

Phase 4: Deliverable 4.3

Final action plan for mitigation and adaptation projects in Méri

Formulate and develop an action plan including climate change mitigation and adaptation projects in Méri.

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1 INTRODUCTION

Adapting to climate change is a relatively new topic for most cities and **increasing their resilience to climate change impacts is an urgent challenge**. The sub-Saharan region is particularly vulnerable to climate change impacts as it suffers from water scarcity and droughts and people and economy are highly dependent on climate sensitive sectors, such as agriculture, fishery, and forestry.

In this sense, the present **Action Plan** intends to help Méri adapt to climate change by reducing its vulnerability to the effects of climate change and increasing its resilience and quality of life; as well as improving its adaptive capacities to create new opportunities to support the city's and the country's sustainable development.

In the municipality of Méri several climate-related hazards have been identified as significant, such as floods, droughts, heat waves, bush fires and high winds, which **negatively impact social, economic and environmental structures**.

The plan aims to describe the actions needed to minimize the adverse effects of climate change in the municipality and follows the principles below:

- (i) To improve knowledge on the effects of climate change to inform public decisions on adaptation,
- (ii) To integrate adaptation in existing public policies in order to ensure overall coherence and reflect the cross-cutting nature of adaptation,
- (iii) To inform the population about the effects of climate change, adaptation and mitigation, so that everyone can take ownership of the issues and act,
- (iv) To consider interactions between activities, and
- (v) To assign responsibilities in terms of implementation and funding.

2 METHODOLOGY

This section aims to **provide a summary of all the previous activities and assessments** carried out in Méri during the development of this project, such as the vulnerability matrix assessment and the several capacity building activities. All of these have been used for the definition of Méri’s Climate Action Plan.

2.1 VULNERABILITY MATRIX

To assess Méri’s climate change vulnerability, a **vulnerability matrix** for the diagnostic of climate change impacts was elaborated in earlier phases of the project. Table 1 and Table 2 below show the most significant hazards identified in the municipality.

Table 1. Extreme climate risks

HAZARDS	PROBABILITY	SEVERITY	LEVEL	RISK ZONES
HEAT WAVE	OFTEN	VERY IMPORTANT	EXTREME	ALL TERRITORY
EXTREME RAINFALL	OFTEN	MAJOR	EXTREME	ALL TERRITORY
DROUGHTS	OFTEN	MAJOR	EXTREME	ALