevent their dissemination.

However, Article 5 qualifies the previous article by specifying that: "If it is impossible to carry out transport under the conditions set out in Article 4, transport must be carried out with a device preventing the spread of materials and substances between loading and unloading points as follows:

- a. the transport of sand, laterite, clay and assimilated, gravel and assimilated, rubble, embankments will be done in a regular vehicle or other suitable container and the contents covered with a tarpaulin;
- b. the transportation of solid waste, salvage and other materials from the will by means of a regular vehicle or in any other appropriate container and the contents covered by a net".

The project-executing agency will ensure that all of the above provisions are complied with in the implementation of the project in order to avoid any spread of materials and materials between the loading and unloading sites in this way.

3.2.2.18. Order n°31/MAEP/SG/DA of 21 September 2004 prohibits the import and use of organochlorines in Togo.

Article ¹ of the Order recognises on the basis of precise scientific data that organachlorines are one of the groups of pesticides that are highly dangerous for human and animal health and for the environment. Article 2 states that: "In order to preserve human and animal health and the environment, it is forbidden to import and use in Togo organochlorines in all their forms, in particular the following persistent organic pollutants (POPs): Aldrin, Endrin, Dieldrin, DDT and its derivatives, Mirex, Toxaphene, Hexachlorocyclohexane (HCH), Chlordane and Heptachlor.

The project promoter will ensure that all these provisions are complied with by avoiding the import and use of these polluting products within the framework of its project.

3.3. NORMATIVE AND DIRECTIVE FRAMEWORK

3.3.1. STANDARDS AND GUIDELINES FOR PHYSICO-CHEMICAL AND SOUND PARAMETERS APPLICABLE TO THE PROJECT

The Togolese Republic does not currently have environmental standards. The standards applicable to the project will therefore be those taken from WHO, European Union or IFC guidelines, which are presented in tables 13 to 19.

The WHO air quality guidelines are intended for use around the world but have been developed to support action to achieve air quality that protects public health in different contexts. Air quality standards are also set by each country to protect the public health of its citizens and as such are an important element of national risk management and environmental policies.

National standards will vary according to the strategy adopted to balance health risks, technological feasibility, economic considerations and various other political and social factors which, in turn, will depend, among other things, on the degree of development and national capacity for air quality management. The WHO recommended guideline values take account of this heterogeneity and recognize, inter alia, that in developing policy targets, governments should carefully consider their own local circumstances before directly adopting the guidelines as legally based standards.

3.3.1.1. Discharge Directives

The WHO and IFC air and water quality guidelines are intended for use around the world, but were developed to support action to achieve air and water quality that protects public health in different contexts. They are presented in Tables 13 to 18.

Table 13: WHO and IFC guidelines for wastewater discharge values

| Pollutant | Unit | Recommended value |
|------------------------|---------------|-------------------|
| pH | - | 6 – 9 |
| DBO | mg/l | 30 |
| COD | mg/l | 125 |
| Total nitrogen | mg/l | 10 |
| Total phosphorus | mg/l | 2 |
| Oils and fats | mg/l | 10 |
| Total suspended solids | mg/l | 50 |
| Total coliforms | NPP2 / 100 ml | 400 |

Source: - World Health Organization (WHO). *Water Quality Guidelines Global, Update, 2005*
 - IFC's *General EHS Guidelines on Environment, Wastewater and Ambient Water Quality, April 2007*

² MPN = Most Probable Number

Table 14: Reference values for effluents (waste water)

| Pollutants | Units | Values given in the guidelines |
|---|--|--------------------------------|
| pH | pH | 6 – 9 |
| BOD5 | mg/l | 25 |
| COD | mg/l | 125 |
| Total nitrogen | mg/l | 10 |
| Total phosphorus | mg/l | 2 |
| Oils and fats | mg/l | 10 |
| Total number of suspended solids | mg/l | 50 |
| Temperature increase | °C | <3b |
| Total number of coliform bacteria | NPPa / 100 ml | 400 |
| Active ingredients / antibiotics | To be determined on a case-by-case basis | |
| Notes : a MPN = Most Probable Number b At the edge of a scientifically established mixing zone that takes into account ambient water quality, receiving water use, potential receptors and assimilative capacity. | | |

Source: Table 1, Environmental, Health and Safety Guidelines, April 30, 2007

Table 15: Selected guidelines from the WHO drinking water list

| Parameter | Unit | Recommended value |
|--------------------------------|------------|-----------------------|
| Total coliforms | per 100 ml | Zero in treated water |
| Cadmium | mg/l | 0,003 |
| Cyanide | mg/l | 0,5 |
| Mercury | mg/l | 0,006 |
| Selenium | mg/l | 0,04 |
| Arsenic | mg/l | 0,01 |
| Fluoride | mg/l | 1,5 |
| Nitrate (as NO ₃ -) | mg/l | 50 |

Source: World Health Organization (WHO) Guidelines for Drinking Water Quality 4th edition, 2011

Table 16: Limit standards for the release of gases and other suspended particulates in the European Union

| Polluting products | Average limit value (EU) |
|--|-------------------------------|
| Ozone (O ₃) | 0.08 ppm |
| Carbon monoxide (CO) | 40 micrograms/m ³ |
| Sulphur dioxide (SO ₂) | 80 micrograms/m ³ |
| Nitrogen Dioxide (NO ₂) | 200 micrograms/m ³ |
| Lead (Pb) | 2micrograms/m ³ |
| Particles in suspension (< 10 microns) | 80 micrograms/m ³ |

Source: GUIGO M. et al: Gestion de l'environnement et études d'impact, Ed. Masson Géographie, Paris, Milan, Barcelona, Bonn, 1991

Table 17: WHO air quality guidelines

| Polluting products | Average exposure time | Value in µg/m ³ |
|--|-------------------------|--|
| Sulphur dioxide (SO₂) | 24 hours | 125 (1st intermediate target) 50 (2nd intermediate target) 20 (Guidelines) |
| | 10 minutes | 500 (Guidelines) |
| Nitrogen Dioxide (NO₂) | 1 year | 40 (Guidelines) |
| | 1 hour | 200 (Guidelines) |
| Particulate matter (PM₁₀) | 1 year | 70 (1st intermediate target) 50 (2nd intermediate target) 30 (3rd intermediate target) 20 (Guidelines) |
| | 24 hours | 150 (1st intermediate target) 100 (2nd intermediate target) 75 (3rd intermediate target) 50 (Guidelines) |
| Particulate matter (PM_{2.5}) | 1 year | 35 (1st intermediate target) 25 (2nd intermediate target) 15 (3rd intermediate target) 10 (Guidelines) |
| | 24 hours | 75 (1st intermediate target) 50 (2nd intermediate target) 37.5 (3rd intermediate target) 25 (Guidelines) |
| Ozone | 8 hours per day maximum | 160 (1st intermediate target) 100 (Guidelines) |

Source: World Health Organization (WHO). Air Quality Guidelines Global Update, 2005

Table 18: WHO air quality guidelines and interim targets for SO₂: 24 hour and 10 minute concentrations

| Target | Average over 24 hours (µg/m ³) | Average over 10 minutes (µg/m ³) | Basis of the chosen concentration |
|-------------------------------|--|--|---|
| First intermediate target (a) | 125 | - | |
| Second intermediate target | 50 | - | Intermediate objective based on the control of motor vehicle emissions, industrial emissions and/or emissions from power plants. This would be a reasonable and feasible target in some developing countries (which could be achieved within a few years), which would lead to significant improvements in health, which in turn would justify further improvements (e.g. targeting the value of the guidelines). |
| Air quality guidelines | 20 | 500 | |

(a) Former WHO air quality guideline (WHO, 2000).

3.3.1.2. **Noise Emission Directives**

Table 19 shows the noise levels that should not be exceeded at the risk of causing noise nuisance.

Table 19: WHO guidelines on noise level

| Receiver | One hour LAeq (dBA) | |
|---|----------------------------------|--------------------------------|
| | Daytime 07.00 - 22.00 hrs. | By night 22.00 - 07.00 hrs. |
| Residential; institutional; educational | 55 | 45 |
| Industrial; commercial | 70 | 70 |

Source: Guidelines for Community Noise, World Health Organization (WHO), 1999.

3.3.2. ENVIRONMENTAL AND QUALITY STANDARDS APPLICABLE TO THE PROJECT

3.3.2.1. ISO 14000 Environmental Management System Standard

The ISO 14000 family of standards provides practical tools for companies and organisations of all types that wish to control their environmental responsibilities. It focuses on environmental management systems with this in mind. The other standards in the family address specific aspects such as auditing, communication, labelling and life cycle assessment, as well as environmental issues affecting climate change.

ISO 14001:2015 specifies the requirements for an environmental management system that can be used by an organisation to improve its environmental performance. This International Standard is intended for use by organizations wishing to manage their environmental responsibilities in a systematic way that contributes to the environmental pillar of sustainable development. It is intended to help an organisation to achieve the expected results of its environmental management system, which add value for the environment, for the organisation itself and for interested parties.

Consistent with the organisation's environmental policy, the expected results of an environmental management system include: improving environmental performance, meeting compliance obligations, achieving environmental objectives.

ISO 14001:2015 is applicable to organizations of any size, type and nature, and applies to those environmental aspects of its activities, products and services that the organization determines and has the means to either control or influence from a life cycle perspective. This International Standard does not establish specific environmental performance criteria. It can be used in whole or in part to improve environmental management in a systematic way. However, statements of conformity with this International Standard are not acceptable unless all its requirements are integrated into an organization's environmental management system and are met, without exclusion.

APRODAT should invite and encourage the companies that will set up in the agropole of Kara to obtain ISO 14001: 2015 certification in order to commit its project to full compliance with both national and international environmental standards.

3.3.2.2. ISO 9000 standard relating to the quality of a process

The ISO 9000 family includes many standards, including :

- ISO 9001:2015 - establishes the requirements for a quality management system;
- ISO 9000:2005 - covers basic concepts and terminology;
- ISO 9004:2009 - shows how to increase the efficiency and effectiveness of a quality management system;
- ISO 19011:2011 - establishes guidelines for internal and external audits of quality management systems.

ISO 9001:2015 defines the criteria for a quality management system. It is the only standard in this family that can be used for certification. Any organisation, large or small, in any field of activity, can use it. In fact, more than a million companies and organizations in over 170 countries apply it. It is based on a number of quality management principles, including a strong customer focus, management motivation and commitment, process approach and continuous improvement. It helps to ensure that customers get consistent, good quality products and services, which in turn leads to good business benefits.

An essential component of ISO 9001:2015 is to verify the proper functioning of the quality management system. An organisation carries out this verification through internal quality audits. It may also invite an independent certification body to verify its compliance with the standard, but this is not an obligation. It may also invite its clients to audit the quality system on their own behalf.

APRODAT should invite and encourage the companies that will set up in the agropole of Kara to obtain ISO 9000 certification in order to commit the company to total quality both nationally and internationally.

3.3.2.3. ISO 22000 standard for food safety management

ISO 22000:2005 defines the requirements for a food safety management system that can be certified as complying with the standard. It explains the means that an organisation must implement to demonstrate its ability to control food safety hazards in order to ensure that all food is safe.

This International Standard specifies requirements for a food safety management system in the food chain where an organization needs to demonstrate its ability to control food safety hazards in order to ensure that any food is safe for human consumption.

It applies to all organisations, irrespective of size, that are involved in some aspect of the food chain and want to implement systems to provide safe products at all times. The means to meet all the requirements of this International Standard may be achieved through the use of internal and/or external resources.

This International Standard sets out requirements to enable an organization to :

- (a) plan, implement, operate, maintain and update a food safety management system designed to provide products which, in accordance with their intended use, are safe for the consumer;
- (b) demonstrate compliance with applicable legal and regulatory requirements relating to food safety;
- (c) assess and evaluate customer requirements and demonstrate compliance with requirements established in agreement with the customer relating to food safety in order to improve customer satisfaction;
- (d) communicate effectively on food safety issues with its suppliers, customers and interested parties in the food chain;
- (e) ensure compliance with its declared food safety policy;
- (f) demonstrate such compliance to interested parties; and
- (g) have its food safety management system certified/registered by an external body, or carry out a self-assessment/self-report of conformity with this International Standard.

All the requirements of this International Standard are general in scope and are designed to apply to all organizations in the food chain, regardless of their size and complexity. It allows an organization, such as a small and/or underdeveloped organization (such as a small farm, small packer-distributor, small retail or food service shop), to implement a combination of externally developed control measures.

As the agropole of the Kara basin will have to house agricultural processing units, APRODAT will have to encourage the companies that will set up there to obtain ISO ISO 22000 certification in order to commit them to total respect for food safety. It will therefore have to train agricultural producers in the project area to respect the provisions of the standard, especially in terms of inputs, and to avoid transgenic products (GMOs).

3.3.2.4. ISO 26000 Standard on Social Responsibility

Companies and organisations do not operate in a vacuum. The way they fit into the heart of society and their environment is a decisive factor in their ability to continue their activities. It is also a parameter that is increasingly used to assess their overall performance.

ISO 26000:2010 was published in 2010 after five years of negotiations between a very large number of stakeholders worldwide. Representatives from governments, NGOs, industry, consumer groups and labour were involved in its development. It therefore represents an international consensus and contains guidelines, not requirements. It is therefore not suitable for certification, unlike other well-known ISO standards. It does, however, clarify the concept of social responsibility, help companies and organisations to translate the principles into concrete actions, and disseminate best practices in social responsibility worldwide.

It is aimed at organisations of all types, whatever their activity, size or location.

The purpose of this International Standard is to help organisations contribute to sustainable development. It aims to encourage organisations to go beyond compliance with the law, while recognising that compliance with the law is a fundamental duty of any organisation and an essential part of its social responsibility. It is intended to promote a common understanding in the field of social responsibility and to complement, not replace, other social responsibility instruments and initiatives.

ISO 26000:2010 is not a management system standard. It is not intended or appropriate for certification purposes or for regulatory or contractual use. Any offer or claim of certification to ISO 26000 would be a misrepresentation of the intent and purpose of this International Standard. Since this International Standard does not contain requirements, such certification would not be evidence of conformity to this International Standard.

As the agropole of the Kara basin will have to work with Agricultural Producers' Organisations, APRODAT will have to invite and encourage the companies that will set up there to adhere to the ISO 26000 standard. When applying this International Standard, it is recommended that companies take into account societal, environmental, legal, cultural, political and organisational differences, as well as differences in economic conditions, in full consistency with international standards of behaviour.

3.3.2.5. ISO 14064 standard on climate change

Climate change has been identified as one of the greatest challenges facing nations, governments, businesses and citizens in the coming decades. It has implications for systems, both human and natural, and could lead to significant changes in resource use, economic and production activities. In response, international, regional, national and local initiatives are being developed and implemented to limit greenhouse gas (GHG) concentrations in the Earth's atmosphere. Such initiatives are based on the quantification, monitoring, reporting and verification of GHG emissions and/or removals.

ISO 14064 details the principles and requirements for the design, development, management and reporting of greenhouse gas inventories for organizations or companies. It includes requirements for determining GHG emission boundaries, quantifying an organization's GHG emissions and removals, and identifying specific actions or activities of an organization to improve GHG management. It also includes requirements and guidance on inventory quality management, reporting, internal auditing and the organization's responsibilities for verification activities.

ISO 14064 is a GHG-neutral programme that aims to provide organizations, governments, project proponents and stakeholders around the world with a clear and consistent vision for the quantification, monitoring, reporting and validation or verification of greenhouse gas inventories or projects. If a greenhouse gas programme is applicable, the requirements of this programme are in addition to those of ISO 14064. It specifies the principles and requirements, at the organization level, for the quantification and reporting of greenhouse gas (GHG) emissions and removals. In particular, the use of ISO 14064 can :

- Improve the environmental integrity of GHG quantification,
- Improve the credibility, consistency and transparency of GHG quantification, monitoring and reporting, including GHG emission reductions and enhanced removals at the project level,
- Facilitate the development and implementation of GHG management strategies and plans at

the organizational level,

- facilitate the development and implementation of GHG projects,
- facilitate the monitoring of performance and progress in reducing GHG emissions and/or increasing GHG removals, and
- facilitate crediting and trading of GHG emission reductions or removal enhancements.

APRODAT is invited to encourage the companies that will set up in the agropole of the Kara basin to obtain ISO 14064 certification in order to commit its project to the respect of both national and international provisions of its services in the fight against climate change.

3.3.2.6. ISO 50001:2011 standard on Energy Management Systems

ISO 50001:2011 specifies the requirements for designing, implementing, maintaining and improving an energy management system that enables organizations to achieve, through a methodical approach, continuous improvement of its energy performance, which includes energy efficiency, use and consumption.

It also specifies requirements for energy use and consumption, including measurement, documentation and reporting, design and procurement of equipment and systems, processes and personnel that contribute to energy performance.

ISO 50001:2011 is applicable to all factors affecting energy performance that the organization can monitor and influence. It does not prescribe specific energy performance criteria. It is designed to be used alone, but can be aligned or integrated with other management systems.

It is applicable to any organisation that wishes to ensure and demonstrate that it complies with the energy policy it has set itself. This can be demonstrated by self-assessment and self-declaration of conformity or certification of the energy management system by an external body.

It also provides, for information purposes, recommendations for its implementation.

APRODAT is invited to encourage the agricultural processing units that will be set up in the agropark to obtain ISO 50001:2011 certification in order to commit the company to comply with both national and international regulations on energy use and consumption.

3.4. INSTITUTIONAL FRAMEWORK

Within the framework of the project, eight (08) main ministerial departments ensuring the application of laws and legislative texts are directly concerned. These are the Ministry of Environment and Forest Resources (guarantor of environmental management in Togo) through its Directorate of Environment, its Directorate of Forest Resources and its Agency for Environmental Management (ANGE), the Ministry of Agriculture, Fisheries and Rural Development (Promoter), and the Ministry of Trade, of Industry and Local Consumption, the Ministry of Water and Village Hydraulics, the Ministry of Opening-up and Rural Tracks, the Ministry Delegate to the President of the Republic, in charge of Energy and Mines, and the Ministry of Territorial Administration, Decentralisation and Territorial Development.

3.4.1. MINISTRY OF ENVIRONMENT AND FOREST RESOURCES

Created on 12 March 1987, the Ministry of the Environment and Forest Resources (MERF) is the centrepiece of government action in environmental management and natural resource conservation.

It is in this spirit that one can envisage its role under Article 10 of the Framework Law on the Environment according to which the implementation of national environmental policy is the responsibility of the Ministry in charge of the environment. This is precisely what is stated more explicitly in its paragraph 2: "the Minister in charge of the environment shall monitor the results of government policy on the environment and sustainable development and ensure that the international commitments relating to the environment to which Togo has subscribed, are integrated into national legislation and regulations".

This involvement of the Minister of the Environment at the central level is accentuated by the legislator, who designates his department as the institution responsible for preparing and disseminating periodic reports on the state of the environment, including in this case, environmental assessments (Article 32 of the Framework Law on the Environment).

The institutional organisation results from the restructuring of the Ministry with decree n°2012-006/PR of 7 March 2012 on the organisation of ministerial departments, the operational aspects of which are enshrined in order n°001-2013 of 20 August 2013 on the organisation of the Ministry of the Environment and Forest Resources). It should be noted that the new decree of 25 January 2016 relating to the powers and organisation of the Ministry should eventually repeal the said decree.

In accordance with decree n°2012-006/PR of 7 March 2012 on the organisation of ministerial departments (the operational aspects of which are enshrined in order n°001- 2013 of 20 August 2013 on the organisation of the Ministry of the Environment and Forest Resources), the MERF operates through a hierarchical structure consisting of the Cabinet, the General Secretariat, the Central Services, the Inspectorate, external services and the chain of attached bodies and institutions. Among the attached institutions, the National Environmental Management Agency (ANGE) figures prominently, as does the one most concerned by this environmental impact study report.

Article 15 of the framework law on the environment creating the National Environment Management Agency (ANGE), as a technical and operational arm of MERF, entrusts it with the following tasks "the promotion and implementation of the national system of environmental assessments including impact studies, strategic environmental assessments, environmental audits".

Within the framework of this project, it is in charge of managing the process of carrying out the environmental impact studies, the evaluation of the report and the issuing of the technical opinion for the environmental compliance certificate.

3.4.2. MINISTRY OF AGRICULTURE, LIVESTOCK AND RURAL DEVELOPMENT

The Ministry of Agriculture, Fisheries and Rural Development is responsible for the country's agricultural, pastoral and fisheries policy. The Ministry of Agriculture, Fisheries and Rural Development is decentralised throughout the country into Regional Directorates of Agriculture, Livestock and Fisheries. It helps people in their daily activities in the field of agriculture, livestock and fisheries. It is the guarantor of agricultural, pastoral and fisheries production, thus ensuring food self-sufficiency in Togo.

The Regional Departments of Agriculture, Livestock and Fisheries are supported by other departments such as the Directorate of Agricultural Plant Sectors (DFV), Directorate of Planning and Monitoring-Evaluation Policies (DPPSE), Directorate of Agricultural Seeds and Plants (DSP).

MAPAH is equipped with certain specialised services such as ICAT and ITRA. The mission of the Togolese Institute for Agricultural Research (ITRA) is to conduct research activities with a view to developing high-performance technologies in the fields of plant and animal production, agrarian systems, natural resource management, and the conservation and processing of agricultural products. It comprises a General Directorate with a Scientific Directorate and 4 agronomic research centres based in each of the country's 4 major ecosystems. The Institute for Technical Advice and Support (ICAT) has the prerogative of promoting the rural world through the professionalization of agricultural producers. As such, it is in charge of agricultural extension and support for producers. It comprises a General Directorate, 5 Regional Directorates and Agencies at the level of Prefectures, relayed at the level of the cantons by agricultural branches. ITRA and ICAT assist people in rural areas in their daily activities in agriculture and animal husbandry, especially in cotton production.

3.4.3. MINISTER OF COMMERCE, INDUSTRY AND LOCAL

CONSUMPTION

The Minister of Trade, Industry and Local Consumption has the mission to engage with the population, partners and the private sector by encouraging a permanent framework for dialogue in order to :

- to enable operators and economic partners to take ownership of the opportunities, the regulations in commercial matters as well as the reforms in progress and in perspective;
- highlight the importance of trade in socio-economic development and the importance of the private sector in wealth creation.

Through the agro-industrial and commercial activities that will take place at the level of the agropole of the Kara basin in general and at the level of the agropark in particular, and the local consumption of the products, this ministry will be able to have a say in the promotion and socio-economic development of the sector.

3.4.4. MINISTRY OF WATER AND VILLAGE HYDRAULICS

The Ministry of Water and Village Hydraulics is responsible for policy and standard setting, resource mobilisation, management control and performance evaluation.

The Ministry, through its Water Resources Directorate, is in charge of the elaboration of the national water policy and the monitoring of its implementation, the preparation of directives in terms of standardisation and regulation on water resources management, the different uses and the implementation of instruments for measuring the quality and quantity of surface and ground water, in close collaboration with the standardisation, regulation and litigation section. It is also in charge of the study and the implementation of the means to satisfy the water demand for all the activities of the country, the inventory of the needs, the mapping and the management of the national hydrometric and piezometric measurement networks, to carry out the hydrological and hydrogeological studies necessary for the development of water resources,

In terms of sanitation, the Ministry deals through its sanitation services with problems related to wastewater management (grey water and tap water).

In the field of village hydraulics, the Ministry is in charge of providing drinking water to the rural population through the installation of boreholes and the installation of human-powered pumps or mini-WATers.

The project will have to work with this ministry in the realisation of the mini-dams, the mini-Dams and the installation of mixed boreholes equipped with human-powered pumps (PMH) and photovoltaic panels.

3.4.5. MINISTRY OF OPENING-UP AND RURAL TRACKS

The Ministry of Opening-up and Rural Roads is responsible for the design, development and implementation of government policy in the area of opening up and the development, rehabilitation and maintenance of rural roads.

The developer must collaborate with this Ministry in the realisation of its project insofar as it also concerns the rehabilitation and development of rural tracks.

3.4.6. MINISTRY DELEGATED TO THE PRESIDENT OF THE REPUBLIC, IN CHARGE OF ENERGY AND MINES

The Ministry delegated to the President of the Republic, in charge of energy and mines with its Directorate General of Energy and the Compagnie Energie Electrique du Togo (CEET), is responsible for the implementation and monitoring of the National Energy Policy. With this in mind, it is looking for

ways and means to ensure the revival of activities and especially the diversification of energy resources. One of the interesting specificities of Togo's electricity sector is that it is governed institutionally and legally simultaneously by a bilateral treaty that is equivalent to the Electricity Code, signed with the neighbouring state of Benin, and by a national law on the organisation of the sector.

As regards mines, the Ministry, through its General Directorate of Mines and Geology, is in charge of authorisations for the opening and exploitation of rock quarries and areas of borrowed lateritic gravel and river sand.

As the project is expected to exploit quarries, gravel lateritic and sand borrow zones for the rehabilitation of tracks, the construction of watercourse crossing structures, dykes of mini-dams and superstructures of water towers and hydrants of mini-WTPs and boreholes equipped with human-powered pumps, this Ministry will have to be involved in the work for the issuance of operating permits for the borrow zones and sand quarries.

3.4.7. MINISTRY OF TERRITORIAL ADMINISTRATION, DECENTRALIZATION AND DEVELOPMENT OF THE TERRITORY

The Ministry of Territorial Administration, Decentralization and Territorial Development implements the State's policy on general territorial administration, decentralization and territorial development. It ensures that the division of competences between the State and local authorities is respected and works to safeguard the general interest and legality. It monitors the application of the law on decentralisation and supports these authorities in their mission of training, consolidation and promotion of citizenship.

The Ministry in charge of Territorial Administration, Decentralisation and Local Government is responsible for the organisation and administration of administrative districts and units as well as the coordination and supervision of the activities of state representatives on the national territory. It ensures that the status and powers of traditional chieftainship are respected.

Through the local authorities (Prefectures and municipalities), it has a look at the projects that are being carried out throughout the territory and works to harmonise them with the development plans of the communities.

3.4.8. MINISTRY OF ECONOMY AND FINANCE

As the institution in charge of implementing and monitoring the country's short- and medium-term economic and financial policy, the Ministry of Economy and Finance will actively intervene in the expropriation of land for public utility works for the various activities of the Kara Basin Agropole Project, which will require the acquisition of land that could lead to involuntary resettlement.

In 2014, the law n° 2014-014 of October 22, 2014 on the modernisation of the State's public action in favour of the economy in its article 78, creates the Expropriation Commission (COMEX). In 2019, decree no. 2019-189/PR of 05 December 2019 formalises the creation of the Expropriation Commission (COMEX). This new entity, which replaces the Interministerial Compensation Committee (CII) created by Order no. 168 /MEF/SG of 10 August 2009 amended by Order no. 073 /MEF/SG of 24 April 2010, is responsible for negotiating with those affected by development projects, making proposals for their compensation and releasing sites or rights-of-way before work is carried out.

Within the framework of the Kara Basin agropole project, the Ministry will have to make available funds that will be allocated to the affected people who must be compensated in accordance with the provisions of the laws and procedures in force. The compensation of those affected by the project is done through the Expropriation Commission (COMEX) housed within it.

3.4.9. OTHER MINISTRIES

In addition to the eight (08) ministries that are directly involved in the SEA process, there are other

ministries that are also concerned with the project but are not directly involved in the SEA process:

- Ministry of Health, Public Hygiene and Universal Access to Care,
- Ministry of Social Action for the Advancement of Women and Literacy,
- Ministry of Grassroots Development, Youth and Youth Employment,
- Ministry of Security and Civil Protection.

4- DESCRIPTION OF THE PROJECT'S RECEIVING ENVIRONMENT

4.1. DELIMITATION OF THE STUDY AREA AND DEFINITION OF THE PROJECT'S ZONE OF INFLUENCE

4.1.1. DELIMITATION OF THE STUDY AREA

The area of the Kara Basin Agropole Project is located in the Kara Region, notably in the Doufelgou Prefecture between 9° 37' and 9° 52' North Latitude and 0° 55' and 1° 02' East Longitude. (Map 1). It is however in the other prefectures of the region, notably Kéran, Dankpen and Bassar and an area of about 165,000 ha (the equivalent of a circle with a radius of about 20 km) (Map 1), i.e. less than 15% of the area of the Kara Administrative Region (extending over 11,490 km² or 1,149,000 ha).

The boundaries of this area are presented as follows:

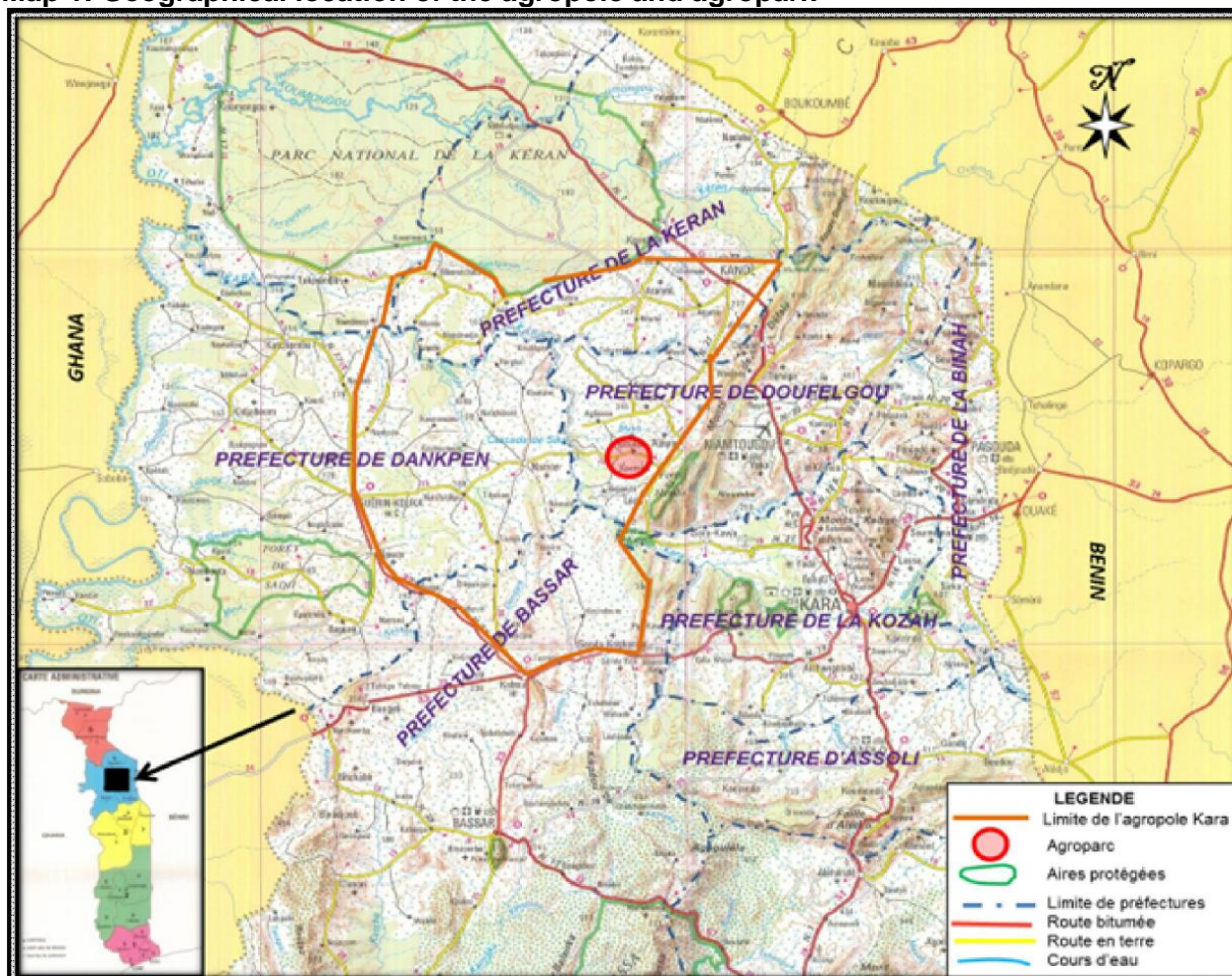
- On the East side: The Kara Forest, the Manda Forest and the Défalé Mountains,
- On the North side: The southern confines of the Kéran National Park currently returned to the local population,
- On the West side: The National Road N°17 (N17) linking Guérin-Kouka to Kabou,
- On the South side: The National Road N°19 (N19) linking Kabou to Kara.

The area thus delimited corresponds to the alluvial plain of the river *Kara* and its tributaries "*Niantin*" (left bank) and "*Mabo*" and "*Nangboa*" (right bank), with an altitude varying from 250 m (upstream) to 150 m (downstream), i.e. a very slight slope of around 0.3%.

Administratively, only four of the seven prefectures of the Kara Region fall within the scope of the study. These are the prefectures of Doufelgou, Kéran, Dankpen and Bassar. There are 19 cantons concerned:

- Four in the Prefecture of Doufelgou: Tchore, Kadjalla, Aloum and Léon.
- Four in the Prefecture of Kéran: Helota, Atalote, Pesside and Kande.
- Seven in Dankpen Prefecture: Guérin-Kouka, Naware, Natchitikpi, Nampoch, Namon, Koutchitchéou and Natchibore.
- Four in Bassar Prefecture: Manga, Kabou, Sanda-Afohou and Sanda- Kagbanda.

Map 1: Geographical location of the agropole and agropark



Source: General map of Togo at 1/500 000, IGN Paris, DCNC Lomé, 1991 modified by Dr Tcheinti-Nabine T., SCET/DECO/ August 2017

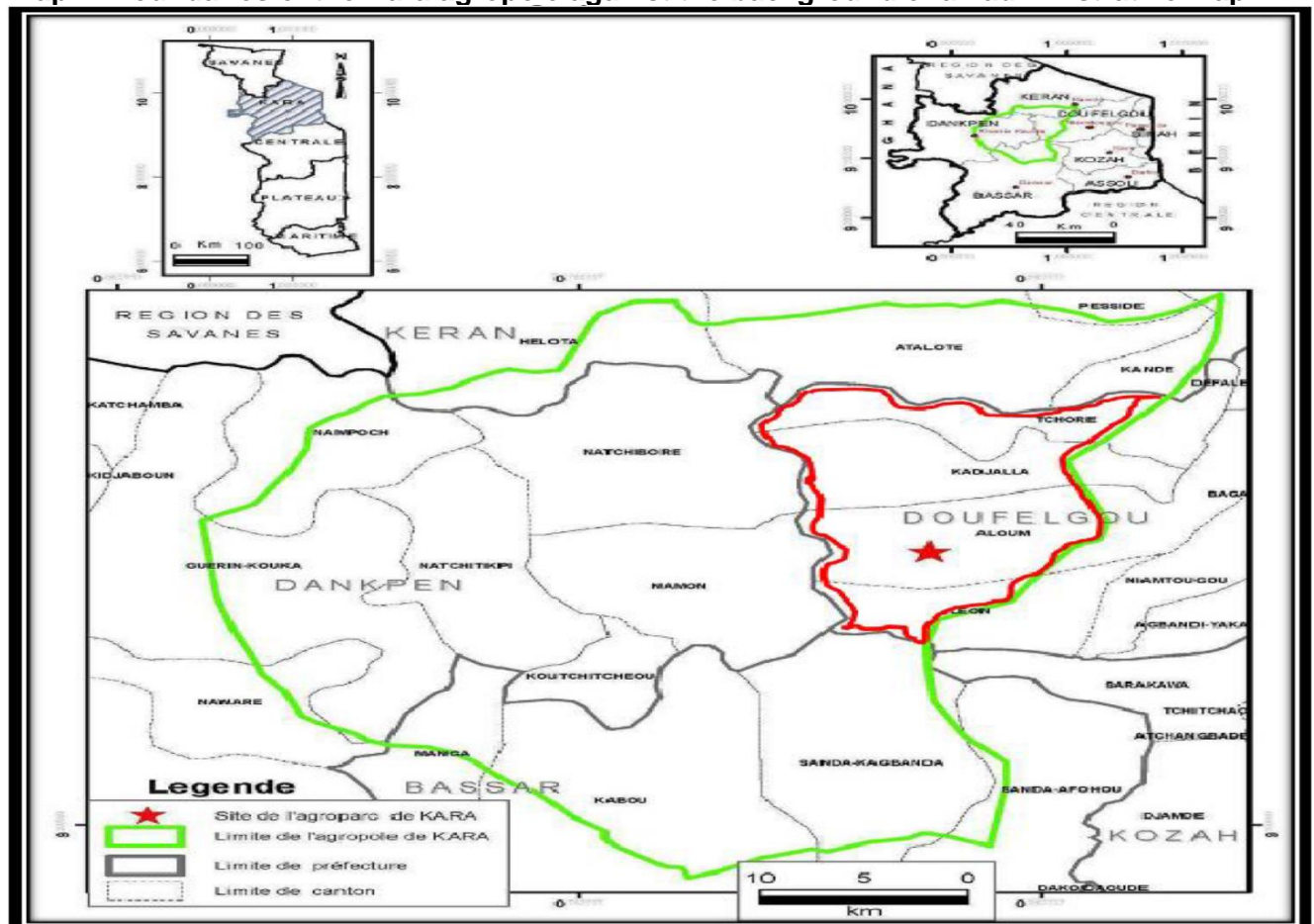
4.1.2. DEFINITION OF THE PROJECT'S ZONES OF INFLUENCE

This is the direct and diffuse zone of influence.

4.1.2.1. Area of direct influence

The area of direct influence for biophysical aspects is defined as the area of direct environmental impacts related to the project (Map 2) This area of direct influence is roughly the place where biophysical and human aspects could be disturbed by the project works. For its first deployment phase, this zone corresponds to the western part of the Doufelgou prefecture and precisely the cantons of Aloum, Léon, Kadjalla and Tchore (Map 2).

Map 2: Boundaries of the Kara agropole against the background of an administrative map



Source: IDEACONSULT International, 2017, Modified by Dr Tcheinti-Nabine T. SCET/DECO/ March 2018

4.1.2.2. Diffuse zone of influence

Outside the direct zone of influence, there is a diffuse zone of influence covering socio-economic and biophysical aspects that can extend for hundreds of kilometres, given the flow of people and project products, the movement of birds, the flow of water and the local, national and sub-regional economic spin-offs of the agropole.

4.2. PHYSICAL ASPECTS

4.2.1. RELIEF

The relief of the Kara Region is very irregular and is characterised by a ridge running North-East-South-West, which is a portion of the Atakora chain separating the Kabyè massifs in the North-East from the schistose hills extending from Kantè to Bassar, in the North-West, and the Oti plain, a sedimentary basin occupying the West of the region.

The north-western part of the Kara region is relatively flat (Guérin-Kouka plain). The rest of the region is more or less mountainous, characterised by an alternation of mountains with steep valleys and small plains with numerous lowlands.

4.2.1.1. Eastern mountain range

It is an area with high altitudes formed by several mountains. We can mention among others, the Kabyè Mountains made up of Mount Kalankpa, Mount Soto and the Lama Range. The altitudes vary

from 300 m and 782 m. To the North-West of this zone, there are the Defalé Mountains where the altitudes vary between 500 m and more than 818 m (Photos 1 and 2).

Photo 1: View of the Monts Défalé from the Alloum village



Source: SCET-Tunisia/DECO IC, 2018

Photo 2: View of the Monts Défalé to the east of the agropole zone



Source: SCET-Tunisia/DECO IC, 2018

Source: Dr Tcheinti-Nabine Tchandikou, September 2020

4.2.1.2. All of the West

The West of the Kara Region is a plain surmounted by a succession of ferruginous hills. The main heights are Mount Sara in Kabou (582 m), Djohoule (494 m) etc.

4.2.1.3. Set of plains

As far as the plain is concerned, it is an extension of the Oti plain (Photo 3). The altitudes there vary between 100 and 200 m.

Photo 3: *View of the western plain of the agropole zone from the Monts Défalé Mountains*



Source: SCET-Tunisia/DECO IC, 2018

To sum up, from an orographic point of view, the relief of the agrolole area itself, consisting essentially of plain, is very favourable to the installation of an agropole.

4.2.2. WATER RESOURCES

4.2.2.1. Surface water

The hydrography of the region is divided between 3 basins all leading to the Oti (Map 3):

- in the centre, the Kara river basin and its tributaries,
- to the west, the Oti basin and its direct tributaries,
- and in the South-West, the Katcha and its tributaries.

On the hydrographic level, therefore, the area of the agropole is essentially drained by a dendritic-type hydrographic network made up of a multitude of rivers and streams controlled by the Kara River. The main tributaries are the Tanmbidou, the Kanga, the Kuom, the Kpéhelou, the Agoumbo, the Nangboua, the Mabo, etc., and the Kara. (Photos 4 to 7).

Photo 4: View of the Kara River at the level of Bidjandè in the West of the project area



Source: SCET-Tunisia/DECO IC, 2018

Photo 5: View of the Kpéhelou River between Kpessidè and Léon in the south the agropole zone



Source: Dr Tcheinti-Nabine Tchandikou, September 2020

Photo 6: View of the Mabo River in the centre of the project area



Source: SCET-Tunisia/DECO IC, 2018

Photo 7: View of the Nangbaou River in the north of the project area



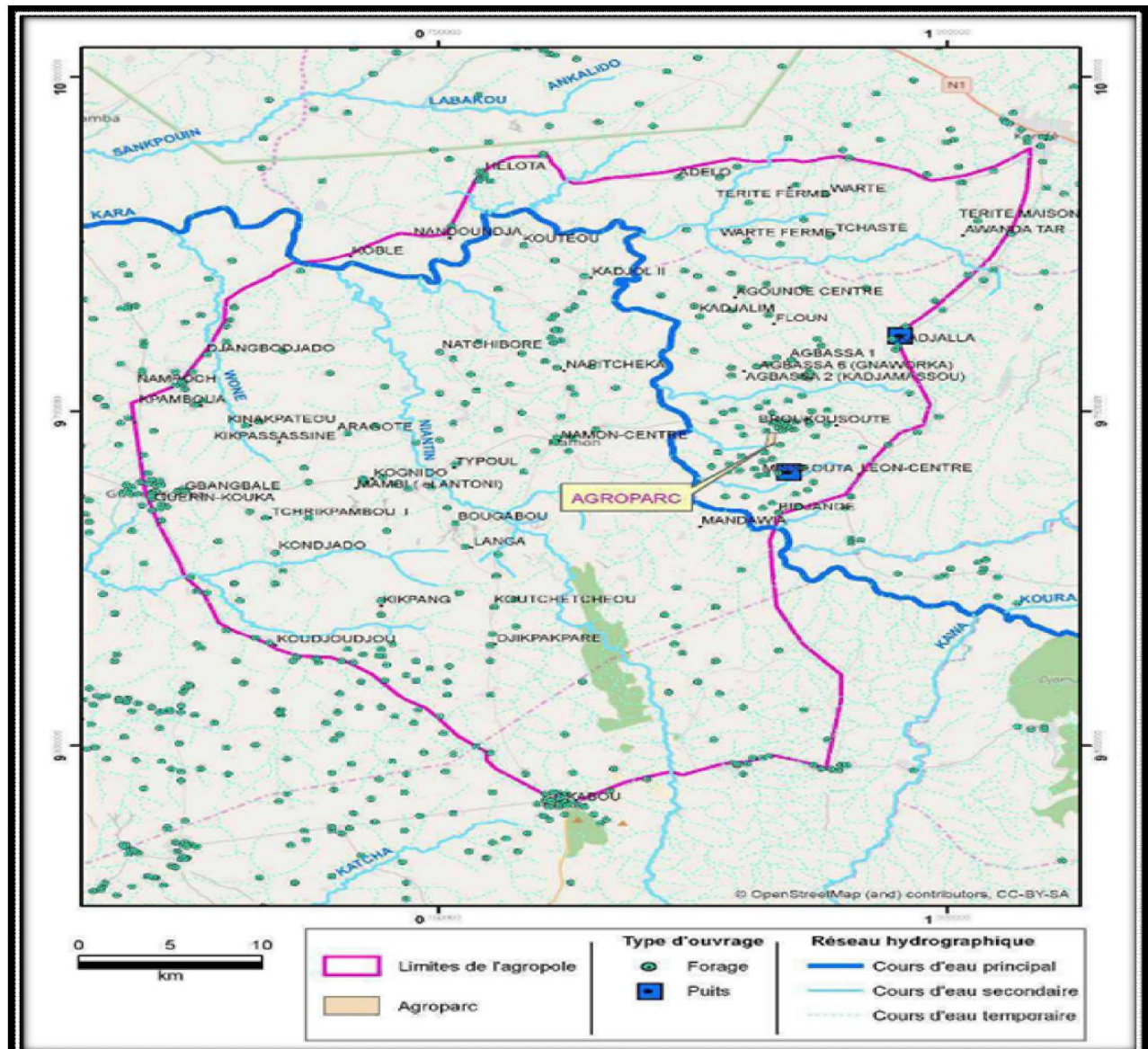
In summary, the hydrographic network of the area is also very favourable to the agropole because of the density and branching of the tributaries of the Kara River. The presence of small declivities allows the installation of micro-dams or water reservoirs that can irrigate the hydro-agricultural installations in a gravitational way.



The underground hydraulic potential depends on the nature of the soil and the geological substrate. From the point of view of groundwater availability, the region does not have quantitative data, however, two types of groundwater can be distinguished:

- Some productive boreholes in the area provide access to these waters. (Map 4)

Map 4: Hydrographic network and water points in the agropole area



Source: IDEACONSULT International/2017

Groundwater is largely determined by the nature of the rock. On the bedrock, the water table appears at several levels between 10 and 40 metres. On the sandstones and flint stones, the water resources seem to be assured. On the other hand, on ancient sands and alluvium, water resources are very low. Indeed, apart from the presence of the cuirass, with a high flow rate but with a rapid drying up, the aquifer levels are rare and the success of drilling is only probable if sandstone levels can be reached (Kankpenandja, 2002). The solution to the water problems on these substrates seems to require the construction of small dams.

4.2.3. GEOLOGY

From a geological point of view, the region is formed by a series of synclines and anticlines constituted by sedimentary or metamorphic epi-metamorphic formations combining into geomorphological elements (Map 5) and comprising :

- The Voltaian made up of the Oti series ;
- The Atakora unit containing schists, micaschists, sandstones and quartzists ;
- The Birrimien or the unit of the plain of Benin (Dahomeyen) containing basic, ultra-basic and muscovite gneiss.
- the Kara plain consisting of two-mica porphyroid granite.

The alluvial deposits have a limited extension. Even in areas where they appear to be important (Oti plain), the layer above the armour does not exceed about ten centimetres. The cuirasses can be found everywhere in the region and are usually only exposed from about 400 m upwards, preventing any plant growth during the dry season.

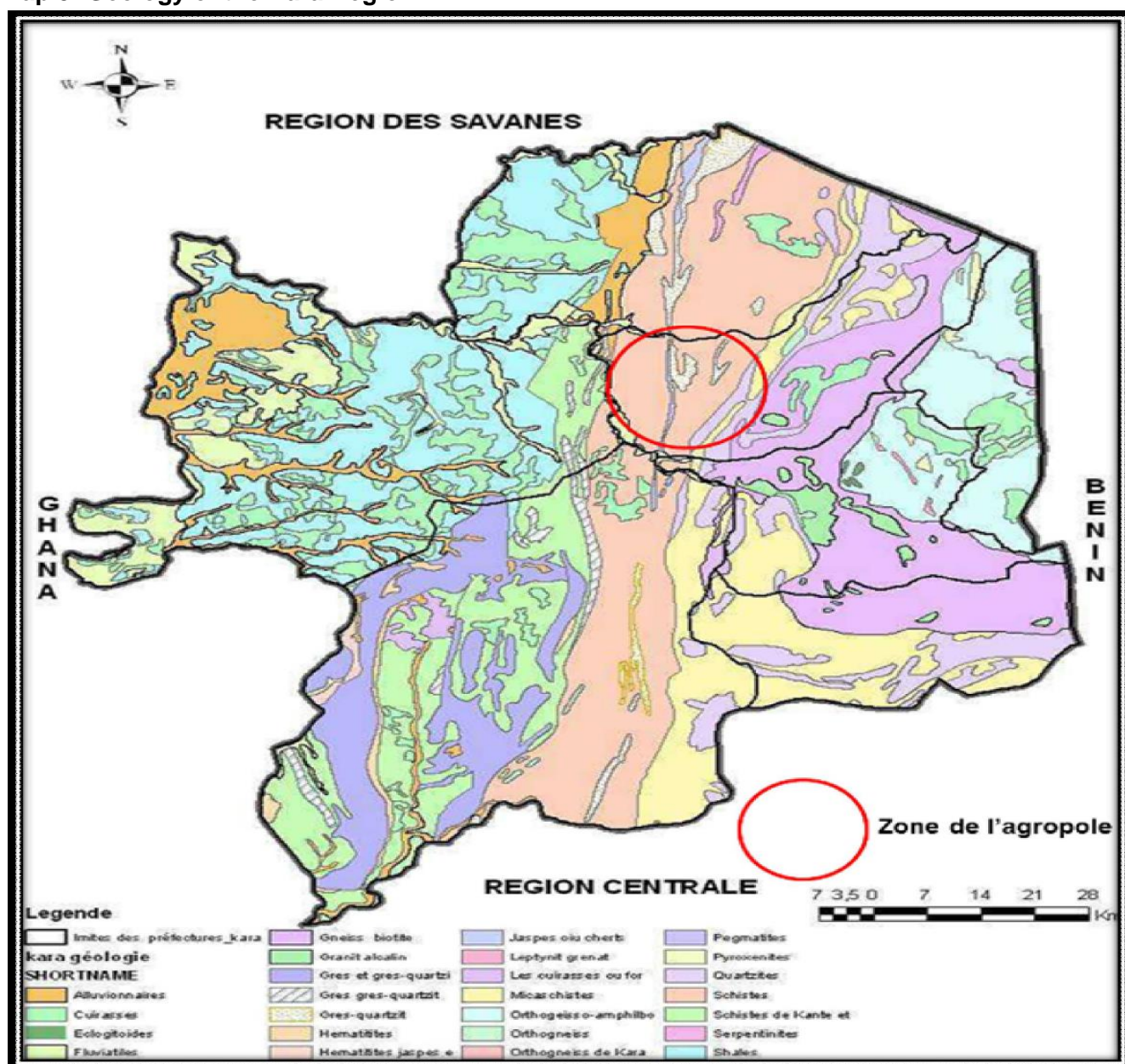
The geological substratum of the project area corresponds to two geomorphological ensembles: the flat surfaces of the Oti valley in the west and the contrasting reliefs in the south and east.

The western part of the region consists of soft, sedimentary and non-metamorphic quasi-horizontal terrains belonging to the supra-tillitic supergroup. On the eastern edge, the terrains are metamorphosed towards more or less sandstone schists. The geological support in general is made up of sedimentary formations, notably Buem sandstone schists, feldspathic quartzic sandstones, quartzites, limestone, sillitite, silexites, which correspond to the Voltaian in the plain, and ferrous materials in the hills at Bangéli. On the other hand, they are essentially made up of green shales, clay and argillite in the north-west.

All these formations are covered with alterations that constitute surface formations.

Oriental reliefs include the orthogneiss of Kara and the Kabye complex. The Kara orthogneiss has two facies: on the one hand, feldspathic micaschists rich in muscovite and on the other hand, porphyroid granites. These are in fact ancient Eburnean granites transformed into orthogneiss. The impermeable nature of the bedrock and the weakness of the cracking do not allow water storage.

Map 5: Geology of the Kara Region



Source: Kara Regional Development Atlas, 1985

4.2.4. SOILS

The Kara Region, in terms of soil types, has 6 soil types whose characteristics, agricultural potential and location are recorded in Table 20, (Map 6).

Table 20: Soil data of the project area

| Types of flooring | Agricultural potential | Factors of degradation |
|----------------------------|--|--|
| Hydromorphic soils | Cereals (rice, maize) yam, fruit, vegetables, sugar cane | Poor farming practices, bush fires, flooding, erosion, drought |
| Tropical ferruginous soils | Cereals, oilseeds, rainfed rice, cotton, legumes | Erosion, deforestation, population pressure, bush fires, drought |

| | | |
|----------------------------|---|--|
| Vertisols and parvertisols | Cereals, legumes, tubers, fruit trees, cotton, market gardening | Erosion, deforestation, population pressure, bush fires, drought |
| Raw mineral soils | Marshes, fruit trees | Bush fires, drought, erosion, flooding |
| Slightly evolved soils | Cereals, oilseeds, cotton | Bush fires, drought, erosion, population pressure |
| Ferralitic soils | Cereals, oilseeds, cotton, fruit trees | Bush fires, population pressure, lack of fallow land, drought, animal pressure |

Source: DRPDAT - Kara, 2017

4.2.4.1. Hydromorphic soils

These soils are characterised by an excess of water for a more or less long period of the year. They can be found almost everywhere in depressed areas on small surfaces. They are extremely varied in texture. But for the most part, they are silty, sandy loam, compact black clay or grey shallow soils. These soils are suitable for the cultivation of cereals such as rice and maize, yam, fruit trees, market gardening and sugar cane. However, they degrade rapidly when exposed to poor farming practices, bush fires, floods and erosion, and drought.

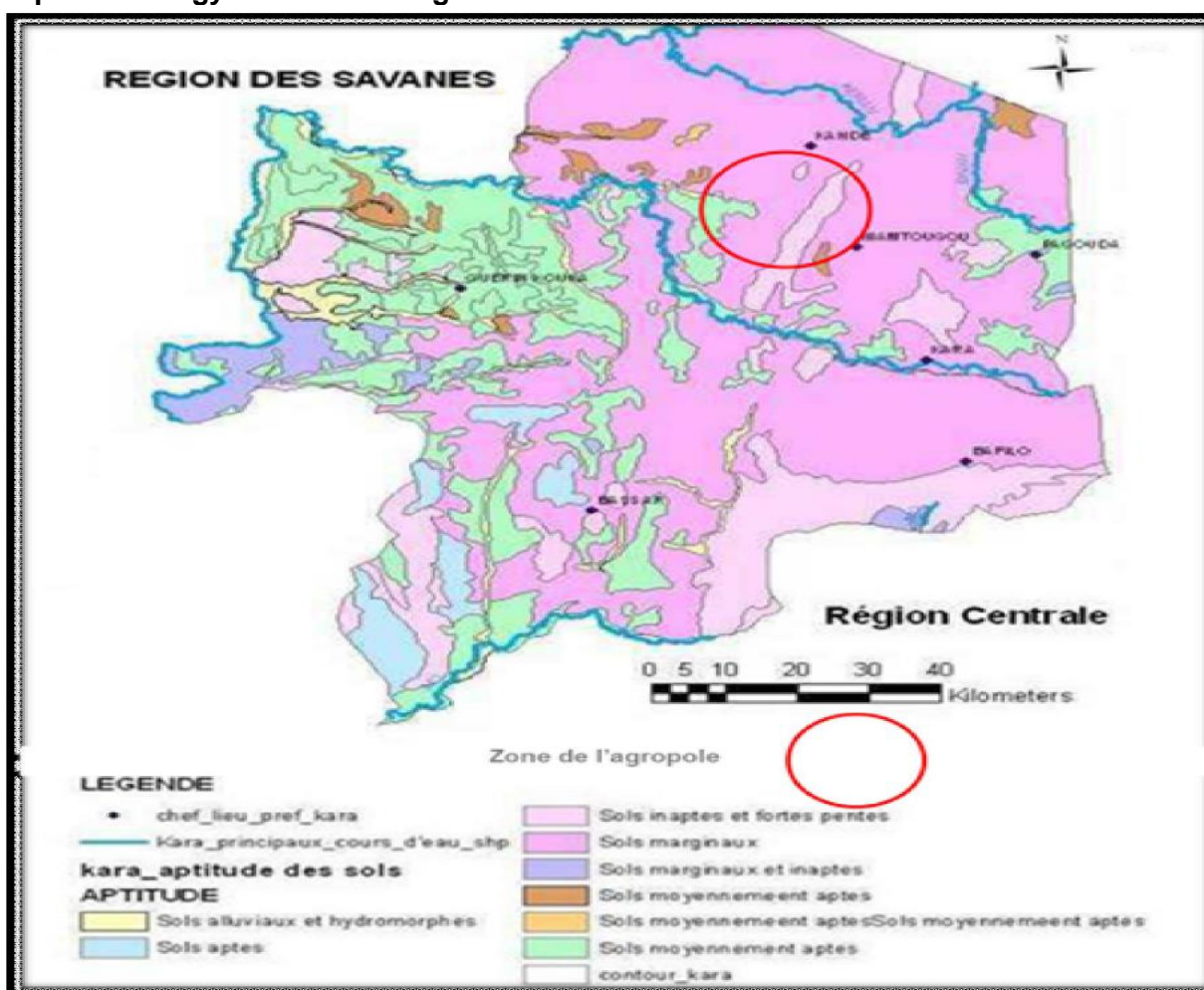
4.2.4.2. Tropical ferruginous soils

This group of soils is the best represented in the region. It includes soils that are heavily leached, more or less concreted or armoured soils that form on schists, granites, sandstone, gneiss and are sometimes enriched with coarse and hydromorphic elements. Their pH is between 6 and 7 on the surface and 5 and 6 at depth. The saturation rate varies from 50 to 80%, but generally above 50%. These soils are suitable for the cultivation of cereals, oilseeds, rainfed rice, cotton and legumes. However, the factors that degrade them are erosion, deforestation, population pressure, bush fires and drought.

4.2.4.3. Vertisols and parvertisols

Black soils formerly known as Tropical Black Clay are made up of swelling clays and are rich in mineral elements. They are found along the Kabyè Mountains. They are suitable for rainfed rice, maize, legumes, tubers, fruit trees, cotton and market gardening. However, their use requires sanitation, irrigation and deep ploughing. However, they degrade when they are exposed to erosion, deforestation, bush fires, population pressure and drought.

Map 6: Pedology of the Kara Region



Source: Atlas of Regional Development 1985

4.2.4.4. Raw mineral/ferralitic soils

These soils are found mainly in the Guérin-Kouka plain and in the Bassar series, in the Chaboua Range and the Daoudé Cliff. They are red soils, more or less beige on the slopes, relatively deep, with the presence of small mica in the process of alteration that cover the various bedrocks. Their organic matter content is quite low but they have a good structure and are very cultivated. Their pH is sometimes below 6 at the surface. They are excellent oil palm soils when they are on mica schists and very good soils for food crops if they are on quartz schists and basic rocks. They can also be suitable for market gardening but with irrigation. However, these soils require a minimum of maintenance, a supply of manure, generally organic, and regular fallow.

4.2.4.5. Slightly evolved soils and lithosols

These are soils that are poorly developed and lithic erosion. Developed in particular on the Monts du Togo and the Monts Kabyè, these soils are sandy with a high proportion of coarse elements. The agricultural interest of these soils remains low. They can only be used for anti-erosive reforestation and pasture. However, limestone and phospho-potassium amendments would have improved their structures. In terms of pedology, due to the nature of the bedrock, the modelling and the process of pedogenesis, a distinction is made between soils on plateaus, soils on ancient alluvial deposits and floodplain soils.

4.2.4.6. Floors on trays

They are very varied and include indurated soils with concretions, soils with non-indurated concretions, poorly evolved raw minerals rich in rock debris, tropical ferruginous soils, indurated hydromorphic soils and thin, sandy hydromorphic soils with basic concretions. At the edge of the concreted or armoured plateaus, which are heavily attacked by erosion, and on isolated mounds, tropical ferruginous soils with little evolved indurated concretions develop.

4.2.4.7. Floors on old alluvium

On the deposits of the upper terrace, three soil classes can be distinguished :

- soils with sesquioxides of low ferralitic and ferruginous content: they are characterised by a light texture and the absence of cuirass or concretions on the upper 120 metres. These soils are very favourable for agriculture.
- soils with leached or indurated tropical ferruginous sesquioxides: these soils are sometimes very indurated with the development of a cuirass shell on the surface.
- hydromorphic mineral gley or pseudogley soils are made up of elongated beaches that form a transition between the area of ancient alluvium and the flood plain. The surface material consisting of coarse sands is of colluvial origin with a particulate structure.

4.2.4.8. Floodplain soils

Flood-prone areas are subject to alluvial inputs from overflow of the riverbeds in the area, particularly the Oti and Kara rivers; and colluvial inputs from lateral runoff. This double contribution makes them heterogeneous from a pedological point of view. The most important feature common to all these soils is the surface or shallow hydromorphy. Two classes of soils are identified:

- Poorly evolved soils of non climatic origin include families on colluvial and sandy alluvial soils. These soils are found along the banks of rivers where they form sandy-silt banks of varying importance;
- Mineral hydromorphic soils with gley or pseudogley are silty clay to beige sandy soils with traces of hydromorphy.

In summary, the geological substratum and pedology are also favourable for the Kara agropole. The soils are abundant and do not suffer from any restrictions in terms of their agronomic quality or the local population. However, the land status of the agropole's land should be properly discussed with the local population in order to avoid any attempts by the population to develop the land.

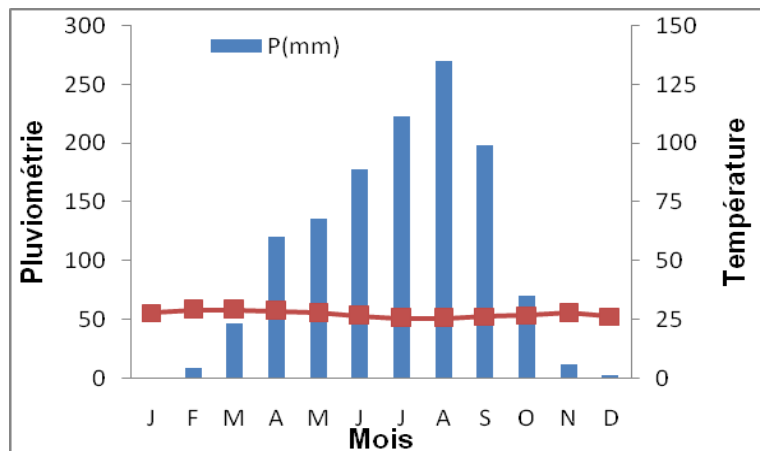
4.2.5. CLIMATE

4.2.5.1. Rainfall regime

The Kara region enjoys a tropical climate of the Sudano-Guinean type characterised by a rainy season (May to September) and a long dry season (October to April) which alternates for a few weeks with the harmattan, a dry wind from the north-east. This last season slows down agricultural activities and makes water supply more precarious, despite relatively high rainfall. It should be noted that the length of these respective seasons is subject to variations over time.

The dry season lasts about 6 months with 4 months (November, December, January and February) which are ecologically dry ($P = 2$ t on the Gaussen scale) (Figure 3). The rainy season covers 7 months with an average annual rainfall of between 1,200 and 1,600 mm.

Figure 3: Evolution of average rainfall in Kara between 2010 and 2019



Source: National Meteorological Department, 2020

The rainfall regime, which determines the seasons, sees the annual rhythm of rainfall vary from one year to the next according to these seasons. Thus in the dry season, rains are rare or even non-existent. Nevertheless, early rains can be observed towards the end of the dry season, early rains that immediately herald the rainy season.

As for the monthly rhythm, it varies according to whether the month is dry, mid-dry (beginning and end of the rainy season - April-May) or rainy (June-July-August-September). During the dry months (December to March) there is practically no rain, the semi-dry months have rainy or rainless days, whereas during the wet months it rains practically every day. It is mostly convergence and convection rain. In addition to these rains, the influence of the relief should be noted, which leads to orographic rains. As a result, it rains more in the mountainous sector. The orographic effect also affects the temperature. It is therefore relatively cooler in the higher parts of the massif than in the surrounding foothills and in the great eastern plain. Temperatures, relative humidity, insolation and evaporation therefore vary according to the relief, the months and the seasons throughout the year.

4.2.5.2. Temperature

The average temperature is 25°C with maxima and minima of 30 and 20°C respectively (Figure 1). The hottest months are February, March and April with maximums exceeding 40°C, while the coolest months of the year are July and August.

4.2.5.3. Humidity

Air humidity is at its lowest in the dry season and can drop as low as 18% in January and February. On the other hand, sunstroke is at its maximum with an average duration of 8 to 9 hours per day. The average evapotranspiration is 1650 mm/year. On a monthly basis, it is at its peak in the dry season, ranging from 150 to over 200 mm in January and February. This is the harmattan period. During the rainy season, air humidity increases more and more to a maximum of 99% or even 100%. On the other hand, sun exposure falls to about 4 hours a day.

4.2.5.4. Wind

A complex phenomenon linked to the annual displacement of the intertropical convergence zone (ZIC), the harmattan is a dry air mass, half cold, half hot, coming from the Sahara. Carried by an easterly flow, often laden with mineral and organic aerosols, its main effect is to cause a drop in hygrometry, especially during the day, and strong thermal variations between day and night. Its average speed is around 2 m / s with maximum gusts of wind that can reach 12 to 14 m / s. It is very dusty and gives rise to thick fogs and dry mists, which greatly reduces the intensity of the sun's rays on the ground and significantly reduces visibility. Dry and cold continental wind, very drying, its physiological impacts are very remarkable.

4.2.5.5. Sound environment

The noise environment in the project area was determined by measuring the noise level at the various hydro-agricultural development sites, tracks and mini-DWTPs and boreholes equipped with human-powered pumps.

The noise studies were carried out during the month of April 2018. The weather conditions were ideal. The wind was not strong enough to influence the noise measurements. The results of the noise environment in the project area are presented in Table 21.

Table 21: Value of noise level at dam sites

| Sites | Noise level db (A) | |
|-----------------------------------|--------------------|-------------|
| | Max Average | Medium Mini |
| Sites of the mini-dams | 45.9 | 34.7 |
| Irrigated perimeter sites | 46.7 | 38.3 |
| Tracks (crossing the conurbation) | 47.9 | 38.2 |
| Mini-AEP sites | 46.5 | 36.8 |

Source: Fieldwork: SCET/DECO/ March 2018

It can be seen from this table that the project area has a noise level well below the standard required by the WHO for the residential environment, which is 55 db in residential areas.

During the construction phase, this noise level will certainly be exceeded due to the use of vehicles and other construction machinery.

4.2.6. AGROPOLE AND CLIMATE CHANGE

4.2.6.1. Events

Climate change has become a forceful force in recent decades in the Sudano-Sahelian zone and particularly in Togo. Irregular rainfall and its spatio-temporal distribution, increasingly high air temperatures, intense droughts and floods that cause remarkable material and human damage, significant land degradation, greater fragility of ecosystems and their dynamics, and drainage structures (gutters, collectors, gutters, bridges, etc.). These are some of the elements that show that Togo's climate is changing, with the result that the environmental, socio-economic and food security problems facing the country are increasing.

These climate changes threaten first and foremost the primary sector, agriculture and animal husbandry. The living conditions and health of the Togolese population are largely dependent on these changes.

The climate changes at work in the Sudano-Sahelian zone and in particular in the project area will probably result (> 80% probability) in an increase in the frequency and duration of high intensity rainfall episodes, thus increasing the risk of flooding which will alternate with episodes of major drought. Indeed, according to the PANA-TOGO, floods, drought, poor distribution of rainfall, late rains and violent winds are the major climatic risks in the country, with drought seeming to cover the whole territory except for the coastal zone, which has a specific feature and where there is another risk, not the least of which is the rise in sea level and coastal erosion. It should be noted that with the latest climatic events, flooding is taking precedence over other risks with its share of material damage and loss of human life. It is becoming more and more frequent and is spreading throughout the country. The livelihoods most exposed to these risks are farming, livestock farming, marketing of agricultural products and market gardening.

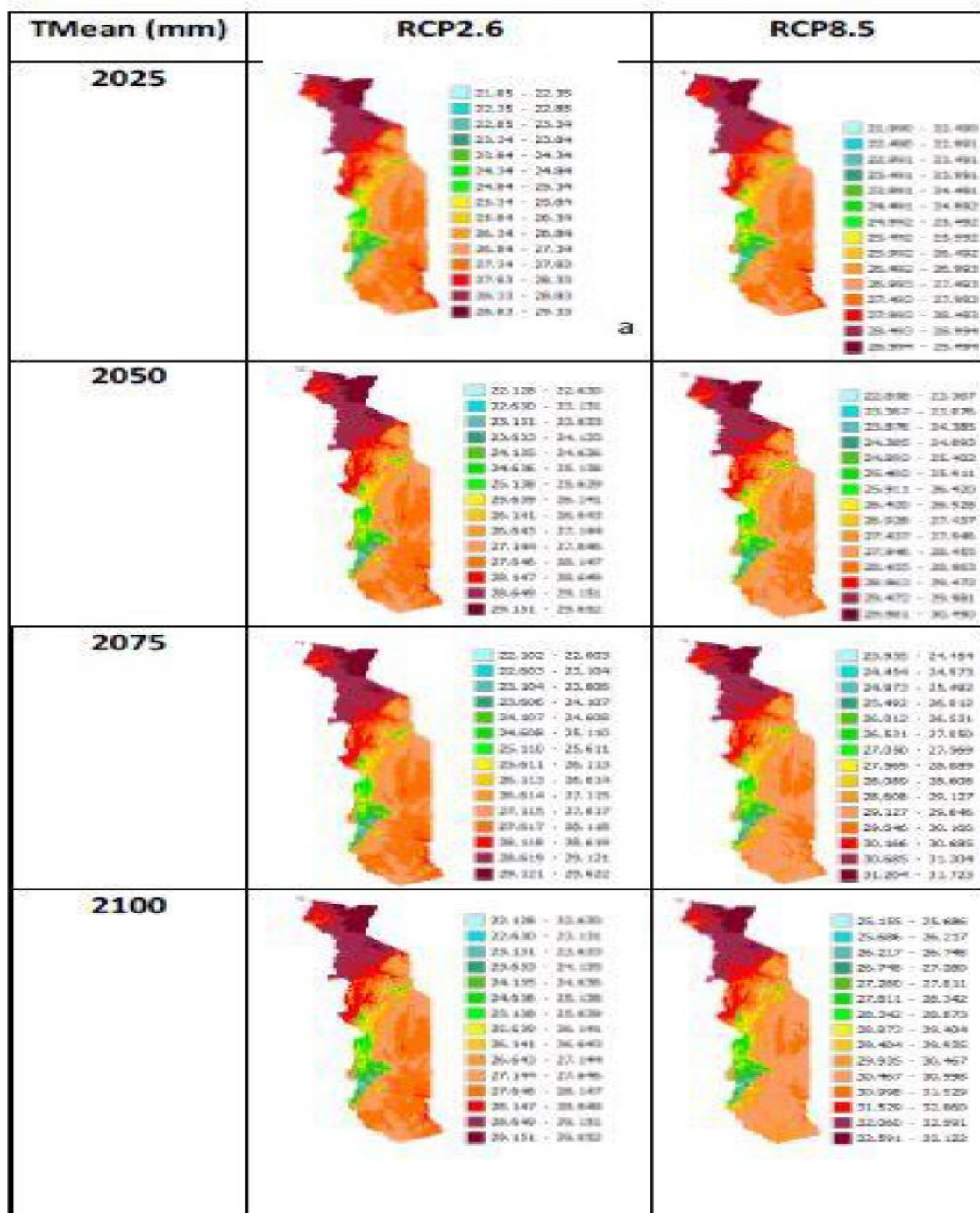
Togo's Third National Communication on Change (TCN) presents the changes in temperature and rainfall in 2025, 2050 and 2100 (Figure 12) compared to the baseline period centred on 1995 in the

RCP2 scenarios and shows the areas that will be severely affected by climate change compared to the baseline situation. Generally speaking, this climate variation will be dispersed over the entire national territory and will vary from 0.097% to 0.938% in terms of precipitation and from 0.568% to 0.718% in terms of temperature in 2025. In 2050, this variation will be between 0.140 and 1.361% depending on the region for rainfall and between 0.824 and 1.041% for temperatures.

Scenarios developed in the TCN show that large variations in temperature will be recorded in northern Togo in the prefectures of Tone, Tandjoaré, Kpendjal, and Cinkassé while large variations (increases) in rainfall will be recorded in northern Bassar, Dankpen and Kéran. Average temperatures are very likely to increase significantly, but the trend in average rainfall as well as in the occurrence of extreme rainfall events is completely uncertain but does not seem to deviate significantly from the "natural" irregularity.

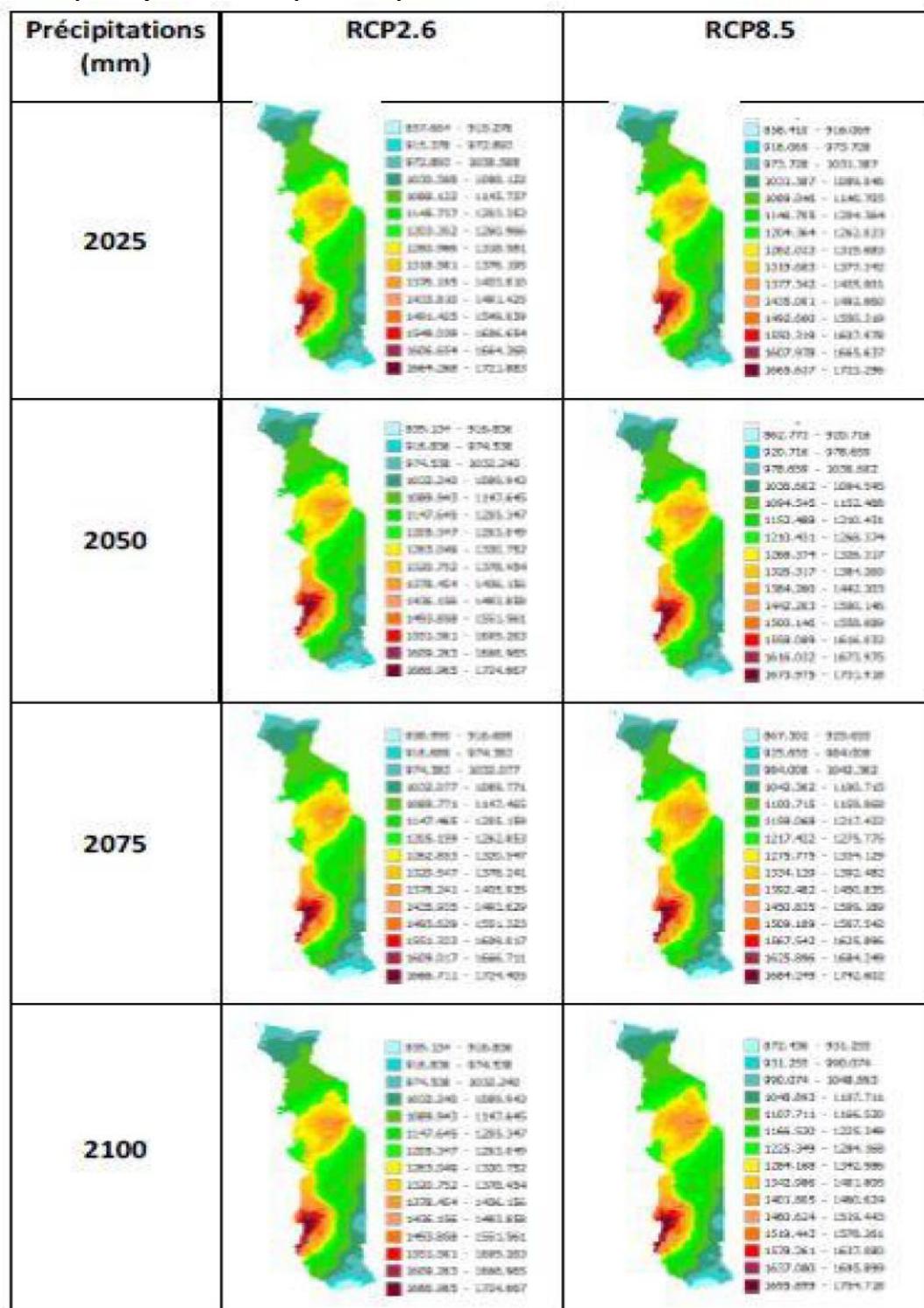
Figure 4: Variations in mean temperatures at different horizons according to the optimistic (RCP 2.6) and pessimistic (RCP 8.5) scenarios

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Source: Ministry of Environment and Forest Resources, Togo's Third National Communication on Climate Change, October 2015

Figure 5: Rainfall variations at different horizons according to the optimistic (RCP 2.6) and pessimistic (RCP 8.5) scenarios



Source: Ministry of Environment and Forest Resources, Togo's Third National Communication on Climate Change, October 2015

As the agropole of the Kara basin is expected to contribute to greenhouse gas emissions, adaptation measures are urgently needed to support the development of these communities.

Indeed, according to the PANA-TOGO, floods, drought, poor distribution of rainfall, late rains and violent winds are the major climatic risks in the country, with drought seeming to cover the whole territory except for the coastal zone, which has a specific feature and where another risk, not the least of which is the rise in sea level, is noted. It should be noted that with the latest climatic events, flooding is taking precedence over other risks with its share of material damage and loss of human life. It is becoming more and more frequent and is spreading throughout the country. The livelihoods most exposed to these risks are farming, livestock farming, marketing of agricultural products and market gardening.

According to PANA-TOGO, the impact of climate change on crops will be manifested through the concentration of CO_2 , which will affect crop productivity and phenology.

With regard to the impact of CO_2 concentration on crop productivity, according to J. Mellilo et al, (1990) cited in the NAPA-TOGO, atmospheric CO_2 concentrations will have reached about 750 ppmv in 2050 and 520 ppmv in 2100. This increase in concentration may modify plant metabolism and cause the biomass of C3 plants to increase, while C7 plants (including maize, sorghum, millet and rice) will react less. Weeds, most of which are C3 plants, will grow faster than crops, compete more severely with major cereal crops, especially maize and sorghum, the staple food of the country, and reduce their productivity by 5-10%; this could dangerously undermine the government's policy of food self-sufficiency.

Regarding the impact of CO_2 concentration on crop phenology, according to PANA-TOGO, changes in crop development and phenology can shorten or lengthen cycles and reduce or increase productivity. Changes may occur in the structure of carbohydrates, which could affect the nutritional value, organoleptic properties, storage capacity and commercial value of certain fruits and vegetables. Some medicinal plants may lose their effectiveness as a result of changes in the structure of their active ingredient. A high concentration of CO_2 will change the composition of the plants.

In terms of temperature and rainfall, the PANA-TOGO predicts that the increase in temperature and the decrease in rainfall could result in seasonal shifts; therefore, climatic instability manifested by a reduction in the length of wet periods, an increase in evapotranspiration and increased drying of the soil would lead to a disruption in the water supply regime of plants, with a consequent decrease in their productivity.

These climate changes threaten first and foremost the primary sector, agriculture and animal husbandry. The living conditions and health of the Togolese population are also largely dependent on these changes. The sectors that will be the most vulnerable are energy, agriculture, forestry and other land uses, and water resources.

Appropriate provisions should therefore be made for adaptation and resilience to climate change. These include the design and dimensioning of structures. The construction of mini-dams for water control for agriculture and the multiplication of mini-SWAGs and boreholes equipped with human-powered pumps for the supply of drinking water to the populations will contribute to the resilience of the populations of the agropole zone of the Kara basin to climate change.

4.2.6.2. Greenhouse gas emissions in Togo

According to the Third National Communication on Climate Change (TCNCC) and the First Updated Biennial Report (PRBA) of Togo on Climate Change, from 1995 to 2015, CO₂ emissions dominate the trend of direct GHGs with an average rate of increase of 437,419 Gg CO₂-e per year. They are followed by CH₄ emissions with 31.149 Gg CO₂-e per year and N₂O with 159.237 Gg CO₂-e per year. The overall growth rate is 78.87% between 1995 and 2015.

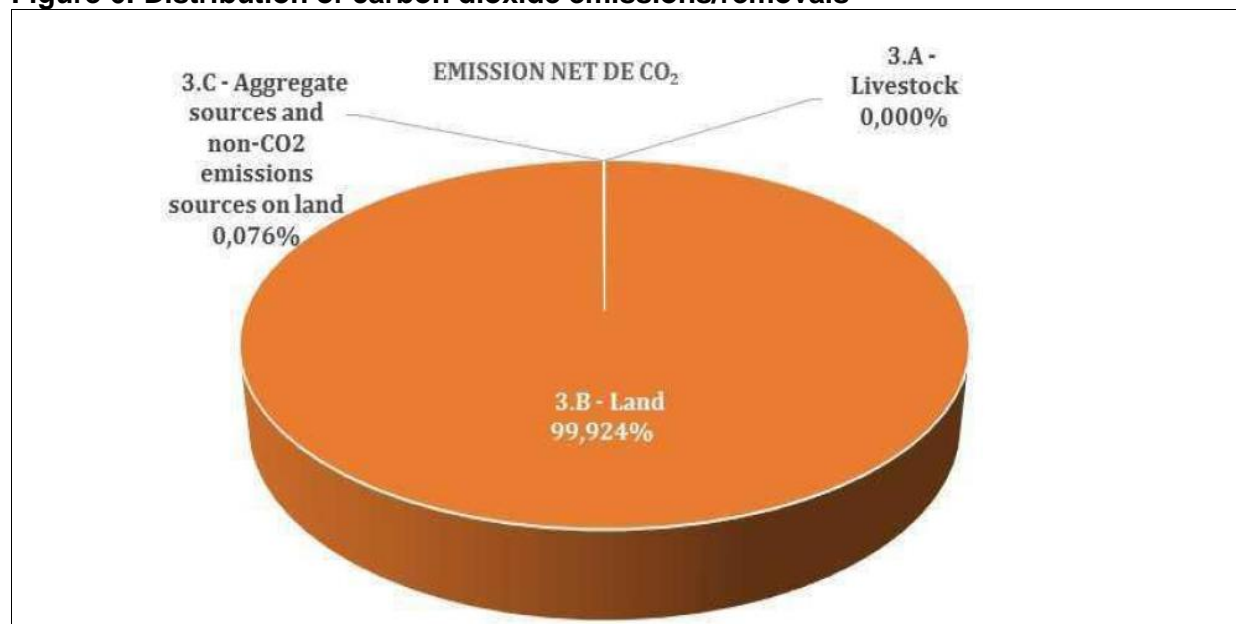
Total CO₂ emissions in 2013 will come mainly from forest land. Methane emissions mainly come from enteric fermentation with 34,636 Gg. Biomass burning contributed about 13.143 Gg of CH₄ and rice cultivation for 1.145 Gg. Soil management remains the key source of N₂O emissions with a total of 15,471 Gg emitted. No emissions of NMVOCs and SO_x are attributable to the AFAT sector (Agriculture, Forestry and Other Land Use).

In 2013, CO₂, CH₄ and N₂O emissions are estimated at 17098.024Gg 52.528Gg and 16.414Gg respectively.

4.2.6.2.1. Carbon Dioxide (CO₂) emissions

As CO₂ absorption is almost nil, emissions are distributed between forest land and aggregate and non-CO₂ emission sources. Forest land remains the main source of CO₂ emissions with 17101.964 Gg or 99.924%, while aggregated sources and non-CO₂ emission sources on land contribute only 12.997 Gg or 0.076% in 2013 (Figure 12).

Figure 6: Distribution of carbon dioxide emissions/removals



Source: Ministry of Environment and Forest Resources, 2013

4.2.6.2.2.

Methane emissions (CH₄)

The CH₄ emissions of 52,528Gg come from aggregated sources and non-CO₂ emission sources on land with a total of 1,139Gg or 2,126% and from livestock with 52,429Gg, corresponding to 97,874% (Figure 13).

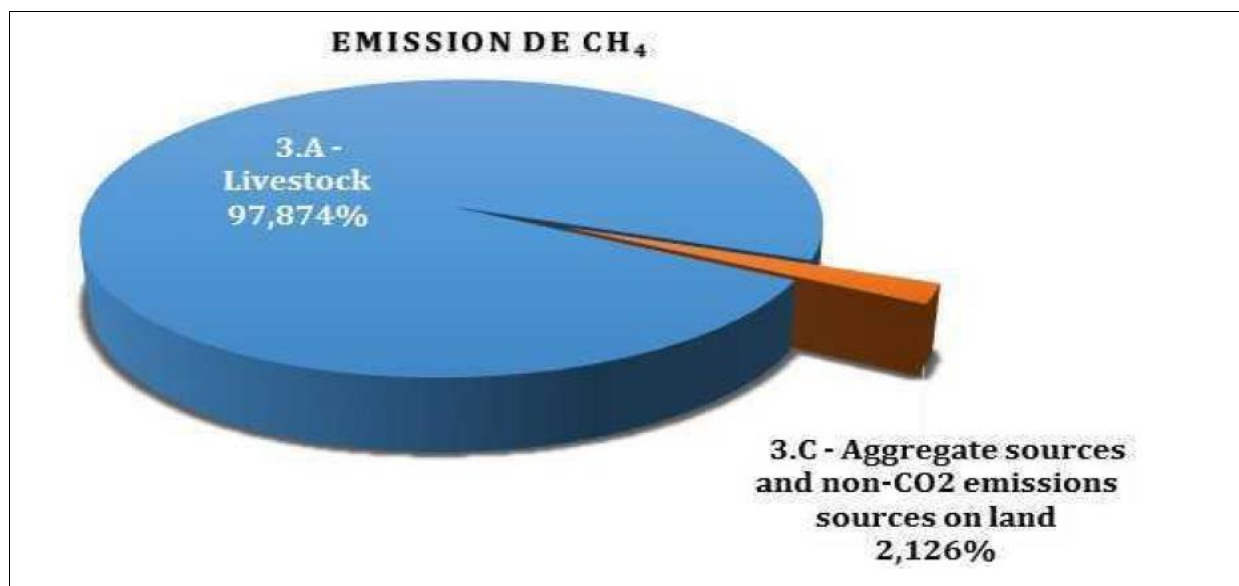


Figure 7: Distribution of methane emissions

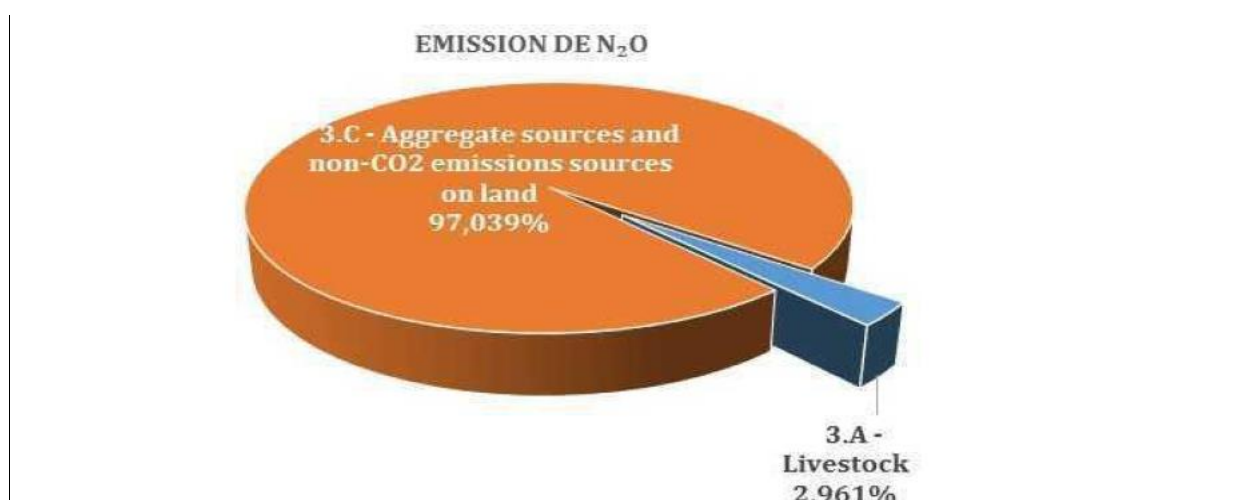
Source: Ministry of Environment and Forest Resources, 2013

4.2.6.2.3.

Emissions of Nitrogen Hemioxide (N₂O)

N₂O emissions from aggregate and non-CO₂ sources on land represent 15.928 Gg or 97.039% of total emissions. Those attributable to manure management represent 0.486 Gg or 2.961% (Figure 14).

Figure 8: Distribution of nitrous oxide emissions



Source: Ministry of Environment and Forest Resources, 2013

4.2.6.2.4.

Trends in direct GHG emissions

Decreasing trends in direct GHG emissions are observed over the period 1995 to 2015. Emissions range from 14290.113Gg CO₂-e in 1995 to 24490.921Gg CO₂-e in 2015, i.e. an increase rate of 73.38%

(Figure 15).

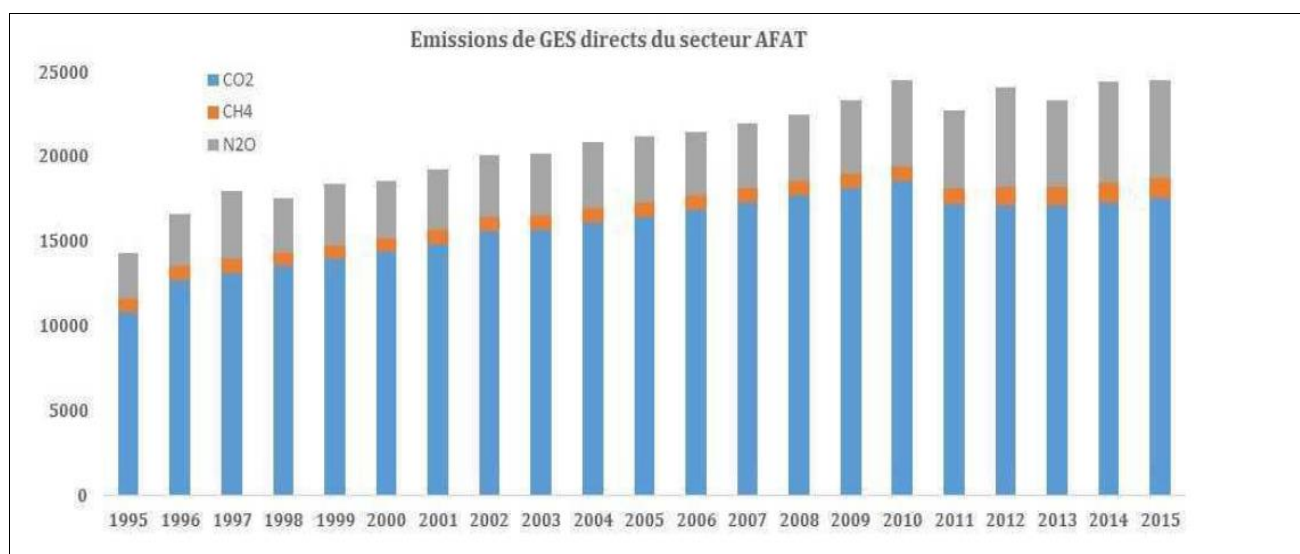


Figure 9: Trends in direct GHG emissions from the AFOLU sector

Globally, emission trends in Togo are clearly on the rise and in terms of CO₂-e, CO₂ emissions dominate the trend with an increase slope of 437.419 Gg CO₂-e per year. The overall growth rate amounts to about 78.87% for the 1995-2015 time series.

4.2.6.3. Adaptation and resilience projects

The projects selected in order of priority are:

- Adaptation of agricultural production systems in 3 regions through the implementation of cultivation techniques (CRA and agro-forestry) integrating climate change and the improvement of agro-meteorological information;
- Implementation of an early warning system to provide real-time information against flooding in the Maritime and Savannah Regions;
- Support and accompaniment of rural communities in the Plateaux and Savannah regions to prevent and control vector-borne diseases;
- Develop small-scale irrigation in lowland areas for existing groups of market gardeners in the central, Kara and Savannah regions, which could curb the rural exodus.
- Support for the catchment of surface water resources in the Savannah and Kara Regions by multipurpose hillside reservoirs.

Togo has also submitted two projects to the GEF worth US\$10 million:

- The first project: Adaptation of Agriculture to Climate Change in Togo (ADAPT) was developed with IFAD support for an amount of 6 million dollars;
- The second project: Development of an early warning system has been integrated into a more comprehensive programme, the US\$ 4 million Integrated Disaster and Land Management Project (IDRLMP), which receives technical support from the World Bank.

To this should be added the project to develop 1000 hectares of lowlands for agro-sylvo-pastoral purposes for a total amount of nearly 7 billion CFA francs financed by the West African Economic and Monetary Union (UEMOA), some of which are taking place in the project area.

4.2.6.4. Agropole of the Kara basin in relation to climate change

The agropole of the Kara basin will be able to contribute to climate change by emitting methane in rice cultivation, nitrous oxide and methane from cattle breeding, as these two gases are greenhouse gases.

With the appearance of anaerobic bacteria in rice fields, there will be a significant release of methane (CH₄) (biogas), which is a greenhouse gas contributing to climate change phenomena. Methane (CH₄) is considered, after carbon dioxide (CO₂) and freons, to be the third gas responsible for global warming due to the greenhouse effect.

Intensive rice cultivation contributes to global warming. It is responsible for the emission of a fairly large quantity of methane (about 120g per kilo of rice), a powerful greenhouse gas.

Methane emission from rice fields results from antagonistic but interdependent microbial activities: in anaerobic soil, so-called "methanogenic" bacteria produce methane, and in aerobic areas, i.e. where oxygen is available (the roots, the soil in contact with them and the soil-water interface), so-called "methanotrophic" bacteria consume up to 90% of the methane produced. It is the methane not consumed by the methanotrophic bacteria that is emitted into the atmosphere.

In rice cultivation, therefore, two types of bacteria act: anaerobic bacteria that develop in the absence of oxygen; and aerobic bacteria that develop in the presence of oxygen.

Anaerobic bacteria produce methane and aerobic bacteria consume it. The irrigation techniques commonly used for rice cultivation favour the main development of anaerobic bacteria, so the methane production is only marginally absorbed by aerobic bacteria. As a result, a large amount of methane is produced and released into the atmosphere. However, alternative irrigation techniques could be used to limit this problem.

The production of one kilogram of rice corresponds to the emission of 120 g. of methane³. Rice farming is therefore the world's second largest producer of methane with 60 million tonnes/year, just behind ruminant farming, which generates 80 million tonnes/year.

³ IRD, *Reducing methane emissions from rice fields*, Scientific news sheets, IRD Microbiology Laboratory, Marseille, May 1999.

4.3. BIOLOGICAL ASPECTS

4.3.1. GENERAL OVERVIEW OF THE VEGETATION

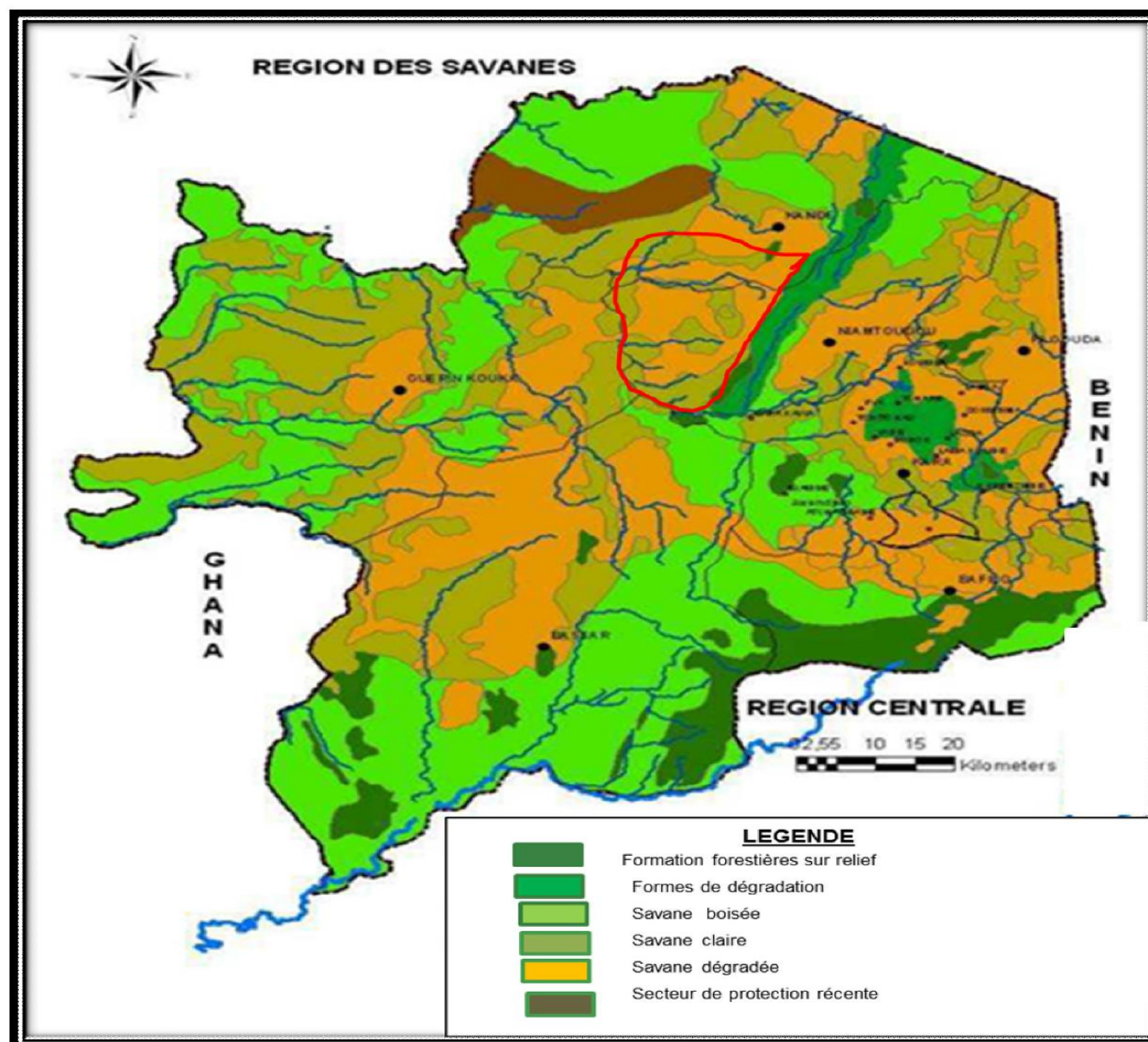
Generally speaking, the project area is part of the dry continental zone of Togo. It is Ecofloristic Zone II of Togo according to Vanpraet 1981. The plant formations encountered in this region depend on the nature of the soil and the forms of the landscape, but above all, in this densely populated area, on the most often intense human activity: bush fires that pass every year; intensive farming methods. The climatic formation known in this area is the Sudano-Guinean savannah with trees. However, within the framework of the present studies, the field has shown that this original ecosystem is intensely cultivated, with several plant formations linked to the different ecosystems in place, depending on the planned developments.

The different plant coverings are forest formations on relief, formations with several forms of degradation, wooded savannah, light savannah, degraded savannah and areas of recent protection (Map 9).

Like the Kara region, the flora in the area is dominated by Sudanian savannahs and is characterised by an interweaving of dry forests and Sudanian-type savannahs. This vegetation is mainly composed of shrubs and herbaceous plants, marked by a few gallery forests along certain watercourses. The vegetation is characterised by an interweaving of dry forests and Sudanian-type savannahs and is the main source of fuel for the inhabitants of the region and for grazing livestock.

The main species are the shea tree (*Vitellaria paradoxa*), the nere (*Parkia biglobosa*), the terminalia (*Terminalia sp.*), the kapok tree (*Bombax constatum*). Numerous oil palms (*Elaeis guineensis*) grow naturally in the region, these alternate with mango (*Mangifera indica*), baobab (*Adansonia digitata*) and rowan (*Borassus aethiopum*). In addition to these primitive species, others such as acacias (*Acacia sp.*), eucalyptus (*Eucalyptus sp.*) and teak (*Tectona grandis*) are introduced into the region by the technical services of rural development and rural planning. The herbaceous stratum is dominated by grasses, in particular, the grass (*Imperata cylindrica*), *Cymbopogon pronimus*, *Loudetia togoensis*, *Andropogon psendapucus* and various *pennisetum*.

Map 7: Vegetation of the Kara Region



Source: IDEACONSULT International/2017 based on the Atlas of Regional Development 1985

4.3.2. VEGETATION ON THE SITE OF THE PLANNED DEVELOPMENTS

4.3.2.1. Vegetation on the development right-of-way of the Broukou mini-dam and its water reservoir.

The right-of-way of the Broukou mini-dam development site is made up of a mosaic of shrubby savannahs, small forest galleries along the watercourses, fallow land where woody species only present a shrubby development and agroforests.

4.3.2.1.1. Shrubby savannah with Terminalia macroptera and Combretum colinum

Can be confused with fallow land, the natural shrubby savannah vegetation observed on the site is dominated by the following woody species: *Terminalia macroptera*, *Terminalia avicennioides*, *Anogeissus*

leiocarpus and *Combretum colinum* of the Combretaceae family (Photo 8); *Piliostigma thonningii*, *Detarium microcarpum*, *Daniellia oliveri* and *Burkea africana* of the Ceasalpiniaceae family; *Nauclea latifolia*, *Gardenia ternifolia*, *Gardenia erubescens*, *Gardenia aqualla* of the Rubiaceae family. It is worth noting the presence of other very frequent species scattered in these savannas or fallow lands, notably *Bombax costatum*, a Bombacaceae; *Vitellaria paradoxa*, a Sapotaceae and *Parkia biglobosa*, a Mimosaceae.

The other woody trees identified in this savannah are : *Isobertinia doka*, *Azelia africana*, *Berlinia grandiflora* of the family Ceasalpiniaceae ; *Crossopteryx febrifuga* of the family Rubiaceae, *Acacia spp*, *Entada abyssinica*, *Prosopis africana* of the family Mimosaceae ; *Mangifera indica*, *Lannea kertingii*, *Lannea acida* of the family Anacardiaceae, *Ceiba pentandra* of the family Bombacaceae, *Hymenocardia acida* of the family Hymenocardiaceae ; *Diopyros mespiliformis* of the family Ebenaceae ; *Pterocarpus erinaceus* of the family Fabaceae; *Strychnos spinosa* of the family Loganiaceae; *Securidaca longipedunculata* of the family Polygalaceae; *Hannoa undulata* of the family Simaroubaceae; *Ficus spp* of the family Moraceae; *Vitex doniana* of the family Verbenaceae; *Khaya senegalensis* of the family Meliaceae; *Lophyra lanceolata* of the family Ochnaceae, *Hyphaene thebaica*, *Borassus aethiopum*, *Elaeis guineensis* of the family Arecaceae.

Photo 8: View of the shrubby savannah at *Terminalia macroptera* at *Combretum colinum*

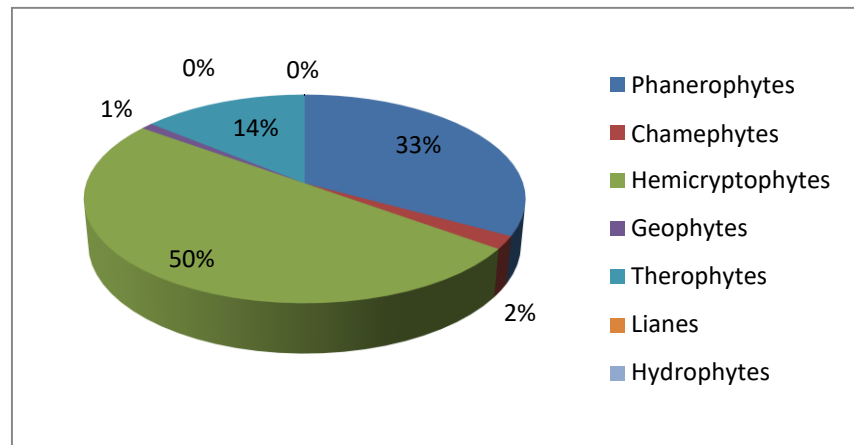


Source: SCET-Tunisia/DECO IC, 2018

The herbaceous carpet remarkable at the time of the present studies in this savannah is essentially dominated by the Poaceae family, such as the grasses *Hyparrhenia sp*, *Andropogon gayanus*, *Panicum sp*, *Imperata cylindrica* and other herbaceous plants such as *Chromolaena odorata* (Asteraceae), *Aframomum alboviolaceum* (Zingiberaceae), *Hyptis suaveolens* (Lamiaceae), *Securinega virosa* (Euphorbiaceae) etc...

The area of the project area that is visibly left fallow has been profoundly disrupted by agricultural activities and the activities of timber exploitation, heating or charcoal making. In this shrubby savannah, Hemicryptophytes represent more than 50% of the biological spectrum (Figure 5). They therefore constitute the main part of the floristic procession. They are followed by Phanerophytes (33%), Therophytes (14%), Geophytes (3%), Chamephytes (2%), Lianes (0%) and Epiphytes (0%).

Figure 10: Biological spectrum of the shrubby savannah with *Terminalia macroptera* and *Combretum colinum*



4.3.2.1.2.

Gallery to gallery forests at *Diospyros mespiliformis*

They border the main rivers and streams that cross the project area. These gallery forests, completely stripped of their plant species, are a relic after the valuable species have been squandered by timber operators. *Diospyros mespiliformis* of the Ebenaceae family (Photo 9), *Lannea kerstingii* of the Anacardiaceae family, *Bombax costatum* of the Bombacaceae family, *Pterocarpus erinaceus* of the Fabaceae family, *Anogeissus leiocarpus* of the Combretaceae family and *Daniellia oliveri* and *Afzelia africana* of the Ceasalpiniaceae family are very large species (almost 20 metres high) dominating *Margaritaria discoidea*, a characteristic species of this ecosystem. There are also significant numbers of *Vitex doniana* and *Elaeis guineensis* and other species.

Photo 9: View of the gallery forest at *Diospyros mespiliformis*



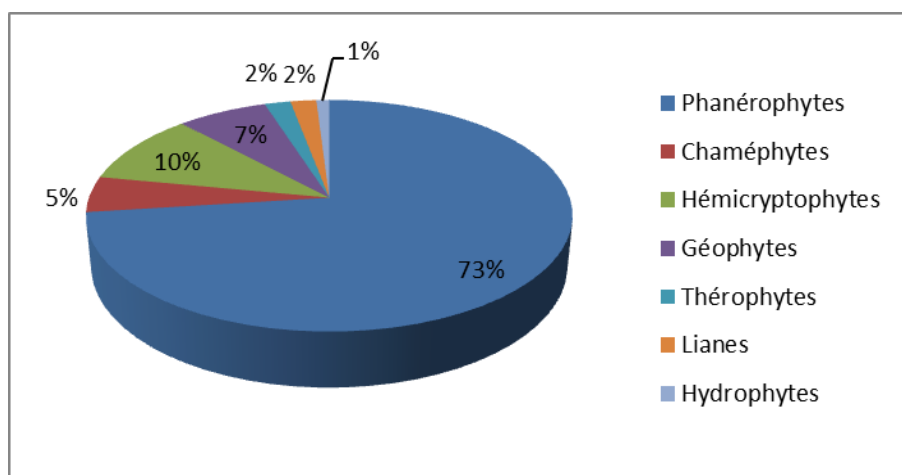
Contrary to the savannahs, these forests have 4 strata :

- An upper tree stratum with a coverage rate of less than 10% ;
- An inferior tree stratum (about 30%) ;
- A shrub stratum (40%) ;
- A grassy stratum (20%).

In addition, in this formation we can observe lianas, notably *Pergularia diamea* of the Asclepiadaceae family and *Opilia celtidifolia* of the Opiliaceae family. Most of these forests are heavily disturbed as the tree and shrub species on the fringe of the major bed have been destroyed by timber operators, charcoal makers and transhumant Peulhs.

In these forests Phanerophytes represent more than 73% of the biological spectrum (Figure 6). They therefore constitute the main part of the floristic procession. They are followed by Hemicriptophytes (10%), Geophytes (7%), Therophytes (2%) and Epiphytes (1%) and Hydrophytes (1%).

Figure 11: Biological spectrum of the gallery forest at *Diospyros mespiliformis*



Source: SCET-Tunisia/DECO IC, 2018

4.3.2.1.3. Agroforestry or agroforestry parks with *Parkia biglobosa*, *Vitellaria paradoxa* and *Adansoni digitata* dominating

In the management landscape of mini-dam 01, which is essentially agrarian, agroforests are based on nere (*Parkia biglobosa*), shea (*Vitellaria paradoxa*) (Photo 10), baobab (*Adansonia digitata*) and Kapokier (*Ceiba pentandra*). Apart from these park tree species, other tree species are visible on the site. These are the Mango Tree (*Mangifera indica*), the Oil Palm (*Elaeis guineensis*), and the Rooster (*Borassus aethiopum*).

In addition to *Parkia biglobosa* and *Adansonia digitata*, species such as *Pterocarpus erinaceus*, *Azelia africana* are also present but are pruned either by herders for livestock or by people for food (case of Baobab).

Photo 10: View of an agroforest in *Parkia biglobosa* and *Vitellaria paradoxa*



Source: SCET-Tunisia/DECO IC, 2018

4.3.2.2. Vegetation on the development right-of-way of the irrigated perimeter from the Broukou mini-dam.

Stretching in an essentially agrarian landscape, the area to be irrigated from the Broukou mini-dam is dominated by crops, fallow land, shrubby savannah with trees, forest galleries, specific formations in the lowlands and tree-lined parks at *Vitellaria paradoxa*. The floristic composition of the wooded parks is as follows:

4.3.2.2.1. Shrubby savannah with *Terminalia macroptera* and dominant *Combretum colinum*

Can be confused with fallow land, the natural shrubby savannah vegetation observed on the site is dominated by the following woody species: *Terminalia macroptera*, *Combretum colinum* (Photo 11) *Terminalia avicennioides* and *Anogeissus leiocarpus* of the Combretaceae family; *Piliostigma thonningii*, *Detarium microcarpum*, *Daniellia oliveri* and *Burkea africana* of the Ceasalpiniaceae family; *Nauclea latifolia*, *Gardenia ternifolia*, *Gardenia erubescens*, *Gardenia aqualla* of the Rubiaceae family. It is worth noting the presence of other very frequent species scattered in these savannas or fallow lands, notably *Bombax costatum*, a Bombacaceae; *Vitellaria paradoxa*, a Sapotaceae and *Parkia biglobosa*, a Mimosaceae.

Photo 11: View of the shrubby savannah and *Terminalia macroptera* and *Combretum colinum*



Source: SCET-Tunisia/DECO IC, 2018

In addition to the species identified in the right-of-way of the Broukou mini-dam, other species have been identified on the perimeter to be irrigated from the latter. These are *Lonchocarpus sericeus* of the Fabaceae family, *Sterculia setigera* of the Sterculiaceae family of *Khaya senegalensis*, *Azadirachta indica* of the Meliaceae family of *Annona senegalensis* of the Annonaceae family, *Eucalyptus sp* of the Myrtaceae family, *Blighia sapida* of the Sapindaceae family, *Gmelina arborea* of the Verbenaceae family and *Mitragyna inermis* of the Rubiaceae family, mainly found in floodplains, *Isoberlinia doka*, *Azalia africana*, *Berlinia grandiflora* of the Ceasalpiniaceae family; *Crossopteryx febrifuga* of the family Rubiaceae, *Acacia spp*, *Entada abyssinica*, *Prosopis africana* of the family Mimosaceae; *Mangifera indica*, *Lannea kerringii*, *Lannea acida* of the family Anacardiaceae, *Ceiba pentandra*, *Adansonia digitata* of the family Bombacaceae, *Hymenocardia acida* of the family Hymenocardiaceae; *Diopyros mespiliformis* of the family Ebenaceae; *Pterocarpus erinaceus* of the family Fabaceae; *Strychnos spinosa* of the family Loganiaceae; *Securidaca longipedunculata* of the family Polygalaceae; *Hannoa undulata* of the family Simaroubaceae; *Ficus spp* of the family Moraceae; *Vitex doniana* of the family Verbenaceae; *Khaya senegalensis* of the family Meliaceae; *Lophyra lanceolata* of the family Ochnaceae, *Hyphaene thebaica*, *Borassus aethiopum*, *Elaeis guineensis* of the family Arecaceae.

The herbaceous carpet remarkable at the time of the present studies in this savannah is essentially dominated by the Poaceae family such as the grasses *Hyparrhenia sp*, *Andropogon gayanus*, *Panicum sp*, *Imperata cylindrica* and other herbaceous plants such as *Chromolaena odorata* (Asteraceae), *Aframomum albobviolaceum* (Zingiberaceae), *Hyptis suaveolens* (Lamiaceae), *Securinega virosa* (Euphorbiaceae) etc...

The area of the project area that is visibly left fallow has been profoundly disrupted by agricultural activities and the activities of timber exploitation, heating or charcoal making.

The biological profile of this plant formation is similar to that represented at the Broukou mini-dam development site. This can be explained by the fact that both the present site and that of the dam are subject to the same human pressure in this region.

4.3.2.2.2. Forests galleries with *Diopyros mespiliformis*, *Lannea kertingii* and *Daniellia oliveri* dominating

They border the main rivers and streams that cross the project area. These gallery forests, completely stripped of their plant species, are a relic after the valuable species have been squandered by timber operators. *Diopyros mespiliformis* of the Ebenaceae family, *Lannea kertingii* of the Anacardiaceae family, *Daniellia oliveri* and *Azelia africana* of the Ceasalpiniaceae family (Photos 12 and 13), *Anogeissus leiocarpus* of the Combretaceae family, *Bombax costatum* of the family Bombacaceae and *Pterocarpus erinaceus* of the family Fabaceae, are the very large species that dominate *Margaritaria discoidea*, a characteristic species of this eco-system. There are also a significant number of plants of *Raphia sudanica*, *Vitex doniana* and also *Elaeis guineensis* and other species such as *Malacantha alnifolia*, a Sapotaceae.

Photo 12: View of the gallery forest at *Diopyros mespiliformis*, at *Daniellia oliveri* dominating



Source: SCET-Tunisia/DECO IC, 2018

Photo 13: View of the gallery forest at *Lannea kertingii* dominating the landscape.



Source: SCET-Tunisia/DECO IC, 2018

Contrary to the savannahs, these forests have 4 strata :

- An upper tree stratum with a coverage rate of less than 10% ;
- An inferior tree stratum (about 30%) ;
- A shrub stratum (40%) ;
- A grassy stratum (20%).

In addition to the species identified in the dam's right-of-way, there are also lianas, notably *Cissus petiolata* of the Vitaceae family and *Mucuna poggei* of the Fabaceae family, as well as species identified in the dam's right-of-way, namely *Pergularia diamea* of the Asclepiadaceae family and *Opilia celtidifolia* of the Opiliaceae family,

Most of these forests are heavily disturbed as the tree and shrub species on the fringe of the major bed have been destroyed by timber operators, charcoal makers and transhumant Peulh.

The biological profile of this gallery is similar to that of the Broukou mini-dam development site due to the fact that both the present site and the dam site are subject to the same human pressure in this region.

In addition to the natural plant formations, the project also includes plantations of Teak (*Tectona grandis*) and *Eucalyptus* (*Eucalyptus sp*) (Photo 14).

Photo 14: View of a teak plantation (*Tectona grandis*) and *Eucalyptus* on site



Source: SCET-Tunisia/DECO IC, 2018

4.3.2.2.3. Agroforestry or agroforestry parks with *Parkia biglobosa*, *Vitellaria paradoxa* and *Adansoni digitata* dominating

In the development landscape of the Broukou mini-dam, which is essentially agrarian, the agroforests are based on néré (*Parkia biglobosa*), shea (*Vitellaria paradoxa*) (Photos 15 and 16), baobab (*Adansonia digitata*) and Kapokier (*Ceiba pentandra*). Apart from these species of trees in the parks, other stands of trees can be seen on the site. These are the Mango Tree (*Mangifera indica*), the Oil Palm (*Elaeis guineensis*), and the Rooster (*Borassus aethiopum*), apart from *Hyphaene thebaica* of the family Arecaceae which is an additional species. In addition to *Parkia biglobosa* and *Adansonia digitata*, species such as *Pterocarpus erinaceus*, *Azelia africana* are also present, but are pruned either by breeders for livestock or by populations for food (case of Baobab).

Photo 15: View of a foot of Néré from a park agroforester in *Parkia biglobosa*



Photo 16: View of a young agroforest in *Vitellaria paradoxa*



Source: SCET-Tunisia/DECO IC, 2018

4.3.2.3.

Vegetation on the development right-of-way of the Kpassidè mini-dam and its water retention area

The right-of-way of the Kpassidè mini-dam development site is made up of a mosaic of wooded savannahs, small forest galleries, and a few fields.

4.3.2.3.1.

Wooded savannah with *Daniellia oliveri* and *Terminalia macroptera* dominating the landscape.

Can be confused with fallow land, the natural shrubby savannah vegetation observed on the site is dominated by the following woody species: *Daniellia oliveri*, *Piliostigma thonningii*, *Detarium microcarpum*, and *Burkea africana* of the Ceasalpiniaceae family, *Terminalia macroptera* (Photo 17), *Terminalia avicennioides*, *Anogeissus leiocarpus* and *Combretum colinum* of the Combretaceae family; *Nauclea latifolia*, *Gardenia ternifolia*, *Gardenia erubescens*, *Gardenia aqualla* of the Rubiaceae family. It is worth noting the presence of other very frequent species scattered in these savannas or fallow lands, notably *Vitellaria paradoxa*, a Sapotaceae and *Parkia biglobosa*, a Mimosaceae.

Photo 17: View of the wooded savannah, *Daniellia oliveri* and *Terminalia macroptera*



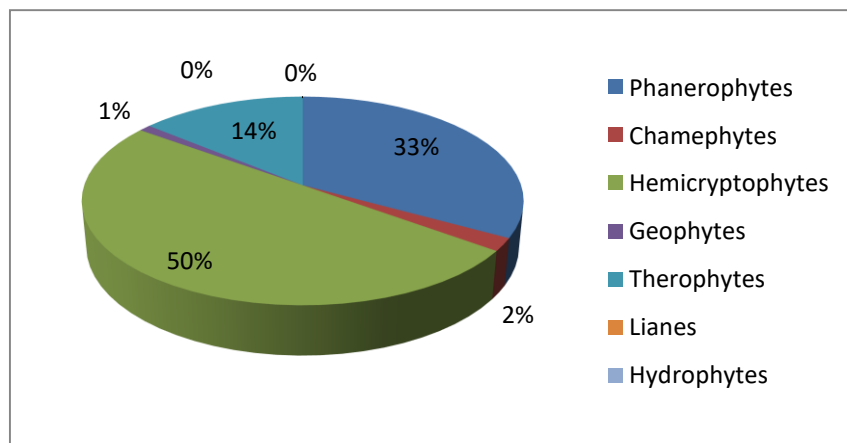
Source: SCET-Tunisia/DECO IC, 2018

The other woody trees identified in this savannah are : *Isobertinia doka*, *Azvelia africana*, *Berlinia grandiflora* of the family Ceasalpiniaceae ; *Crossopteryx febrifuga* of the family Rubiaceae, *Acacia spp*, *Entada abyssinica*, *Prosopis africana* of the family Mimosaceae ; *Cussonia kirkii* of the family Araliaceae, *Mangifera indica*, *Lannea kertingii* of the family Anacardiaceae, *Hymenocardia acida* of the family Hymenocardiaceae ; *Diopyros mespiliformis* of the family Ebenaceae ; *Pterocarpus erinaceus* of the family Fabaceae; *Hannoa undulata* of the family Simaroubaceae; *Ficus spp* of the family Moraceae; *Vitex doniana* of the family Verbenaceae; *Khaya senegalensis* of the family Meliaceae; *Lophira lanceolata* of the Ochnaceae family, *Hyphaene thebaica*, *Borassus aethiopum*, *Elaeis guineensis* of the Arecaceae family, *Gmelina arborea* of the Verbenaceae family and *Blighia sapida* of the Sapindaceae family.

The herbaceous carpet remarkable at the time of the present studies in this savannah is essentially dominated by the Poaceae family such as the grasses *Hyparrhenia sp*, *Andropogon gayanus*), *Hyptis suaveolens* (Lamiaceae), *Securinega virosa* (Euphorbiaceae) etc...

The project area is visibly less penetrated by the populations, which leaves a rather tight vegetation formation. Figure 7 shows the biological spectrum of the wooded savannah site with *Daniellia oliveri* and *Terminalia macroptera* dominating.

Figure 12: Biological spectrum of the wooded savannah with *Daniellia oliveri* and *Terminalia macroptera* dominating.



Source: SCET-Tunisia/DECO IC, 2018

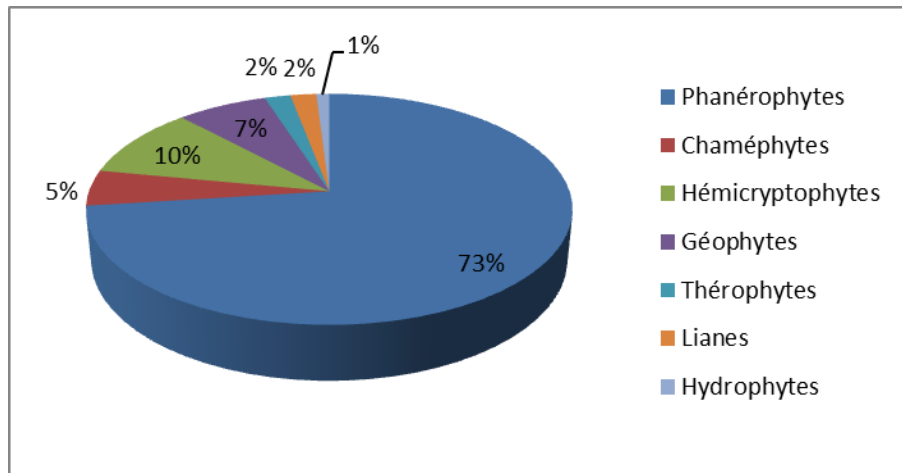
4.3.2.3.2. Daniellia oliveri dominating

Forests galleries with *Diopyros mespiliformis* and

They border the main rivers and streams that drain the project area. These gallery forests, completely stripped of their plant species, are a relic after the valuable species have been squandered by timber operators. *Diopyros mespiliformis* of the Ebenaceae family, *Daniellia oliveri*, *Isobertinia doka*, and *Azvelia africana* of the Ceasalpiniaceae family, *Lannea kertingii* of the Anacardiaceae family, *Bombax costatum* of the Bombacaceae family, *Pterocarpus erinaceus* of the Fabaceae family are very large species that dominate this ecosystem. There are also significant numbers of *Vitex doniana* and *Elaeis guineensis* and other species.

Figure 8 shows the biological spectrum of the gallery forest with *Diospyros mespiliformis* and *Daniellia oliveri* dominating

Figure 13: Biological spectrum of the gallery forest with *Diospyros mespiliformis* and *Daniellia oliveri* dominating.



Source: SCET-Tunisia/DECO IC, 2018

4.3.2.4. Vegetation on the development right-of-way of the irrigated perimeter from the Kpassidé mini-dam.

The area to be irrigated from the Kpassidé dam is dominated by shrubby savannahs, forest galleries, parks with trees in *Vitellaria paradoxa*, fallow land and crops resulting from the intensive agrarian practices in this landscape. The floristic composition of these formations is as follows:

4.3.2.4.1. Shrubby savannah with *Terminalia macroptera* and *Combretum colinum* dominating

Can be confused with fallow land, the natural shrubby savannah vegetation observed on the site is dominated by the following woody species: *Anogeissus leiocarpus*, *Terminalia macroptera*, *Terminalia avicennioides*, and *Combretum colinum* of the Combretaceae family; *Azalia africana*, *Piliostigma thonningii*, *Detarium microcarpum* and *Daniellia oliveri* of the Ceasalpiniaceae family; *Cussonia kirkii* of the family Araliaceae, *Nauclea latifolia*, *Gardenia ternifolia*, *Gardenia erubescens*, *Gardenia aqualla* of the family Rubiaceae. It is worth noting the presence of other very frequent species scattered in these savannas or fallow lands, notably *Bombax costatum*, a Bombacaceae; *Vitellaria paradoxa*, a Sapotaceae and *Parkia biglobosa*, a Mimosaceae.

In addition to the species identified in the right-of-way of the Kpassidé dam, other species have been identified on the perimeter to be irrigated from the latter. These are, *Sterculia setigera* of the Sterculiaceae family, *Khaya senegalensis*, *Azadirachta indica* of the Meliaceae family, *Annona senegalensis* of the Annonaceae family, *Eucalyptus sp* of the Myrtaceae family, *Blighia sapida* of the Sapindaceae family, *Gmelina arborea* of the Verbenaceae family and *Mitragyna inermis* of the Rubiaceae family, mainly found in floodplains.

The other woody trees identified in this savannah are : *Isobertinia doka*, *Azelia africana*, *Berlinia grandiflora* of the family Ceasalpinaceae ; *Crossopteryx febrifuga* of the family Rubiaceae, *Acacia* spp, *Entada abyssinica*, of the family Mimosaceae ; *Mangifera indica*, *Lannea kerringii*, *Lannea acida* of the family Anacardiaceae, *Ceiba pentandra*, *Adansonia digitata* of the family Bombacaceae, *Hymenocardia acida* of the family Hymenocardiaceae; *Diopyros mespiliformis* of the family Ebenaceae; *Pterocarpus erinaceus* of the family Fabaceae; *Strychnos spinosa* of the family Loganiaceae; *Securidaca longipedunculata* of the family Polygalaceae; *Hannoa undulata* of the family Simaroubaceae; *Ficus* spp of the family Moraceae; *Vitex doniana* of the family Verbenaceae; *Khaya senegalensis* of the family Meliaceae; *Lophira lanceolata* of the family Ochnaceae, *Hyphaene thebaica*, *Borassus aethiopum*, *Elaeis guineensis* of the family Arecaceae.

The herbaceous carpet remarkable at the time of the present studies in this savannah is essentially dominated by the Poaceae family such as the grasses *Hyparrhenia* sp, *Andropogon gayanus* and other herbaceous plants such as *Aframomum albviolaceum* (Zingiberaceae), *Hyptis suaveolens* (Lamiaceae), *Securinega virosa* (Euphorbiaceae) etc...

4.3.2.4.2. Forests galleries in *Daniellia oliveri* and *Syzygium guineense* dominate

These gallery forests, completely stripped of their plant species, border the main rivers and streams in the project area and are a relic after the valuable species have been squandered by timber operators.

However, species such as *Syzygium guineense* of the family Myrtaceae (Photo 18), *Daniellia oliveri*, *Berlinia grandiflora* and *Azelia africana* of the family Ceasalpinaceae, *Diospyros mespiliformis* of the family Ebenaceae, *Lannea kerringii* of the family Anacardiaceae, *Bombax costatum* of the family Bombacaceae, *Pterocarpus erinaceus* of the family Fabaceae. There are a significant number of plants of *Raphia sudanica*, *Vitex doniana* and also *Mitragyna inermis* of the Rubiaceae family and other species.

Photo 18: View of the gallery forest at *Syzygium guineense* dominating the view.



Source: SCET-Tunisia/DECO IC, 2018

Contrary to the savannahs, these forests have 4 strata :

- An upper tree stratum with a coverage rate of less than 10% ;
- An inferior tree stratum (about 30%) ;
- A shrub stratum (40%) ;
- A grassy stratum (20%).

In addition, lianas can be observed in this formation, notably *Pergularia diamea* of the Asclepiadaceae family, *Opilia celtidifolia* of the Opiliaceae family, *Cissus petiolata* of the Vitaceae family and *Mucuna poggei* of the Fabaceae family.

Most of these forests are heavily disturbed as the tree and shrub species on the fringe of the major bed have been destroyed by timber operators, charcoal makers and transhumant Peulhs. In addition to the natural plant formations, fallow land with a floristic composition similar to that of the shrubby savannah can also be found.

4.3.2.4.3. Agroforestry or agroforestry parks with *Parkia biglobosa*, *Vitellaria paradoxa* and *Adansoni digitata* dominating

In the development landscape of the irrigated perimeter from the Kpassidè mini-dam, which is essentially agrarian, agroforests are based on nere (*Parkia biglobosa*), shea (*Vitellaria paradoxa*), baobab (*Adansonia digitata*) and Kapokier (*Ceiba pentandra*). Apart from these species of trees in the parks, other tree species can be seen on the site. These are the Mango Tree (*Mangifera indica*), the Oil Palm (*Elaeis guineensis*), and the Rooster (*Borassus aethiopum*). In addition to *Parkia biglobosa* and *Adansonia digitata*, species such as *Pterocarpus erinaceus*, *Azelia africana* are also present but are pruned either by herders for livestock or by people for food (case of Baobab).

4.3.2.5. Vegetation on the development right-of-way of the Léon mini-dam and its water retention area

The right-of-way of the Léon dam development site is made up of a mosaic of wooded savannas at *Daniellia oliveri*, forest galleries along the watercourses and fallow land.

4.3.2.5.1. Wooded savannah of *Daniellia oliveri*

The wooded savannah observed on the site is dominated by the following woody species: *Daniellia oliveri* of the Ceasalpiniaceae family (Photo 19); *Terminalia macroptera*, *Terminalia avicennioides* and *Anogeissus leiocarpus* of the Combretaceae family; *Piliostigma thonningii*, *Detarium microcarpum* of the Ceasalpiniaceae family; *Nauclea latifolia*, *Gardenia ternifolia*, *Gardenia erubescens*, *Gardenia aqualla* of the Rubiaceae family. It is worth noting the presence of other very frequent species scattered in these savannas or fallow lands, notably *Bombax costatum*, a Bombacaceae; *Vitellaria paradoxa*, a Sapotaceae and *Parkia biglobosa*, a Mimosaceae.

Photo 19: View of the wooded savannah in *Daniellia oliveri*



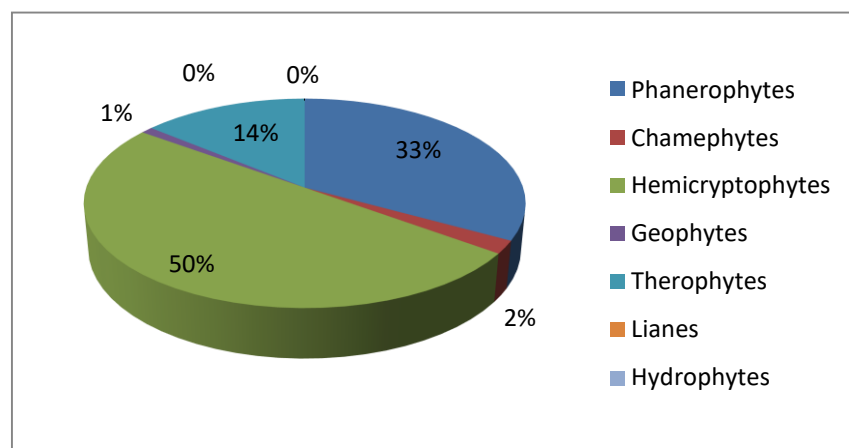
Source: SCET-Tunisia/DECO IC, 2018

The other woody trees identified in this savannah are : *Burkea africana*, *Isobertia doka*, *Azalia africana* of the family Ceasalpinaceae; *Acacia* spp, *Entada abyssinica*, *Prosopis africana* of the family Mimosaceae; *Mangifera indica*, *Lannea kerringii*, *Lannea acida* of the family Anacardiaceae, *Ceiba pentandra*, *Adansonia digitata* of the family Bombacaceae, *Hymenocardia acida* of the family Hymenocardiaceae; *Diopyros mespiliformis* of the family Ebenaceae; *Pterocarpus erinaceus* of the family Fabaceae; *Strychnos spinosa* of the family Loganiaceae; *Securidaca longipedunculata* of the family Polygalaceae; *Hannoa undulata* of the family Simaroubaceae; *Ficus* spp. of the family Moraceae; *Vitex doniana* of the family Verbenaceae; *Khaya senegalensis* of the family Meliaceae; *Cussonia kirkii* of the family Araliaceae, *Borassus aethiopum*, *Elaeis guineensis* of the family Arecaceae.

The herbaceous carpet remarkable at the time of the present studies in this savannah is essentially dominated by the Poaceae family such as the grasses *Hyparrhenia* sp, *Andropogon gayanus*, *Panicum* sp and other herbaceous plants such as *Hyptis suaveolens* (Lamiaceae), *Securinega virosa* (Euphorbiaceae) etc...

Figure 9 shows the biological spectrum of the wooded savannah in *Daniellia oliveri*

Figure 14: Biological spectrum of the wooded savannah in *Daniellia oliveri*



Source: SCET-Tunisia/DECO IC, 2018

4.3.2.5.2. Forest galleries in *Lannea kerstingii* dominating

They border the main rivers and streams that cross the project area. These gallery forests, completely stripped of their plant species, are a relic after the valuable species have been squandered by timber operators. *Lannea kerringii* of the Anacardiaceae family, *Pterocarpus erinaceus* of the Fabaceae family (Photo 20), *Diopyros mespiliformis* of the Ebenaceae family, and *Daniellia oliveri* and *Azalia africana* of the Ceasalpinaceae family constitute the very large species of this ecosystem. There are also large numbers of *Raphia sudanica*, *Vitex doniana* and also *Elaeis guineensis* and other species.

Photo 20: View of the gallery forest at *Lannea kerstingii* and at *Pterocarpus erinaceus* dominating



Source: SCET-Tunisia/DECO IC, 2018

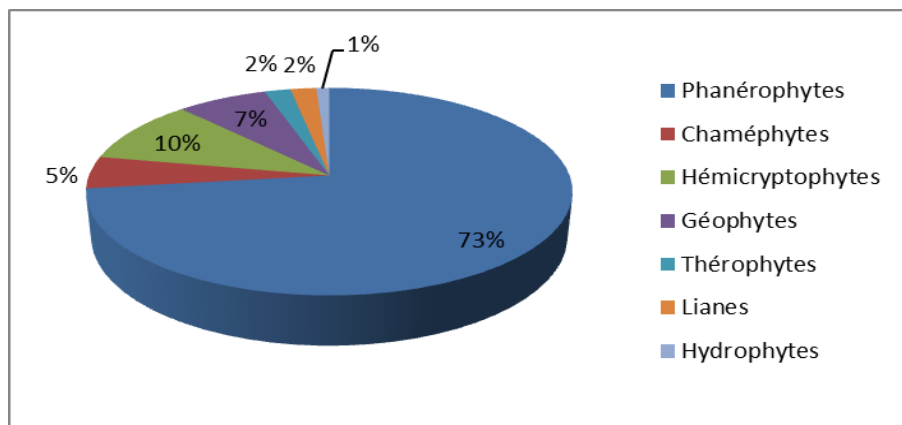
Contrary to the savannahs, these forests have 4 strata :

- An upper tree stratum with a coverage rate of less than 10% ;
- An inferior tree stratum (about 30%) ;
- A shrub stratum (40%) ;
- A grassy stratum (20%).

In addition, lianas can be observed in this formation, notably *Pergularia diamea* of the Asclepiadaceae family, *Opilia celtidifolia* of the Opiliaceae family, *Cissus petiolata* of the Vitaceae family and *Mucuna poggei* of the Fabaceae family.

Figure 10 shows the biological spectrum of the wooded savannah at *Lannea kerstingii*

Figure 15: Biological spectrum of the gallery forest at *Lannea kerstingii* dominating the landscape.



Source: SCET-Tunisia/DECO IC, 2018

4.3.2.6. Vegetation on the development right-of-way of the irrigated perimeter from the Léon mini-dam.

Stretching in an essentially agrarian landscape, the area to be irrigated from the Léon dam is dominated by crops, fallow land, shrubby savannah with trees, forest galleries, specific formations in the lowlands and wooded parks in *Vitellaria paradoxa*. The floristic composition of the wooded parks is as follows:

4.3.2.6.1. Wooded savannah with *Terminalia macroptera* and *Combretum colinum* dominating the landscape.

Can be confused with fallow land, the natural shrubby savannah vegetation observed on the site is dominated by the following woody species: *Terminalia macroptera*, *Terminalia avicennioides*, *Anogeissus leiocarpus* and *Combretum colinum* of the Combretaceae family (Photo 21); *Piliostigma thonningii*, *Detarium microcarpum*, *Daniellia oliveri* and *Burkea africana* of the Ceasalpiniaceae family; *Nauclea latifolia*, *Gardenia ternifolia*, *Gardenia erubescens*, *Gardenia aqualla* of the Rubiaceae family. It is worth noting the presence of other very frequent species scattered in these savannas or fallow lands, notably *Bombax costatum*, a Bombacaceae; *Vitellaria paradoxa*, a Sapotaceae and *Parkia biglobosa*, a Mimosaceae.

Photo 21: View of the shrubby savannah at *Terminalia macroptera* at *Combretum colinum*



Source: SCET-Tunisia/DECO IC, 2018

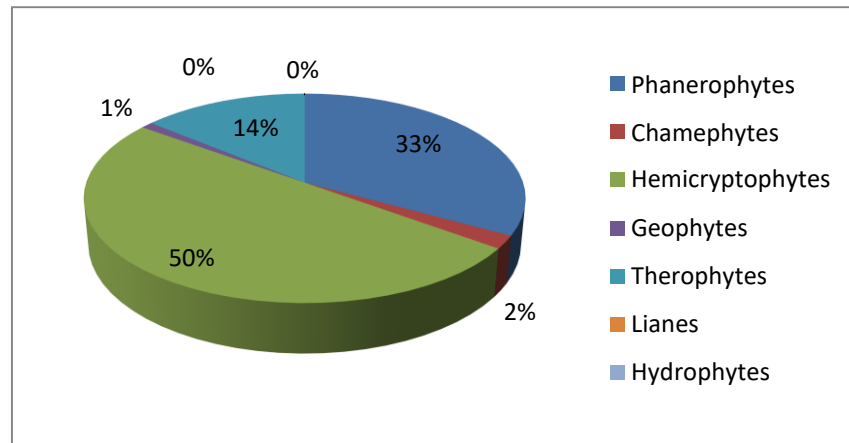
In addition to the species identified in the right-of-way of the Broukou dam, two other species have been identified on the perimeter to be irrigated from the latter. These are *Lonchocarpus sericeus* of the Fabaceae family, *Sterculia setigera* of the Sterculiaceae family of *Khaya senegalensis*, *Azadirachta indica* of the Meliaceae family of *Annona senegalensis* of the Annonaceae family, *Eucalyptus sp* of the Myrtaceae family, *Blighia sapida* of the Sapindaceae family, *Gmelina arborea* of the Verbenaceae family and *Mitragyna inermis* of the Rubiaceae family, mainly found in floodplains.

The other woody trees identified in this savannah are : *Isobertlinia doka*, *Azalia africana*, *Berlinia grandiflora* of the family Ceasalpiniaceae ; *Crossopteryx febrifuga* of the family Rubiaceae, *Acacia spp*, *Entada abyssinica*, *Prosopis africana* of the family Mimosaceae ; *Mangifera indica*, *Lannea kertingii*, *Lannea acida* of the family Anacardiaceae, *Ceiba pentandra*, *Adansonia digitata* of the family Bombacaceae, *Hymenocardia acida* of the family Hymenocardiaceae ; *Diopyros mespiliformis* of the family Ebenaceae ; *Pterocarpus erinaceus* of the family Fabaceae; *Strychnos spinosa* of the family Loganiaceae; *Securidaca longipedunculata* of the family Polygalaceae; *Hannoa undulata* of the family Simaroubaceae; *Ficus spp* of the family Moraceae; *Vitex doniana* of the family Verbenaceae; *Khaya senegalensis* of the family Meliaceae; *Lophyra lanceolata* of the family Ochnaceae, *Hyphaene thebaica*, *Borassus aethiopum*, *Elaeis guineensis* of the family Arecaceae.

The herbaceous carpet remarkable at the time of the present studies in this savannah is essentially dominated by the Poaceae family such as the grasses *Hyparrhenia sp*, *Andropogon gayanus*, *Panicum sp*, *Imperata cylindrica* and other herbaceous plants such as *Hyptis suaveolens* (Lamiaceae), *Securinega virosa* (Euphorbiaceae) etc...

Figure 11 shows the biological spectrum of the wooded savannah in *Daniellia oliveri*

Figure 16: Biological spectrum of the wooded savannah in *Daniellia oliveri*



Source: SCET-Tunisia/DECO IC, 2018

4.3.2.6.2. Forests galleries in *Lannea kertingii* and *Daniellia oliveri* dominate

They border the main rivers and streams that cross the project area. These gallery forests, completely stripped of their plant species, are a relic after the valuable species have been squandered by timber operators. *Lannea kertingii* of the Anacardiaceae family, *Daniellia oliveri* and *Azelia africana* of the Ceasalpiniaceae family (Photo 22). *Diopyros mespiliformis* of the Ebenaceae family, *Pterocarpus erinaceus* of the Fabaceae family, *Bombax costatum* of the Bombacaceae family, are the very large species that dominate *Margaritaria discoidea*, a characteristic species of this ecosystem. There are plants of *Raphia sudanica*, *Vitex doniana* and also *Elaeis guineensis* in significant numbers and other species such as *Malacantha alnifolia*, a Sapotaceae.

Photo 22: View of the gallery forest with *Lannea kertingii* and *Daniellia oliveri* dominating



Source: SCET-Tunisia/DECO IC, 2018

Contrary to the savannahs, these forests have 4 strata :

- An upper tree stratum has a recovery rate of less than 10%;
- An inferior tree stratum (about 30%) ;
- A shrub stratum (40%) ;
- A grassy stratum (20%).

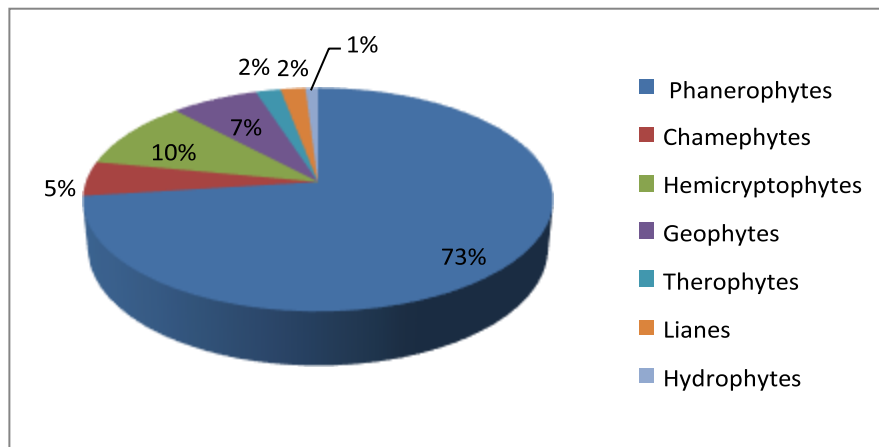
In addition to the species identified in the dam's right-of-way, there are also lianas, notably *Cissus petiolata* of the Vitaceae family and *Mucuna poggei* of the Fabaceae family, as well as species identified in the dam's right-of-way, namely *Pergularia diamea* of the Asclepiadaceae family and *Opilia celtidifolia* of the Opiliaceae family,

Most of these forests are heavily disturbed as the tree and shrub species on the fringe of the major bed have been destroyed by timber operators, charcoal makers and transhumant Peulh.

In addition, apart from the *Mitragyna inermis* species of the Rubiaceae family and *Terminalia macroptera* of the Combretaceae family specific to the rice-growing lowlands, a formation can be observed in this landscape whose floristic composition is similar to the forest galleries. *Daniellia oliveri* of the Ceasalpinaceae family, *Acacia spp.* of the Mimosaceae family and *Diospyros mespiliformis* of the Ebenaceae family can be found here.

Figure 12 shows the biological spectrum of the wooded savannah at *Lannea kertingii* and at *Daniellia oliveri*

Figure 17: Biological spectrum of the gallery forest with *Lannea kertingii* and *Daniellia oliveri* dominating.



Source: SCET-Tunisia/DECO IC, 2018

4.3.2.6.3. Agroforestry or agroforestry parks with *Parkia biglobosa*, *Vitellaria paradoxa* and *Adansonia digitata* dominating

In the Léon mini-dam development landscape, which is essentially agrarian, agroforests are based on *Parkia biglobosa*, shea (*Vitellaria paradoxa*), baobab (*Adansonia digitata*) (Photos 23 and 24) and Kapokier (*Ceiba pentandra*). Apart from these tree species in the parks, other tree species can be seen on the site. These are the Mango Tree (*Mangifera indica*), the Oil Palm (*Elaeis guineensis*), and the Rooster (*Borassus aethiopum*) (Photo 25), apart from *Hyphaene thebaica* of the family Arecaceae which is an additional species.

In addition to *Parkia biglobosa* and *Adansonia digitata*, species such as *Pterocarpus erinaceus*, *Azelia africana* are also present but are pruned either by herders for livestock or by people for food (case of Baobab).

Photo 23: View of an agroforest in *Adansonia digitata*



Source: SCET-Tunisia/DECO IC, 2018



Photo 24: View of an agroforest in *Parkia biglobosa*



Source: SCET-Tunisia/DECO IC, 2018

Photo 25: View of an agroforest in *Ceiba* and *Borassus aethiopum*



Source: SCET-Tunisia/DECO IC, 2018

4.3.3. FAUNA

The fauna in the study area is quite diverse. Today, the destruction of habitats, very strong demographic pressure and agricultural activities are seriously disturbing this fauna. Based on information collected from the local populations in the project area, this fauna includes systematic groups of Mammals, Birds, Amphibians or Batrachians Reptiles whose specific constitution is as follows :

4.3.3.1. Mammals

According to the literature and the local population, the mammals in the project area are made up of small individuals due to the destruction of natural habitats. The species commonly encountered are medium-sized taxa, in this case rodents, lagomorphs and primates. These are the Civet (*Viverra civetta*), various Genets (*Genetta spp.*), the Red Monkey (*Erythrocebus patas*), the Rabbit-eared Hare (*Lepus crawshayi*), the Burrowing Squirrel (*Xerus erythropus*), the Aulacode,

(*Thrynomys swinderianus*) of the cricetoma (Gambian rat or *Crycetomys gambianus*), the palm rat (*Xerus erythropus*) and other murids such as the Nile rat (*Arvicanthis niloticus*) and the gerbil (*Taterillus emini*). Ungulates include the duiker (*Sylvicapra grimmia*, *Cephalophus sylvicultor*, *Cephalophus dorsalis* *Cephalophus niger*), and the harnessed gib (*Tragelaphus scriptus*).

4.3.3.2. Avifauna

The avifauna is very diverse among vertebrates. According to information from the populations, the most frequently encountered birds are: the wild guinea fowl (*Numida meleagris*), the Gendarme Weaver, the Ox Heron (*Bubulcus ibis*), the White-backed Swift (*Apus affinis*), the Senegalese Coucal (*Centropus senegalensis*), the Common Francolin (*Francolinus bicalcaratus*), and the Turtle Dove (*Streptopelia ssp.*).

It should be noted that among this avifauna it is mainly guinea fowl, partridges, francolins and turtle doves that are most feared by farmers because of the enormous damage they cause on farms.

The different habitats of this area also shelter several species of birds of prey (*Lophaetus occipitalis*, *Stephanoaetus coronatus*, *Hieraetus spp.* *Circaetus gallicus...*), passerines and other groups (*Euplectes macroura*, *Pycnonotus barbatus*, *Turtur afer*, *centropus senegalensis*, *Crinifer piscator...*). However, species such as the Black Kite (*Milvus migrans*), Partridge (*Perdix*), *perdix* Turtle Dove (*Streptopelia ssp.*) could be observed on site.

4.3.3.3. Herpetofauna

The Herpetofauna group consists mainly of Reptiles and Amphibians. Among the Reptiles, we can distinguish the Chelonians, the Varans, the Ophidians. The herpetological fauna consists of one species of crocodile (*Crocodylus niloticus* and *Ostéolaemus tetraspis*), at least thirty species of snakes and 19 species of amphibians.

Apart from two species of Chelonians of the families Testunidae (*Kinixys spp*) and Pelomedusidae (*Pelusios niger*, *Pelomedusa subrufa*), the main species reported are mainly Ophidians belonging to the families Agamidae (*Agama agama* margouillats), Chamaeleonitidae (*Chamaleo sp* chameleons) and Varinidae (*Varanus niloticus*), *Varanus exanthematicus*), viperidae (*Echis ocellatus*, *Bitis arientans*, *Atheris spp*, *Atractaspis sp*), Boidae (*Gongylophis muelleri*), Natricidae (*Natriciteres variegata*, Elapidae (*Naja nigricolis*), Lamprophidae (*Psammphis elegans*), Pithonidae (*Python sebae*, *Python reguis*), Gekkonidae (geckos *Gekko sp*), Scincidae (skins), etc.

Venomous snakes are also commonly encountered in the Ophidian group. These are the Naja (*N. melanoleuca*, *N. nigricolis*), the Mambas (*Dendroaspis viridis*, and *D. jamesoni*).

Concerning Amphibians, Ranidae (*Hemeisus marmoratus*, *H. sudanese*, *Hylarana albolabris*, *H. galamensis*, *Phrynobatrachus latifrons*), Hyperolidae (*Kassina senegalensis*, *Leptopelis viridis*, *Africalus dorsalis*) and silvicultural species such as *Bufo superciliaris* and *Wernria preuss* are identified in the region.

4.4. **HUMAN ASPECTS**

4.4.1. **SOCIO-DEMOGRAPHIC CHARACTERISTICS OF THE PROJECT AREA**

4.4.1.1. **Number of employees and changes in the population**

The population of the Kara region reached 769,940 inhabitants according to the 4th General Census of Population and Housing in 2010. The region had 425,073 inhabitants at the time of the previous census in 1981. Table 22 shows the evolution of the population during the three intercensal decades, and this evolution, although sustained with an average annual growth rate of about 2%, remains lower than the growth recorded at the national level with an average annual growth rate of about 2.9%.

Table 22: Evolution of the population of the Kara Region by prefecture between 1981 and 2010

| Prefecture | Total population (RGPH 1981) | Total population (RGPH 2010) |
|--------------------------|------------------------------|------------------------------|
| Assoli | 32 447 | 51 491 |
| Bassar | 118 682 | 119 717 |
| Binah | 50 077 | 70 054 |
| Dankpen | (*) | 130 723 |
| Doufelgou | 58 996 | 78 635 |
| Keran | 44 607 | 94 061 |
| Kozah | 120 264 | 225 259 |
| Total Kara Region | 426 651 | 769 940 |
| Total Togo | 2 719 567 | 6 191 155 |

NB: (*) Dankpen was not yet a prefecture

Source: DGSCN: RGPH, November 1981, RGPH, November 2010

An analysis of this increase at the level of prefectures cannot be complete and coherent, since a new prefecture "Dankpen 4 " has been created and new administrative boundaries of prefectures and cantons have changed. However, the table clearly indicates that the two prefectures of Kéran and Kozah, whose main city (Kara) is also the capital city of the region, are the most dynamic and attractive with average annual growth rates of 2.61 and 2.19% respectively. An estimate based on the average annual growth rate of each prefecture gives the population numbers for the years 2017 and 2018 (Table 23).

Table 23: Population size in the Kara Region by prefecture in 2017 and 2018

| Prefectures | Total population 2018 | Total population 2019 |
|--------------------------|-----------------------|-----------------------|
| Assoli | 65 430 | 80 998 |
| Bassar | 120 257 | 148 871 |
| Binah | 83 285 | 103 102 |
| Dankpen | 131 312 | 162 556 |
| Doufelgou | 91 293 | 113 015 |
| Kéran | 138 438 | 171 378 |
| Kozah | 311 751 | 385 929 |
| Total Kara Region | 941 766 | 1,165 850 |

Source: Estimation Dr Tcheinti-Nabine Tchandikou, September 20205

⁴ Sub-prefecture of Guérin-Kouka created in 1964 and attached to the Bassar prefecture, then erected as a prefecture (Dankpen prefecture) in 1991

⁵ This estimate is made using the demographic statistical formula: $P_n = P_0 (1 + \theta)^n$ (P_n = number of people sought, P_0 = Known workforce (2010), θ = rate of increase and n = duration of increase)

4.4.1.2. Spatial distribution of the population

In general, the distribution of the population according to place of residence shows that the Kara region remains predominantly rural with a rate of 76%, higher than the national rural population rate of about 62%. The cantons concerned by the project are Léon, Aloum, Kadjalla and Tchoré. These different cantons have the following respective populations: 3172 inhabitants, 9003 inhabitants, 7956 inhabitants and Tchoré 3 840 inhabitants. These figures show that the canton of Aloum is the most populated in the area followed by the canton of Kadjalla, Tchoré and Léon. The agropole of the Kara basin will therefore be able to count on a large workforce located in the direct and indirect zone of influence.

The project's direct sites of influence are located in the cantons of Léon and Aloum. They are Léon, Bidjandè, Misséota and Broukou respectively. The population size of the villages concerned by the project is presented in Table 24.

Table 24: Number of people in the project area

| Villages | Populations 2010 | | | Populations 2019 |
|---------------|------------------|---------------|---------------|------------------|
| | H | F | Total | Total |
| Léon-Centre | 302 | 401 | 703 | 870 |
| Léon Yaka | 269 | 250 | 519 | 642 |
| Léon Agbandè | 80 | 92 | 172 | 213 |
| Anima | 449 | 607 | 1 056 | 1 307 |
| Bidjandè | 832 | 946 | 1 778 | 2 201 |
| Misséota | 687 | 713 | 1 400 | 1 733 |
| Broukou | 2 172 | 2 348 | 4 520 | 5 595 |
| Kpassidè | 224 | 247 | 471 | 583 |
| Tagbadè | 244 | 278 | 522 | 646 |
| Kadjalla | 967 | 919 | 1 886 | 2 335 |
| Agbassa | 1 259 | 1 373 | 2 632 | 3 258 |
| Agoundé | 1 376 | 1 500 | 2 876 | 3 560 |
| Tchoré-Centre | 280 | 298 | 578 | 716 |
| Tchoré-Nacoco | 309 | 315 | 624 | 772 |
| Ayiga | 87 | 92 | 179 | 222 |
| Odjindane | 115 | 144 | 259 | 321 |
| Total | 9 652 | 10 523 | 20 175 | 24 975 |

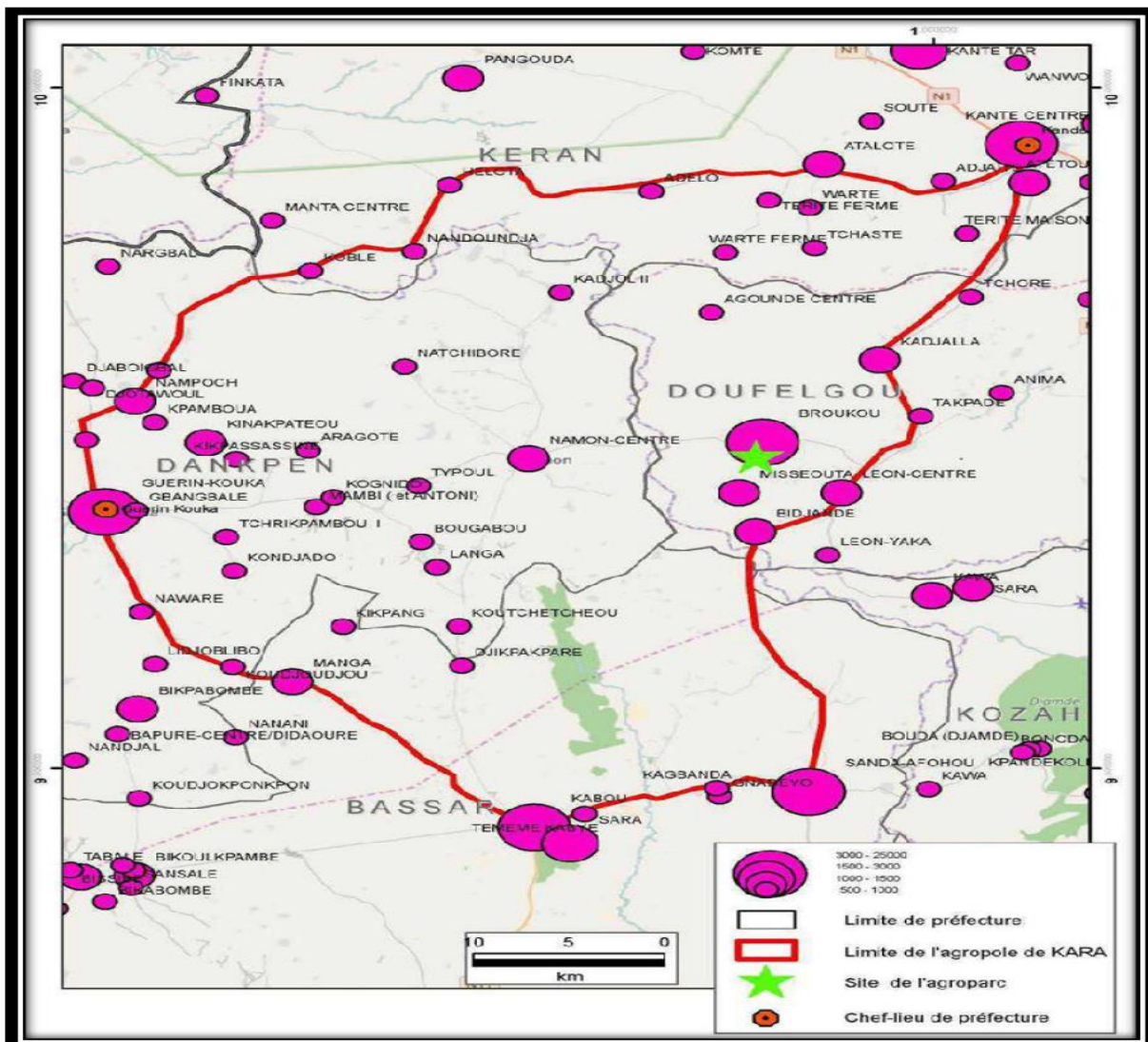
Source: RGPH 2010, Estimate 20206

Analysis of Table 24 shows that the female workforce in the zone is larger than the male workforce. The proportion of women in the population concerned by the project is in line with the general trend which shows that in Togo 48.6% of the population are men and 51.4% are women, i.e. 95 men for every 100 women. The Agropole project will have to take the female gender into account in the design of the project as it is equally suited to agricultural activities as the male gender.

For example, plots should be reserved for women. Similarly, market gardening must be developed in the project to occupy most of the women who are fond of this field. Map 10 shows the distribution of the different localities in the area and the size of their population.

⁶ Idem

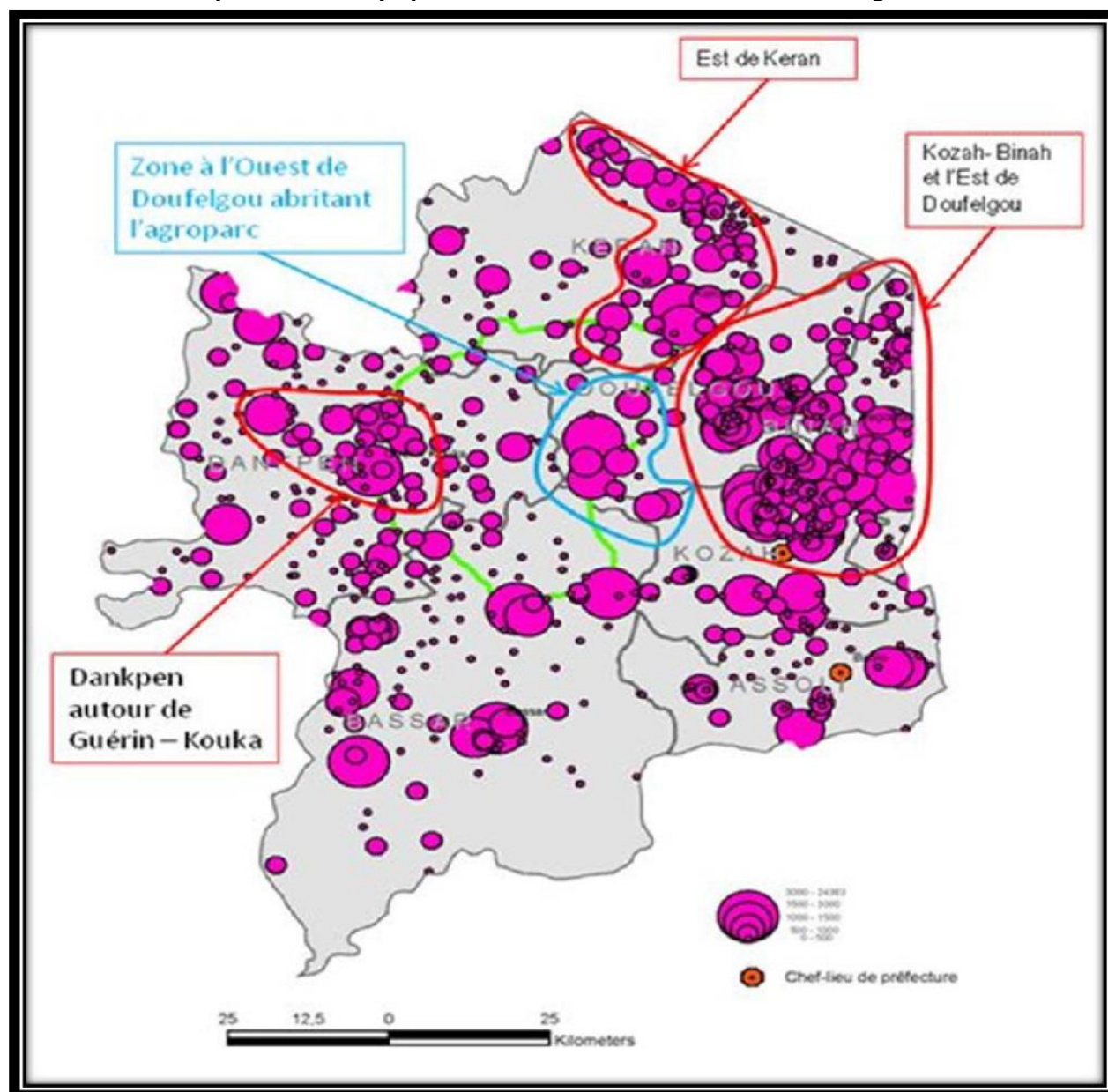
Map 8: Main localities in the project area



Source: IDEACONSULT International/2017 according to RGPH 2010

The area of the first start-up phase of the agropole of the Kara basin located west of Doufelgou constitutes the third settlement area in the Kara Region. There are five localities with more than 1,000 inhabitants, namely : Broukou (4,520 inhabitants), Bidjande (1,778 inhabitants), Misseouta (1,400 inhabitants), Kadjalla (1,886 inhabitants), Léon (1,394 inhabitants) (Map 11).

Map 9: Areas of population concentration in the Kara Region



Source: IDEACONSULT International/2017 according to RGPH 2010

4.4.1.3. Population density

The population density in the Kara region is characterised by a contrast between areas of high concentration and vast areas of demographic depression. Overall, the density in the region has almost doubled in 30 years, from 37 inhabitants/km² in 1981 to 66 inhabitants/km² in 2010. The Doufelgou prefecture, which for the most part hosts the agropole of the Kara basin in its first phase, is a major centre of settlement after the Kozah and Binah in the region, with 210 h/km², 146 h/km² and 62 h/km² respectively.

The population density and the human concentration in the area of the agropole reflect a human dynamic at the level and a non-negligible labour and production force for the project. The existence of these production basins is an important breeding ground for the success of the agropole project in the Kara region.

4.4.1.4. Ethnic composition

The population of the agropole area of the Kara basin is composed of various sociolinguistic groups. These are mainly the Lamba, Nawda, Kabyè, Cotoçoli (Tém), Konkomba and Peuhls.

History shows that the settlement of the area took place sequentially as follows:

- Until the 16th century the whole region was occupied by the Lama, ancestors of the present Kabyè and Lamba. Several invasions took place during the following centuries, leading to the arrival of new peoples and the withdrawal of the first occupants towards the mountainous massifs ;
- In the 17th century, it experienced voltaic contributions from Bassari (Bassar), Bariba and Djerma from the North-East followed by the arrival of Gourma from the North ;
- In the 18th and 19th centuries, there was a neo-Sudanese contribution from Niger and Sudan along the trade route leading to the ocean coast. These were the Hausa and the Cotoçoli ;
- To the west in the Oti plain, the Dagomba and Ashanti invasions led to the arrival of the Konkomba.
- the Losso or Naoudemba are said to have come from Burkina-Faso, infiltrating between the two preceding groups (Kabyè and Lamba) and adopting some of their traditions.

This ethnic heterogeneity, once a source of conflict and instability during the pre-colonial period, is today proving to be a melting pot of cultural wealth thanks to inter-ethnic marriages and crossbreeding which have led to peaceful coexistence. This cultural wealth is to be capitalised and consolidated within the framework of the project, taking into account the land and economic stakes of the project located in an indigenous environment.

4.4.1.5. Religious practices

Animism and Christianity predominate in the project area followed by Islam (Photos 26 to 30). The importance of animism in the area shows that the majority of the population is attached to tradition. This belonging to the animist religion justifies the existence of certain forms of ritual organisation of space, solutions to forms of external aggression of space, symbolic forms of ritual securing of land, fields and sacred practices of fertility of farms. The trend in both rural and urban areas is towards the conservation of ancestral religious practices that are considered concrete, efficient and imported religions that constitute the new references. Divided between the new religious references and the ancestral religions considered deviant, most of the inhabitants have a syncretistic tendency, even if the aspect of recourse to ancestral practices is overshadowed by several people. Thus, fetishes are perceptible in the houses and site of the project.

Photo 26: *View of family fetishes in concessions in Misséota*



Source: SCET-Tunisia/DECO IC, 2018



Photo 27: View of family fetishes in a concession at the Kpassidè dam site



Source: Dr Tcheinti-Nabine Tchandikou, September 2020



Photo 29: View of the Catholic Church of Léon

Photo 28: View of the Catholic church of Broukou



Source: Dr Tcheinti-Nabine Tchandikou, September 2020



Source: SCET-Tunisia/DECO IC, 2018

Photo 30: View of mosques in Broukou



Source: Dr Tcheinti-Nabine Tchandikou, September 2020



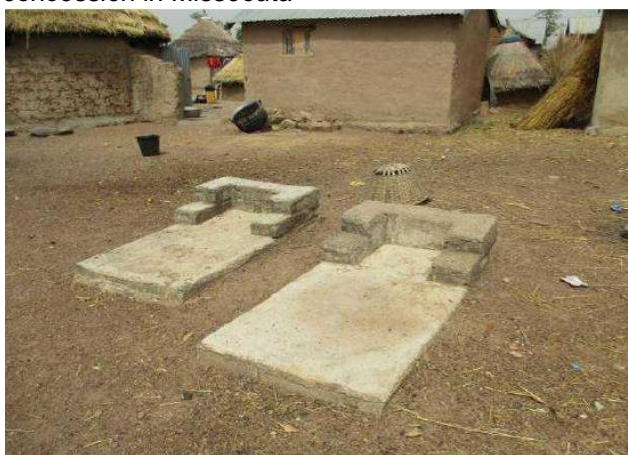
Source: SCET-Tunisia/DECO IC, 2018

4.4.1.6. sites

Sepulchral, archaeological and other historical heritage

At the level of sepulchral sites in the project area, there is not yet a common cemetery in all villages. The deceased are buried directly in the plot of the grieving family of the deceased (Photos 31 and 32).

Photo 31: Viewed from two tombs in one concession in Misseouta



Source: SCET-Tunisia/DECO IC, 2018

Photo 32: View of a tomb on the project site in Bidjandè



Source: SCET-Tunisia/DECO IC, 2018

With regard to the archaeology of the project area, the analysis of the archaeological and historical situation in the project area through literature and field investigations shows that there are no archaeological sites in the area. However, during the excavation work, preventive archaeology will be carried out⁷.

In terms of physical cultural resources, particularly social referents, the project area is home to two fetishes at the level of mini-dam 1 at Misséouta on the *Tanmbidou* River. These are the "Atchorou" fetish and the "Kikpéni" fetish. Furthermore, according to the testimonies of the populations of the M'bli district in the locality of Misseouta, a relic of sacred wood is present in the right-of-way of the planned development from mini-dam 2 on the *Kanga* River.

Another sacred forest is located in Bidjandè towards the *Kara* River (Photo 34).

⁷ The purpose of preventive archaeology is to ensure the detection, conservation or safeguarding of elements of the archaeological heritage affected or likely to be affected by public or private works contributing to developments.

Photo 33: *View of the sacred gallery of M'bli in Misséouta*



Source: SCET-Tunisia/DECO IC, 2018

Photo 34: *View of the sacred forest of Bidjandè*



Source: SCET-Tunisia/DECO IC, 2018

The agropole project will require the resettlement of fetishes according to the populations and the protection of the sacred wood of M'bli. This can only be done in consultation with village priests and elders.

4.4.1.7.

Migratory phenomenon in the project area

The migratory phenomenon is present in the area. According to the populations, this phenomenon is becoming more and more important. These movements are national and international. On the national level, there are permanent and temporary migrations. As far as permanent migration is concerned, young people migrate mainly to Kara and Lomé where they prefer to drive motorbike taxis. Temporarily, some migrate to the agricultural areas of South Togo, mainly to Notsè, Kpèlè, Assrama, Agbélouvé for sharecropping. These last migrations are agricultural in search of means of survival. The able-bodied arms of the project area benefit from the agricultural season in the south, which is earlier than in the north. They return at the beginning of the rainy season, probably in May-June, for their own agricultural activities.

Internationally, young people and adults migrate to Benin and Nigeria. These migrations are made easy by the proximity of localities in Benin. According to research, the phenomenon of emigration concerns both women and men.

In general, migration is a real phenomenon in the area and concerns a large proportion of the young population. These migratory movements can be explained by the search for well-being, the lack of rainfall, the difficulties of work in the fields in relation to the use of rudimentary tools and the deterioration in the terms of trade between buyers and agricultural producers. It is also the effect of the lack of integration infrastructures such as schools, health centres, drinking water, leisure centres and electricity. Poverty is therefore at the origin of external migration. This migration is sometimes encouraged by some parents through mimicry and the perception of the gains made by others in the area in relation to basic needs. What a respondent in Tchoré-Ayiga said about migration.

"Look, almost all the sheet metal roofs in this village are the work of external migration. Young people prefer to go to Nigeria and Benin. To cover the roof of their house, you have to travel. Parents encourage this phenomenon because the neighbour's son was able to cover his father's house. Even we who are teachers in the area understand that they really have no choice. In this context, schools are deserted. Those who stay there are only children who in the near future will follow in the footsteps of their brothers".

The project therefore has a real chance of succeeding if it takes the form of an integrated project that allows the farmers to be masters and owners of the water and soil. The construction of drinking water supply infrastructures, the development of essential tracks and the extension of electricity will enable the young people to remain in their respective environments in order to mitigate the incessant needs and nuisances created by the rural exodus to the cities.

The productive forces in the project area are confronted with a lack of schooling. According to observations and cross-checking, a significant proportion of them belong to the class of the unschooled. Literacy will be beneficial in that it will allow better assimilation of the agricultural techniques that will be provided within the framework of this project. It will equip the rural world with the skills to write, read and converse with the agricultural professional world. It will be an opportunity to discuss easily with the outside world associated with the project or made up of clients.

4.4.2. CHARACTERISTICS OF THE HABITAT

In the project area, the housing is mainly clustered and scattered in places. The dwellings occupied by households in the project area are largely owned by the occupants. The type of space occupation for housing is of the sedentary type. In general, the dwellings are adobe, rectangular and round in shape. They are covered with zinc or straw metal sheeting (Photos 35 to 38). It should be noted that most of the dwellings in the area are unfenced. This reality is characteristic of rural areas where cohabitation is easy, with deviance mitigated by the social norms that are still restrictive in the area.

This mode of construction reveals the existence of the mechanical solidarity that distinguishes rural from urban areas. In the project area, fraternity, consideration of blood ties, preservation of family ties are the foundations of cohesion and social development. In this area, community reflexes are the rule and individualism the exception. However, in Kadjalla, a locality a little closer to Kantè, the chief town of the prefecture of Kéran, there are some modern dwellings of well-to-do people (Photo 39).

Photo 35: Traditional dwellings in Broukou



Source: SCET-Tunisia/DECO IC, 2018

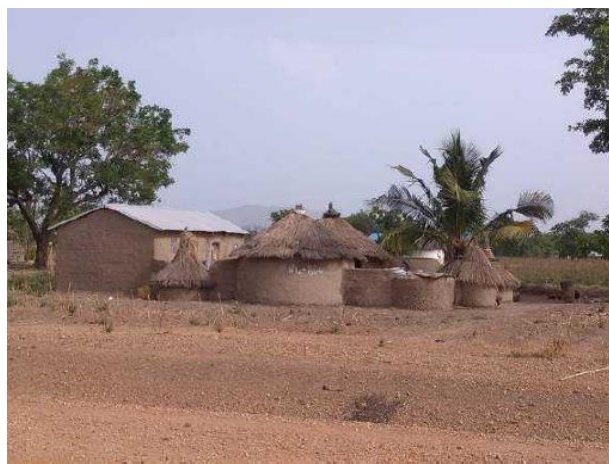
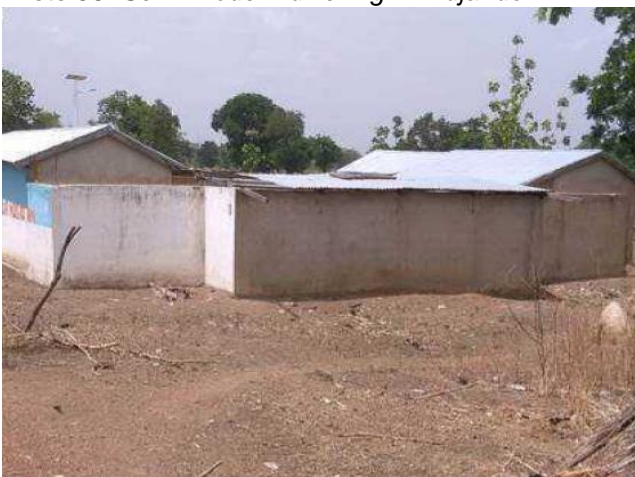


Photo 36: Semi-modern dwelling in Bidjandè



Source: SCET-Tunisia/DECO IC, 2018

Photo 37: Traditional dwellings in Agbassa



Source: SCET-Tunisia/DECO IC, 2018

Photo 38: *Traditional dwellings in Kadjalla*



Source: SCET-Tunisia/DECO IC, 2018

Photo 39: *Modern house in Kadjalla*



Source: SCET-Tunisia/DECO IC, 2018

Observation of the dwellings shows that, in addition to their traditional role, they play a role as a shop for storing agricultural products. This new function of the dwelling is a result of the assaults of the transhumant animals. The granaries are no longer safe places for storing crops.

The modern buildings encountered in the project area are mostly administrative buildings such as health centres, schools or micro-finance institutions such as FUCEC.

4.4.3. POLITICAL AND COMMUNITY ORGANISATIONS

4.4.3.1. Customary authorities

The types of local authorities identified are canton chiefs, village chiefs, neighbourhood chiefs, wise men, and notables. The customary way is the traditional procedure for appointing an authority, which is sometimes superseded and determined by political expediency. In the implementation of the law and respect for the customs and habits of land management, customary chiefs (considered as an institution of the central administration as guardians of customs and habits) have the necessary prerogatives to be involved in land management. In addition to these consultative powers, the customary authorities exercise a moral magistracy and assist the population in the event of land conflicts.

4.4.3.2. Community structures

The project area has community structures such as the Cantonal Development Committees (CCD), Village Development Committees (CVD). All the villages except the canton capitals have VDCs. The CCDs are at the level of the cantons. The main tasks of the CCDs and VDCs are to initiate and co-ordinate development activities in their village and canton, to organise periodic meetings with the community as part of the activities to be carried out, to organise community work and to mobilise local resources. Concretely, they intervene in clean-up activities, in the construction of community structures such as schools, markets, shops and boreholes. DSFs are the foundation of community development and the entities on which any project must be based in order to receive the attention and support of the beneficiaries. They are bodies for integrating projects into the social logics of the environment. This is why the Agropole project must involve the CCDs and DSFs in the project so that they can become better acquainted with the project and its operation. The success of the project depends on this.

Both CCD and DSF members are elected. Education and good character are the main eligibility requirements for DSF and CCD members. The central principle is voluntary service. They represent, like customary authorities, the organisations of social influence to be consulted in consultations and negotiations with communities on the start-up of projects, measures to mitigate negative impacts and on the resolution of certain possible conflict situations.

4.4.3.3. Cooperative organisation: Agricultural production groups

The area covered by the project has a number of groups in the making. These are structures for promoting social solidarity and mutual aid between members. These production and self-help structures are involved in trade, cereal and tuber production, and animal husbandry. In the zone, the presence of the Cotton Cooperative Societies (SCC) is noteworthy. In Misséota, for example, there are several groups involved in the production and marketing of cereals. These are "Hezouwè", "Villahoma", "Dihèzi", "Bouwèdéou", "E spérance", "Solidarité", "Batchalibia", "Peace", "Blah", "Dissinadama", "Bouwèessodjolo", "Midyawa".

For the functional viability and organisational dynamism of these farmers' cooperatives, it is essential to intensify capacity building for farmers. If certain localities do not have these structures, it is not because they are unwilling, but rather because they are unaware of their benefits and of the opportunities for hydro-agricultural development for controlled production and in direct connection with external commercial networks and institutions. The existence of certain groupings in the area shows that the conditions for community organisation and development are met provided that opportunities are created. Any initiative in the agricultural sector in the area can be based on existing cooperative structures or on the will and the will to create them. The agropole project will certainly benefit from these organisations, which will ensure the success and sustainability of the project.

The existence of cooperative structures of a heterogeneous nature as regards their composition is a fact which is indicative of a disposition of the peasants to innovation in production and in the production relations in the area. This is evidence of the evolution of gender relations in social and community organization. In mixed groups, men and women occupy the same roles without gender reference and can access the same status.

4.4.3.4. Land issues

4.4.3.4.1. Land resources and land management

Land is the support of habitat, culture and identity cleavages, a symbol of social security and at the same time a coveted asset, a source of misfortune in traditional conservation societies.

In the project area, the areas of exploitation of the inhabitants are mainly located within the village territory. In general, the populations consulted attest to the sufficiency of arable land. These lands are governed by traditional land law. The purchase of land is not a usual practice in the area, but it is not excluded. Supply and need determine land sales.

Women have the same access to land as men in the area to practice agriculture. The women interviewed stated that they are not aware of any tacit or explicit regulations that prohibit women's access to land. Thus, men and women

The women and men interviewed reported the actual exercise of agricultural activities at the project sites by both men and women.

4.4.3.4.2. Method of land acquisition and tenure

The main traditional way of accessing land is through inheritance. It is still an inheritance devolution. There are also transfers of land to the needy, mostly immigrants. Indeed, the non-natives present in the project area have acquired the right of use and not the right of ownership, regardless of how long they have lived on the land. The foreigner can use the land for as long as he or she can, provided that he or

she complies with customary rules of land management, good morals and good conduct. The owner retains the right of ownership and may use it whenever the need arises. The land tenure system in the area is then that of customary law, which confers power over the land and its use. The project will then take place in a land tenure context governed by traditional practices and social norms. In this context, land tenure security is guaranteed by this customary law recognised by the local authorities and attested by other communities.

The recognition by communities of the right of ownership results in the rarity of land disputes and the solicitation of land from recognised owners. This recognition is also reflected in gifts in kind to the owners when the harvest is good on the part of the usufructuaries, which is optional. This means of recognition of land ownership is the most widespread. The people of the zone have confidence in this customary means and are hardly aware of the urgency of establishing state recognition through a land title. This confidence is maintained by the low demand for land, making market relations very weak. There is therefore an almost non-existence of the market and land disputes.

The land is directly owned. Indeed, some plots are exploited by the owners themselves or their offspring, while others are left to the exploitation of usufructuaries who are not required to pay any consideration. In the local collective conception, land is an inalienable good, not subject to commercial or economic exchange. The needs for the exploitation of the land formulated are satisfied by usufruct agreements. According to the owners, this is a form of interest-free land loan. The advantage of the direct usufruct is the appropriation of the totality of agricultural yields and the expression of the right of use on the cultivated plots.

Thus, securing land tenure also involves the regular use of land by the owner in order to avoid giving opportunities to crooked farmers to take over the land. Its disadvantage is the inability to use all the land one owns. It is in this context that the agropole project must place particular emphasis on exploitation as a result of the investment. Although the right of ownership belongs to the owners, it is important that they ensure that they are able to exploit all the land they own. Otherwise, an agreement will have to be reached between the owners and farmers for the development of all the land in order for the project to achieve its objective of achieving food self-sufficiency, food security and poverty reduction in rural areas.

Poverty reduction can only be achieved if the owner can only farm his area on his own if the rest of the holding is transferred to a farmer. This solution will generate production ratios that are hitherto alien to the area, and therefore not part of existing land tenure practices, and into which they may have difficulty integrating. The introduction of systematic leasing will disrupt land tenure patterns in the area and could be a source of concern for farmers. Farmers therefore need to be reassured that the project will be profitable and will certainly protect them from debt.

The Agropole project, thanks to rural development and its corollaries, notably the modernisation of the farming system, the increase in yield and income, will change the rural environment. The latter will experience socio-economic changes that may lead to the development of land and its importance in human and market relations. This metamorphosis of the rural environment and the value of the land requires, from the outset of the project, formal and unassailable means of securing land tenure.

4.4.3.4.3. Land use context

Production relations between farmers and owners are governed by verbal contracts based on customary land uses and practices. In the project area, there are more non-owner farmers than owner farmers. The latter's undeveloped land is solicited by indigenous and non-indigenous people for exploitation. In this context a usufruct contract is concluded. The landowner is entitled to use the land without alienating it, i.e. he has a right of use. There is no defined consideration. The beneficiary of the usufruct is bound to the owner by the duty of solidarity and recognition which can take various forms in particular circumstances.

These can be cases of illness, accidents, deaths, parties and births. These are generally circumstances that require compassion and celebration.

Lending, renting or leasing that reflect economic forms of access to land and the existence of economic relationships in the land are not part of local land tenure practices in the project area. It should also be noted that donation does not constitute a mode of access to land in the project area. In the everyday language of local landowners, usufruct means donation. When asked what the farmers' mode of access to the land is, the answer is *"I gave him the land so that he could use it"*. When asked whether the farmer can appropriate the land, the owners answer in the negative. In the mother tongue, usufruct takes on the appearance of donation.

In Agbassa, access to land requires the provision of a local drinking jar. "Tchoukoutou", a litre of the local drink "Sodabi" and a bottle of "Dry Gin". In Kadjalla, on the other hand, a request for land is sufficient if the applicant meets the criteria of morality. However, in the case of Agbassa, the same applies to access to land in Kadjalla when one wants to establish a house. This establishment does not confer the status of owner but of usufructuary.

4.4.3.4.4. Land conflicts

There are no recent conflicts identified between landowners and non-owner farmers who are beneficiaries of usufruct land. This social cohesion within production relationships is undoubtedly ensured by tradition and custom as the driving force behind local land practices. It is an expression of philosophy in rural areas based on solidarity and good neighbourly relations. Land tenure problems are not noticeable in the project area. The few existing conflicts derive from the EDF project. Landowners complain that after the end of the FED-Agbassa project, some settled farmers tend to take over the land. It is in this context that the agropole project is urged to help resolve these problems before the project starts. The scarcity of land conflicts can be explained by the low market value of the land.

4.4.3.5. Gender issues in the area

The investigations revealed more or less equitable access to factors of production. Women and men live together on the sites identified for the project. Women have access to agricultural production land on the same basis as men. They are also free to favour their fields over those of their husbands. In November and December harvest periods, women take their produce from the field before worrying about the men's fields.

However, in the project area, there are still reductive perceptions of women to the point of denying them the right to inheritance. This attitude is in line with trends in rural areas with a strong attachment to tradition. This restriction is very accentuated when it comes to access to the throne of chieftaincy and inheritance of real estate such as land despite the existence of laws protecting women in this regard.

Even if there are inclinations towards understanding new social values and tolerance, resistance is linked to socio-cultural burdens. For example, with regard to credit, there are no gender restrictions. Both men and women are subject to the same loan conditions. Nonetheless, the tendency to categorise activities according to gender remains strong in urban and especially rural areas, especially in households. Thus, activities such as cleaning, processing and grinding cereals, fetching water and cooking remain activities practised mainly by women.

Educationally, girls and boys have access to primary education. This access is promoted by the actions of NGOs working in the area of gender equity and by the state, which has made primary education free. It is at the secondary level that preferences resurface. Males are urged to continue formal education at the expense of females if there is a shortfall in the means of schooling. It should be noted that, if both sexes have sufficient means to complete their education, women's reductive preferences and views fade away. There is therefore an effort on the part of the male sex to integrate women into all dimensions of social development. Women will be more integrated into society on an equal footing with men if the agricultural projects initiated in the area enable men to be free from need and women to achieve financial autonomy.

Socio-cultural practices harmful to women's health are not noticeable in the locality. It should be pointed out that for most married women decision-making power lies mainly with the husbands. Similarly, husbands are the main providers of household resources. They are assisted by their wives when they are engaged in income-generating activities. Thus, the investigations revealed that men and women help each other in the search for family resources as much as possible. The situation of widows without income-generating activities is deplorable in the area in that their situation involves their own social security cover and that of their offspring. The disappearance of a spouse is a great burden and an attack on family balance and harmony. For those who have an income-generating activity, the situation is relatively better. In these circumstances, female offspring are forced to emigrate or to opt for marriage. Female offspring are vulnerable in this situation. In this context, indicators of poverty and major ills in rural areas are not better.

In terms of the specific needs of women in the area, the female respondents expressed needs in relation to the establishment of health centres and drinking water supply sources. The fulfilment of these wishes will alleviate water fetching, student punishment, parental investment and children's exposure to intestinal parasitosis. It is also intended to relieve women and their children during periods of pregnancy and serious illness. Electricity extension is also a concern for the women of the area. For the latter, the absence of electrical extension leads to a tendency for weak parental control over children, particularly girls, and a large proportion of school failure. In general, the extension of electricity will make it possible to avoid school failure and school wastage, especially among girls.

4.4.4. SOCIO-ECONOMIC ACTIVITIES

Agriculture remains the main economic activity in the area. It occupies a large part of the local population and is a source of mobilisation of financial resources and livelihoods. Most often, agriculture is associated with animal husbandry and, for some farmers, it is combined with trade, handicrafts or fishing as a complementary activity.

4.4.4.1. Agriculture

4.4.4.1.1. Cultivation system

Crops are cultivated both on the mainland and in the lowlands. Rice cultivation remains the main economic activity in the lowlands. According to the PDPR-K socio-economic study, it employs 87% of the farmers. Apart from rice, other crops include tubers (about 6% of farmers), cereals (3% of farmers) and market gardening (2% of farmers). Other crops are generally grown in association with rice, which shows that rice remains an agricultural tradition in the majority of the identified lowlands (Photos 40 and 41).

Outside the lowlands, the main cereal crops are maize and sorghum (Photos 42 to 45). Cotton, which remains the main cash crop in the zone (photos 46 and 47), tubers such as yam and cassava (photos 48 and 49), legumes such as soya, beans (photos 50 to 52), oilseeds such as sesame and groundnuts are also grown. Market gardening is practised in the project area, particularly chilli (Photo 53), tomatoes and okra. This activity is more common in Tchoré canton. There are no significant gender differences in cultivation. Women are also prominent in the exploitation of the lowlands, where rice and off-season maize are mainly cultivated. According to respondents, women's plots compete with those of men.

Photo 40: Rice field at Houkada on the Kanga River



Source: SCET-Tunisia/DECO IC, 2018

Photo 41: Misséouta rice field on the Tanmbigou river



Source: SCET-Tunisia/DECO IC, 2018

Photo 42: Maize field in Misséouta



Photo 44: Sorghum-arachid polyculture in Broukou



Source: Dr Tcheinti-Nabine Tchandikou, September 2020

Photo 43: Maize field in Bidjandè



Photo 45: Sorghum field in Broukou



Source: Dr Tcheinti-Nabine Tchandikou, September 2020

Photo 46: Cotton fields in Misséouta



Source: Dr Tcheinti-Nabine Tchandikou, September 2020

Photo 47: Cotton fields in Kpassidè



Source: Dr Tcheinti-Nabine Tchandikou, September 2020

Photo 48: Yam field in Ogoundè



Source: SCET-Tunisia/DECO IC, 2018

Photo 49: Kadjalim cassava-maize polyculture



Source: SCET-Tunisia/DECO IC, 2018

Photo 50: Soya field in Bidjandè



Source: SCET-Tunisia/DECO IC, 2018

Photo 51: Sorghum-bean polyculture in Ogoundè



Source: SCET-Tunisia/DECO IC, 2018

Photo 52: *Field of vouadzou in Kadjalim*



Source: SCET-Tunisia/DECO IC, 2018

Photo 53: *Green pepper field in Agbassa*



Source: SCET-Tunisia/DECO IC, 2018

Market gardening for both men and women is a recourse for the female sex that makes it an activity par excellence and a relief for households in the context of their subsistence. In general, market gardening products, rice, maize, and soya are the main crops in which women are more active. Market gardening is difficult to implement because of the problems of flooding and drought in the lowlands. It is practiced in the dry season when the land is still wet. Women are more interested in this type of culture but are limited by the lack of water. Women's activity is in the production of crops for domestic consumption and petty trade. Women divide their time between traditional roles related to the functioning of the household and agricultural activities.

Faced with the diversity of cultures, they make a trade-off by choosing food crops and market gardening that enable them to fulfil the functions of both consumption and small-scale trade. They avoid cash crops such as cotton and certain cereals, which involve a large physical investment. Women's attitude is to avoid crops whose production requires large investments or involves recourse to credit. Women do not grow cotton as this crop is perceived as a male activity and is considered too restrictive in terms of external inputs or factors of production to be used (fertilisers, insecticides, participation in technical training, etc.).

4.4.4.1.2.

Means of production used on the farm

The means of production are essentially of the traditional type. The hoes, cutters, axes which constitute a primary tool are used exclusively by about 94% of the farmers according to the socio-economic study of the PDPR-K. The rest of the farmers use them in association with modern tools such as tractors and harnessed cultivation (4%) (Photos 54 and 55). The exclusive use of modern means is almost non-existent. The farming population also includes farmers who only use cultivation methods based on semi-modern implements. The use of modern farming techniques in the project area shows the receptiveness of farmers to innovation in the rural world and in agricultural activities. The attachment to rudimentary agricultural production technologies is therefore a result of the significant financial investments required for the appropriation of modern technologies. Under these conditions, the eventual introduction of socio-agricultural innovations within the framework of this project is a process that will encounter a receptive environment already disposed to the use of certain modern instruments.

Photo 54: Yoke cultivation in a cotton field at



Source: Dr Tcheinti-Nabine Tchandikou, September 2020

Photo 55: Tractor in the area of a



Source: Dr Tcheinti-Nabine Tchandikou, September 2020

There is a growing shortage of labour in agriculture. Young people perceive agricultural activities as arduous and prefer the exodus or the adoption of the motorbike taxi activity in the city. The resurgence of the rural exodus is not an asset to the agricultural workforce. Young people are increasingly engaged in motorcycle-taxis, leaving the cultivation of the land behind. This explains the availability of arable land in the project area. Difficulties in appropriating modern means of production associated with the lack of labour are obstacles to the extension of agricultural land and the increase in the farmer's income. Under these conditions, agricultural production and its economic output are dependent on this context, and do not allow the peasant's savings to be built up. Most of the farmers interviewed said that they do not have large cash savings. It varies on average between 20,000 and 100,000 CFA francs. The savings are also made up in kind, i.e. reserves for harvests for the lean season and in case of force majeure. For the most part, production is used for consumption and to dispose of income that is directly used for daily needs. The agropole project in the Kara basin will enable an increase in the number of savers and the amount saved, thanks to the contribution and appropriation by farmers of suitable and efficient means of production.

4.4.4.1.3.

Constraints on agricultural production

There is essentially a lack of improved and modern production techniques, such as ploughs or pairs of oxen for harnessed cultivation, leading to extensive cultivation becoming an essential feature of the production system. Similarly, access to agricultural inputs remains difficult for farmers given their income and its unavailability on the ground. As a result, the habit of acquiring and using modern inputs (chemical fertilisers, improved seeds...) is not a practice acquired in the farming system. The farming community lacks the technical means to integrate organic fertilisation and soil conservation techniques into agricultural production systems. It therefore appears that the milieu does not yet have a supply of agricultural intensification technology adapted to the agro-ecological and socio-economic situations and to consumer demand. Rice cultivation is limited by working conditions. These are related to the lack of means of crop processing and storage. Most localities lack warehouses for storing agricultural products.

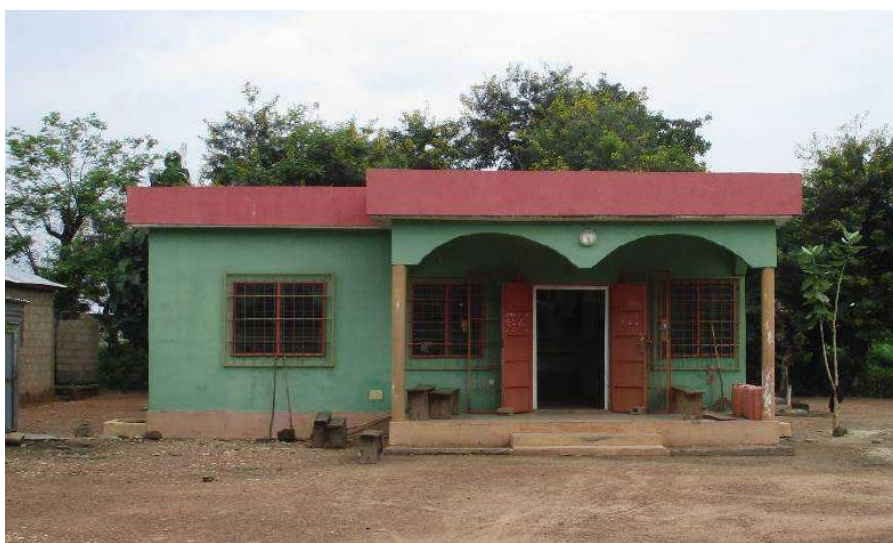
The deterioration of communication channels limits the relations of the peasant trader with the outside world. This situation is accentuated in rainy periods and creates mistrust towards external traders and means of transport. The main assets of agriculture in the area are: the availability of land suitable for cultivation, attachment to the land, receptiveness to immigrants in search of cultivable land, easy access to land and receptiveness to agricultural innovation in the project area.

4.4.4.1.4.

Source of funding for agricultural activities

Agricultural activities and farmers' organisations are supported by microcredit institutions in the area. The use of credits is more present at the level of cooperatives and agricultural groups. Credit services remain embryonic in the project area. According to the farmers interviewed, FUCEC (Photo 56) and the Mutual Savings and Credit Union (MEC) operate in the zone and in the granting of loans. The producers also use loan sharks to carry out their agricultural campaign. In general, producers finance their farming activity with their own funds.

Photo 56: View of the FUCEC premises in Broukou



Source: SCE I - I unisia/DECO IC, 2018

The low use of credit on farms is linked to the following factors:

- Lack of information and knowledge about credit, access procedures and its appropriateness,
- The non satisfaction of credit granting conditions by the peasant world, due to the lack of surety bonds (in the absence of a title deed to their land, farmers are not able to present reliable surety bonds),
- Fairly short maturity: depending on the crop, the repayment of loans is not generally in line with the crop cycle and the harvest or favourable sales period,
- The high interest rate: the interest rates applied are often out of reach of the farmers. In the case of the project area, FUCEC grants an interest rate of 12% compared with 8% for the Mutuelle d'Epargne et de Crédit (MEC).
- Weak risk-taking capacity through credit: fears of indebtedness and consequent lawsuits due to the high interest rate and cyclical factors (the vagaries of rainfall, accidents, damage from transhumance, late access to inputs) that compromise yields and reduce repayment capacity,
- Lack of exploitation of large areas that require the use of credits.
- Poor organisation of the sectors and non-involvement of traders in production: outside the cotton sector, farmers do not receive any support from the recipients of the products.

4.4.4.1.5.

Credit services in the project area

The project area is rather a rural environment dominated by ancestral credit or loan practices. In the absence of major investment projects, recourse to credit is generally limited to small loans from relatives. Credits can take the form of sharecropping. In the absence of money to finance sharecropping, the farmer resorts to sharecroppers on credit in contractual forms. It is a credit that requires the physical investment of a sharecropper in return for a higher payment after the harvest. This credit will be sold in kind or in cash. Agricultural credit for peasants is practically assured by microcredit or microfinance services organised by MFIs (Micro Finance Institutions) which provide a number of services to farmers and the population:

- Collection of savings
- The transfer of funds
- The granting of credits

Membership of MFIs is subject to the payment of a membership share and a membership fee. The conditions of access to credit and the repayment mechanisms are the responsibility of the institution. A regressive rate varying between 10 and 24% is applied by the different institutions. Membership of these MFIs presents constraints, namely difficulties of access, associated with their administration, which is often in difficulty for management reasons. These constraints constitute bottlenecks which inhibit the visibility and image of micro finance. More often than not, clients wishing to withdraw their investments for a particular activity are often confronted with the institution's inability to honour its commitments. The client receives only part of the amount requested. These constraints put in difficulty the farmers who rely on these institutions to finance their agricultural campaign. This is also one of the fears of the farmers' adherence to these institutions.

FUCEC-Togo, which is the Cooperative Savings and Credit Cooperative (COOPEC) network, is the main microfinance institution in the project area. This institution is based at the prefectural level. The rural localities of the project can only access credit by moving to Mango, Mandouri and Guérin-Kouka.

A)

Procedures

Members of the Mutuals affiliated to the MFI must meet certain general eligibility conditions known and accepted by all, before applying for a loan. These are among others :

- the opening of an account by the payment of the membership fee amounting to two thousand five hundred (2,500) FCFA, and the release of the social share fixed at five thousand (5,000) FCFA;
- the provision of a minimum balance on the deposit account during the three months preceding the credit application in the amount of fifteen thousand (15,000) FCFA for individuals, Fifty thousand (50,000) FCFA for agricultural associations and cooperatives and One hundred thousand (100,000) FCFA for NGOs.

The member applying for a loan for the first time must save regularly over a period of at least three (3) months in one of the MFI's Mutuals. In addition to meeting the general conditions of eligibility for credit, the credit applicant must provide a file containing the following elements:

- Letter of credit application ;
- Credit application form ;

- Legalised copies of identity documents (passport, national identity card, voter's card, professional cards of the law enforcement and security forces) valid for at least six (06) months;
- For legal entities, legalized copies: identity papers of the first three persons in charge, articles of association, internal regulations, minutes of incorporation, installation authorization, economic operator's card;
- Income statements and balance sheets for the last two financial years ;
- Business plan covering at least the duration of the loan (description of the activity, projected balance sheet, projected operating account, etc.) ;
- Receipts for the payment of the purchase and study expenses of the file ;
- Guarantees (Pledging of savings, mortgage, monetary guarantee from the mutual insurance company covering one third of the amount requested, cross guarantee for payday loans and certificate of seizure of wages);
- Certificate of joint and several liability of the members for the groupings ;
- Commitment by signature of two persons (guarantors) belonging or not to the mutual, for credits not exceeding FCFA 450,000 (tontine credits), accompanied by authenticated copies of identity papers ;
- Acknowledgement of debt and commitment of good character ;
- Savings book and savings account statement.

The study of a credit application depends on the project to be financed, the financial situation of the member and any guarantees offered. Any member who wishes to benefit from a loan from the MFI must first fill out a loan application form, the forms for which are available in all the branches of the institution's mutual insurance companies, at the level of loan officers and often at the level of the regional representations of the Agricultural Administration.

The fee for the constitution of the credit file is fixed at 1000 FCFA, the time limit for the study of the credit file is fixed at two (2) weeks at the most after the member has duly fulfilled the conditions of access to credit incumbent upon him/her.

B) Credit conditions

B1) Interest rates applied

The interest rate on loans in force varies between 10 and 24%. For any repayment, the interest due is collected and accounted for first and the remainder will be used to amortise the outstanding capital.

B2) Amounts Granted

The amount of credit requested is not granted in principle; it may be revised downwards or refused by the Credit Committee. A Credit to a member may not exceed "three (3) times" the borrower's savings even if he has sufficient guarantees or sureties. However, no member is automatically entitled to "three (3) times" his deposit. Each application must be considered according to the member's ability to repay and taking into account his or her means. The maximum credit granted to a single member may not exceed :

- 5,000,000 in the case of a natural person ;
- 10,000,000 if it is a legal entity (SME/SMI, NGO, group, etc.).

However, this ceiling may be exceeded if the pledged savings of the member concerned represents 66% of the credit requested within the limit of 15 000 000 FCFA.

B3) Guarantees required

The MFI, in a creditor position vis-à-vis the members receiving credit, requires each debtor to provide guarantees to prevent the risk of non-payment.

The guarantees offered by the MFI are surety, pledge and mortgage.

➤ **Bonding**

It is the commitment made by a third party, called a guarantor, to reimburse the MFI in the event of default by the debtor, the beneficiary of the loan. Guarantors can be individual or joint and several and/or moral or monetary.

➤ **Pledging**

The debtor pledges part of his credit balance (equal to at least 1/3 of the amount of credit requested for HDI) as security. This pledged deposit is blocked until the debt to the mutual insurance company is cleared. In the event of non-repayment and after 24 months of delay, the pledged deposit is used to cover all or part of the outstanding credit.

➤ **The Mortgage**

The debtor pledges real estate (built or undeveloped land) as security. In the event of non-repayment and after a delay of 24 months, this guarantee is carried out to cover all or part of the outstanding loan.

4.4.4.2. Breeding

4.4.4.2.1. Animal production

Animal husbandry is an important activity in the project area and is practised with a traditional production method. Livestock production consists of cattle (Photo 57), small ruminants including sheep and goats (Photo 58), pigs and poultry. The animals raised are often rambunctious and for the most part without enclosures. All social actors are involved in livestock production, when some forms of livestock production, such as poultry, are included in almost every household. This divagation is also favoured by the virtual non-existence of animal thieves because of the ethical values in force in rural areas, blood ties, coercion maintained by social norms and the spiritual dimensions of the rural environment. The option of raising animals is chosen so that they can benefit from the abundance of pasture and debris from the fields close to the houses.

Important differences remain in the activity covering cattle, pigs and small ruminants, which are more demanding in terms of shelter, feed and care. Health monitoring is carried out from time to time by the veterinary services of the Ministry of Agriculture, Animal Production and Fisheries (MAPAH). To mitigate the burden of livestock production. Goat, sheep and pig breeding is remarkable in the project area. Cattle are essentially the work of nomadic herdsman. The most frequent conflicts are those between local farmers and nomadic herdsman. The presence of the latter in the project area is significant. Production is both for consumption and marketing.

Photo 57: *Transhumant cattle in Léon Yaka*



Source: Dr Tcheinti-Nabine Tchandikou, September 2020

Photo 58: *Sheep grazing in Broukou*



Source: Dr Tcheinti-Nabine Tchandikou, September 2020

4.4.4.2.2.

Constraints of animal production

The area has assets for animal production. These assets are justified by the abundance of pasture, the contributions of agricultural production and the availability of space for the construction of enclosures. Livestock production is not free of handicaps, including irregular access to technical support services, due to the difficult contacts caused by the advanced state of degradation of communication routes and the lack of resources for the deployment of technicians in this area by the competent services. This difficulty deprives livestock breeders of the necessary support such as training on the need to build pens, production techniques, feeding, cross-breeding of species, management of livestock numbers and prophylaxis. The difficulties that hinder the development of livestock farming are mainly the following:

- The lack of water for livestock in the area hinders development in this sector. As water is scarce for humans, humans and animals sometimes share water at the same time. This situation leads to conflicts between the population and the livestock farmers because river water is polluted by the animals. This deficit devalues livestock in that the livestock keeper is doing bad business because of the low weight of the animals. The shape of the livestock is therefore affected by this water shortage. (The construction of dams in the project area for livestock breeding will revitalize this sector and will increase the income of livestock owners and motivate the development of this sector).

- the hindered transport of livestock to markets, which means that livestock farmers are obliged to sell their products locally at very low prices.
- The degradation of transport routes restricts the activity of agricultural and livestock services in the field. In this context, the rehabilitation of roads and slip roads will improve the movement of goods and people. It will also be an opportunity to improve the coverage of the localities of livestock technicians by extending the technical and organisational services of the agricultural services in the field and the regularity of their visits to the villages.
- A lack of financial and human resources allocated to the decentralised public services in charge of agricultural and livestock issues. De-concentrated public services lack field staff, which hampers agricultural and livestock production in the remote areas of the zone. Similarly, these decentralised services lack the operational means to deploy their field agents when they have them for monitoring and supporting livestock production. These include the lack of adequate means of transport to use the degraded roads in the area and the lack of fuel.

Map 12 presents the different agricultural and pastoral support infrastructures in the project area.

4.4.4.2.3. Transhumance

Transhumance means the presence of transhumant nomads with their livestock, especially in the dry season between November and May, without any respect for the regulations in force on the subject. They are in search of pastures and water sources for their livestock. These passing animals cause damage to the farmers' fields, which can lead to conflicts between farmers and herders.

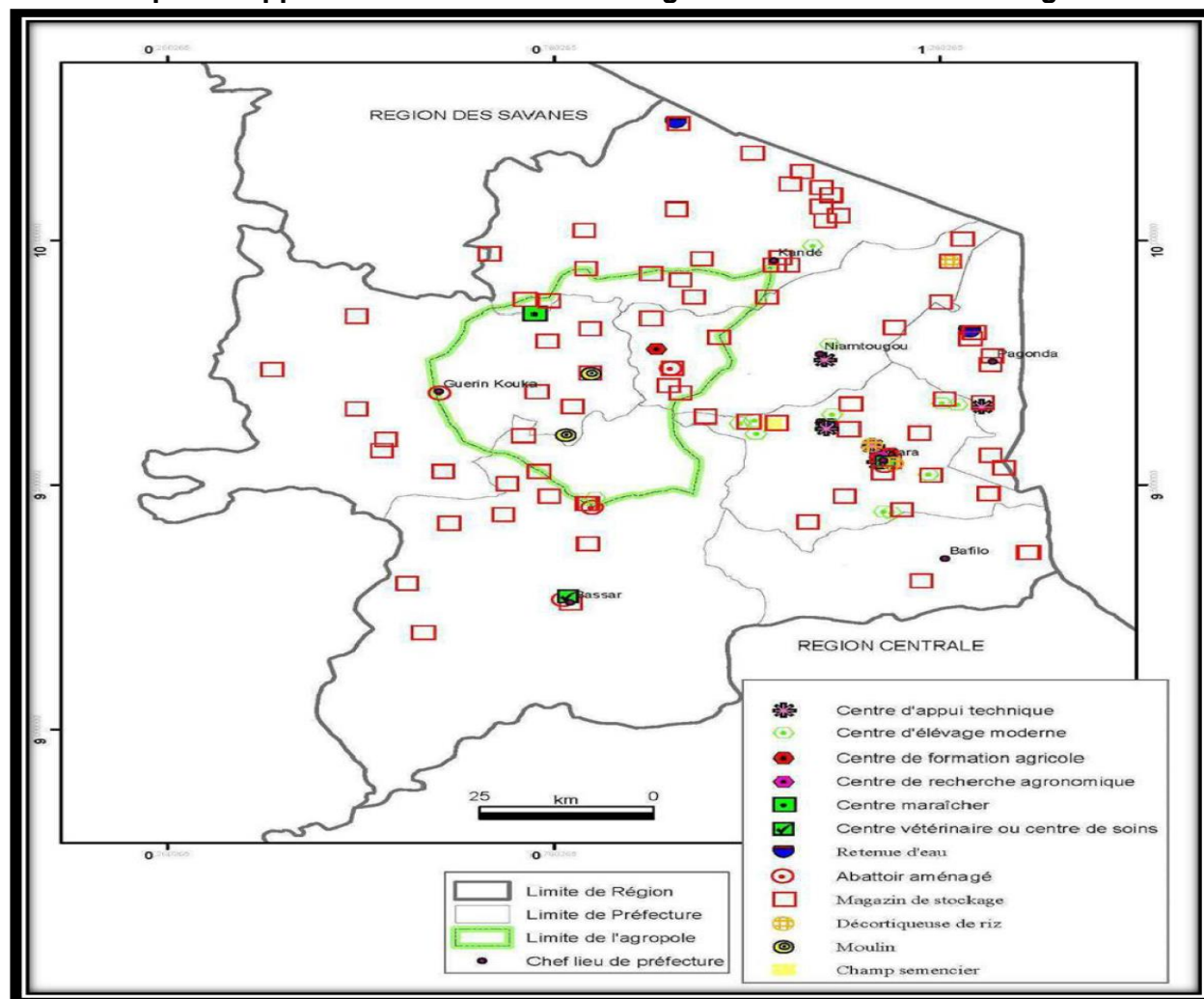
However, the movement of the animals does not respect at all the corridors defined by the authorities in their movements (Figure 59 Map 13). These transhumance corridors often do not have water points, leaving transhumant herdsman who try to follow the corridors to leave them through fields and vegetation in search of water in the streams.

Photo 59: View of some markers delimiting a transhumant passage corridor in Dankpen prefecture between Namon and Guérin-Kouka



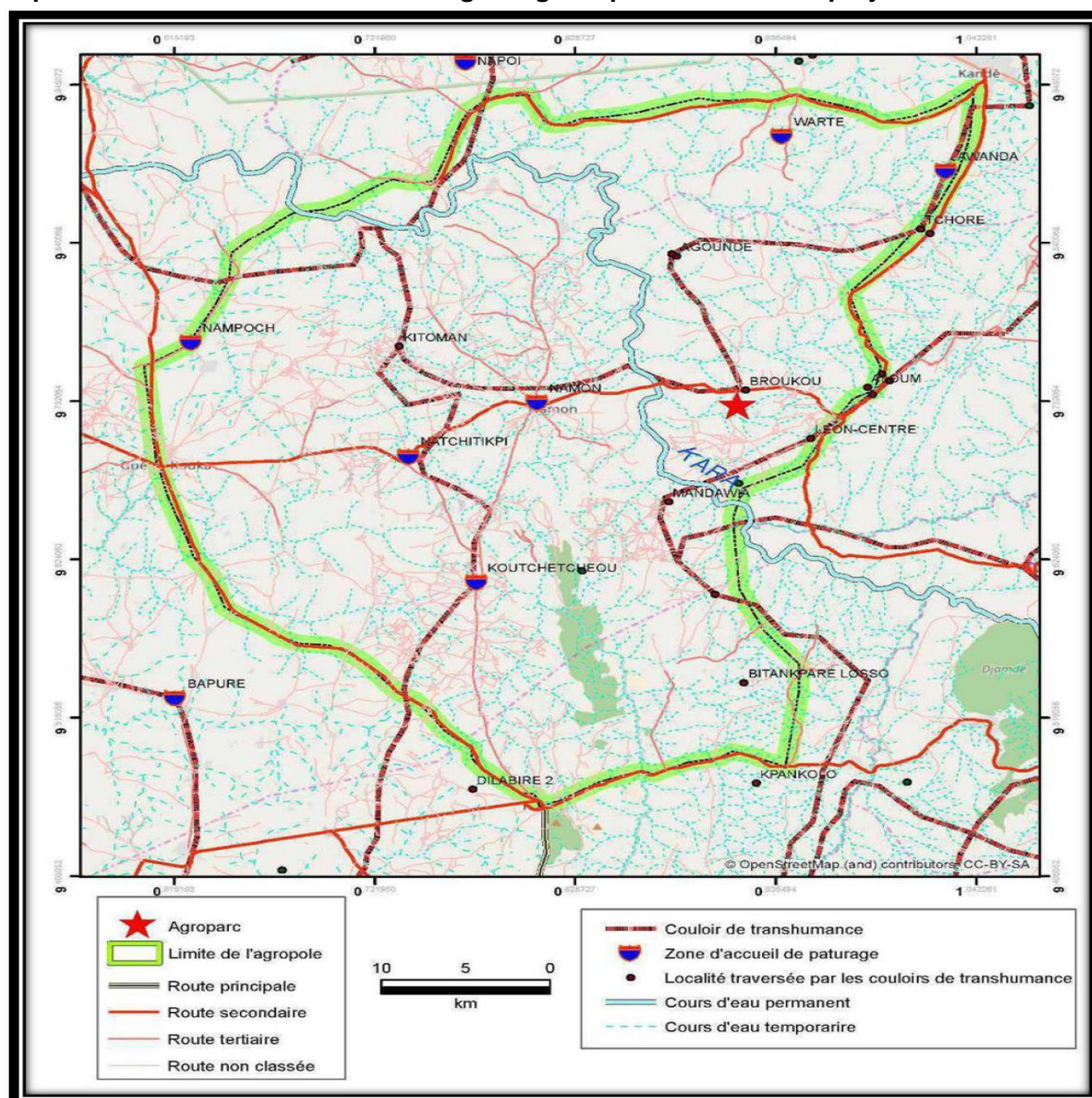
Source: SCET-Tunisia/DECO IC, 2018

Map 10: Support infrastructures for the agricultural sector in Kara Region



Source: IDEACONSULT International, based on DRAEP data, Kara / 2017

Map 11: Transhumance corridors and grazing reception areas in the project area



Source: IDEACONSULT International, based on DRAEP data, Kara / 2017

4.4.4.3. Commerce

4.4.4.3.1. Commercial structures

Trade in the project area is characterised by the sale of agricultural products, wood and non-wood forest products, livestock, and the purchase of basic manufactured goods. The main local products sold by the farmers are, among others, agricultural products: cereals, tubers, livestock products, woody forest products. The sale of the sorghum drink (Tchoukoutou) is also an income-generating activity. In return, the population is supplied with basic necessities. Market days are also an opportunity for the population to buy clothing products, and products such as soap and street pharmaceuticals. The purchase of spare parts for the repair of bicycles and mopeds, etc. is also a fundamental concern.

Women make up a large proportion of market participants. Although men also go there to sell their

products as women do, the latter are more distinguished by the sale of agricultural products such as maize, rice and cassava local drinks and charcoal, while men are involved in the sale of livestock. A gender division of labour in the market seems to be effective in the area.

The place of supply depends on the quantity of the products required, distance, availability, product cost and the duration of the flow. Kara, Niamtougou, Kanté are supply markets in the area because of their proximity to the project sites. The disposal of products is not without difficulties. The main means of transporting goods to the markets are: feet, bicycles and motorbike taxis. Vehicles encounter difficulties in accessing the localities during the rainy season.

The markets are spaces of exchange and major attractions in the project area. The days of their animation are opportunities not to be missed. They are weekly markets that provide the opportunity to stock up on basic necessities and financial income. One notes fundamentally in the project area the market of Broukou which is animated every Friday (Photos 60 and 61). It is the largest reference market in the area. Every Friday, farmers, buyers and traders from the area converge on this market. Most of the farmers sell their products on the spot. Thus, local products are marketed by selling to a clientele that moves around the zone.

Photo 60: Animation of the Broukou market on a Friday



Source: Dr Tcheinti-Nabine Tchandikou, September 2020

Photo 61: Broukou market and its bus station on an ordinary day



Source: Dr Tcheinti-Nabine Tchandikou, September 2020

The markets frequented in the area are subdivided into two groups: rural markets and urban markets:

Rural markets: They are not negligible in proportion because of the abundance of agricultural and pastoral supply. The important social and economic role they play explains this abundance. They are the place for exchanging information and products, it is also the place for contact, meetings and leisure activities. The main problem with these markets is the problem of sheds and stalls. The markets in the project area do not have built stalls, forcing the traders to display the goods on the ground. This group of markets can be subdivided into three categories according to their audience and size. A distinction can be made between a :

- 1st category: It groups together the so-called inter-prefectoral markets where products and customers come from far away; this is the case of the Broukou market.
- 2nd category: This is the category of local and cantonal markets. They are located in the cantonal capitals. The clientele is small and comes from the surrounding villages; this is the case of Kadjalla, Agbassa (Photos 62 and 63) Tchore-centre, by way of illustration.
- 3rd category: The latter is that of small village markets. The range of products sold is insignificant and the clientele is made up of local residents and some traders in transit to the cantonal markets. These include Léon-Yaka, Bidjandè (Photos 64 and 65), Agoundè, Misséota. The products are essentially sold directly without intermediaries. The indirect mode through the intermediary of the groups is essentially through the marketing of rice and cotton.

Urban markets: These are those of the chief towns of the Prefectures. All of these markets benefit from infrastructures such as sheet metal sheds, raised stalls and permanent buildings. The project area is close to the markets of Guérin-Kouka, Kanté, Niamtougou, Défalé and Kara.

Photo 62: *Kadjalla market on an ordinary day*



Source: SCET-Tunisia/DECO IC, 2018

Photo 63: *Agbassa market square on an ordinary day*



Source: SCET-Tunisia/DECO IC, 2018

Photo 64: *Léon market on an ordinary day*



Source: SCET-Tunisia/DECO IC, 2018

Photo 65: *Bidjandè market square on an ordinary day*



Source: SCET-Tunisia/DECO IC, 2018

4.4.4.3.2.

Sales channel and clientele

The commercialization circuit depends on the clientele and the products. This circuit differs according to products such as cereals, tubers, cotton, market garden products and livestock products.

A)

Cereals sector

The state plays an important role in the disposal of agricultural products in the area. This role is carried out by Togo's National Food Security Agency (ANSAT), which has two mandates, one to build up food security stocks by collecting surplus maize and the other to regulate the marketing of maize. In addition to the state marketing sector, there are other cereal marketing channels. These are the :

- direct sales from producers to consumers (local or urban). The product is packaged and sold directly to consumers immediately after harvesting. This sale is motivated by the producers' need for financial means to meet daily expenses.
- sale of producers to intermediate traders who supply urban consumers. Intermediary traders buy the products directly from the producers during the harvest and transport them to the centres.

urban areas where they will either be sold to consumers or resold or stocked for later resale.

The profitable disposal of cereals is not without constraints. Three main constraints have been identified in the project area:

- The first constraint concerns the farmer's difficulties in saving. In this context, in order to satisfy vital needs, the farmer is obliged to sell his products directly to the market. Therefore, he does not have the possibility to raise the price through storage. Those who have savings resist the urge to sell and take advantage of the rising prices during the lean season.
- The second concerns the imposition of the measure by traders in urban areas. In the absence of an alternative and in the face of the pressure of need, the battle often fought over the measure is won by the buyer. In the usual practice in the area, cereals, like certain market garden products, are measured by the bowl, a bowl weighing 2.5 kg. However, the volume of the bowl varies from one trader to another, with a minimum capacity of two (2) standard bowls. The producer often has no choice but to accept the use of these bowls required by traders from urban areas.
- The third concerns the low capacity of producers to sell their products on regional and national markets; as a result, most products are sold on local markets due to poor road infrastructure and the remoteness of these markets.

B) Cotton

Cotton is subject to special marketing because it belongs to the cash crop family. Its marketing and transport are entrusted to the Nouvelle Société de Cotonnière du Togo (NSCT) (formerly SOTOCO) which takes care of purchasing at specific points and transport to the ginning plants. The company is assisted in its task by the farmers organised as a Cotton Cooperative Society (SCC). In this new company, middlemen are banned. The farmers are increasingly invited to sell their products for cash.

C) Vegetable products

There are two main marketing channels in the area:

The first marketing circuit: Wholesale traders travel to the production sites to negotiate the products at a field price and the products are bought and transported to the markets in the large urban centres where the wholesalers and semi-wholesalers will come to stock up. This distribution circuit is best suited to individual producers. It avoids transport costs for producers and mitigates post-harvest losses.

The second marketing circuit: the producer himself transports his production to the local market where the product is delivered directly to consumers.

D) Livestock products

There is a large network of butchers and livestock traders in the project area. Cattle are purchased directly from the herds from the butchers. In this context, tricycles are used as means of transport. They are then transported to the places of consumption, particularly to Lomé in trucks. Some Peulhs sell directly to herd couriers coming from Burkina Faso or Niger and going to Lomé. For sheep, goats and poultry, butchers, livestock traders in urban areas and "foufou bar" owners are the main customers. An important part of the livestock is sold on the Broukou market. A livestock market is set up in Broukou (Photo 66).

E) Wood energy sector

This concerns the exploitation and marketing of firewood and charcoal (Photos 67 to 71). These activities are highly developed and are sources of advanced vegetation degradation in the project area (Photos 72 and 73). This sector is perceptible along the Sarakawa-Léon section. The firewood is exposed along the track to attract buyers from the towns of Kara, Niamtougou, Kantè. These woods are used for cooking in informal restaurants and traditional bakeries. This trade is a real source of income for the practitioners of these activities and contributes to the local economy. The Agropole project will make it possible to mitigate this trade by offering alternatives on the project's agricultural sites.

The Agropole project also provides for the creation of community forests of up to 10,000 ha at the level of the agricultural processing centres set up in the cantons of the zone. These community forests will be able to supply the populations with dead wood for traditional energy.

Photo 67 : Sale of wood between Léon-Yaka and Léon



Source: SCET-Tunisia/DECO IC, 2018

Photo 68 : Sale of wood in Léon and Bidjandè



Source: SCET-Tunisia/DECO IC, 2018

Photo 69 : Sale of wood in bidjandè



Source: SCET-Tunisia/DECO IC, 2018

Photo 70: Charcoal bags to Awassan

Photo 71: Charcoal bags at Léon Yaka



Source: SCET-Tunisia/DECO IC, 2018

Photo 72: Cutting wood in Léon-Yaka for carbonisation and firewood



Source: SCET-Tunisia/DECO IC, 2018

Photo 73: Cutting wood in Bidjandè for charcoal and firewood



Source: SCET-Tunisia/DECO IC, 2018



Source: SCET-Tunisia/DECO IC, 2018

4.4.4.3.3.

Constraints of commercial activity

The degradation of the transport networks expressed by the actors of the commercial circuit of the zone generates additional costs in the supply of goods. In order to transport their goods to the various points of sale, traders use transport services that take into account the level of practicability of the tracks instead of the distance to be covered.

Given the accentuated degradation of the roads and tracks linking the different villages in the area, regular participation of traders in the market is not guaranteed. The means of participation in the market are not identical according to the season. In the rainy season, traders sometimes use other means of transport such as motorbike taxis, especially tricycles or bicycles. This is due to the impracticability of the tracks with different fortunes for cars. The cars get stuck in the mud, which is very disruptive to transport. The risk of accidents increases and transporters do not hesitate to refuse any destination to the area. The combination of these constraints leads to the impoverishment of traders.

Cases of hold-ups are deplored in the project area. The inhabitants of the area explain this fact by the poor state of the tracks, which lengthens the journey time, forcing users to travel late at night. It is therefore an opportunity seized by the robbers to operate. The deterioration of the tracks is also the cause of difficulties in supplying certain basic necessities. In this case, the law of supply and demand applies: "any rare product is expensive". The rural consumer will have to bear the additional costs.

Also, the absence of takers due to the deterioration of the tracks forces the trader to deliver his goods at a price that reduces the gains in profitability. Commercial activity is also hampered by difficulties in accessing credit. Thus, the scarcity of microfinance institutions and the difficult conditions for granting credit as well as the current payment terms are not conducive to the recruitment of traders in the area by Micro Finance Institutions (MFIs).

4.4.4.4. Employment

Togo has one of the highest unemployment rates in sub-Saharan Africa (28.6%), and this situation is one of the major concerns of the public authorities who are working to develop personal initiative, entrepreneurship and self-employment. The Regional Directorate of Labour and Social Laws coordinates national employment policy at the regional level.

The Togolese economy is largely dominated by agriculture, trade and manufacturing activities. These three sectors account for 40%, 22% and 15% of household heads in 2011 respectively and as such are central to Togo's growth strategy. They employ 90% of households in rural areas (63% work in agriculture). In urban areas, agriculture-related activities concern 20% of household heads, but trade and manufacturing activities dominate with, respectively, 30% and 17% of heads of household concerned.

The Third Demographic and Health Survey (EDST-III)⁸ showed regional disparities in employment, although rates in the Kara region are close to the national average, as shown in Table 25. At the national level, and by area of residence, the results show that most rural women work in the agricultural sector (46%) and in sales and services (42%) while in urban areas they are in the majority in sales and services (74%).

Table 25: Distribution of the population aged 15-49 years by sex and type of occupation

| | Currently working | Unemployed | Executive/ technician/ management | Employee | Sales and services | Qualified manual | Unqualified manual | Domestic worker | Agriculture | Other |
|-----------------------|-------------------|------------|-----------------------------------|----------|--------------------|------------------|--------------------|-----------------|-------------|-------|
| Kara Region | | | | | | | | | | |
| Woman | 69,1% | 30,9% | 0,4% | | 55,4% | 6,2% | 2,4% | | 35,2% | 0,4% |
| Man | 72,5% | 27,5% | 1,5% | 0,2% | 14,2% | 17,9% | 5,6% | | 57,6% | 3% |
| National level | | | | | | | | | | |
| Woman | 70,3% | 29,7% | 1,0% | | 56,2% | 11,7% | 3,5% | 0,4% | 26,8% | 0,3% |
| Man | 74% | 26% | 4,1% | 0,3% | 23,6% | 29,3% | 4,1% | 0,2% | 36,1% | 2,3% |

Source: General Directorate of Statistics and National Accounting) and Ministry of Health, EDST-III 2013-2014 /January 2015

In the Kara region, the gaps recorded mainly concern a lack of skilled manual jobs (23% compared with 41% nationally) and an employment rate in agriculture that is well above the national average (93% compared with 63%), which is logical given the predominantly agricultural nature of the activities in the region. The agropole project will be an invaluable contribution to the employment sector. Recruitment for skilled and unskilled jobs will improve the region's employment sector. In the same way, young graduates from the area in search of qualified or unskilled jobs will be able to join the project, which is a condition for membership in the local populations and leaders of the area. The latter believe that the agropole project must first and foremost benefit the local people. This improvement in the employment sector will provide guidance to young students in their future professional orientation and will give households the chance to ensure the survival and schooling of their children.

4.4.5. **INFRASTRUCTURE, EQUIPMENT AND SOCIO-COLLECTIVE SERVICES**

4.4.5.1. In the field of education

The project area presents a more or less precarious educational situation. Most of the villages involved in the project have at least one public primary school. These are Léon, Léon-Yaka, Bidjandè, Broukou (Photo 74), Aloum, Agoundé (Photo 76), Kpassidè (Photo 77), Agbassa, Kadjalla, Tchoré, Tchoré-Nacoco, Tchoré-Ayiga, Kadjalim. The one in Misséota is a Local Initiative School (EDIL). The localities of Agbandè and Anima do not have school infrastructures.

⁸ EDST-III 2013-2014; Ministry of Planning, Development and Land Management (General Directorate of Statistics and National Accounting) and Ministry of Health; January 2015

Photo 74: View of the public primary school in Broukou



Source: Dr Tcheinti-Nabine Tchandikou, September 2020

Photo 75: View of the Broukou kindergarten



Source: Dr Tcheinti-Nabine Tchandikou, September 2020

Photo 76: EPP of Agoundè



Source: Dr Tcheinti-Nabine Tchandikou, September 2020

Photo 77: EPP of Kpassidè



Source: Dr Tcheinti-Nabine Tchandikou, September 2020

Pupils from Agbandè go to the EPP Léon-Centre and those from Anima go to Léon Yaka. In these different localities, the trend is to build three classrooms. Thus, a classroom contains two levels at the same time to solve the shortage of classrooms. The situation of the pupils in these premises is unsatisfactory because of the overcrowding and the number of classrooms available. makeshift baits are erected to accommodate the excess pupil numbers.

At the secondary school level the situation is not good. Only Léon-Centre, Broukou, Alloum, Agbassa and Kadjalla have a General Education College. The one in Agbassa is housed in makeshift premises. Pupils from Misséota and Bidjandé attend the CEG Léon-Centre, those from Léon Yaka attend the CEG Sarakawa, those from Tchoré-Nacoco attend the CEG Broukou, Kadjalla and Agbassa.

Only Broukou has a high school. (Photo 78) The situation of the Broukou high school, which is the only one in the area, needs to be improved because all the buildings do not comply with generally established standards. The Lycée built is a local initiative (LYDIL), built by the population itself, who recruited the majority of the teaching staff, commonly known as "Enseignement Volontaire (EV)". The other high schools solicited are those of Défalé, Kantè, Kara, and Niamtougou. At this level too, bait is being used to contain the overcrowding. Volunteer Teachers (VT) are very present in the area.

Photo 78: Broukou secondary school and college



Source : SCET Tunisia/DECO IC, 2018

Source: SCET-Tunisia/DECO IC, 2018

Classes are made possible by the mobilisation of local resources brought in by parents. The education system in the area is therefore fragile. This deficit is a source of school wastage in the zone, because the distances between villages and schools do not motivate pupils who are subjected to the more or less trying distances and the burning sun.

This lack of high school attendance does not provide many solutions to repeated failures. This situation increases the investment efforts of parents who are already affected by the financial difficulties linked to the slump, inequalities in trade relations and climatic hazards. From now on, parents will have to bear the costs of accommodation in the host locality (Kara, Kantè, Défalé and Niamtougou) and transport for their children admitted to secondary school and collège. Broukou remains the largest reception centre in the area. The schools in Broukou are therefore affected by the number of pupils and the inadequacy of the reception framework. This situation is often fatal to the development of children's school education and the emergence of managers in the area because it is at the root of the high school dropout rates which remain particularly high and the exodus to Benin and Nigeria. In primary education, the repetition rate is 23.6% and the dropout rate is 5.7%. This situation is also at the root of the increase in the number of out-of-school populations and limited schooling at primary level in the zone.

Higher education institutions are present in the extended project area, especially in Kara. A distinction is made between public and private universities. The University of Kara (UK) is the only public university present in the project area (Photo 79). The different faculties of this university are: the Faculty of Letters and Human Sciences (FLESH), the Faculty of Law and Political Sciences, the Faculty of Economics and Management (FASEG), the Faculty of Science and Technology and the Faculty of Health Sciences.

The University of Kara has set up a Higher Institute of Agricultural Trades (ISMA) from the 2017-2018 academic year. According to the university authorities, this course of study will be able to meet the needs in qualified human resources of Togo's agropoles. This will be a godsend for the agropole of the Kara basin, which will thus have a source of agricultural executives who can validly operate in the profession.

Photo 79: View of the entrance and the faculty of Kara University (South Campus)



Source: Dr Tcheinti-Nabine Tchandikou, September 2020

4.4.5.2. In the health sector

The project area presents a limited picture of health centre staffing. All the canton capitals have health centres, as well as some of the agglomerations in the zone. Broukou, Léon, Kadjalla, Agoundé (Photos 80 to 83), Aloum and Tchoré have a medical-social centre (CMS) or a peripheral care unit (USP). As regards the Medical Social Centre (CMS) of Broukou, built with funding from the Islamic Development Bank (IDB) in 2003-2004, to date the building is in a dilapidated state and presents cracks in places. These premises could pose a danger to patients. The centre lacks staff and various medical equipment. This centre, like the one in Agoundé, lacks a refrigerator for storing vaccines. This problem is present in several health structures in the area.

Agbassa, Bidjandè, Agbandè Léon-Yaka, Misseota, Tchoré-Nacoco, Tchoré-Ayica, Anima, Kadjallim do not have a health centre. These localities have recourse to the nearest health centre. Misséota, Bidjandè, Agbandè, Anima and Léon-Yaka use the USP of Léon-Centre and Broukou. Agbassa uses the Peripheral Care Unit (USP) in Broukou or Kadjalla. Tchoré-Nacoco and Ayica use the USPs in Agoundé and Tchoré-Centre. The construction of a health centre in these localities, which have a large population, will be an asset for farmers in these areas, improving their quality of life and better responding to Agropole's requests.

Photo 80: View of the Centre of Broukou



Source: Dr Tcheinti-Nabine Tchandikou, September 2020

Photo 81: View of the Léon Health Centre



Source: SCET-Tunisia/DECO IC, 2018

The main pathologies observed in the project area are malaria, acute respiratory insufficiency, intestinal parasitosis, dermatosis and diarrhoea. The treatment of these different pathologies follows different and multiple therapeutic itineraries. In the event of illness, traditional therapy combining medicinal infusions and the use of diagnostics and therapeutic convocations of the sacred and ritual associated with street medicines are the first reflexes of the inhabitants in rural areas and part of the urban environment. Then comes the recourse to conventional care through health centres. This last case only occurs when the first reflexes fail. Health practitioners in the area adopt communication methods through discussions and awareness campaigns to preserve the health of the population. The distribution of impregnated mosquito nets, awareness-raising and vaccination programmes are methods of protecting the health of the populations in the area.

Despite the existence of these health care structures, the lack of supply of products, the shortage of competent staff, the absence of adequate equipment to deal with the ills of care seekers and the distance and poor condition of the tracks, reduce the health services on offer and the enthusiasm of the population for using the existing health care units. The relationship between the existing health care structure and care seekers depends on the nature of the symptoms and the pathology. Irregular, short-term or delayed relationships are therefore created, conditioned by the nature of the symptoms.

The chieftaincy, the members of the Village Development Committee (VDC) of Broukou, Kadjalla and Tchore met and expressed the following needs:

- a complete rehabilitation of the health centre with appropriate equipment,
- a surgical unit for caesarean sections and trained, qualified staff (doctors, medical assistants, midwives) and sufficient numbers (pregnant women travel for more than 50 km, particularly to the Regional Hospital Centre (CHR) in Kara for critical cases of childbirth and caesarean sections.

The equipment, recruitment and integration of maternity wards in these various care centres will be an attraction for non-native peasants and a factor in the integration of young people wishing to settle down to work the land.

The reference health centres in the project area are: Kara University Hospital Centre, Kara Regional Hospital (Chinese Hospital) and the prefectural hospitals of Bassar, Guérin-Kouka, Kantè, Niamtougou (Table 26). These centres are called upon for serious illnesses that require diagnosis by specialists. Thus, these health centres have diversified and specialised areas of intervention. They include general medicine, traumatology, general surgery, gynecology, obstetrics, paediatrics, stomatology and intensive care. If you cannot find specialist services to treat a pathology, the campus university hospital centres and Sylvanus

Olympio all in Lomé are the last resort before going abroad. Pathologies related to the heart, blood, nerves and renal insufficiency are referred to Kara in or Lomé.

Table 26: Situation of the health infrastructure in 2019 in the region

| Prefecture s | Asso li | Bassa r | Bina h | Dankpe n | Doufelgo u | Kéra n | Koza h | Tota l |
|-------------------------|--------------------|--------------------|-------------------|---------------------|-----------------------|-------------------|-------------------|-------------------|
| CHU | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| CHR | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| HP | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 6 |
| Polyclinic | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 |
| CMS | 0 | 4 | 1 | 1 | 4 | 0 | 8 | 18 |
| USP | 9 | 16 | 14 | 16 | 18 | 12 | 26 | 111 |
| Clinic | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 5 |
| PMI | 0 | 0 | 1 | 0 | 0 | 0 | 2 | 3 |
| CRN* | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 3 |
| CMA** | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 |
| Total | 10 | 21 | 16 | 18 | 23 | 14 | 45 | 151 |

Source: Regional Health Directorate, Kara/2020

* : Nutritional Recovery Centre

** : Army Medical Centre (in Niamtougou)

However, in terms of health coverage, the number of health centres per 5,000 inhabitants and the number of beds per 1,000 inhabitants are key health indicators (3 beds per 1,000 inhabitants according to the WHO), showing that the project area still lacks health infrastructure and equipment. Table 27 shows the distribution of health infrastructure by prefectures in 2019.

Table 27: Health infrastructure and facilities in Kara Region in 2019

| Prefectures | Pop. In 2019 | Number of beds | Hospitals | CMS | No. of beds/1000hpts | No. of CMS/5000hpts | No. of hpts/CMS |
|---------------|----------------|----------------|-----------|-----------|----------------------|---------------------|-----------------|
| Assoli | 63 242 | 25 | 1 | 0 | 0,36 | 0 | NA |
| Bassar | 146 374 | 70 | 1 | 4 | 0,47 | 0,13 | 36 593 |
| Binah | 86 664 | 65 | 1 | 1 | 0,75 | 0,05 | 86 664 |
| Dankpen | 158 383 | 20 | 1 | 1 | 0,12 | 0,03 | 158 383 |
| Doufelgou | 97 065 | 30 | 1 | 4 | 0,30 | 0,20 | 24 266 |
| Kéran | 114 742 | 20 | 1 | 0 | 0,17 | 0 | 0 |
| Kozah | 280 332 | 500 | 3 | 8 | 1,78 | 0,14 | 35 041 |
| Region | 946 785 | 710 | 9 | 18 | 0,74 | 1,90 | 52 599 |

Source: Regional Health Directorate, Kara/2020

4.4.5.3. In terms of transport infrastructure

The project area has a precarious transport infrastructure. Most of the transport network is made up of developed or undeveloped tracks in advanced state of deterioration (Photos 84 and 85). Many of the tracks are makeshift, traced by the people's daily use of them. The poor condition of the tracks in this area provides poor traffic conditions for users. Difficult transport conditions in the rainy season complicate the economic situation of the area and the socio-economic conditions of the inhabitants, especially the farmers. The evacuation of the sick is a major concern with the situation presented by the tracks.

Currently, some tracks are being rehabilitated within the PUDC project. These are Sarakawa-Kadjalla-Kantè (RN21), Alloum-Broukou, Broukou-Nabom and Namon- Guérin Kouka, Kadjalim-Tchorè Nakoko, RN21(Agounboua)-Awassan and EPP Afoudè-Tchorè Ayiga.

The rehabilitation and maintenance of these tracks as part of the agropole would greatly relieve the population and promote the mobility of traders and socio-economic development in the area.

Table 28 gives a non-exhaustive list of the deterioration generally encountered on all the tracks.

Table 28: Degradations observed on the different tracks in the project area

| N° | OBSERVED DEGRADATIONS |
|----|---|
| 1 | Surfacing of the roadway |
| 2 | Presence of trees and shrubs in the right-of-way of the track |
| 3 | Practically non-existent trail-like tracks |
| 4 | Potholes |
| 5 | Corrugated sheet metal |
| 6 | Longitudinal and transverse gullies |
| 7 | Bourbiers |
| 8 | Deformations (subsidence) |
| 9 | Ditch space (lateral/divergent) |
| 10 | Absence of ditches (lateral and divergent) |
| 11 | Low points without crossing structures |
| 12 | Damage to existing structures |
| 13 | Existing structures in good condition obstructed |
| 14 | Beads |
| 15 | Erosion of high embankment slopes by runoff |
| 16 | Erosion of high embankment slopes by local residents |
| 17 | Lack of lateral drainage in built-up areas |
| 18 | Lack of road signs |
| 19 | Rock outcrops on the roadway |

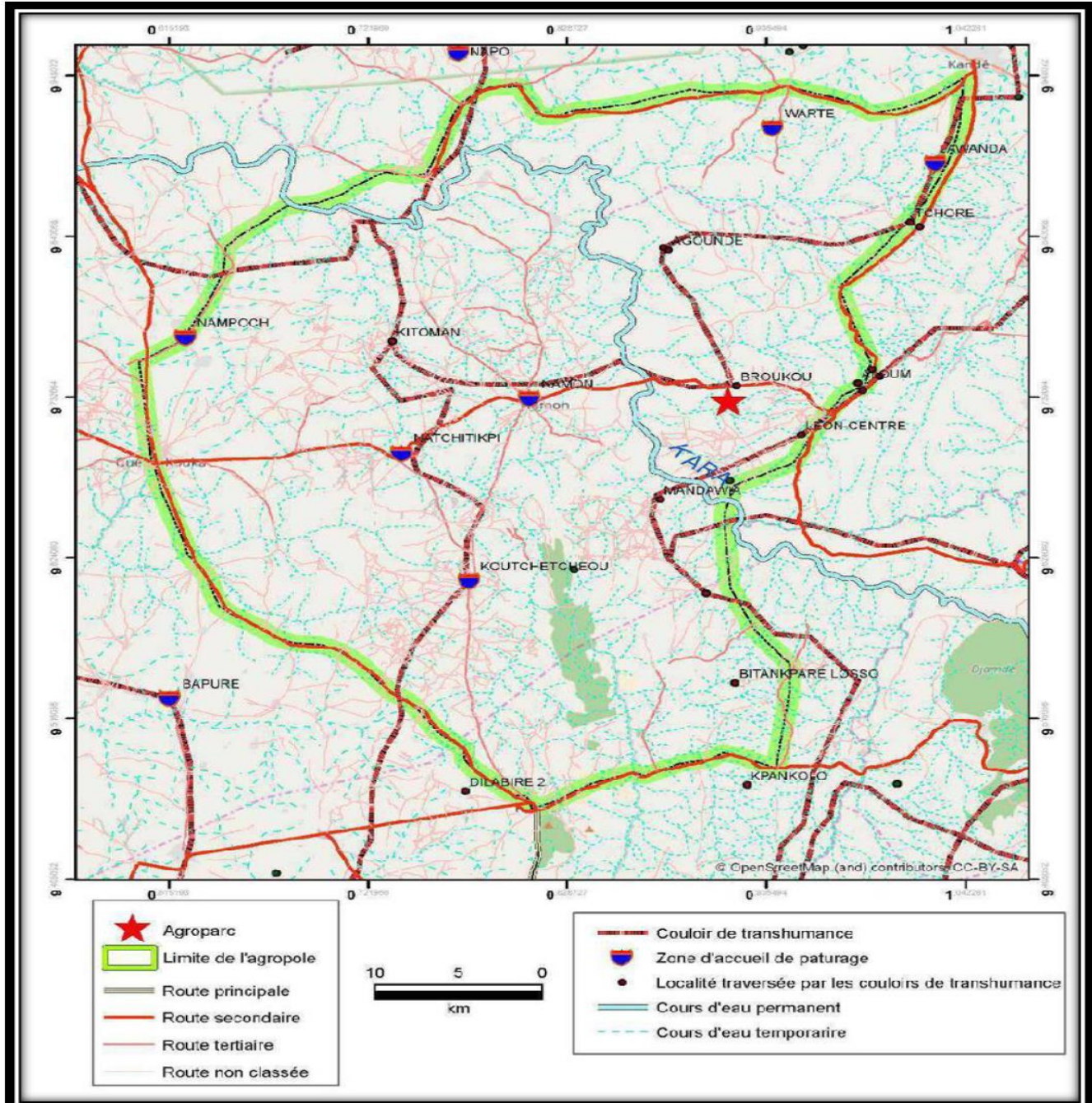
Photo 84: Degraded state of the Broukou Agbassa track



Source: Dr Tcheinti-Nabine Tchandikou, September 2020

Map 14 shows the roads and tracks in the agropole zone in relation to the agropark and the main localities in the area.

Map 12: Road infrastructure in the agropole of Kara



Source: IDEACONSULT International based on data from DGAT/2017

During the rainy season, the tracks are in a precarious state of practicability. The tracks leading to the Tchore-Nacoco, Tchore-Ayica and Agoundé zones are narrow and in a very poor state. Only 4x4 vehicles are allowed to drive on these stretches. The Broukou-Agbossa track also needs to be improved because, in periods of rain, given the poor quality of the work on the river, passage is sometimes impossible. The populations of Tchore-Centre and its surroundings are obliged to bypass through Kadjalla-Centre. This diversion lengthens the distances by several dozen kilometres with makeshift tracks.

4.4.5.4.

Drinking water supply

Water sources in the project area are mainly wells, boreholes and rivers. Most of the localities concerned by the project are equipped with hydraulic works, including boreholes (mostly in the cantons and villages) and mini-waterworks, especially in Kadjalla. The management of boreholes remains the prerogative of the water committees. The water committees' coffers are only timidly supplied with water when breakdowns occur. In this case, contributions are made per household. The search for water is a duty that falls mainly on women and children. The project area is mainly covered by village water supply. Water, the source of life, remains an old problem for a large part of the rural population despite the efforts that the government has undertaken and continues to undertake throughout the area. Some isolated localities suffer from a lack of drinking water for human consumption.

Several organizations and technical services continue to provide technical and financial assistance for sinking or drilling wells. However, there is a multitude of wells that often dry up. On the other hand, boreholes reaching deeper water tables have excellent flow rates (5 to 10 m³/hour or more) with special equipment.

Wells: There are two types of wells: traditional wells and modern wells. Most wells are dug by hand. Generally, these wells very rarely exceed 15 metres in depth and are subject to low water levels in periods of drought due to the degenerative nature of the surface rocks containing the water table. The level of water in the aquifers then drops very quickly, causing the wells to dry up and the lack of water in the dry season. Modern wells are large-diameter wells with a depth of between 20 and 30 metres.

Water reservoirs: This is an alternative solution in rural areas. They have a disadvantage in terms of health and are a source of drink for the herds. The water very often dries up from December onwards because of the pedological characteristics of the areas where these reservoirs are built, but the early drying up depends on evaporation, which in turn depends on the ratio of insolation to plant cover. The main water reservoir in the project area is the one located to the north of Broukou, about 2 kilometres from the agropark (Photo 86).

Photo 86: *Water retention located North of Broukou*



Source: SCET-Tunisia/DECO IC, 2018

The springs: The springs exist in the region and have conditioned the creation of certain farms and hamlets. These are unfortunately not listed. Some of them have dried up over time, due to climate change and anthropic pressure, leaving the population centres with a lack of water.

Boreholes: The villages concerned by the project have more or less drinking water sources. Most of the localities are equipped with human-powered boreholes (Photos 87 and 88). In Kadjalla there is a borehole with a wind-powered pump (Photo 89).

Photo 87: *View of a borehole equipped with a pump with human motricity in Bidjandè*



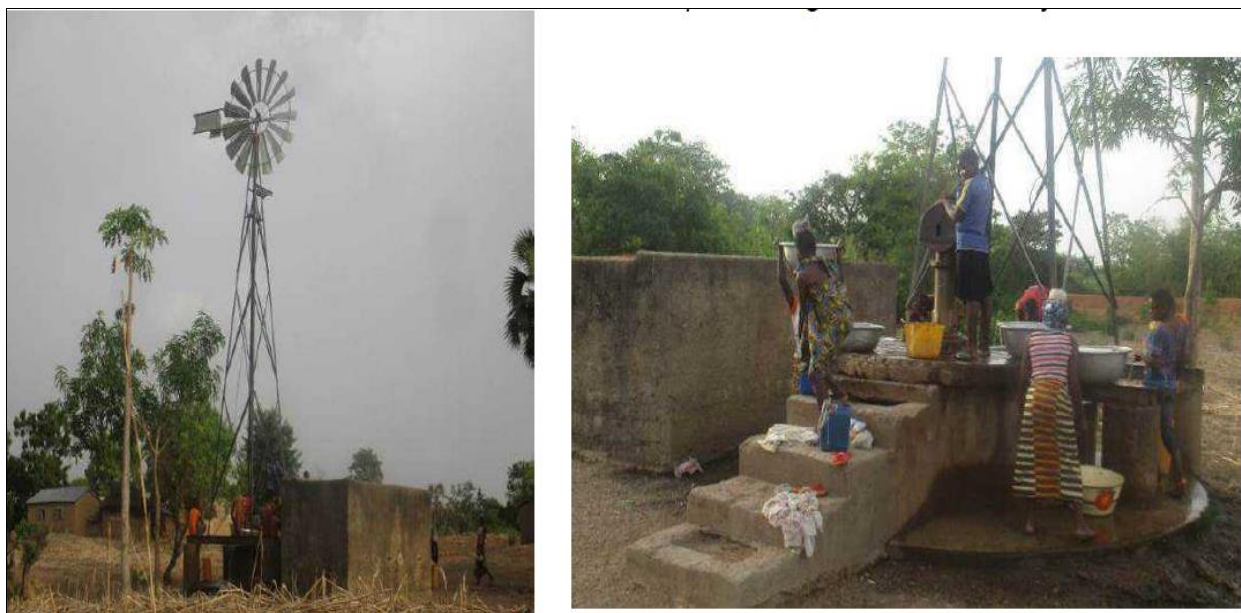
Source: SCET-Tunisia/DECO IC, 2018

Photo 88: *View of a borehole fitted with a pump with human motor skills in Kadjalla*



Source: SCET-Tunisia/DECO IC, 2018

Photo 89: A fountain post powered by wind energy in Kadjalla



Source: SCET-Tunisia/DECO IC, 2018

APRODAT began by carrying out mixed drilling in some localities of the agropole of the Kara basin, with human-powered pumps coupled with an electrically powered fountain and an elevated tank (Photo 89).

Photo 90: A mixed fountain station in Léon Yaka



Source: Dr Tcheinti-Nabine Tchandikou, September 2020

Photo 91: A mixed fountain bollard in Kpassidè



Source: Dr Tcheinti-Nabine Tchandikou, September 2020

However, some localities which are most hamlets do not have boreholes. These are Komta (Léon), M'bli, Lomou in the vicinity of Misséota, Akar Toundé, Akar Gnaka, Landa Ankolom in the vicinity of Broukou, Kpéhiri and Anima in the vicinity of Alloum, Bignandè-Bas (Block 6), the districts of Agbassa (Kpimkpim, Kpanta), Kankabidi, Semassi), the Koumdé districts of Kadjalim, the localities of Ounté, Alienté, Amaktélo and Koutakou in the vicinity of Kadjalla, Tchatssémon and Sigunda in the vicinity of Tchoré-Nacoco, Kouwéré and Atchakalaw in the vicinity of Tchoré-Centre. All these localities get their water from the Kara and other rivers. Kpimkpim gets its water from the Mabo River.

Localities that do not have drinking water supply facilities or whose facilities are broken down are obliged to use river water. Given the degree of pollution of these waters by large livestock, the population is frequently exposed to the risk of contamination by water-borne diseases such as guinea worm, onchocerciasis, intestinal parasitosis, etc. The difficult conditions of access to water affect children and women in their formal socialisation process. The schooling of children is also linked to the availability of water. Thus, according to the populations we met, the number of boreholes remains insufficient given the expansion of localities and the increase in population. Women often gather at the water point.

The installation of mini-SWRAs and solar-powered human-powered pumps would greatly relieve vulnerable people such as children for whom the search for water for their families, especially in dry seasons, becomes a real chore. Similarly, the supply of drinking water to remote localities will be an asset for the full membership of the Agropole project.

4.4.5.5. Energy infrastructure

As far as lighting is concerned, the project area is not yet covered by electrical power. As the Compagnie Energie Electrique du Togo (CEET) has not yet fully invested in the electrical extension in the area, only a few poles powered by solar energy exist for public lighting. Solar-powered street lamps can be seen in the large towns in the project area: Léon, Broukou (Photos 92 and 93), Alloum, Kadjalla, Tchoré-centre. Solar panels for domestic use are also visible in the area. A large part of the population in the project area uses paraffin lamps and torches. Certain services such as the health centre and some wealthy private individuals have generators as a source of electrical energy. The main source of energy used for cooking is charcoal.

At present APRODAT has already started the installation of the electric poles as a prelude to the electrification of the CEET conventionally electrified area from Sarakawa (Photos 94 and 95).

Photo 92: Solar-powered public lighting pole in Léon



Source: SCET-Tunisia/DECO TC, 2018

Photo 93: Alignment of lighting posts solar public in Broukou



Source: SCET-Tunisia/DECO IC, 2018

4.4.5.6.

Communication infrastructures

The localities crossed by the project are essentially covered by the telecommunication network, notably TOGOCOM and Moov (Photos 96 to 99). However, there are complaints about recurrent network disturbances in the area. The local authorities stated: "we have network problems. We need to improve its quality in our area". Mobile phone users also complain about the quality of coverage of the telecommunications network. Consumers report the existence of significant disturbances leading to difficulties in communication and access to telephone services such as credit transfer.

With TOGOCOM and MOOV two mobile phone operators, the telecommunications market in Togo offers a varied range of products and services. Apart from voice services, data services are booming: SMS, MMS, video conferencing and especially WhatsApp.

Photo 98: View of a telecommunication antenna in Kadjalla



Source: SCET-Tunisia/DECO IC, 2018

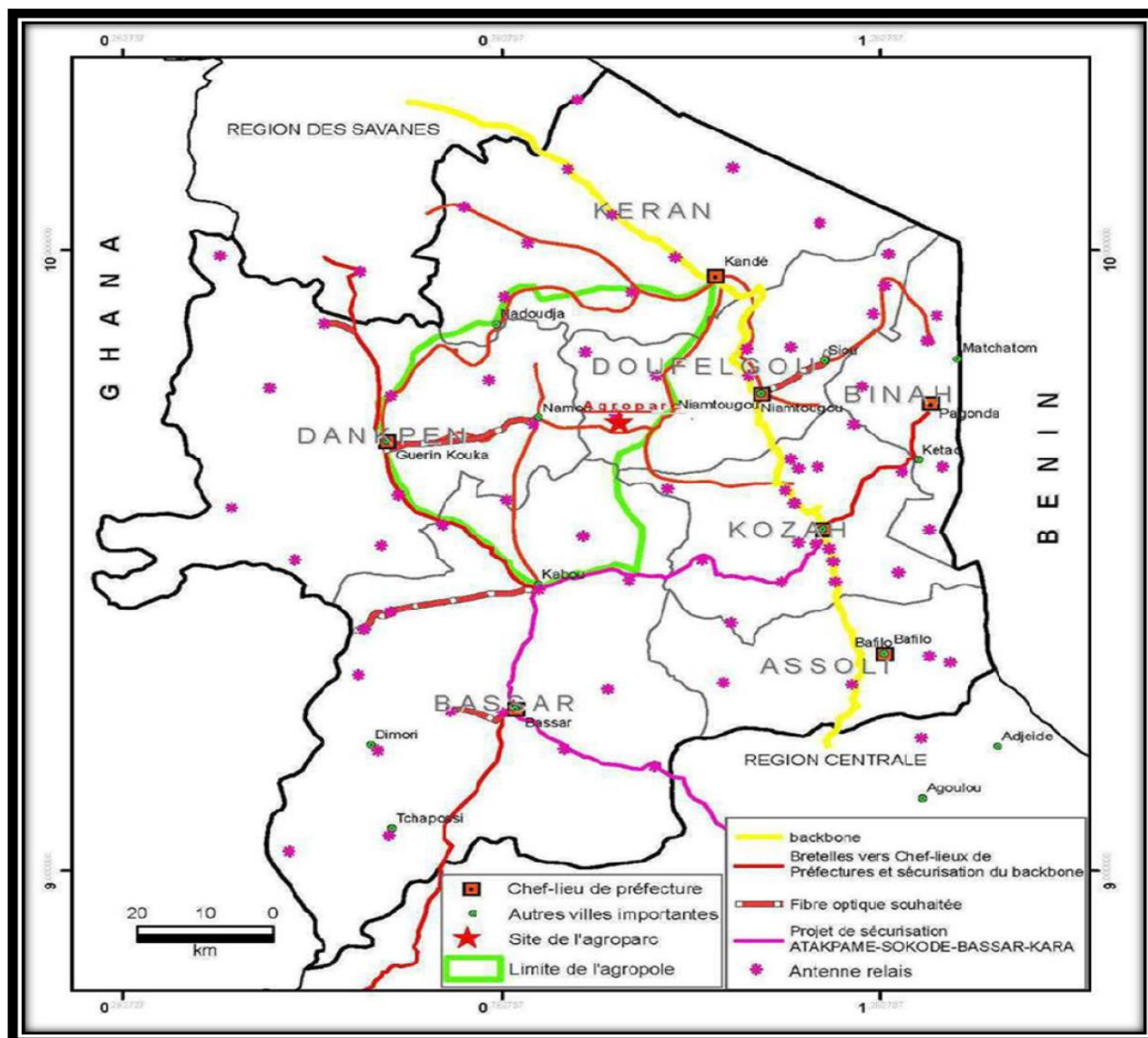
Photo 99: View of a telecommunication antenna in Ogoandé



Source: SCET-Tunisia/DECO IC, 2018

Two TOGOCOM relay antennas were recently installed in the project area, on the track leading from Kara town to Sarakawa and Broukou respectively. In addition, the Lomé-Cinkassé Backbone project and the project to secure the Atakpamé-Sokodé-Bassar-Kabou-Kara Backbone currently underway will improve the rate of Internet penetration on Togolese territory, reduce communication costs and very significantly improve the quality of service in Togo and in exchanges with the sub-region and more broadly with the rest of the world.

Map 15 shows the telecommunication network in the Kara region and in the agropole of the Kara basin.



Map 13: Telecommunication network in the Kara region

Source : IDEACONSULT International /2017

4.5. ANALYSIS OF THE INITIAL STATE OF THE PROJECT AREA

4.5.1. ON THE BIOPHYSICAL LEVEL

Analysis of the biophysical environment makes it possible to see whether the initial state of the project area is in ecological balance or whether, as a result of anthropic actions or other natural events, the area is already in ecological imbalance.

The description of the environment of the project area gives us an idea of its initial state and occupation. It is clear from this description that the project area, before the development work begins, already presents an unstable biophysically unstable environment, characterised by :

- air polluted by dust and airborne particles from vehicle traffic on dirt roads, combustion gases (carbon monoxide, nitrogen and lead oxides) from car exhausts smoke and ash from the burning of firewood, charcoal making and bush fires;
- degraded and hardly practicable tracks ;
- inaccessible places in rainy seasons;
- a biodiversity that is certainly rich in both flora and fauna species that is dependent on the rhythm of the seasons and is threatened by human activities.

4.5.1.1. State of the vegetation

The initial vegetative state of the project area is not static. It evolves annually and interannually.

In terms of annual evolution, we can see that the herbaceous carpet, which is usually thin and discontinuous, grows rapidly and becomes quite dense as soon as the first rains fall, at the same time as the trees turn green again. On the other hand, the dry season forces the plants to rest for a prolonged period each year.

With regard to the interannual evolution, it should be stressed that woody species are subject to strong agricultural and energy pressure (firewood, charcoal), which results in the felling of trees, pruning and cutting down of branches, and the devitalisation of dry forest. In arable areas, the natural vegetation has been profoundly modified. This means that the natural and anthropised facies of the vegetation are presented here bearing in mind that the landscapes observed in the area have for the most part reached very advanced stages of degradation with a natural state that has become rare. At present, the vegetation cover is only made up of wooded or shrubby savannah of the Sudanian type in places outside the cliff foothills where some forest massifs can be found.

4.5.1.2. Areas of ecological interest

There are all the sites for the construction of mini-dams and hydro-agricultural developments in the project area of Ecologically Significant Areas. These are the galleries for their role in protecting the hydrographic network, which are the areas of interest to be taken care of in order to limit damage. Also found in this agrarian landscape are scattered stands of trees with multiple but above all economic uses, in particular Shea (*Vitellaria paradoxa*), Nere (*Parkia biglobosa*), Oil Palm (*Elaeis guineense*) and Mango (*Mangifera indica*).

The project area is also home to commercially valuable species that are being exploited for timber and service timber, fuelwood and charcoal making. These different species are presented in Tables 29-31.

Table 29: Species of commercial value at the site of Mini-dam 01 and its water impoundment

| Species | Family | Trade name |
|------------------------------|-----------------|-------------------|
| <i>Lannea kerstingii</i> | Anacardiaceae | |
| <i>Khaya senegalensis</i> | Meliaceae | |
| <i>Ceiba pentandra</i> | Bombacaceae | Cheesemaker |
| <i>Azalia africana</i> | Ceasalpiniaceae | Doussie or Lingué |
| <i>Anogeissus leiocarpus</i> | Ceasalpiniaceae | |
| <i>Isobertinia doka</i> | Ceasalpiniaceae | |
| <i>Terminalia spp</i> | Combretaceae | |
| <i>Pterocarpus erinaceus</i> | Fabaceae | |
| <i>Khaya senegalensis</i> | Meliaceae | |
| <i>Vitellaria paradoxa</i> | Sapotaceae | |
| <i>Prosopis africana</i> | Mimosaceae | |
| <i>Parkia biglobosa</i> | Mimosaceae | |
| <i>Vitex doniana</i> | Verbenaceae | |

Source: Fieldwork SCET Tunisia/DECO IC/2018, updated in September 2020 (Dr Tcheinti-Nabine Tchandikou)

Table 30: Species of commercial value on the right-of-way of the irrigated perimeter right-of-way from the mini-dam 01

| Species | Family | Trade name |
|---------|--------|------------|
|---------|--------|------------|

| | | |
|---------------------------------|----------------|-------------------|
| <i>Lannea kerstingii</i> | Anacardiaceae | |
| <i>Cleistopholis patens</i> | Annonaceae | |
| <i>Ceiba pentandra</i> | Bombacaceae | Cheesemaker |
| <i>Azelia africana</i> | Cesalpiniaceae | Doussie or Lingué |
| <i>Erythrophleum suaveolens</i> | Cesalpiniaceae | Tali |
| <i>Albizia adianthifolia</i> | Mimosaceae | Iatandza |
| <i>Albizia ferruginea</i> | Mimosaceae | Iatandza |
| <i>Albizia zygia</i> | Mimosaceae | Ovochi |
| <i>Aubrevillea kerstingii</i> | Mimosaceae | |
| <i>Antiaris africana</i> | Moraceae | Ako |
| <i>Milicia excelsa</i> | Moraceae | Iroko |
| <i>Pycnanthus angolensis</i> | Myristicaceae | Ilomba |
| <i>Cola gigantea</i> | Sterculiaceae | |
| <i>Hallea stipulosa</i> | Rubiaceae | |
| <i>Vitellaria paradoxa</i> | Sapotaceae | |
| <i>Parkia biglobosa</i> | Mimosaceae | |
| <i>Vitex doniana</i> | Verbenaceae | |

Source: Fieldwork SCET Tunisia/DECO IC/2018, updated in September 2020 (Dr Tcheinti-Nabine Tchandikou)

Table 31: Species of commercial value at the site of Mini-dam 02 and its water reservoir

| Species | Family | Trade name |
|---------------------------------|----------------|-------------------|
| <i>Lannea kerstingii</i> | Anacardiaceae | |
| <i>Cleistopholis patens</i> | Annonaceae | |
| <i>Ceiba pentandra</i> | Bombacaceae | Cheesemaker |
| <i>Azelia africana</i> | Cesalpiniaceae | Doussie or Lingué |
| <i>Erythrophleum suaveolens</i> | Cesalpiniaceae | Tali |
| <i>Albizia adianthifolia</i> | Mimosaceae | Iatandza |
| <i>Albizia ferruginea</i> | Mimosaceae | Iatandza |
| <i>Albizia zygia</i> | Mimosaceae | Ovochi |
| <i>Aubrevillea kerstingii</i> | Mimosaceae | |
| <i>Antiaris africana</i> | Moraceae | Ako |
| <i>Milicia excelsa</i> | Moraceae | Iroko |
| <i>Pycnanthus angolensis</i> | Myristicaceae | Ilomba |
| <i>Cola gigantea</i> | Sterculiaceae | |
| <i>Hallea stipulosa</i> | Rubiaceae | |
| <i>Vitellaria paradoxa</i> | Sapotaceae | |
| <i>Parkia biglobosa</i> | Mimosaceae | |
| <i>Vitex doniana</i> | Verbenaceae | |

Source: Fieldwork SCET Tunisia/DECO IC/2018, updated in September 2020 (Dr Tcheinti-Nabine Tchandikou)

The same species of commercial value can be found on the right-of-way of the irrigated perimeter from mini-dam 02 and on the site of mini-dam 03 and its water reservoir and other sites.

In addition to these timber species, other valuable products are available on the site, including medicinal plants, for which inventories have identified several species contained in Tables 32 and 33.

Table 32: Medicinal plants found at the site of mini-dam 01 and its water reservoir

| Plants | Vertu |
|--------------------------|---|
| <i>Azelia africana</i> | gonorrhoea, trypanosomiasis, oedema, epilepsy, febrifuge, skin wound, leprosy, hypertension, constipation, lumbago, haemorrhage at delivery, oedema, Immunity started, acute rheumatism |
| <i>Lannea kerstingii</i> | Leanness, malaria |

| | |
|----------------------------|---|
| <i>Lannea acida</i> | Dysentery, Orchitis, venereal disease, asthenia, sterility |
| <i>Annona senegalensis</i> | Smoking, ovarian cysts, infertility, food (fruit) |
| <i>Parkia biglobosa</i> | Gastric ulcer, threatened abortion, ovarian cysts, respiratory diseases, deworming Phagedenic ulcer, yellow fever, haemorrhoids, amoebiasis, bronchitis, cough, burning, abscess. |
| <i>Khaya senegalensis</i> | Diarrhoea, Deworming, abortion, Malaria, sickle cell anemia |
| <i>Nauclea latifolia</i> | Deworming, ascites, haemostatic, male sterility, malaria, conjunctivitis, abscess, constipation, renal insufficiency, |
| <i>Adansonia digitata</i> | Fortifiers, malaria, Galactagogues, Strophanthus counterpoison. Tooth decay, gingivitis, malaria, measles, gastritis |
| <i>Vitellaria paradoxa</i> | Female sterility, Dysentery, haemorrhoids, bilharzia, coughs |

Source: Fieldwork SCET Tunisia/DECO IC/2018, updated in September 2020 (Dr Tcheinti-Nabine Tchandikou)

Table 33: Medicinal plants identified on the right-of-way of the irrigated perimeter starting from mini-dam 01

| Plants | Vertu |
|---------------------------------|---|
| <i>Lannea kerstingii</i> | Leanness, malaria |
| <i>Rhus natalensis</i> | Hiatal and inguinal hernia, goiter |
| <i>Annona senegalensis</i> | Smoking, ovarian cysts, infertility, food (fruit) |
| <i>Uvaria chamae</i> | Acute hepatitis, gastric ulcer, malaria |
| <i>Saba comorensis</i> | Hemorrhoids, agalactia, liver failure. |
| <i>Mondia whitei</i> | Sexual insufficiency, physical asthenia, liver failure, jaundice |
| <i>Azela africana</i> | Immunity initiated, acute rheumatism |
| <i>Cassia sieberiana</i> | Gastric ulcer, malaria |
| <i>Maytenus senegalensis</i> | Gastric acidity, sexual infection |
| <i>Cochlospermum planchonii</i> | Acute hepatitis, gastric ulcer, malaria |
| <i>Ipomea mauritiana</i> | Umbilical hernia, ovarian cysts, stubborn constipation |
| <i>Parkia biglobosa</i> | Gastric ulcer, threatened abortion, ovarian cysts, respiratory diseases |
| <i>Subscorpioid horn</i> | Difficult childbirth |

Source: Fieldwork SCET Tunisia/DECO IC/2018, updated in September 2020 (Dr Tcheinti-Nabine Tchandikou)

At the site of the mini-dam 02 and its water reservoir, the same species of medicinal plants as on the right-of-way for the development of the irrigated perimeter from mini-dam 01 and on the other sites are listed.

4.5.1.3. Floristic analysis and biodiversity issues

The floristic inventory of the various development sites in the project area is not exhaustive but gives an idea of the state of biodiversity.

4.5.1.3.1. At the Broukou dam development right-of-way and its water retention area

The floristic analysis of the vegetation focused on woody plants at the level of the Broukou dam development right-of-way and its water reservoir has enabled the identification of 58 species grouped into 451 genera and 23 families. However, seven families are best represented by the number of species in these vegetations: Ceasalpiniaceae, Rubiaceae, Combretaceae, Mimosaceae, Loganiaceae, Anacardiaceae and Gramineae.

In the floristic procession, the species best represented are four: *Terminalia macroptera* and *Combretum colinum*, characteristic of the shrubby savannah and of no particular interest in terms of biodiversity conservation, and two in the forest galleries found on site and also characteristic of these formations in the Sudanian agrarian zone. These are *Diospyros mespiliformis* and *Margaritaria discoidea*.

According to Togo's 5th National Report on Biological Diversity (2009-2014) and research by KOKOU et al, 2009, Atsri, 2009 and Tagba, 2013, five species are threatened with extinction due to their preferential and abusive use by local populations as charcoal, fuelwood or timber. These are *Pterocarpus erinaceus*, *Anogeissus leiocarpus*, *Prosopis africana*, *Terminalia spp*, *Khaya senegalensis* which are all found in the inventory of the present studies.

In addition to these endangered species in Togo in the project area, other species can be found on the red list of the IUCN inventory of the conservation status of plant species as shown in Table 34.

Table 34: IUCN Red List of the Conservation Status of Plant Species Inventory

| Species | Family | Categories IUCN |
|--------------------------------|--------------|-----------------|
| <i>Afzelia africana</i> Sm. | Fabaceae | VU |
| <i>Vitellaria paradoxa</i> | Sapotaceae | VU |
| <i>Diospyros mespiliformis</i> | Ebenaceae | NA |
| <i>Khaya senegalensis</i> | Meliaceae | EN |
| <i>Pterocarpus erinaceus</i> | Fabaceae | LR |
| <i>Anogeissus leiocarpus</i> | Fabaceae | NA |
| <i>Prosopis africana</i> | Mimosaceae | LR |
| <i>Terminalia spp</i> | Combretaceae | NA |
| <i>Adansonia digitata</i> | Bombacaceae | NA |

The different IUCN plant categories are defined as follows: EN: Endangered Species; VU: Vulnerable; LR: Low Risk and NA: Not applicable.

Among these species, it is important to point out that *Pterocarpus erinaceus* and *Afzelia africana* are currently regularly removed when the transhumant Peulhs pass through.

4.5.1.3.2. At the level of the development right-of-way of the irrigated perimeter from the Broukou dam

The floristic analysis of this vegetation focused on woody plants at the level of the development right-of-way of the irrigated perimeter from the Broukou dam, allowed to identify 61 species grouped in 57 genera and 34 families. Here again, seven families are best represented by the number of species in these vegetations: Ceasalpiniaceae, Rubiaceae, Combretaceae, Mimosaceae, Loganiaceae, Anacardiaceae, and Gramineae.

In the floral procession, the species best represented are three: one *Terminalia avicennioides*, characteristic of the shrubby savannah and of no particular interest in terms of biodiversity conservation, and two in the forest galleries found on site and also characteristic of these formations in the Sudanese mountainous area. These are *Pterocarpus santalinoides* and *Raphia soudanica*.

A total of five species identified in the project area are on the IUCN Red List of Plant Species Conservation Status Inventory. These species are either threatened or listed as endangered or on the red list of the endangered status inventory: *Afzelia africana*, *Vitellaria paradoxa*, *Pterocarpus erinaceus*, *Pterocarpus santalinoides*, *Lophira lanceolata*.

The floristic analysis enabled 46 species to be identified, grouped into 39 genera and 25 families. In the floristic procession, two species are on the red list of the IUCN inventory of the state of conservation of plant species. These species are *Afzelia africana* and *Pterocarpus erinaceus*.

Among these species, it is important to point out that at present, *Lophira lanceolata* and *Vitellaria pardoza* are seriously exploited and *Pterocarpus erinaceus* and *Afzelia africana* are regularly removed when the transhumant Peulhs pass by.

The same floristic and biodiversity analysis was carried out on the development right-of-way of the Kpassidè mini-dam and its water reservoir, on the development right-of-way of the irrigated perimeter from the Kpassidè mini-dam, on the development right-of-way of the Léon mini-dam and its water reservoir and on the development right-of-way of the irrigated perimeter from the Léon mini-dam.

4.5.1.4. State of the fauna

4.5.1.4.1. Potential threats

The development of agriculture and forestry in the project area contributes to a loss of wildlife habitats. Vegetation is being increasingly degraded through timber exploitation and the transformation of the vegetation cover into a mosaic of savannahs by agricultural systems that are ecologically unsuitable for the conservation of natural resources.

4.5.1.4.2. Ecological value of the site

The value of the environment is calculated by adding the specific values (SV) of the wildlife species (F x R x D).

- According to the methodology announced in chapter 2, on the sites of the mini-dams and their water reservoirs F has a value of 2 on the fidelity scale (F), R has a value of 4 on the scarcity scale (R) and D has a value of 1 on the distribution scale (D).

VS mini-dam site = $2 \times 4 \times 1$

VS mini-dam site = 8

- According to the methodology announced in chapter 2, in the sites of the perimeters to be irrigated from the mini-dams and their water retention F has a value of 1 on the fidelity scale (F), R has a value of 4 on the scarcity scale (R) and D has a value of 1 on the distribution scale (D)

VS mini-dam site = $1 \times 4 \times 1$

VS mini-dam site = 4

VM = $\sum Vs = 8 + 4$

M = 12

This value, according to Hertig's (1999) scale, corresponds to the rank of very low value media.

4.5.2. AT THE HUMAN LEVEL: RESULTS OF THE FIRST PUBLIC CONSULTATIONS

4.5.2.1. Perceptions and attitudes of the beneficiary populations towards the project

Public consultations were carried out in the project area to explain the project to the population and to gather their opinions, concerns and fears regarding the negative impacts of the project and to seek possible solutions with them (Photos 100 to 110). The populations consulted, made up of owners, operators and opinion leaders, expressed their joy at the fact that they are benefiting from this innovative project in Togo. The enthusiasm is all the greater according to the population, because their area has

been chosen to be among the Agropoles pilot localities in Togo and the Kara region. This state of mind is justified by the feeling that land development will be an opportunity to modernise agriculture, to increase agricultural production through water control, to create outlets for the products of the agropole, to enhance the value of the farming profession and to reduce poverty in rural areas. Through its integrated aspect, this initiative will also be an opportunity to maintain and rebuild a large productive force capable of bringing about significant qualitative changes in the beneficiary rural areas. The agropole of the Kara basin will be a limit or even a brake on the emigration of young people to the cities and neighbouring countries.



Photo 100: *Public consultation in Broukou*



Photo 101: *Public consultation in Misséota*



Photo 102: *Public consultation in Misseota*

Photo source: SCET-Tunisia/DECO IC, 2018



Photo 103: Public consultation in Léon-Yaka



Photo 104: Public consultation in Agbassa



Photo 105: Public consultation in Bidjandé

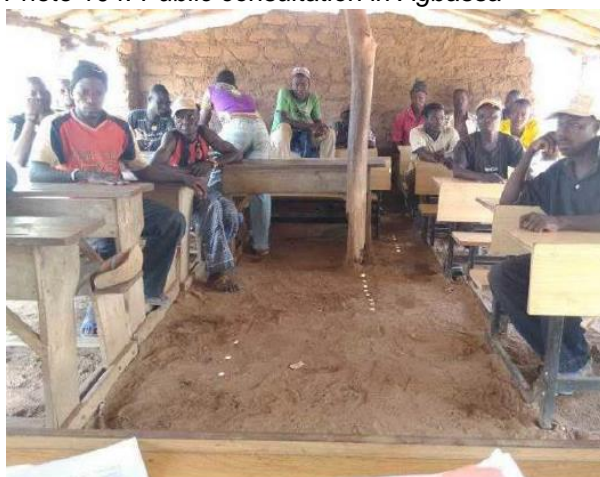


Photo 106: Public consultation at Tchore- Ayiga



Photo 107: Public consultation in Léon-Yaka



Photo 108: Public consultation in Kadjalla

Photo source: SCET-Tunisia/DECO IC, 2018



Photo 109: Public consultation in Kadjalla

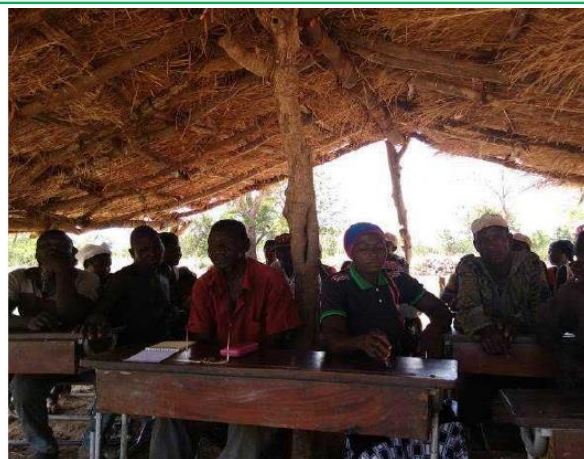


Photo 110: Public consultation in Tchore-Nacoco

Photo source: SCET-Tunisia/DECO IC, 2018

For the populations consulted, the project is a solution to the fundamental concerns of agricultural producers. As one respondent put it: *"Despite all the solutions provided so far, none of them have succeeded in lifting farmers out of poverty. The Kara Basin agro-project is new in its industrial dimensions, so it is important to give this new project a chance to offer better working and marketing conditions. What is still interesting is that the project seeks to stabilise all the living forces in the area so that they can devote themselves to agriculture, which from now on must leave the ranks of survival activities and go back to being a profession that feeds its people. The modernisation and industrialisation of the agricultural sector are certainly means to achieve this noble objective. ».*

According to the operators, it is a new page that will open in the middle. The farming world will benefit from the transfer of technology that will make it possible to increase production and broaden marketing channels through the construction of rural transport infrastructures. For the producers, this project will allow an extension of the agricultural areas and the acquisition of modern farming practices. The realisation of the agropole is also an opportunity to attract the area to the outside world.

Operators and owners perceive this project as an opportunity to attract operators, traders and players in other economic fields. One respondent expressed herself in these terms:

"We seem to be forgotten, even though our productions serve city dwellers and the whole country. But through this project, it is an opportunity to make up for the handicaps in terms of agricultural development and to become one of the areas that already benefit from large hydro-agricultural projects in Togo. Our localities will now be able to better express themselves in the field they know best: agriculture. We support this project".

For operators and owners, this project will reduce the number of people leaving for urban centres and neighbouring countries such as Ghana and Nigeria. This is a reason for those who have emigrated to return to develop their locality through agriculture, which will now bring them more income than in neighbouring countries.

Producers at the project sites say they are particularly interested in this project because of its ability to provide agricultural areas with water sources. Delays in rainfall make farmers dependent on the rains and unsatisfactory harvests. However, the populations have expressed their desire to see the project effectively accompanied by agricultural equipment and socio-economic infrastructure.

Operators expressed concern about surpluses in the operations phase of the project. These surpluses, which cannot be disposed of through the project, will create delicate situations with the MFIs, which do not take into account any mitigating situations and are beyond the farmers' control. The farmer risks being sued by these institutions for non-compliance with repayment clauses. The farmers still have in mind the exhortations to mass produce from certain NGOs in favour of Soya and the National Agency for Food Security (ANSAT). In the end, the production could not be absorbed by these institutions, hence the creation of delicate situations with the MFIs.

Moreover, operators fear the selective purchasing methods used by ANSAT. According to the operators, ANSAT grants a privilege to some operators to the detriment of others. This situation is detrimental to the farmers who have the good will to produce for this institution but cannot sell for reasons of selection at the head of the client. Farmers are asking the Agropole project to learn lessons from this ANSAT behaviour and to consume all production without any selection, at the risk of farmers' disengagement.

This includes mainly providing water and markets to the populations. Apart from this concern, the producers are convinced that the pilot area has enormous potential to meet the project's objectives. This conviction is justified by the accessibility of the land, the availability of sites, the availability of labour, and the willingness and adherence of producers and landowners to the project. The producers hope to change their lives through this initiative by making agriculture a noble and wealth-creating profession.

There are a number of reasons inherent in the project that favour the adhesion of the populations. These are :

- construction of infrastructure integrated into the project
- the electrical extension
- the industrialisation of agriculture
- the desire to diversify the crops on the site
- technology transfer
- the possibility of increasing production
- the possibility of increasing farm incomes
- water control
- the development of market gardening
- women's financial empowerment
- a trigger for the socio-economic, cultural and spatial development of the area
- the mitigation of migratory movements harmful to the preservation of villages and

its economic assets.

However, people are haunted by the negative impacts of the Agbassa EDF. For the populations of the area, this project has installed farmers on land that did not belong to it. The people who settled on the sites now claim ownership of the land they only had the right to use. This situation is at the root of land conflicts in the area. In this context, it is important that the land status in the new project be clarified so that the land can be made available to APRODAT. It is also important that land disputes arising from the EDF project are addressed and resolved before the new project starts.

In addition, the project is asked to give priority to local labour during the construction and operation phase for a successful completion of the project. To this end, opinion leaders, local authorities and community leaders must be involved.

4.5.2.2. infrastructures in the area

Perceptions and attitudes towards the projected

The populations concerned by the project welcomed the initiative of the hydro-agricultural developments, the tracks and the drinking water supply. For these populations, the project was able to identify the priority problems of the area. In order to prioritise, the populations believe that the issue of drinking water supply remains essential and decisive for the project's success. According to these populations, many localities continue to drink water from rivers, particularly the Kara.

This situation is permanently damaging to the health of the farmers, who are occasionally slowed down by water-quality diseases. However, the participants feel that the project can do better by solving the water problem in some areas where there is no drinking water supply and by developing certain paths that are important to the communities for a better circulation of goods and people. For the populations and local leaders of Alloum, the project could have done better by installing standpipes and water towers in Alloum as well as in all the townships. As a result, the populations of Alloum believe that a readjustment is necessary to ensure greater equity in the distribution of infrastructures.

Moreover, the populations of the project area regret that water infrastructures have not been provided for livestock. Indeed, according to the participants, the project area, particularly Tchore, is an unprecedented livestock breeding area, as the lack of water for the livestock means that the animals are dehydrated and in poor health. This situation has a considerable influence on their weight and consequently on their value. This constitutes a loss of income for the herder and a source of demotivation. Therefore, the construction of water sources for livestock is necessary within the framework of an agropole to revitalise the estate, at the risk of seeing it go down in flames and sink. Ultimately, the populations are asking the agropole project to compensate or resettle all those who will be affected by all the actions related to the implementation and operation of the project.

The different reactions of the different actors to the negative environmental impacts and recommendations are recorded in Table 35.

Table 35: Presentation of the reactions of the different actors to the negative environmental impacts and recommendations

| Actors | Points discussed : negative impacts | Reactions to project impacts | Recommendations /Stocks |
|-------------------|--|--|--|
| All actors | Air pollution | <ul style="list-style-type: none"> The implementation of the projects will lead to the emission of dust in the cities and will degrade the living environment of the populations. The drivers of the trucks transporting the materials do not respect the population. They speed and often cause accidents | <ul style="list-style-type: none"> Raising drivers' awareness of the need to respect the public and the speed limit in towns and cities Punishing offenders |
| | Pollution by construction site waste | <ul style="list-style-type: none"> The completion of the projects will generate waste, especially excavated material and plastic bags from workers after the consumption of water (Pure water) on the construction site. The abandonment of packaging and other waste in the wilderness | <ul style="list-style-type: none"> Installing rubbish bins on building sites ; Support the Neighbourhood Development Committees (CDQ) in the acquisition of rubbish collection and maintenance equipment for the neighbourhoods |
| | Risk of infection of sexually transmitted diseases and HIV/AIDS Risk of deviations sexual | <ul style="list-style-type: none"> The arrival of technicians and labourers for a more or less long period of time will encourage unprotected sexual activities. The arrival of technicians and labourers for a more or less long period of time will favour sexual activities with other people's wives. | <ul style="list-style-type: none"> Raise awareness among the population as well as all the skills from elsewhere on good behaviour in the context of sexual activities and those relating to the women of others. Educating young girls about the importance of sexual protection and the use of female condoms and feminine condoms |
| | Displacement of cultural heritage | <ul style="list-style-type: none"> The project in the preparation phase will require the relocation of some fetishes and shrines, hence the need to make arrangements for | <ul style="list-style-type: none"> Supporting priests financially for the relocation of fetishes |
| | Loss of agricultural land | <ul style="list-style-type: none"> During the preparation stage, some farmers will see their cultivated plots of land swallowed up by the project site. There will be a need to expand to other lands with the support of the project. | <ul style="list-style-type: none"> Favouring the operators, if necessary, in the acquisition of plots of land on the project site Assist in the resettlement of farmers to other lands with the help of local authorities |

| Actors | Points discussed : negative impacts | Reactions to project impacts | Recommendations /Stocks |
|---------------------------------------|--|---|--|
| | Risks of land conflicts | <ul style="list-style-type: none"> The project in the preparation phase will rekindle latent land conflicts and conflicts related to the settlement of farmers on the land with the EDF-Agbassa project. | <ul style="list-style-type: none"> Identify and help resolve the liabilities of the EDF-Agbassa project from a land tenure point of view with local leaders (Chiefs, CCCD, CVD). |
| | Risk of traffic accidents | <ul style="list-style-type: none"> During the preparation phase, heavy machinery will be present on the tracks in the area. Excessive speed and the inattention of users less accustomed to this traffic will lead to traffic accidents. It is therefore necessary to take measures to ensure that | <ul style="list-style-type: none"> Putting up road signs on the main tracks Make machine operators more aware of the need for greater vigilance. Introduction of punishments by the project for deviations in driving behaviour |
| | Disruption to the movement of people and goods | <ul style="list-style-type: none"> The work that will be carried out as part of the development of the runways will disrupt the movement of goods and people in the area. | <ul style="list-style-type: none"> Provide more or less short deviations as far as possible to ensure the movement of people and goods. |
| | In the exploitation phase | <ul style="list-style-type: none"> The abandonment of packaging and other waste in the wilderness Apart from door-to-door refuse collection, town halls do not have an adequate system for managing refuse in the streets through sweeping | <ul style="list-style-type: none"> Support the Neighbourhood Development Committees (CDQ) in the acquisition of rubbish collection and maintenance equipment for the neighbourhoods |
| All actors | Emergence of new economic reports | <ul style="list-style-type: none"> The project in the exploitation phase will lead to new production relationships between farmers and landowners because of the economic stakes. The operator could be prejudiced | <ul style="list-style-type: none"> The need to regulate production relations between owners and operators in order to secure the latter's security |
| Women and women's associations | Risk of traffic accidents | <ul style="list-style-type: none"> During the preparation phase, heavy machinery will be present on the tracks in the area. Excessive speed and the inattention of users less accustomed to this traffic will lead to traffic accidents. It is therefore necessary to take measures to ensure that | <ul style="list-style-type: none"> Putting up road signs on the main tracks Make machine operators more aware of the need for greater vigilance. Introduction of punishments by the project for deviations in driving behaviour |

| Actors | Points discussed : negative impacts | Reactions to project impacts | Recommendations /Stocks |
|--|---|--|---|
| Local chiefs, traditional and customary chiefs, | Ignorance of local competences and accentuation of disparities between certain villages and canton capitals | <ul style="list-style-type: none"> The FED-Agbassa project did not benefit young people in the area. Labour is often ignored The precarious working conditions of local workers during the execution of projects. The village of Broukou, with the infrastructure planned in this locality compared to the derisory infrastructures planned for Alloum, the canton chief town to which Broukou belongs, will experience unprecedented development to the detriment of the local population. The disparities will increase between the chief towns of Alloum and Broukou, one of the villages. This disparity will lead to uncomfortable situations in the future with questions of chieftaincy or the establishment of chief towns in rural communes. Frustration of the populations in relation to the infrastructures built within the framework of the project. Some localities, given their administrative status, may feel aggrieved in relation to infrastructure built in less administratively important areas. The case of Alloum must be treated with delicacy. | <ul style="list-style-type: none"> That a rate of 30% of the recruitment of local labour be granted to the staff of works companies during the implementation of the Agropole project. Reviewing the price paid to local labour during the execution of the work Equip and protect staff and workforce wherever they come from Reduce the disparities between Alloum canton capital and Broukou by building infrastructure more or less at the level of those planned for Broukou. Taking into account the complaints about the infrastructures transmitted to the consultant and the construction of brones fountains and water towers as in Broukou. |
| Representatives of civil society (NGOs Youth Organisation, Organisation of women) | Risk of surplus and sensitivity with MFIs | <ul style="list-style-type: none"> At the exploitation stage, production can be in excess with difficulty of disposal. This situation will lead to delicate situations with MFIs. | <ul style="list-style-type: none"> Set up a guarantee fund in the event of a surplus at farmer level with MFIs in order to avoid lawsuits due to involvement in the Agropole project. |
| All actors | All negative impacts (General discussion) | <ul style="list-style-type: none"> Non transmission of documents to local authorities final impact studies for grassroots monitoring. Refusal to take into account the grievances and demands of the local population and leaders transmitted to the project consultants. Lack of consultation with local leaders in identifying infrastructure needs and their spatial allocation | <ul style="list-style-type: none"> The final environmental documents relating to the preparation must be made available to local leaders (Chiefs, CCD, DSF) Complaints and concerns must be taken into account to redirect or adjust the planning and allocation of planned infrastructure. Local leaders should be consulted in the identification of needs and at all stages of the project. |

| Actors | Points discussed : negative impacts | Reactions to project impacts | Recommendations /Stocks |
|--------|---|--|--|
| | | <ul style="list-style-type: none"> • Non-effective monitoring of the implementation of certain environmental measures • Non-employment of local young people in proportion to the number of cantons and villages crossed by the project. • Non-compensation of the effective and fair value of the persons affected by the Interministerial Compensation Committee • Not inviting local actors and leaders to the validation workshops of project preparation reports. | <p>implementation of the project in order to allow for the full adhesion of the populations and the perfect success of the project</p> <ul style="list-style-type: none"> • The environmental specifications resulting from the environmental studies of the Agropole project must be rigorously applied and effectively monitored during their implementation. • To grant a rate of 30% of the recruitment of local labour in the staff of works companies during the implementation of the Agropole project • Compensate all affected persons at fair value, regardless of their status. • Invite local actors and leaders from each canton crossed by the project during the report validation workshops. |

According to the populations of the area in general, the construction of the requested infrastructure will strengthen trust and cooperation between the project and the local populations (Table 36). It will also be a means of increasing the potential of valid arms ready for the project because, according to the populations, it is certain that the areas with infrastructure will not be able to exploit the land to be developed on their own, which is why it is necessary to motivate the farmers in the surrounding area and provide them with a source of well-being. Other grievances have also been expressed and relate to school buildings, the establishment of health centres, the construction of community centres, modern market sheds, and the equipping of health centres with refrigerators for vaccine storage and the construction of sanitary facilities for the USP of Agoundé (Table 37).

Table 36: List of grievances regarding drinking water supply and runway facilities

| Cantons | Villages | Neighbourhoods | Drinking water supply | Tracks to be developed |
|---------|--|----------------|---|--|
| Alloum | Misséota | | -Establishment of a drilling rig in M'bli -Rehabilitating the shaft3 -Rehabilitating drilling at EPP Misséota | -Misséota-bloc- M'bli -Block 6 Misséota-Bloc 10 Broukou |
| | Akar-Toundé, Akar-Gnaka, Landa-Ankolom | | Setting up a forge | |
| | Kpéhiri, Anima | | Drilling installation | -Alloum-Anima-Niamtougou -Alloum-Kpéhiri-Broukou -Kadjiri-Downwards-Kpéhiri -Piwiya-Kpéhiri |
| | Kpassidè | | -An additional drill hole to be installed - Two boreholes to be rehabilitated | |
| | Tagbadè | | An additional drill hole to be installed | |
| | Alloum | Alloum-centre | Drilling rehabilitation existing | |
| Léon | Léon-centre | Komta | Setting up a borehole | |
| | Bidjandè | Kanga | Setting up a borehole | -Bidjandè-Mandawia |
| | | Block 2 B | Drilling installation | |
| | Léon-centre | EPP and CEG | -Implementation of drilling in both institutions -Drilling rehabilitation at Block 5 | |
| | Léon-Yaka | Atamdè | | -Agbandè-CEG Léon |

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| | | | | |
|--|---|--|--|---|
| | Agbassa | Kpimkpim, Kpanta, Tomesse, Kankanbiti | Drilling installation | -Agbaasa-Semassi - Block6- Kpimkpim -Block1- Kadjalim |
| | Agoundé | Koumnde | Drilling installation | -Kadjalim-Agbassa |
| | Ounté, Koutakou, Alienté, Amaktélo, Tchamasse, and Afsia | | Drilling installation | -EPP Kadjalla-Koutakou -Agounboua-Wounté -USP-kadjalla-centre- Awassan -Royal-Alienté-Okpélou -Sarta-Tilawaeon -EPP-Kadjalla-CEG Broukou |
| | Kadjalla - centre | Lom-Nava | -Rehabilitation of the Kadjalla-centre dam -Rehabilitating the Kadjalla-centre well | |
| | Tchoré - Nacoco | Tchatssémon and Sigunda Amalaté | Drilling installation | - Nacoco-Kiliwiyo -Work on Nagbowou |
| | | | Drilling rehabilitation | |
| | Tchoré- Ayica | Ourssémou (peulh) | Drilling installation | |
| | | Oudjita | Drilling rehabilitation | |
| | Tchoré - Centre | Atchakalaw and Kouwère | Drilling installation | -Tchoré-centre-Kouwère- Ayiga-Nacoco -Central Korea - Atchakalaw |

Table 37: Other needs expressed by the populations consulted

| Cantons | Villages | Expressed needs |
|----------|-------------------|---|
| Alloum | Misséota | <ul style="list-style-type: none"> -School building construction at EPP Block 6, EPP Kanga Block 7 -Community centre construction -Construction of a public toilet -Literacy -Training for the fight against plague -Building a room for the civil registry office - Setting up a CEG -Setting up a school canteen |
| Alloum | Broukou | <ul style="list-style-type: none"> -Construction of school buildings at the high school -Reinforcement of the USP staff and supply of a fridge for storing vaccines -Building and equipping a library - Electrical extension -Asphalting of the Alloum-Broukou track |
| Alloum | Alloum | <ul style="list-style-type: none"> -Kindergarten building construction -Construction of a building for a kindergarten in Anima, Alloum-Centre, Kpessidè. |
| Léon | Léon and Bidjandè | <ul style="list-style-type: none"> -Reinforcement of the staff of USP Léon -Installation of a fertiliser depot -Developing livestock in the project |
| Léon | Léon-Yaka | <ul style="list-style-type: none"> -Construction of a community centre -Construction of a public toilet at the market -Construction of sheds for the market -Construction of warehouses for the storage of agricultural products -Electrical extension |
| Kadjalla | Agbassa | <ul style="list-style-type: none"> -Construction and equipment of a building for CEG Agbassa, EPP Otchacté, EPP Opassoun -Construction of sheds for the Agbassa market -Establishment of a USP in Agbassa -Construction of a community centre -Construction of warehouses for the storage of agricultural products |
| Kadjalla | Agoundé | <ul style="list-style-type: none"> -Need for water retention for market gardening -Building sanitary facilities at USP Agoundé -Supply of refrigerator for vaccine storage -Rehabilitation of teachers' housing - Building construction for EPP6Agoundé-Centre -Rehabilitating the Agoundé market |
| Kadjalla | Kadjalla-Centre | <ul style="list-style-type: none"> -Building construction at EPP Kadjalla -Building construction for EPP Agoumboua -Build a building for EPP Central -Building for the CEG -Community centre construction -Warehouse construction for storage of agricultural products - Transforming the USP into a CMS -Rehabilitation of the Kadjalla-centre dam -Rehabilitating the veterinary centre -setting up a mini-pharmacy in Koutakou -Development of the lowlands of Kparougountan, Allelemou, Sarta, Ressaura, Tchalobre-Agnanté and of Nassim |

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| | | |
|--------|---------------|---|
| Tchoré | Tchoré-Nacoco | -School building construction -Extension of the project's dams in the area |
| Tchoré | Ayica | -School building construction at EPP |
| Tchoré | Tchoré-Centre | -Construction of dams for market gardeners and animals -Warehouse construction for storage of agricultural products -Electrical extension -Deconcentration of tractor supply to Tchoré |

In general, the populations adhere to the project and request that particular attention be paid to the disputes inherited from the EDF project and the grievances. Similarly, they would like the labour force to be drawn essentially from the area in close symbiosis with local leaders (chiefs, CCD, CVD).

4.5.3. SECOND PHASE OF PUBLIC CONSULTATION AT THE TIME OF UPDATING THE STUDIES (GCF FINANCED ACTIVITIES)

Within the framework of the Project for the Development of Agropoles in Togo's Kara Region (PTA-Kara), additional activities have been introduced requiring the updating of environmental and social safeguard instruments, notably the ESIA, the PAR, the CGES, the PGPP, on the one hand, and the elaboration of the CPR on the other hand.

It is within this framework that a team led by Dr TCHEINT-NABINE Tchandikou, an individual consultant recruited for the circumstance, conducted a second phase of consultation of the populations of the agropole zone of the Kara basin in order to inform the communities on the state of progress of the project, the additional activities and to collect the appreciations, concerns and complaints of the stakeholders in relation to the potential negative impacts and the possible risks that these activities could generate.

The team exchanged with actors from 19 cantons who are concerned by the project's actions. In each of these localities, the team presented to the actors the additional activities which could have negative impacts on the beneficiaries. They mainly concern :

- *Supporting access to finance for smallholder farmers to invest in solar-powered drip irrigation technology (1,018.25 kW installed capacity), which will support horticulture and market gardening of vegetables and fruit, including other cash crops, on at least 15,428 ha,*
- *The creation of sustainably managed (community) forests (about 10,000 ha) to generate income from income-generating activities and other benefits*

The team explained to the beneficiaries in each of these localities the content of these additional activities and exchanged on the availability of land to implement these activities. A period of exchange in plenary between the team and the participants took place following the presentation. These exchanges allowed participants to ask questions of understanding, to give their appreciations, to express their concerns and grievances. These questions, appreciations, concerns and grievances as well as the answers given or suggestions made by the team are recorded in the summary table below.



Photo 111 : Consultation du public à Léon



Photo 112 : Consultation du public à Alloum



Photo 113 : Consultation du public à Kadjalla



Photo 114 : Consultation du public à Tchore

Table 38: Summary of questions, concerns, grievances raised and responses

| | Appreciations/questions/concerns/complaints | Actors | Answers / Suggestions | Points of attention |
|---|--|-------------------------------|---|---|
| CANTON DE LEON (Villages grouped together for consultation: Léon, Léon-Yaka, Bidjandé, Misséoata, Agbandé, Anima) | | | | |
| 1 | The mountains here are an asset for the community forests. Our fear is that people are dishonest and the risk of them setting bush fires to destroy this forest is high. How can we take steps to avoid these bushfires? | CCD Léon | <p>Indeed, the mountains in your area are not exploited for agriculture. It is an asset so that they can be enriched for the community forest.</p> <p>The best strategy for fighting bushfires must come from you. It is your forest that will provide you with the enormous benefits. It will be necessary to raise awareness among local residents and involve them in making the forest safe. The project will be able to strengthen your capacities for good management. You will also be equipped to fight bush fires. Beyond that, only your ownership and involvement will facilitate the securing of the forests.</p> | |
| 2 | The problem of the transhumants who destroy the forests and cut the trees there, how can we ensure that these transhumants who often graze at night do not destroy the forest? | Secretary to the canton chief | -You must work with the transhumance committee and the communal authorities. There are texts that govern transhumance and specify the corridors and the transhumance period. Make an effort to respect and ensure that these provisions are respected by the transhumants. | |
| 3 | <p>-How to maintain the community forest and protect it from wildfire?</p> <p>-We are concerned about the slow pace of activities that are slow to get started</p> | President of CTA | <p>-The project plans to build your capacity in the maintenance, protection and management of community forests. You will be provided with adequate equipment to fight bush fires. You will be able to make experience-sharing visits to the Mô plain to see their experience in managing community forests.</p> <p>-Yes, you are perfectly right to be concerned about the slowness. But don't worry, starts always take time.</p> | It is desirable to envisage exchange visits with the communities of the Mô plain to learn from their experiences in forest management initiated by the PDRI-Mô project. |
| 4 | Is the 10,000 ha of community forest you are talking about for our CTA alone? | Member of CTA | No, it is for all 11 CTAs in the agropole, each of which will share them out according to the available surface area it has identified. | |

| CANTON D'ALLOUM (Villages grouped together for consultation: Alloum, Broukou, Akar-Toundé, Akar-Gnaka, Akar-Sika, Landa Ankolom) | | | | |
|--|---|--|---|---|
| 5 | There is no land problem | Representative of the Regent of Alloum | Good news, it is therefore certain that the community of Léon will find land for the various projects. | - |
| 6 | Can a landowner of a developed site decide not to renew an operator's contract if his children are now capable of operating it? | President CCD | The owner may do so if his children really have the capacity to exploit the plot, but he will not be able to remove a plot to leave it unexploited; Any breach of contract must be done in strict compliance with the terms of the contract. contractually agreed by both parties | |
| 7 | What will be the conditions of access to the plots on the drip-fed sites for market gardening? | | The only conditions that can be enumerated at this stage are to be an entrepreneur or individual operator with the desire to do market gardening or horticulture, to have a plot on the developed site or to acquire a plot by formal lease/rental from a landowner. | |
| 8 | There is an area where there is a sacred forest, can this area be turned into a community forest? | | The area can be included in the community forest since it is sacred to the same community. If they decide to include it in their community forest there is no problem. The sacred area will only be managed with respect for its sacred character according to its owners. | |
| 9 | Who will be responsible for managing the community forest? Who will build the capacity of the management bodies if they are set up? How long should a community forest be maintained? Will the community be able to decide to make another use of it? | President CVD of Broukou | The management of all community forests is the responsibility of the community that owns the forest; The project will support the establishment of management committees for these forests and ensure that their capacities are strengthened in order to play their roles effectively; The community forest is of indefinite duration as long as the community understands its relevance and importance (wood, IGA as beekeeping, medicinal plants, climate regulation, carbon credit, etc.) It must be conserved in a sustainable way. | - |
| 10 | Can each village in the canton identify its site to be developed for market gardening? | Agricultural producer | It is difficult for the project to do one development per village; it would be too costly; but a developed site will be accessible to farmers in all the surrounding villages on a priority basis | |

| | | | | |
|--|--|--------------------------------------|--|--|
| 1 | Will the community have access to wood from the forests? | | The exploitation of community forests will be the responsibility of the community itself; management mechanisms will be put in place, their capacities strengthened for a sustainable management of the forests. for the benefit of all. For access to wood in particular, each community will decide on the conditions of exploitation and access to the wood. | |
| 1 2 | What measures will be taken to protect community forests from transhumant herds? | President CTA | Monitoring and protection systems will be set up and their capacities strengthened (technical training and equipment) to ensure the monitoring of each forest. Transhumance corridors have been demarcated, and transhumants will be made aware of the need to respect them. There are also regulatory texts on transhumance and forest protection that will be popularised for the benefit of all stakeholders. operating in the Agropole area | |
| CANTON OF KADJALLA (Villages grouped together for consultation: Kadjalla, Agbassa) | | | | |
| 1 | -Agropole had previously had plots identified. Since then, however, these plots are no longer mentioned. -Is it possible to share community forests and market gardening sites in several villages in our canton? | President CCD | -These plots are intended for the production block (soya, rice, maize, sesame). They will be exploited. -Several villages for their implantation community forests. But it will not be possible to develop the blocks market gardeners in several villages in the same canton because of the high investment costs. | |
| 2 | -Who will be authorised to operate the market garden perimeter that will be developed? -How will reforestation be carried out? On individual plots or on a collective plot? | President of the OSRA grouping | -Priority will be given to local operators to exploit the developed sites. However, if the local operators are unable to exploit the entire developed perimeter, the landowners will authorise other foreign operators to exploit the perimeter through an emphyteutic contract. -It is desirable to have a collective plot for the collective forest, but beyond the collective plot, if people individually have the plots to Reforestation is also desired. | |
| 3 | -Here everyone has their own plot. The site that will be developed can group together the plots of several owners. How will each owner have access to his plot? | Neighbourhood chief | -Each farmer knows his plot. He will exploit it as a priority. However, if the owners do not manage to use the whole of the developed perimeter, they will authorise other plots. foreign operators to exploit the perimeter through a long-term contract. | |
| 4 | -Is there community participation for these additional activities? | President of the Lana- Assinih group | -No. The only thing the community is asked to do is to dispose of the land. | |

| | | | | |
|---|---|---|---|--|
| 5 | -How can we make sure that the transhumants do not destroy our reforestation? | President of the Lantouh Group | - You have to work with the transhumance committee and the communal authorities. There are texts that govern transhumance and specify the corridors and the transhumance period. Make an effort to respect and ensure that these provisions are respected by the transhumants. | |
| 6 | -We do market gardening on the banks of rivers which is often devastated by transhumants. How are we going to make sure that our reforestation and market gardening does not be devastated? | Tilawa district chief | | |
| 7 | Some people or projects often arrive to ask for the land and a while later they want to appropriate the land that is given to them. How can we secure our land? | President of the Tcharna-Assinih grouping | -Agropole is not taking the land for the project or for the State. The market garden block will be identified by you, managed and made available to the beneficiaries for exploitation. The landowners will sign contracts (emphyteutic lease) with the farmers. The site for the community forest will be consensual for the whole community and the benefits will be for the whole community. In all cases, the land will remain the property of the communities and not of the agropole. | |
| 8 | -Often when we do community reforestation, some local P&MS take over this reforestation. How can we secure the community forest that we are going to create? | Youth Leader | -The whole community will be informed through awareness raising. The site will be identified and chosen by consensus. The project will strengthen your capacities to ensure good forest management. A management committee will also be set up and will periodically report on management. All this will make the forest secure. | |
| CANTON DE TCHORE (Villages grouped together for consultation: Tchore-Centre, Tchore-Nacoco, Ayiga) | | | | |
| 1 | Can community forests be demarcated in every village in the canton? | President CCD | Community forests can be in every village if the community agrees to do so. It would even be a good thing that each village community has its own community forest | |
| 2 | There is concern about the absence of landowners at the meeting. | Chairman of the KORFALO group | You have the information, if you perceive the relevance of the actions announced, you organise a meeting with the village chiefs and landowners to identify the sites you are going to propose to Agropole. | |
| 3 | Drip irrigation will work with what water? There is a water problem here. | Member of the SITOLE group | The development plans to drill boreholes to supply the sites that will be developed for market gardening and horticulture. | |

| | | | | |
|---|---|----------------------------|---|--|
| 4 | What is the required area per canton for each action (community forest and drip-fed block)? | Agricultural producer | The area depends on the availability of land in each canton for community forests. For the drip system, it should also be noted that the available financial means will allow the development of 15428ha. There is no fixed surface area per canton; each canton offers the areas it has at its disposal. | |
| 5 | Sesame is a late-seeded crop, so herbicides are used for spraying before sowing, will registered herbicides be available for this? | Young apprentice carpenter | There are registered herbicides; the ICAT technicians who accompany you know them, ask them for advice; they can even advise you from others. cultural practices that you will not use herbicide | |
| CANTON DE KPASSIDE (Villages grouped together for consultation: Kpassidè, Kokotè, Lamoussara) | | | | |
| 1 | The landowners were not invited to the meeting, it would be difficult to say, but land exists. | Head of canton | With the information you have received, you will organise a meeting with village chiefs and landowners to identify sites and return to the Agropole team | |
| 2 | Our fears are often promises that are never kept and also the bad experience with groups of swindlers who have victimized communities | | You are right to be wary, but you know the Agropole project and the members of the Agropole team and the head office in Kara to verify the information We also have our contacts that we will leave with you if necessary to reassure you. | |
| 3 | Who will delimit the sites if we identify them? | KOKOTE village chief | Agropole will come with the appropriate equipment and under your guide to delimit the sites and have the precise surface area of each site. | |
| 4 | Who is going to bear the costs of developing market gardening sites? Can a family identify a site that will be developed for them? | | The development costs of each site are borne by the project. Accommodation is made for the benefit of the community, not for the benefit of families; a family that is willing and able to afford it can apply to businesses that have skills for it. do the fitting out at their own expense | |
| 5 | Can community forests be demarcated by village? Can a site with drip irrigation be developed per village? | Chairman CVD KOKOTE | Each village can normally decide to demarcate its own community forest; The development of drip irrigation sites requires a large investment that it will not be possible for the project to do on a per village basis. However, each development carried out is primarily beneficial to the surrounding communities. | |

| | | | | |
|---|--|---------------------------------|---|--|
| 6 | For beekeeping in community forests, for example, who is going to provide the hives when the price of a hive is estimated at 25,000 CFA francs? | | The initiative will come from the community with the support of the project; the community is not obliged to buy these hives, it can also use cheaper locally made hives if they exist. | |
| 7 | Can you create your own private forest? | | Anyone can have their own private forest if they have land and if the area is suitable and does not pose any threat or danger to neighbours | |
| 8 | Can seedlings be found to reforest the quarries often abandoned by the contractors who build the roads? | Secretary SCOOP LAMOSSABA | The choice of reforestation sites is the responsibility of the community; on the community's initiative, nurserymen can produce seedlings for the reforestation of these quarries Seek the support of a technician to ensure successful reforestation on those types of quarries where rich arable land has often been stripped off | |
| 9 | Can the project strengthen the capacity of local nurserymen to produce seedlings? Can the project provide nurserymen with seed for fast growing plants? | | The identified and registered nurserymen will be strengthened for the production of adapted and accepted plants by the community. | |

5- ANALYSIS OF OPTIONS AND VARIANTS AND PROJECT DESCRIPTION

5.1. OPTIONS ANALYSIS

There are two options for the project. These are the no project option and the project option.

5.1.1. NO PROJECT" OPTION

This is an option not to carry out the project. In this case, no positive impact is to be expected, but the negative consequences for the populations will continue to grow, further trapping them in the vicious circle of poverty. However, negative impacts on the biophysical aspects and on the populations will be avoided.

In view of the considerable economic benefits that this project presents for the country and for the populations of the area, this option cannot be retained. Indeed, this option is inadmissible in view of the context and justification of the project. The "no project" option would lead to the following consequences:

- ✓ The lack of socio-economic development of the area ;
- ✓ Lack of diversification of agricultural production and local sources of income outside of rainfed agricultural activities subject to climatic hazards, soil poverty and population density;
- ✓ A significant socio-economic shortfall linked to the loss of employment opportunities and income for the population during the execution of the works and the operation of the facilities.
- ✓ Increasing the country's dependence on food needs,

From an environmental point of view, this option will not lead to the destruction of flora and fauna, harmful discharges on the ground, in the air and in the water, nor to the production of waste and noise pollution.

5.1.2. PROJECT" OPTION

This is the option that requires the project to be carried out. This option is acceptable because the project has socio-economic benefits such as :

At the local level :

- ✓ Water management ;
- ✓ The development of intensive agricultural activity in the project area;
- ✓ Improvement of the living environment
- ✓ The improvement of transport conditions for people and goods in relation to the population's concerns about the state of the tracks;
- ✓ Opening up of localities ;
- ✓ Promotion of the development of the area ;
- ✓ Fight against poverty
- ✓ The creation of direct and indirect jobs for young people ;
- ✓ The promotion of the development of the project implementation area ;
- ✓ The contribution to poverty reduction ;

- ✓ The technical improvement of local farmers in rice, fish and seafood production through training and continuing education;
- ✓ The increase in gross income per agricultural producer and other substantial benefits;
- ✓ Supplying the population with drinking water
- ✓ Reducing health risks and improving the health of the population

At the national level

- ✓ The contribution to the increase in national food production, especially rice and other products from the promising sectors;
- ✓ The industrialization of the country
- ✓ The contribution to the reduction of foreign exchange used to import part of the rice consumed in the country;

The implementation of the project has more positive than negative environmental, social and economic impacts. The negative impacts of the project on the environment can be mitigated or compensated for by the measures that will be proposed in this study.

5.2. PRESENTATION OF THE PROJECT

The project covers hydro-agricultural developments, rehabilitation of tracks and drinking water supply.

5.2.1. HYDRO-AGRICULTURAL FACILITIES

5.2.1.1. Dams component

The development of 3 small dams among 10 pre-identified dams based on topographic maps and reconnaissance visits in the field.

These are the sites :

- B1 (at the foot of the Agropark),
- B2 (located near the village of Kpassidè
- B3 which is close to the village of Léon.

The surface areas of the catchment areas are 14 to 16 km², with average contributions of around 5 to 6 million m³/year per site.

At this stage of the summary studies, the maximum capacities of the basins of these three Dams are estimated at 2 Mm³ ; 6 Mm³ and 4 Mm³ , respectively for sites B1, B2 and B3.

The useful height of the dams (max. depth of the water body) is 10 to 12 m. The length of the dikes is 1000 to 1200 m.

Each dam will be equipped with :

- a flood spillway, which releases floods into the downstream river dyke. Given the level of average inflows and the storage capacity of the dams, the spillway is expected to discharge almost every year.
- one (or 2 if the dam feeds irrigated areas located on both banks) water intake(s), set at 2 m above the bottom of the watercourse, thus leaving a slice of dead water unused, and which corresponds to water with a high sediment content, which should not be injected into irrigation networks to avoid clogging. The intake will feed the main water supply canal to the perimeters to be irrigated downstream of the dam. It will also feed a pipe that will bring raw water to a treatment plant to be provided for the agro-park's drinking water supply.
- a drain valve, allowing the reservoir to be emptied from time to time by flushing muddy water into the downstream watercourse, thus guaranteeing a longer service life for the structure

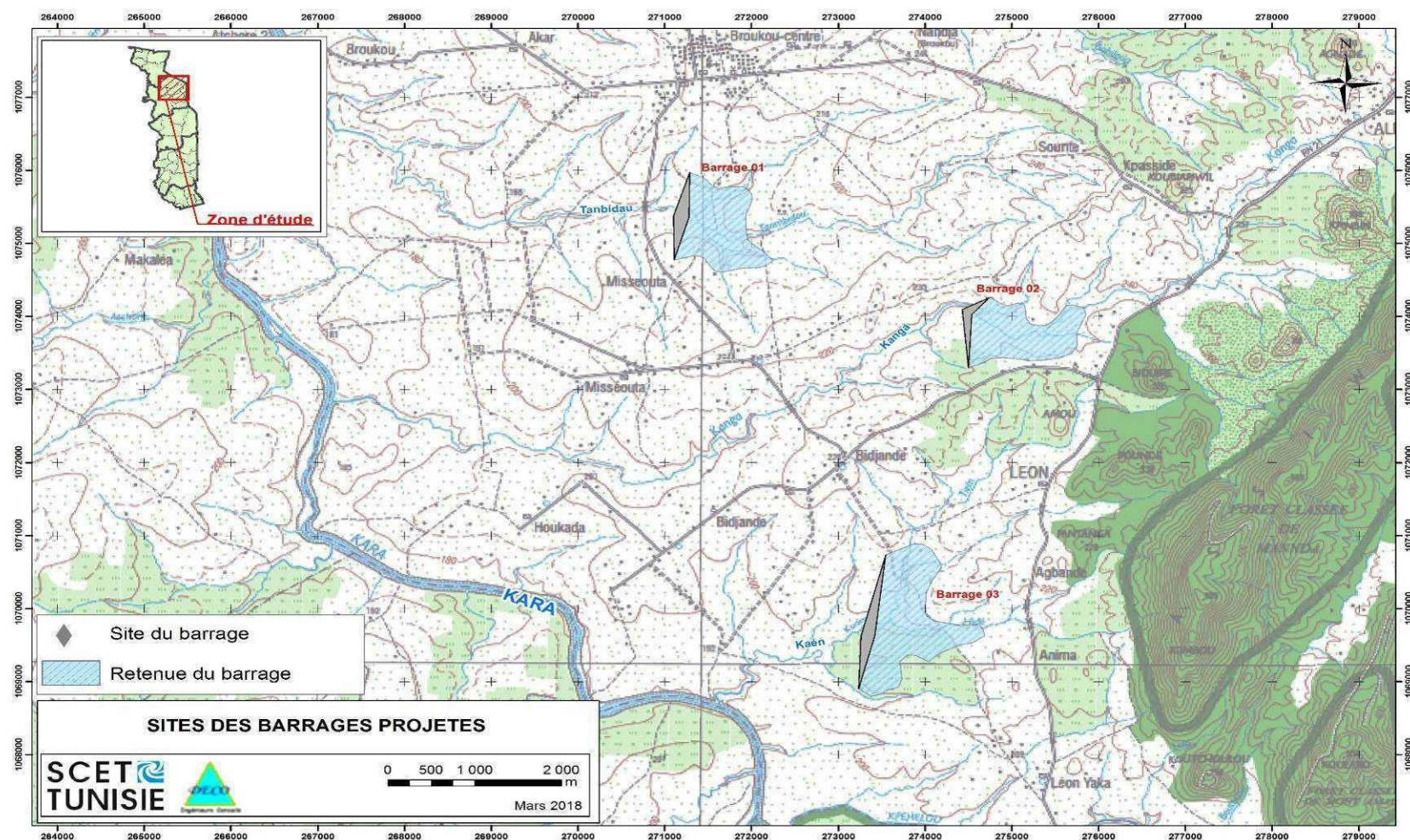
The area flooded per dam is about 100 to 150 ha. This area must be expropriated and any landowners or farmers compensated. In the case of the presence of dwellings on these dams, they must be moved.

The reservoirs of the dams could also be used for the development of the fish farming sector.

In addition, Dam B1, located at the foot of the Agro-Park, will provide the water necessary for the development of the processing industries planned by the agropole (i.e. nearly 500,000 m³/year according to the mission¹).

Map 16 gives the location of the sites of the planned dams and reservoirs.

Map 14: Mini-dam sites



Source: SCET-Tunisia/DECO IC, 2018

5.2.1.2. Hydro-agricultural facilities component

Water from the dams will be used mainly for irrigation of plains downstream. There are two basic rules to be observed in order to delimit the areas to be irrigated:

- the land is suitable for irrigation (soil quality)
- the topography is favourable to irrigation by the surface gravity system: the maximum elevation of the areas to be irrigated must be lower than the elevation of the dam's water intake, in order to allow gravity flow of the irrigation water.

To this end, it is planned to develop nearly **1,500 ha net** (about 1,800 ha gross) to be irrigated in 2 fully secured rainy seasons, and partially under off-season irrigation (20% on average), i.e. nearly 2,300 ha of irrigated crops per year (mainly rice, maize, soya and various other off-season and perennial crops). The irrigation system adapted to the context of the Project and to the types of crops to be grown is surface irrigation (submersion) with a water distribution system by open canals running on a water tower.

The development plan for each site includes the following works:

- one (or 2 if the dam feeds both banks) supply structure and load breaker, coming from the dam's water intake
- a gravity feed channel, on each bank, trapezoidal in shape, semi-buried, made of concrete-lined earth in order to limit water loss in the transfer.

This canal will be dimensioned for peak irrigation flow. It will be built using cut-and-fill (targeted cut-and-fill balance, avoiding the need to transport external materials to build the canal). It will roughly follow the contour line corresponding to the level of the dam intake and will have a minimum slope of about 0.5‰. The right-of-way of this structure is a few metres. It will be bordered by a right-of-way (a roughly laid-out track).

If necessary, cattle drinking troughs can be built along this canal.

- When it reaches the level of the plain or lowland to be irrigated, the main canal feeds a network of gravity-fed secondary canals, also made of concrete-lined earth. These secondary canals are generally laid out in a transverse direction. They feed tertiary canals made of earth, installed in the longitudinal direction (schematically parallel to the watercourse) with a slight slope.

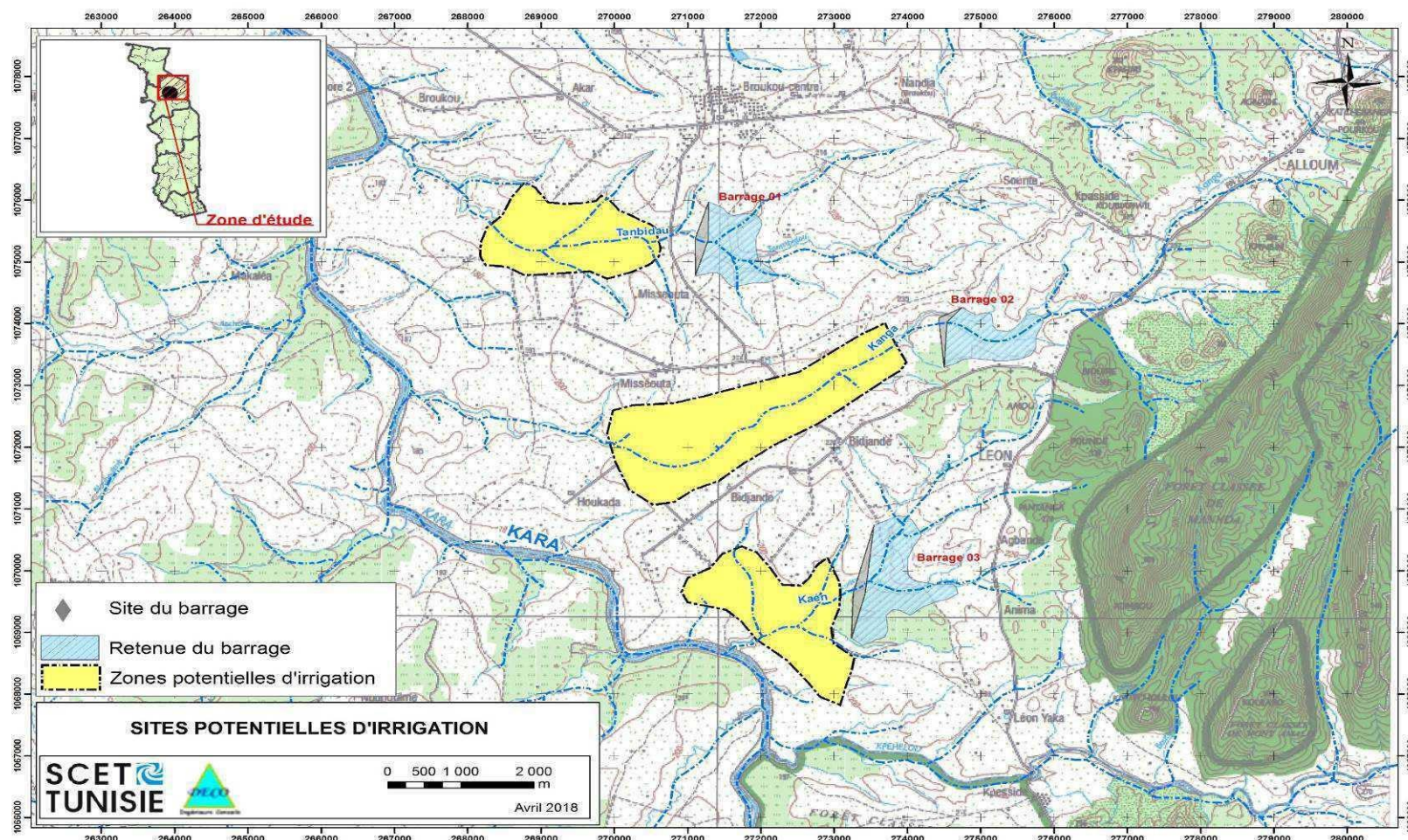
Each tertiary canal conveys a "hand of water" of 20 to 30 l/s to irrigated plots of land, the size of which is a priori 1 ha: 200 m x 50 m (area considered reliable to guarantee a sufficient income for future irrigators). The hand of water circulates in turn between the plots of land in the same hydraulic district, which are about ten hectares in size (400 m x 250 m, with a central tertiary canal).

- A drainage network made up of main, secondary and tertiary drains (earth ditches generally 0.50 to 1m 1m50 deep). This network is designed to evacuate excess runoff water (heavy rains) and water from emptying traps at harvest time, for rice cultivation. The main drainage collector joins the watercourse to discharge the drained water.

- A network of traffic lanes (main, secondary and tertiary) within the perimeter to allow easy access to all plots for the execution of agricultural works, for the supply of inputs and for the evacuation of agricultural products to marketing points.

Map 17 shows the location of potential irrigation areas downstream of the 3 planned mini-dams.

Map 15: Dam sites with potentially irrigable areas



Source: SCET-Tunisia/DECO IC, 2018

5.2.2. REHABILITATION OF TRACKS

5.2.2.1. Recommended types of maintenance

In view of the importance of the various paths identified for the success of the project, it is essential to restore them in order to ensure the circulation of products and the opening up of the localities.

At the end of the analyses and the findings of the various investigations, the consultant proposes three types of development likely to be carried out on the various sections depending on their condition and the maintenance actions to be carried out. These are :

- **Type 1 layout level (T1):** it is characterised by light reprofiling, occasional reloading and the layout and repair of small structures;
- **Type 2 layout level (T2):** it consists of heavy reprofiling, systematic reloading with layout and construction of medium structures;
- **Type 3 Development Level (T3):** designates activities characterised by resetting, heavy reshaping, systematic reloading, development and repair of large structures.

These defined levels of development are applicable concomitantly to the different states of the previously listed runways, based on the technical inspections carried out during the visit to the various runways, the details of which are presented in the appendices in the route diagrams. Table 39 provides a summary:

Table 39: Breakdown of types of rural track development

| Condition of the runway | Good | Passable | Mediocre |
|-------------------------|------|----------|----------|
| Proportion (%) | 5 | 70 | 25 |
| Type of layout planned | T1 | T2 | T3 |

5.2.2.2. Presentation of the main technical development options selected

5.2.2.2.1. Geometrical and structural characteristics

The development of the various rural tracks of the agropole will have a structural feature consisting of a platform of good bearing capacity in accordance with the requirements defined for this type of pavement, on which a 20 cm thick wearing course of selected material will be laid.

Geometrically, two types of cross profiles have been considered according to the importance of the track in the network. Thus, it will be elaborated :

- the PT1 profile for the main arteries of the network; and
- the PT2 profile for secondary arteries.

Table 40 and Figures 13 and 14 provide a description.

Table 40: Description of the cross profiles types

| Profile number | Platform | Roller conveyor (0.20m thick) | Drainage device |
|----------------|----------|-------------------------------|---|
| PT1 | 8 | 6 m | Earthen ditch on both sides or reinforced concrete gutter |
| PT2 | 7 | 5 m | Earthen ditch on both sides or reinforced concrete gutter |

Figure 18: Cross profile type PT1 (Main runway)

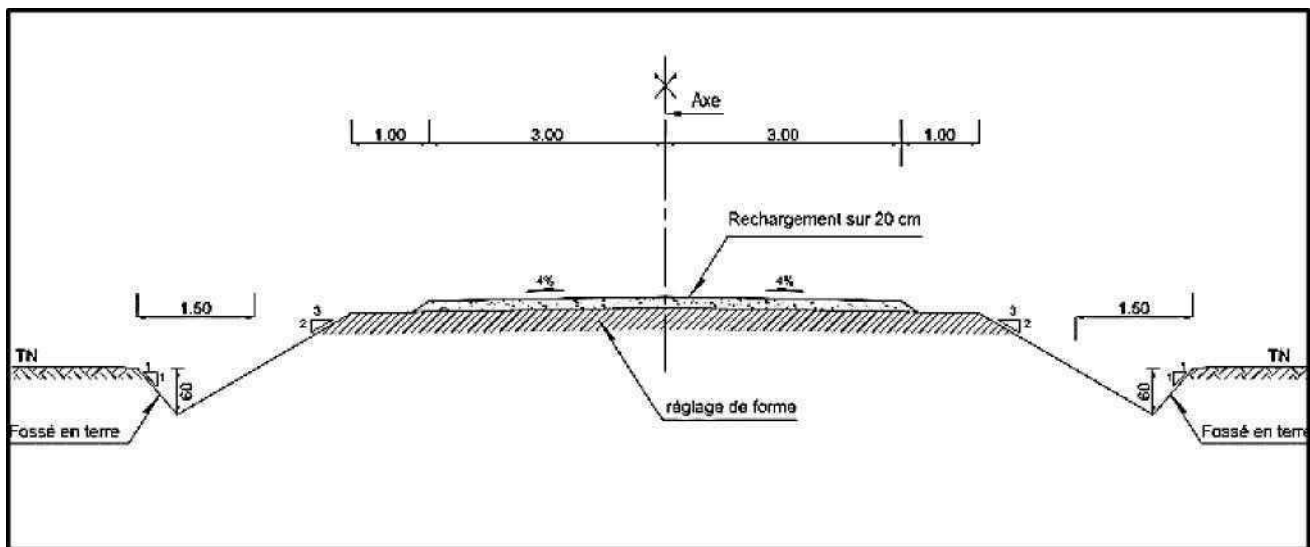


Figure 19: Cross profile type PT2 (Secondary tracks)

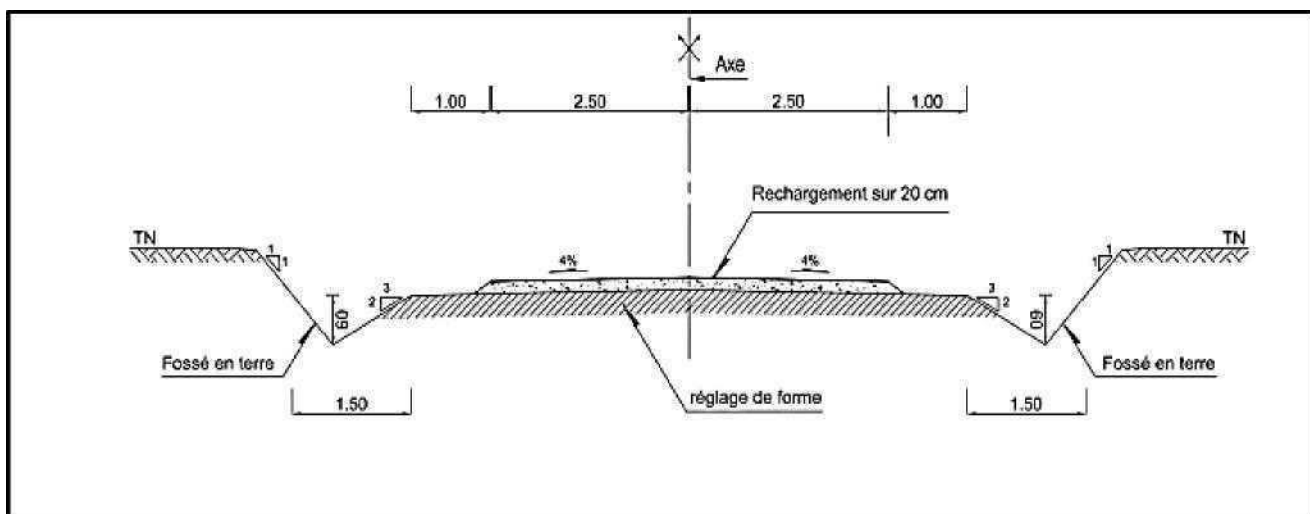


Table 41 provides a summary of the distribution of these different types of facilities according to the trails.

Table 41: Assignment of cross-profiles types to tracks

| Typical profile | | N° | Trunk | |
|------------------------------|-----|----|-------------------------|-----------------------------------|
| | | | Start | End |
| TRACKS IN THE BROUKOU AREA | | | | |
| Main backrest | PT1 | 1 | Léon Yaka | Bidjandé |
| | | 2 | Bidjandé | (Misséouta-) |
| | | 3 | Broukou | Agbassa |
| | | 4 | Agbassa(-Okpeloum) | Nangboua River |
| 36,2 | | 5 | Nangboua River | (Tchasté-)Atalote |
| South Broukou | PT1 | 6 | Léon | Bidjandé |
| 8,5 | | 7 | Kpassidé | Misseouta |
| North Broukou | PT1 | 8 | Kadjala (-Agbassa) | Ossare deTITA |
| | PT2 | 9 | Ossare deTita | Otchakte |
| | PT1 | 10 | Kadjalim | Tchore Nakoko |
| | PT2 | 11 | Kara River (Uzbekistan) | (Agounde-)Kadjalim |
| | PT1 | 12 | RN21-(Agounboua) | Awassan |
| 47,7 | PT2 | 13 | EPPAgoundeX | Tchore Ayiga |
| TRACKS IN THE SARA-KAWA ZONE | | | | |
| South RN21 | PT2 | 14 | Loop RN21 | Kawa |
| | | 15 | Kawa | Kara River |
| | | 16 | RN21(Sara) | (Hotel Campement Sara) Kara River |
| 9,6 | | 17 | RN21 moov antenna | Kara River |
| North RN21 | PT2 | 18 | Loop RN21 | Sara |
| | | 19 | Sara(Market) | River Kpelou 1 |
| | | 20 | Sara(Market) | River Kpelou 2 |
| 18,5 | | 21 | RN21 (Gnatre) | River Kpelou (and strap) |

5.2.2.2.2. Hydraulic works

The hydraulic structures identified and planned at the end of their diagnosis are summarised in Table 42.

Table 42: Summary of the diagnosis of the planned works

| Existing works (Nature and condition) | Existing works | | Works to be built |
|--|----------------|---------------------|----------------------|
| | To keep | To be demolished | |
| T1- Léon Yaka -Bidjandé / 5,6 Km | | | |
| 1 | 1 | 0 | 8 |
| T2- Bidjandé-Misséouta-Broukou / 6,3 Km | | | |
| 3 | 3 | 0 | 1 |
| T3- Broukou-Agbassa / 5,0 Km | | | |
| 2 | 1 | 0 | 3 |
| T4- Agbassa-Okpeloum-Rivière Nangboua/ 9,9 Km | | | |
| 1 | 0 | 1 | 1 |
| T4 Strap | | | |
| 0 | 0 | 1 | 8 |
| T5- River Nangboua-Tchasté-Atalote/ 9,4 Km | | | |
| 4 | 1 | 2 | 6 |
| T6- Léon-Bidjandé/ 3,3 km | | | |
| 5 | 5 | 0 | 4 |
| T7- Kpassidé-Misseouta/ 5,2 Km | | | |
| 0 | 0 | 0 | 9 |
| T8- Kadjala-Agbassa-Ossare deTITA/ 13,1 Km | | | |
| 5 | 1 | 4 | 12 |
| T9- Ossare de TITA-Otchakte/ 4,3 Km | | | |
| 0 | 0 | 0 | 4 |
| T11- River Kara -Oudjitane-Agounde-Kadjalim/ 9,1 Km | | | |
| 0 | 0 | 0 | 7 |
| T14-loop RN21-Kawa/ 0,8 Km | | | |
| 0 | 0 | 0 | 2 |
| T15- Kawa-Kara River/ 2,6 Km | | | |
| 0 | 0 | 0 | 6 |
| T16- RN21(Sara)-Hotel Camp Sara-Rivière Kara/ 2,8 Km | | | |
| 2 | 1 | 1 | 4 |
| T17- RN21 (moov antenna)-Kara River/ 3,4 Km | | | |
| 0 | 0 | 0 | 4 |

5.2.2.3. Other constructive arrangements for the development of the slopes

5.2.2.3.1. Purging and reloading operations of critical runway sections

- Purge to a thickness sufficient to rebuild the foundation of the track platform.
- Creation of the foundation layer and, if necessary, internal drainage of this layer.
- Reloading of the track in such a way that the platform is at least 40 cm higher than the lowland area and out of the water in all seasons. This embankment must be compacted by appropriate mechanical means and made up of ditch cuttings or materials selected from adjacent land or extracted from borrow areas if necessary.
- The pavement will consist of a 20 cm wearing course resting on natural ground or on a compacted embankment (made up of any lateritic or quarzitic material). It will be compacted and levelled according to the standard profile with transverse slopes of 3% from the crest. In curves, the wearing course will have a single slope of 3% towards the inside of the curve. In areas where the track platform coincides with the lateritic armour, the sections whose composition (lateritic mix) allows year-round traffic will not be subject to wearing course material additions.
- Where the slope across the TN permits, the profile across the running surface may be single-sloped in straight alignments so as to promote the flow of surface water towards the lower part of the TN.

5.2.2.3.2. Sewerage works

- Lateral ditches will be provided on both sides of the track when the track is excavated or at the TN, to ensure drainage of the wearing course. These ditches will have a triangular cross-section with a maximum depth of 0.60 m in relation to the level of the runway foundation, with an internal slope of 3H/2V and 1H/1V for the external slope.
- The longitudinal slope will depend on the slope of the ground; in erosive areas, the ditch can be built if its longitudinal slope exceeds 4%.
- Installation of lateral drains and outlets for run-off water, so that the water collected is discharged at regular intervals and directed to natural outlets.
- the crossing or drainage works will be in appropriate number and will include submersible rafts, nozzles, gutters and short-span culverts (slab bridges without girders) limited to the main talwegs.
- The access ramps will be made of selected materials that are not very sensitive to water (lateritic gravel).

5.2.3. DRINKING WATER SUPPLY

5.2.3.1. Mini-AEP: Technical design - future supply scheme

For each village, the new system of mini WATSANs based on boreholes essentially includes the implementation and dimensioning of the following elements:

- The borehole(s)
- The pumping system
- The discharge network
- Storage (tank)
- The distribution network
- Distribution works (BF & BP)

5.2.3.1.1. Water resources: drilling locations

Three (03) sites have been established in each locality. All the sites were established in the presence of the local authorities or their representatives. The sites are marked out on the ground by a post coupled with a stone or brick painted red with an inscription (F1 F2 or F3). Table 43 presents the potential sites for drilling sites.

Table 43: Location of boreholes for mini-DWPs

| Localités | Sites (F) | Lieu-dit | Coordonnées GPS etrex 10 Garmin | | Altitudes (m) |
|-----------|-----------|----------------------------------|---------------------------------|-------------|---------------|
| | | | N | E | |
| Kadjalla | 1 | Klouwéré | 09°48.023' | 000°58.615' | 247 |
| | 2 | Lom Nava | 09°48.091' | 000°58.670' | 242 |
| | 3 | Lom Nava | 09°48.121' | 000°48.680' | 239 |
| Broukou | 1 | Sounté Lycée | 09°44.633' | 000°55.853' | 230 |
| | 2 | Château yéhou | 09°44.587' | 000°55.022' | 225 |
| | 3 | Togograin | 09°44.435' | 000°54.747' | 217 |
| Léon | 1 | Quartier chef (carrière) | 09°42.224' | 000°57.448' | 250 |
| | 2 | Poundé ancien (USP) | 09°42.063' | 000°57.338' | 242 |
| | 3 | Poundé (terrain foot) | 09°42.105' | 000°57.290' | 240 |
| Agoundé | 1 | Quartier USP (Derrière bâtiment) | 09°50.590' | 000°53.140' | 201 |
| | 2 | Marché (Côté PMH) | 09°50.600' | 000°52.694' | 204 |
| | 3 | Quartier chef | 09°50.287' | 000°52.893' | 207 |
| Agbassa | 1 | Quartier Chef | 09°46.997' | 000°54.377' | 223 |
| | 2 | Quartier EPP | 09°47.045' | 000°54.569' | 226 |
| | 3 | Marché (Champ Angom-adjji) | 09°46.924' | 000°54.800' | 240 |

5.2.3.1.2. Storage : Water tower

The sprayed tanks are circular in shape, made of reinforced concrete and of the tower type (on 20 m pillars). The selected capacities are: 50 m³ for Kadjalla, Léon, Agbassa and Agoundé localities and 100 m³ for Broukou locality.

5.2.3.1.3. Distribution network

The material used for the pipes will be PVC with a nominal pressure of 10 bars. The distribution network will be made up of :

- main, secondary and tertiary pipes (private connections and fountain bollards) in PVC;
- safety and control installations such as suction cups, drains, shut-off valves etc.
- service points: standpipes and private connections serve people, public infrastructures (EPP, USP, market, etc.). Both of these devices are equipped with a meter designed to measure consumption and to charge the water service according to the volume consumed.

Table 44 presents the projected works for each mini-SEA in the different localities.

Table 44: Projected works for mini-SEAs

| Locality | Capacity Castle of eauur | Discharge (m) | Distributi on (m) | Number of hydrants |
|----------|--------------------------------|------------------|----------------------|-----------------------|
| Kadjalla | 50 m ³ | 885 | 3 765 | 10 |
| Broukou | 100 m ³ | 1120 | 5 050 | 11 |
| Agbassa | 50 m ³ | 300 | 6 350 | 9 |
| Agoundè | 50 m ³ | 530 | 5 450 | 8 |
| Léon | 50 m ³ | 410 | 5 855 | 7 |

5.2.3.2. Boreholes equipped with human-powered pumps

Within the framework of the agropole project in the Kara basin, it is planned to carry out a :

- 60 new boreholes equipped with human-powered pumps (PMH)
- 8 rehabilitations of old boreholes equipped with human-powered pumps (PMH).

The list of sites for new boreholes (PMH) is presented in table 45.

Table 45: List of sites established for new drilling (TDC)

| N° | Prefecture | Canton | Village | Neighbourho od (Location -dit) | Coordinates of the sites located | | Priority Sites | Forecast Depth | Population (hts) | USP | EPP | CEG | Market place |
|----|------------|--------|-----------|--------------------------------------|-------------------------------------|-------------|-------------------|----------------|---------------------|-----|-------------|-----|-----------------|
| | | | | | Latitude | Longitude | | | | | | | |
| 1 | DOUFELGOU | ALLOUM | Broukou | SEBADI | 09°44.645 , | 00°55.159'E | F1 | 40 to 70 m | 900 | - | - | - | - |
| | | | | | 09°44.626 , | 00°55.175'E | F2 | | | | | | |
| 2 | | | Broukou | AKAR EPP | 09°44.536 , | 00°53.823'E | F1 | 40 to 70 m | 3455 | | EPP AKAR | | |
| | | | | | 09°44.541 , | 00°53.785'E | F2 | | | | | | |
| 3 | | | Broukou | Togograin | 09°43.893 , | 00°54.698'E | F1 | 40 to 75 m | 400 | | | | |
| | | | | | 09°43.922 , | 00°54.682'E | F2 | | | | | | |
| 4 | | | Broukou | Boufa | 09°44.256 , | 00°54.534'E | F1 | 40 to 75 m | 350 | - | - | - | - |
| | | | | | 09°44.324 , | 00°54.564'E | F2 | | | | | | |
| 5 | | | Broukou | Kpandine | 09°44.465 , | 00°57.029E | F1 | 40 to 80 m | 420 | - | - | - | - |
| | | | | | 09°44.465 , | 00°57.012E | F2 | | | | | | |
| 6 | | | Broukou | SOULEA (Soulawia) | 09°45.006 , | 00°53.804E | F1 | 55 to 80 m | 5000 | - | - | - | - |
| | | | | | 09°45.014 , | 00°53.820E | F2 | | | | | | |
| 7 | | | Misseouta | Nangbaya (Mangbaya) | 09°42.836 , | 00°56.359'E | F1 | 55 to 80 m | 250 | - | - | - | - |
| | | | | | 09°42.798 , | 00°56.291'E | F2 | | | | | | |
| 8 | | | Misseouta | Kanga | 09°41.642 , | 00°54.476'E | F1 | 60 to 80 m | 400 | - | - | - | - |
| | | | | | 09°41.680 , | 00°54.466'E | F2 | | | | | | |
| 9 | | | Misseouta | Thankpalo | 09°42.419 , | 00°54.940'E | F1 | 60 to 80 m | 500 | - | - | - | - |

| | | | | | | | | | | | | | | |
|--|--|--|--|--|------------|-------------|----|--|--|--|--|--|--|--|
| | | | | | 09°42.511' | 00°54.901'E | F2 | | | | | | | |
|--|--|--|--|--|------------|-------------|----|--|--|--|--|--|--|--|

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| | | | | | | | | | | | | | |
|----|-----------|----------|----------------------|-----------------|----------------|--------------|----|---------------|------|----|----------------------|---|-----------------|
| 10 | DOUFELGOU | ALLOUM | Alloum centre | Akpantchouma | 09°44.245 , | 00°59.388'E | F1 | 40 to 65 m | 350 | 1 | 1 | 1 | - |
| | | | | | 09°44.058 , | 00°59.304'E | F2 | | | | | | |
| 11 | | KADJALLA | Kadjalla | Sarta | 09°48.095 , | 00°57.309'E | F1 | 40 to 65 m | 650 | - | - | - | Sarta Market |
| | | | | | 09°48.095 , | 00°57.309'E | F2 | | | | | | |
| 12 | | | Kadjalla | Agnateté | 09°48.500 , | 00°59.484'E | F1 | 40 to 80 m | 578 | - | - | - | - |
| | | | | | 09°48.434 , | 00°59.486'E | F2 | | | | | | |
| 13 | | | Kadjalla | Tilawéon | 09°46.034 , | 00°57.186'E | F1 | 40 to 80 m | 250 | - | EPP Tilawéon | - | - |
| | | | | | 09°46.988 , | 00°57.194'E | F2 | | | | | | |
| 14 | | | Agoundé | Kadjallim | 09°49.603 , | 00°54.535'E | F1 | 55 to 80 m | 850 | - | EPP kadjalli m | - | - |
| | | | | | 09°49.495 , | 00°54.670'E | F2 | | | | | | |
| 15 | | ALLOUM | Agbassa | Otchacté | 09°48.010 , | 00°52.844'E | F1 | 55 to 80 m | 900 | - | EPP Otchacté | - | - |
| | | | | | 09°48.082 , | 00°52.814'E | F2 | | | | | | |
| 16 | | KADJALLA | Agoundé | Kpapté | 09°51.124 , | 00°55.895'E | F1 | 50 9 80 m | 747 | | EPP Kpapté | - | - |
| | | | | | 09°51.081 , | 00°55.861'E | F2 | | | | | | |
| 17 | DOUFELGOU | KADJALLA | Tchoré (Kadjalla) | Kalité (Ageoté) | 09°50.400 , | 001°00.747'E | F1 | 50 0 80 m | 1200 | 01 | EPP Kalité | - | - |
| | | | | | 09°50.401 , | 001°00.747'E | F2 | | | | | | |
| 18 | | | Kadjallim | Limaoukopé | 09°49.196 , | 00°53.136'E | F1 | 55 to 75 m | 700 | - | - | - | - |
| | | | | | 09°49.136 , | 00°53.159'E | F2 | | | | | | |
| 19 | | LEON | Leon - Yaka | Atindo | 09°39.217 , | 00°56;881'E | F1 | 60 to 80 m | 185 | - | - | - | - |
| | | | | | 09°39.012 , | 00°56;083'E | F2 | | | | | | |

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| | | | | | | | | | | | | | |
|----|-----------|----------|---------------------------|----------------|------------|-------------|----|------------|-------|---|---|---|-----------------|
| 20 | | | Leon - Yaka | Pira | 09°39.378' | 00°56.895'E | F1 | 60 to 80 m | 250 | - | - | - | - |
| | | | | | 09°39.332' | 00°57.006'E | F2 | | | | | | |
| 21 | | | Léon - Anima | Anima centre | 09°39.591' | 00°57.215'E | F1 | 60 to 80 m | 200 | - | - | - | - |
| | | | | | 09°39.622' | 00°57.246'E | F2 | | | | | | |
| 22 | DOUFELGOU | LEON | Léon- Anima | Atamda | 09°40.331' | 00°58.933'E | F1 | 65 to 85 m | 250 | - | - | - | - |
| | | | | | 09°40.360' | 00°58.929'E | F2 | | | | | | |
| 23 | | | Léon- Anima (Léon - Yaka) | Koudjourou | 09°38.913' | 00°58.304'E | F1 | 60 to 85 m | 150 | - | - | - | - |
| | | | | | 09°38.896' | 00°58.290'E | F2 | | | | | | |
| 24 | | | Agbandé | Peulh | 09°40.985' | 00°56.575'E | F1 | 40 to 70 m | 120 | - | - | - | - |
| | | | | | 09°40.950' | 00°56.575'E | F2 | | | | | | |
| 25 | | | Agbandé | Bottom and Top | 09°40.860' | 00°56.974'E | F1 | 55 to 80 m | 150 | - | - | - | - |
| | | | | | 09°40.902' | 00°56.972'E | F2 | | | | | | |
| 26 | | | Mandawiya | Pawia | 09°37.597' | 00°51.357'E | F1 | 60 to 80 m | 500 | - | - | - | - |
| | | | | | 09°37.716' | 00°51.381'E | F2 | | | | | | |
| 27 | KOZAH | SARAKAWA | Kpessidè | Akondou | 09°38.317' | 00°57.171'E | F1 | 5 to 70 m | 165 | - | - | - | - |
| | | | | | 09°38.274' | 00°57.212'E | F2 | | | | | | |
| 28 | | | Sara | The Kpaté | 09°38.269' | 01°01.497'E | F1 | 65 to 80 m | 230 | - | - | - | Sarakawa Market |
| | | | | | 09°38.207' | 01°01.386'E | F2 | | | | | | |
| 29 | | | Sara | Kpalanda | 09°37.421' | 01°00.605'E | F1 | 55 to 70 m | 350 | - | - | - | - |
| | | | | | 09°37.400' | 01°00.650'E | F2 | | | | | | |
| 30 | | | Sara | Kadjikaro | 09°37.854' | 01°01.807'E | F1 | 60 to 85 m | 250 | - | - | - | - |
| | | | | | 09°37.761' | 01°01.716'E | F2 | | | | | | |
| 31 | DOUFELGOU | TCHORE | Tchoré | Atchaouté II | 09°51.959' | 01°01.668'E | F1 | 60 to 80 m | 900 | - | - | - | - |
| | | | | | 09°51.958' | 01°01.635'E | F2 | | | | | | |
| 32 | | | Ayiga | Woutonta | 09°51.130' | 00°55.288'E | F1 | 60 to 80 m | 1 000 | - | - | - | - |
| | | | | | 09°51.288' | 00°55.231'E | F2 | | | | | | |
| 33 | | | Nacoco | Loumbre | 09°51.450' | 00°53.025'E | F1 | 60 to | 95 | - | - | - | - |

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| | | | | | 09°51.370' | 00°53.032'E | F2 | 80 m | 0 | | | | |
|-------------|-------------|---------------------|------------------------------|----------------------------------|------------|----------------|------------------------------------|-----------------------|-----|----|-----|-----------------|--|
| Prefectures | Cantons | Villages | Neighbourhoods (Lieu-dit) | Coordinates of the sites located | | Priority sites | Depth of the water depth (m) | Populati on (hbts) | USP | EP | CEG | Market place | |
| | | | | Latitudes | Longitudes | | | | | | | | |
| DANKPEN | Namon | Mergbal | Askpalan | 09°41.481' | 00°46.387' | F1 | 50 à 80 | 645 | - | - | - | - | |
| | | | | 09°41.584' | 00°46.554' | F2 | | | | | | | |
| | Natchiboré | Konkonba Bousson | Konkomba | 09°45.032' | 00°45.713' | F1 | 50 à 80 | 700 | - | - | - | - | |
| | | | | 09°45.095' | 00°45.663' | F2 | | | | | | | |
| | Namon | Typoul | Typoul I | 09°42.923' | 00°46.218' | F1 | 50 à 80 | 679 | - | 1 | - | - | |
| | | | | 09°42.847' | 00°46.289' | F2 | | | | | | | |
| | Natchitikpi | Aragote | Kpakpaboune | 09°43.662' | 00°42.643' | F1 | 50 à 80 | 1800 | - | 1 | - | - | |
| | | | | 09°43.614' | 00°42.586' | F2 | | | | | | | |
| | Natchitikpi | Kinassiou | Yaoudé | 09°45.497 | 00°42.157' | F1 | 50 à 80 | 260 | - | - | - | - | |
| | | | | 09°45.547' | 00°42.171' | F2 | | | | | | | |
| | Natchitikpi | Kitamang | Kitomang | 09°45.996' | 00°44.037' | F1 | 50 à 80 | 800 | - | - | - | - | |
| | | | | 09°45.978' | 00°43.972' | F2 | | | | | | | |
| | Natchitikpi | Kitamang | Himang yaoté | 09°45.485' | 00°43.401' | F1 | 50 à 80 | 380 | - | - | - | - | |
| | | | | 09°45.489' | 00°43.531' | F2 | | | | | | | |
| | Namon | Awarded | Assouta | 09°42.554' | 00°50°216' | F1 | 50 à 80 | 639 | - | - | - | - | |
| | | | | 09°42.554' | 00°50°250' | F2 | | | | | | | |
| | Namon | Kpatchidé | Kaptchidé | 09°41.383' | 00°51.728' | F1 | 50 à 80 | 500 | - | - | - | - | |
| | | | | 09°41.382' | 00°51.703' | F2 | | | | | | | |
| | Ataloté | Chasted | Nampaka II | 09°52.509' | 00°55.907' | F1 | 50 à 80 | 368 | - | - | 1 | - | |
| | | | | 09°52.460' | 00°55.915' | F2 | | | | | | | |

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| | | | | | | | | | | | | |
|-------|---------|----------------|----------------|------------|------------|----|---------|-----|---|---|---|---|
| KERAN | Ataloté | Tchasté-closed | Houkoun | 09°52.278' | 00°56.362' | F1 | 50 à 80 | 390 | - | 1 | 1 | - |
| | | | | 09°52.258' | 00°56.205' | F2 | | | | | | |
| | Ataloté | Tchasté | Houkoulémre | 09°53.175' | 00°57.518' | F1 | 50 à 80 | 280 | - | - | 1 | - |
| | | | | 09°53.204' | 00°57.481' | F2 | | | | | | |
| | Ataloté | Terité | Kpalakou | 09°55.174' | 00°54.587' | F1 | 50 à 80 | 300 | - | - | - | - |
| | | | | 09°55.198' | 00°54.621' | F2 | | | | | | |
| | Ataloté | Komté | Komté Houreleo | 10°01.661' | 00°53.259' | F1 | 50 à 80 | 350 | - | - | - | - |
| | | | | 10°01.618' | 00°53.223' | F2 | | | | | | |
| | Ataloté | Houreta | Houratélou | 10°01.729' | 00°53.758' | F1 | 50 à 80 | 400 | - | - | - | - |
| | | | | 10°01.700' | 00°53.778' | F2 | | | | | | |
| | Ataloté | Anima-fermé | Kpanklème | 09°56.720' | 00°54.556' | F1 | 50 à 80 | 600 | - | - | - | - |
| | | | | 09°56.665' | 00°54.661' | F2 | | | | | | |
| | Ataloté | Ataloté | Napo II | 09°56.857' | 00°55.143' | F1 | 50 à 80 | 400 | - | - | - | - |
| | | | | 09°56.800' | 00°55.137' | F2 | | | | | | |
| | Ataloté | Ataloté | Napo II | 09°56.559' | 00°56.408' | F1 | 50 à 80 | 700 | - | - | - | - |
| | | | | 09°56.549' | 00°56.455' | F2 | | | | | | |
| | Ataloté | Ataloté | N'itimba | 09°59.939' | 00°53.647' | F1 | 50 à 80 | 400 | - | - | - | - |
| | | | | 09°59.895' | 00°53.614' | F2 | | | | | | |
| KERAN | Helota | Helota | Atchirklaou | 09°55.291' | 00°46.783' | F1 | 50 à 80 | 350 | - | - | - | - |
| | | | | 09°55.316' | 00°46.848' | F2 | | | | | | |
| | Helota | Kpar Kpaï | Kpandjouté II | 09°56.495' | 00°49.484' | F1 | 50 à 80 | 300 | - | - | - | 1 |
| | | | | 09°56.486' | 00°49.466' | F2 | | | | | | |
| | Helota | Labor | Labor | 09°55.414' | 00°48.649' | F2 | 50 à 80 | 450 | - | - | - | - |
| | | | | | | | | | | | | |
| | Helota | Helota | Tapouwo | 09°54.265' | 00°45.785' | F1 | 50 à 80 | 285 | - | - | - | - |
| | | | | 09°54.252' | 00°45.753' | F2 | | | | | | |
| | Ossacré | Ossacré | Makanda-Telou | 10°03.348' | 00°44.140' | F1 | 50 à 80 | 285 | - | - | - | - |

ENVIRONMENTAL AND SOCIAL IMPACT STUDY (ESIA) Final updated version

VOLUME 1: CONTEXT, STUDY METHODOLOGY, POLITICAL, LEGAL, NORMATIVE AND INSTITUTIONAL FRAMEWORKS, DESCRIPTION OF THE RECEIVING ENVIRONMENT AND PRESENTATION OF THE PROJECT

| | | | | | | | | | | | | |
|--|---------|----------------|------------|------------|------------|----|---------|-----|---|---|---|---|
| | | | | 10°03.279' | 00°44.154' | F2 | | | | | | |
| | Ossacré | Ossacré | Pangouwara | 10°02.302' | 00°48.218' | F1 | 50 à 80 | 700 | - | - | - | - |
| | | | | 10°02.311' | 00°48.233' | F2 | | | | | | |
| | Ossacré | Pangouda | Akpelota | 10°00.163' | 00°47.801' | F1 | 50 à 80 | 300 | - | - | - | - |
| | | | | 10°00.124' | 00°47.820' | F2 | | | | | | |
| | Ossacré | Ossacre | Maliham II | 10°00.364' | 00°46.194' | F1 | 50 à 80 | 320 | - | - | - | - |
| | | | | 10°00.382' | 00°46°204' | F2 | | | | | | |
| | Ossacré | Pangouda | Kpalkoumé | 10°00.673' | 00°48.598' | F1 | 50 à 80 | 300 | - | - | - | - |
| | | | | 10°00.702' | 00°48.608' | F2 | | | | | | |
| | Helota | Kpas Kpaï | Nawaki | 09°56.342' | 00°47.594' | F1 | 50 à 80 | 350 | - | 1 | - | 1 |
| | | | | 09°56.356' | 00°47.574' | F2 | | | | | | |
| | Ataloté | Tchasté-closed | Nanpaka I | 09°52.877' | 00°55.334' | F1 | 50 à 80 | 368 | - | 1 | - | 1 |

BIBLIOGRAPHY

ANNEX 1: TERMS OF REFERENCE

INTRODUCTION

The constraints, challenges and opportunities relating to Togo's agricultural sector call for the identification of innovative strategies to improve the sector and make Togo an emerging country by 2030. In fact, the Head of State's speech, addressed to the nation on the occasion of the 54th anniversary of Togo's independence, underlines the importance of the development of Togolese agriculture, which is the country's leading economic sector (40% of GDP), bringing together 60% of the population with 87% of the active population, often family members, the majority of whom live in extreme poverty (73%).

Vision 2030 is therefore based on the structural transformation of Togolese agriculture and the Togolese economy so as to position Togo on the path to emergence. The materialization of this vision requires innovative approaches and mechanisms at the conceptual, operational and financing levels to exploit the full potential of port and road infrastructure, ICTs, energy, etc.

To meet the challenge, the Ministry of Agriculture, Livestock and Fisheries has renewed its agricultural policy note for the period 2016-2030. This new agricultural policy identifies as a strategic transformation approach for the agricultural sector, the implementation of agropoles within the next fifteen (15) years. This option is supported by the AfDB which in its Country Strategy Paper (CSP) 2016-2020 has chosen to support the development of agropoles in Togo.

As a pilot project, the development of the first agropole, located in the Kara Region, is planned for 2018.

1. JUSTIFICATION

One of the main characteristics of the agricultural sector in the Kara Region is the existence of small-scale family farms with areas ranging from 0.5 to 1ha. The development of the agricultural sector remains dependent, among other things, on climatic hazards, the low value of agricultural products, insufficient financing, the low level of training and technical skills of producers, the use of rudimentary tools in tilling the soil and the low level of trade.

In terms of agro-industry, the region is characterised by : (i) an industrial sector weakly integrated with the rest of the economy, limiting the processing of local raw materials; (ii) low competitiveness linked to the high cost of production factors and the non-conformity of industrial products with international standards; (iii) a low level of investment linked to the difficulties of access to credit; (iv) a tax system that provides insufficient incentives limiting private intervention in the sector; (v) an unsuitable financial system, high rates and fairly restrictive reimbursement guarantees.

Agriculture is seen as a risky sector, not financially solvent from a strict financial point of view, as the availability of income is influenced by the vagaries of the climate and does not depend solely on the work provided. In addition, financial availability is dependent on harvest periods, which is not adapted to the current financial system that organizes credit repayments generally on a monthly basis.

To meet the challenges, there are many options to trigger favourable dynamics, but they are based on the paradigm of supply, seen as derived demand. The aim is to connect the growing demand for agricultural and food goods to production systems through a complementary series of processing units of varying sizes. This involves, among other things, the reasoned

organisation of space, the control of water, the development of agro-industry, the organisation of the players at all levels of the value chains, the securing of land and the emergence of a land market which makes it possible to stimulate private investment, the mobilisation of financing for the benefit of agriculture and agro-industry, the intensification, diversification and the creation of intersectoral synergies (energy, hydraulics, transport, industry, trade, telecommunications, etc.).

Based on the assets of the Kara Region, notably the previous and ongoing projects, the Strategic Plan for the Development of Agropoles at the National Level identifies as a priority the establishment of the Kara agropole, which appears to be one of the major axes to contribute to the success of the plan as a whole.

2. OBJECTIVES OF THE PROJECT

The main objective of the project is to operationalise in a concerted and decentralised approach, the country's new agricultural policy for inclusive and strong economic growth. It aims to make the best use of the human, natural, geographical and socio-cultural assets of the region concerned in order to achieve inclusive, harmonious and sustainable development, in line with established development strategies and policies.

Specifically, the project aims to : (i) increasing agricultural productivity and production in a sustainable manner by promoting the sectors; (ii) developing infrastructure, (iii) promoting integrated development centres including access to basic services (health, education, water, sanitation, energy) thanks in particular to the intensive use of information and communication technologies.

Through the agropole of Kara, the objective is to create, within a restricted and developed perimeter, the conditions for private investors to take an interest in the agricultural sector and settle in the Agro-park. This assumes good support infrastructures, a legal, fiscal, financial, adapted and encouraging framework, visibility on value chains and the availability of quality raw materials at a competitive cost.

3. PROJECT INTERVENTION AREA

The Kara agropole project area covers an area of about 165,000 ha (the equivalent of a circle with a radius of about 20 km), i.e. less than 15% of the area of the Kara Administrative Region. The boundaries of this perimeter are as follows:

- On the east side: the Kara Forest, the Manda Forest and the Défalé Mountains.
- On the north side: the southern confines of the Kéran National Park.
- On the West side: the National Road N°17 (N17) linking Guérin-Kouka to Kabou.
- On the South side: the National Road N°19 (N19) linking Kabou to Kara.

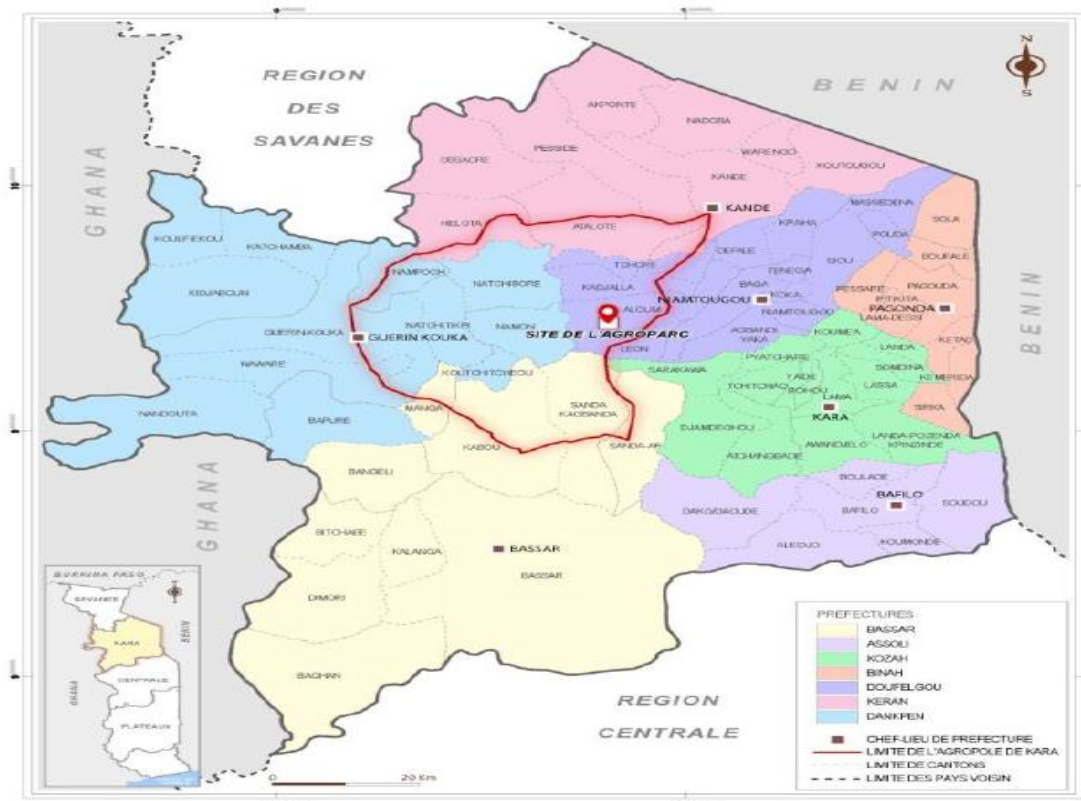
The area thus delimited corresponds to the alluvial plain of the Kara and its tributaries "Niantin" (left bank) and "Mabo" and "Nangboa" (right bank), with an altitude varying from 250 m (upstream) to 150 m (downstream), i.e. a very slight slope of around 0.3%. However, the zone of influence of the agropole can extend well beyond these limits, particularly on the western side, where good land is available, but the distances from the site of the Broukou Agropark become restrictive.

Administratively, only four of the seven prefectures of the Kara Region are within the perimeter of the zone: Doufelgou, Kéran, Dankpen and Bassar. There are 19 cantons

concerned:

- Four in the Prefecture of Doufelgou: Tchore, Kadjalla, Aloum and Léon.
- Four in the Prefecture of Kéran: Helota, Atalote, Pesside and Kande.
- Seven in Dankpen Prefecture: Guérin-Kouka, Naware, Natchitikpi, Nampoch, Namon, Koutchitcheou and Natchibore.
- Four in Bassar Prefecture: Manga, Sanda-Afohou, Kabou and Sanda- Kagbon.

Figure 20: Map of the project area



4. PRESENTATION OF THE PROJECT

The Project for the Development of Agropoles in Togo (PRODAT) is part of the new agricultural policy that aims to create more added value through production, processing and exports, while ensuring social inclusion and environmental protection. It advocates a development approach based on the promotion of agropoles, coupled with the use of innovative financing mechanisms, particularly in the form of private investment and public-private partnerships (PPPs).

In order to reach the targeted objectives, PRODAT aims to gather in one place and under the same operational organisation focused on the valorisation of the local agricultural potentialities, the different levers allowing to boost the rural economy and to bring people out of poverty. The agropoles will gradually integrate the development of various support infrastructures (water management, energy, transport, etc.), the promotion of agro-industry as well as the development of services (finance, ITC, etc.). Thus, it appears necessary within the framework of the implementation of the project activities to carry out technical studies prior to the implementation of hydro-agricultural developments, the construction or rehabilitation of rural tracks and the supply of drinking water to the populations.

The studies focused primarily on the pilot agropole in the Kara basin, as specified in the terms of reference.

4.1. PROJECT COMPONENTS

4.1.1. Rural Tracks" component

The problem of landlockedness is a major constraint for the development of agropoles. Current efforts, linked to the development of the Lomé - Ouagadougou road corridor, will ultimately contribute to linking the agropoles to the capital and the countries of the hinterland. As far as the three targeted agropoles are concerned, it should be noted that for the Kara region, a major effort has been made in the road sector both to open up production areas and to facilitate trade between Togo and neighbouring countries and between inland towns.

To support the government's efforts in the area of transport, a programme of tracks will be developed for the Kara basin agro-farm, the selected pilot agropole, as a complement to the state interventions already planned.

4.1.1.1. Linear

An overall linear of approximately 121 km of rural tracks was investigated on the basis of the main objectives of the project, the projected agricultural developments and the assumptions made previously. A summary is presented in the following table:

Directory of selected tracks for the agropole's road network

| ZONES | N° of sections | Sections | | Distance (km) |
|----------------------------|----------------|-------------------------|------------------------|---------------|
| | | Start | End | |
| Tracks in the Broukou area | | | | 92,4 |
| Main backrest | T01 | LéonYaka | Bidjandé | 5,6 |
| | T02 | Bidjandé | (Misséouta-) | 6,3 |
| | T03 | Broukou | Agbassa | 5 |
| | T04 | Agbassa(-Okpeloum) | Nangboua River | 9,9 |
| | T05 | Nangboua River | (Tchasté-)Atalote | 9,4 |
| South Broukou | T06 | Léon | Bidjandé | 3,3 |
| | T07 | Kpassidé | Misseouta | 5,2 |
| North Broukou | T08 | Kadjala (-Agbassa) | Ossare deTITA | 13,1 |
| | T09 | Ossare deTITA | Otchakte | 4,3 |
| | T10 | Kadjalim | Tchore Nakoko | 9,4 |
| | T11 | Kara River (Uzbekistan) | (Agounde-)Kadjalim | 9,2 |
| | T12 | RN21-(Agounboua) | Awassan | 8,3 |
| | T13 | EPPAgoundeX | TchoreAyiga | 3,4 |

| Zones | N° of sections | Sections | | Distance (km) |
|---------------------------|----------------|-------------------|--------------------------------------|---------------|
| | | Start | End | |
| Tracks in the Sara area28 | | | | .1 |
| South RN21 | T14 | Loop RN21 | Kawa | 0,8 |
| | T15 | Kawa | Kara River | 2,6 |
| | T16 | RN21(Sara) | (Hotel Campement Sara) River Kara | 2,8 |
| | T17 | RN21 Moov antenna | Kara River | 3,4 |
| North RN21 | T18 | Loop RN21 | Sara | 3,1 |
| | T19 | Sara(Market) | River Kéelou 1 | 6,1 |
| | T20 | Sara(Market) | Kpélou River 2 | 2,1 |
| | T21 | RN21 (Gnatre) | Kpélou River (and ramp) | 7,2 |
| TOTAL120 | | | | .5 |

4.1.1.2. Arrangement for the development of the tracks of the agropole network

Three types of development on the different sections depending on their condition and maintenance actions will be carried out. These are :

- **Type 1 layout level (T1):** it is characterised by light reprofiling, occasional reloading and the layout and repair of small structures;
- **Type 2 layout level (T2):** it consists of heavy reprofiling, systematic reloading with layout and construction of medium structures;
- **Type 3 development level (T3):** designates activities characterised by resetting, heavy reprofiling, systematic reloading, development and repair of major structures.

These levels of furnishings define applicable at the same time to the various runway conditions on the basis of the technical inspections carried out.

4.1.2. **Dams and hydro-agricultural facilities component (AHA)**

Water management is an essential element for the promotion of agropoles and the securing of agricultural production. The agropole of the Kara basin will have to integrate and examine in detail the developments selected by these previous studies and propose other possibilities that were not taken into account during these previous studies.

4.1.2.1. Dams" component

The "dams" component involves the development of 3 small dams pre-identified on the basis of topographic maps and reconnaissance visits in the field.

These are the sites :

- B1 (at the foot of the Agropark),

- B2 (located near the village of Kpassidè
- B3 which is close to the village of Léon.

The surface areas of the catchment areas are 14 to 16 km², with average inputs of around 5 to 6 million m³/year per site. At the stage of the summary studies, the maximum capacities of the basins of these three dams are estimated at millions of m³/year; 6 million m³/year and 4 million m³/year, respectively for sites B1, B2 and B3.

The useful height of the dams (max. depth of the water body) is 10 to 12 m. The length of the dikes is 1000 to 1200 m.

Each dam will be equipped with :

- a flood spillway, which releases floods into the downstream river dyke. Given the level of average inflows and the storage capacity of the dams, the spillway is expected to discharge almost every year.
- one (or 2 if the dam feeds irrigated areas located on both banks) water intake(s), set at 2 m above the bottom of the watercourse, thus leaving a slice of dead water unused, and which corresponds to water with a high sediment content, which should not be injected into irrigation networks to avoid clogging. The intake will feed the main water supply canal to the perimeters to be irrigated downstream of the dam. It will also feed a pipe that will bring raw water to a treatment plant to be provided for the agro-park's drinking water supply.
- a drain valve, allowing the reservoir to be emptied from time to time by flushing muddy water into the downstream watercourse, thus guaranteeing a longer service life for the structure

The area flooded per dam is about 100 to 150 ha. The reservoirs of the dams can also be used for the development of the fish farming industry.

In addition, Dam B4, located at the foot of the Agropark, will provide the water necessary for the development of the processing industries planned by the agropole (i.e. nearly 500,000 m³/year according to the mission¹).

4.1.2.2. Hydro-agricultural facilities component

It is planned to develop nearly 1000 ha net (about 1200 ha gross) to be irrigated in 2 rainy campaigns, totally secured, and partially in off-season irrigation (20% on average), i.e. nearly 2300 ha of irrigated crops per year (mainly rice, maize, soya and various other off-season and perennial crops).

Water from the dams will be used mainly for irrigation of plains downstream. 2 basic rules are to be observed to delimit the areas to be irrigated:

- the land is suitable for irrigation (soil quality)
- the topography is favourable to irrigation by the surface gravity system: the maximum elevation of the areas to be irrigated must be lower than the elevation of the dam's water intake, in order to allow gravity flow of the irrigation water.

The irrigation system adapted to the context of the Project and to the types of crops to be grown is surface irrigation (submersion) with a water distribution system through open canals operating on a water tower.

The development plan for each site includes the following works:

- one (or 2 if the dam feeds both banks) supply structure and load breaker, coming from the dam's water intake
- a gravity feed channel, on each bank, trapezoidal in shape, semi-buried, made of concrete-lined earth in order to limit water loss in the transfer.

This canal will be dimensioned for peak irrigation flow. It will be built using cut-and-fill (targeted cut-and-fill balance, avoiding the need to transport external materials to build the canal). It will roughly follow the contour line corresponding to the level of the dam intake and will have a minimum slope of about 0.5%. The right-of-way of this structure is a few metres. It will be bordered by a right-of-way (a roughly laid-out track).

If necessary, cattle drinking troughs can be built along this canal.

- When it reaches the level of the plain or lowland to be irrigated, the main canal feeds a network of gravity-fed secondary canals, also made of concrete-lined earth. These secondary canals are generally laid out in a transverse direction. They feed tertiary canals made of earth, installed in the longitudinal direction (schematically parallel to the watercourse) with a slight slope.

Each tertiary canal conveys a "hand of water" of 20 to 30 l/s to irrigated plots of land, the size of which is a priori 1 ha: 200 m x 50 m (area considered reliable to guarantee a sufficient income for future irrigators). The hand of water circulates in turn between the plots of land in the same hydraulic district, which are about ten hectares in size (400 m x 250 m, with a central tertiary canal).

- A drainage network made up of main, secondary and tertiary drains (earth ditches generally 0.50 to 1m 1m50 deep). This network is designed to evacuate excess runoff water (heavy rains) and water from emptying traps at harvest time, for rice cultivation. The main drainage collector joins the watercourse to discharge the drained water.
- A network of traffic lanes (main, secondary and tertiary) within the perimeter to allow easy access to all plots for the execution of agricultural works, for the supply of inputs and for the evacuation of agricultural products to marketing points.

4.1.3. AEP component

Under this sub-component, it is planned to :

i) ii) Rehabilitation and extension of the mini-powered water supply system in Kadjala; creation of 4 new mini-powered water supply systems for the most populated localities in the project area (Broukou; Agbassa; Léon, Agoundé).

ii) The creation of 60 human-powered pumps. Construction of boreholes equipped solar)

4.1.3.1. Mini AEP system

In addition to the hydro-agricultural developments, it will also be a question of providing the various areas with infrastructures that can meet the drinking water and sanitation needs of the neighbouring rural populations. The study will focus on the development of mini-WATER schemes consisting of boreholes, water towers, supply networks and standpipes.

➤ Technical design of the system

For each village, the new system of mini WATSANs based on boreholes essentially includes the implementation and dimensioning of the following elements:

- The borehole(s)
- The pumping system
- The discharge network
- Storage (tank)
- The distribution network
- Distribution works (BF & BP)

➤ **Water resources: drilling locations**

Three (03) sites have been established in each locality. All the sites were established in the presence of the local authorities or their representatives. The sites are marked out on the ground by a post coupled with a stone or brick painted red with an inscription (F1 F2 or F3).

| Localités | Sites (F) | Lieu-dit | Coordonnées GPS etrex 10 Garmin | | Altitudes (m) |
|-----------|-----------|----------------------------------|---------------------------------|-------------|---------------|
| | | | N | E | |
| Kadjalla | 1 | Klouwéré | 09°48.023' | 000°58.615' | 247 |
| | 2 | Lom Nava | 09°48.091' | 000°58.670' | 242 |
| | 3 | Lom Nava | 09°48.121' | 000°48.680' | 239 |
| Broukou | 1 | Sounté Lycée | 09°44.633' | 000°55.853' | 230 |
| | 2 | Château yéhou | 09°44.587' | 000°55.022' | 225 |
| | 3 | Togograin | 09°44.435' | 000°54.747' | 217 |
| Léon | 1 | Quartier chef (carrière) | 09°42.224' | 000°57.448' | 250 |
| | 2 | Poundé ancien (USP) | 09°42.063' | 000°57.338' | 242 |
| | 3 | Poundé (terrain foot) | 09°42.105' | 000°57.290' | 240 |
| Agoundé | 1 | Quartier USP (Derrière bâtiment) | 09°50.590' | 000°53.140' | 201 |
| | 2 | Marché (Côté PMH) | 09°50.600' | 000°52.694' | 204 |
| | 3 | Quartier chef | 09°50.287' | 000°52.893' | 207 |
| Agbassa | 1 | Quartier Chef | 09°46.997' | 000°54.377' | 223 |
| | 2 | Quartier EPP | 09°47.045' | 000°54.569' | 226 |
| | 3 | Marché (Champ Angom-adj) | 09°46.924' | 000°54.800' | 240 |

➤ **Storage : Water tower**

The sprayed tanks are circular in shape, made of reinforced concrete and of the tower type (on 20 m pillars). The selected capacities are: 50 m³ for Kadjalla, Léon, Agbassa and Agoundé localities and 100 m³ for Broukou locality.

➤ **Distribution network**

The material used for the pipes will be PVC with a nominal pressure of 10 bars. The distribution network will be made up of :

- main, secondary and tertiary pipes (private connections and fountain bollards) in PVC;
- safety and control installations such as suction cups, drains, shut-off valves etc.
- service points: standpipes and private connections serve people, public infrastructures (EPP, USP, market, etc.). Both of these devices are equipped with a meter designed to measure consumption and to charge the water service according to the volume consumed.

Projected works for the mini-AEP system

| Locality | Castle capacity of water | Discharge (m) | Distribution (m) | Number of terminals fountains |
|-----------------|---------------------------------|----------------------|-------------------------|--------------------------------------|
| Kadjala | 50 m ³ | 885 | 3 765 | 10 |
| Broukou | 100 m ³ | 1120 | 5 050 | 11 |
| Agbassa | 50 m ³ | 300 | 6 350 | 9 |
| Agoundè | 50 m ³ | 530 | 5 450 | 8 |
| Léon | 50 m ³ | 410 | 5 855 | 7 |

4.1.3.2. Boreholes equipped with human-powered pumps (PMH)

Within the framework of this project it is planned to carry out :

- 60 new PMH boreholes
- 8 rehabilitations of old boreholes equipped with PMH

4.2. PRESENTATION OF THE PROMOTER

The Ministry of Agriculture, Livestock and Fisheries (MAEP) is the promoter of this project within the framework of the Project for the Development of Agropoles in Togo (PRODAT). The preparation of PRODAT is financed by the African Development Bank (ADB) through a specific grant (PPF).

5. PURPOSE AND OBJECTIVES OF THE IMPACT ASSESSMENT

The aim of the envisaged study is to assess the potential impacts of the project on the physical and socio-economic environment in order to ensure its sustainability.

Specifically, this will involve :

- identify the positive and negative impacts of the project in the area ;
- analysing these impacts ;
- propose mitigation and/or compensation measures for negative impacts and measures to enhance positive impacts;
- to draw up an environmental and social management plan ;
- develop a risk management plan ;
- develop a Resettlement Action Plan (RAP) ;
- develop an environmental monitoring and follow-up programme.

6. SERVICES REQUESTED

As part of this study, the consultancy firm will carry out :

6.1. DESCRIPTION OF THE POLITICAL, LEGAL AND INSTITUTIONAL FRAMEWORK OF THE PROJECT

In this part, the consultant will make, on the one hand, a summary of the Texts regulating the construction activities of classified installations, and on the other hand, a summary of the conventions that Togo has signed and ratified, the legislative and regulatory texts adopted at the national level and which require ESIA's for projects that may significantly affect the various components of the environment.

6.2. DESCRIPTION OF THE RECEIVING ENVIRONMENT

- delimit the areas of direct and indirect influence of the project (scope of the study) ;
- To make such a clear and simple description and analysis of the initial state of the project's receiving environment with emphasis on:

- ***The physical environment:*** Geographical location, geology (geological formations crossed), topography, landscape, hydrographic network, air quality, soils (soil structure and texture, agricultural potential), climate (rainfall, evapotranspiration, temperatures, sunshine, winds), risk factors for natural disasters, etc.

- ***The biological environment:*** Vegetation (the different plant formations, threatened plant species....), fauna (the different fauna habitats crossed and the presence or not of rare, endemic or endangered species), fragile and or threatened ecosystems, sensitive areas, (rivers, wetlands, mountain....),

- ***Landscape:*** description of the shape of landscapes, their visual qualities and recreational values, sites of special and archaeological interest, etc.

- **The human, socio-cultural and economic environment.** The socio-cultural, demographic and health data of the project area will be presented. The settlement patterns of the villages in the area, as well as their state of development, access to health and education services and their impact on the production system, as well as the degree of dependence of the population on the environment, will also be examined. The economic activities (agriculture, trade, services and other activities present in the project area), the socio-economic profiles of the population concerned (socio-professional categories and types of activities, etc.), the cultural, archaeological and religious sites (cemeteries, sacred places.....), likely to be affected by it, will be the subject of an inventory and analysis which will be integrated into the environmental impact study report. The land context and land use will also be exposed.

To this end, the consultant will carry out a socio-economic study of the project area. To this end, based on the results of existing socio-economic studies, the Consultant will carry out additional surveys among heads of households, managers of economic activities, social infrastructure and collective facilities, as well as among landowners and farmers located in the project area for :

- a socio-economic categorisation of the inhabitants of the project area ;
- a classification of the economic activities, socio-cultural facilities, infrastructures and inhabitants located in the project area;
- Drawing up a list of the wishes and expectations of the populations in the project area.

After this description, the consultant will report on the evolution of the area without the project, which will allow a comparison to be made with the evolution of this area with the project.

6.3. DESCRIPTION AND CHOICE OF VARIANTS

It consists of describing the variants of the project and choosing those that respect the environment.

- determine different variants of the project that will take into account different technologies that are environmentally friendly, given that the site is already chosen ;
- select the variant(s) least damaging to the environment and property and analyse them. The economic, technical, environmental and socio-cultural criteria will be considered in the selection of the variant, while giving priority to environmental criteria;
- describe the selected variant(s). The description should highlight the overall plan of the project components and the various activities to be carried out during development, construction, operation and completion of the project. This description should make it possible to identify the activities and sources of impact of each variant;
- present a summary of the project.

6.4. ANALYSIS OF THE IMPACTS AND RISKS OF THE SELECTED VARIANT

This analysis consists of :

- Determine and characterize the impacts on the physical and human environments; this part will clearly and precisely highlight the impacts of project implementation on the various components of the environment described above;
- Assessing the significance of impacts ;
- identifying uncertainties ;
- identify the risks linked to the execution of the project ;
- present mitigation and/or compensation measures.

6.5. ELABORATION OF AN ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (PGES) AND A RISK MANAGEMENT PLAN (PGR)

Taking into account the preparatory, construction, operation and end of project phases, the environmental management plan will include :

- measures to mitigate and/or compensate for negative impacts ;
- an environmental monitoring programme that will include :
 - - the list of items requiring monitoring ;
 - all the measures and means envisaged to protect the environment;
 - the characteristics of the monitoring programme (implementation schedule, human and financial resources allocated to the programme) ;
 - the initiator's commitments regarding the submission of monitoring reports (number, frequency, content) to the National Environment Management Agency (ANGE) ;
- an environmental monitoring programme including :
 - the reasons for the follow-up and the list of items requiring follow-up ;
 - the objectives of the follow-up programme and the components targeted by the programme, the scientific methods envisaged ;
 - the number of follow-up studies planned as well as their characteristics (scientific methods, timetable);
 - the modalities concerning the production of monitoring reports (number, frequency) to the National Environment Management Agency;
- an institutional framework for the implementation of the ESMP and RMP ;
- a budget for the implementation of the ESMP and RMP ;
- a summary table of the environmental and social management plan and the risk management plan according to the framework in force.

7. EXPECTED RESULTS

The Consultant will provide the Employer with a complete file (ESIA report and annexed documents) in accordance with the texts in force in the Togolese Republic and in compliance with the above specifications as explained in the terms of reference of the study. The conclusions of the consultations with the populations, the minutes of the consultant's information meetings with the populations concerned, with a view to obtaining their opinion.

The project, will be briefly summarised in the body of the ESIA report and annexed to it.

❖ Detailed environmental and social impact study reports by component, each including :

- a table of contents ;
- a list of tables and figures ;
- a list of acronyms and abbreviations used;
- a non-technical summary that can be understood by all stakeholders ;
- a contextualization of the project ;
- an environmental and social impact assessment methodology
- a political, legal and institutional framework for the project;
- a description of the initial state of the environment ;
- an analysis of the options and variants and then to the description of the project;
- identification, description and evaluation of environmental and social impacts;
- an environmental and social management plan ;
- risk identification, description and assessment ;
- a risk management plan ;
- an environmental monitoring and surveillance programme ;
- ancillary documents and bibliographical references used during the production of the report or product.

❖ When the number of affected persons reaches fifty (50), a Resettlement Action Plan (RAP) will be developed taking into account the people and property that will be affected. This plan shall include a list of affected persons and property and the modalities for their resettlement.

8. STAKEHOLDERS

The consultant will focus on the involvement of the following actors:

- the population of the project area who must be informed in order to have their opinion on the project. They must be informed throughout the project cycle so that their opinions can be taken into account They should be consulted in determining the various compensation rates if necessary,
- the institutions and actors involved in the project
- the promoter of the project,
- local authorities (Prefectures, cantons and villages).
- the population of the project area;
- the five prefectures of the Kara region concerned by the project;
- the surrounding villages (traditional chiefs and CVDs) ;
- technical services (National Environmental Management Agency, Directorate General of Mines, Fire Brigade, Water and Sanitation Department, etc.).

9. TIMETABLE AND STEPS FOR CARRYING OUT THE STUDY

The duration of the study is two (02) months and should be carried out as follows:

- an interim report in two (2) copies plus an unprotected electronic medium (CD), 45 days after the signing of the contract.

- 15 days after the observations, the Consultant/Consultancy will produce a final report after having integrated the observations from the report evaluation process. The final report will be sent to the Promoter in five (5) copies plus an electronic version on CD.

10. CONSULTANT'S PROFILE

The service provider must be a consultant/design office qualified in the field of environmental and social impact studies with a multidisciplinary team of at least:

- an environmentalist, head of mission, with proven skills in impact assessment and environmental management and must have at least 10 years experience in the field of environmental issues and have carried out at least 3 consultancy missions in the field of environmental and social impact assessment of road projects;
 - a civil engineer with a background in environmental engineering;
 - a biologist specialising in environmental assessment ;
 - a sociologist or socio-economist with experience in environmental and social impact assessment.

11. ROLE OF THE PROMOTER

The project owner will have to make all relevant documentation available to the Design Office and will facilitate contacts with the technical services. The Consultant/Consultancy will forward two (02) copies of the draft ESIA report to the National Environmental Management Agency for its evaluation. The comments resulting from the report evaluation process will be forwarded to the promoter for consideration in the final report. The Promoter will forward five (05) copies of the final document plus an electronic version on CD to the National Environmental Management Agency.

12. PERFORMANCE ASSESSMENT CRITERIA

The ESIA report will be assessed by :

- an ad hoc evaluation committee meeting in an evaluation workshop according to the criteria below:
 - compliance of the report with the terms of reference ;
 - technically correct and accurate information :
 - the quality and fidelity of the analysis of the initial state of the site;
 - the quality and reliability of the data ;
 - the relevance of the scientific methods used ;
 - the quality of the analyses in the identification, description and evaluation of the project's impacts on the environment;
 - the conformity of the proposed measures with the standards and legislation in force;
 - the relevance and adequacy of the proposed mitigation measures with the imperatives of environmental protection and sustainable development and their contribution to the implementation of the orientations and strategies of the national environment policy;
 - the content of the environmental management programme and its coherence with the envisaged mitigation measures;
 - the content of the risk management plan ;
 - its consistency with the proposed preventive measures;

- the monitoring and follow-up programme and the corresponding institutional arrangements;
- the methods of financing the management plan of the environment.
- taking into account the comments of the public ;
- comprehensive and satisfactory statement of key findings ;
- clear, comprehensible and sufficient information for decision-making.

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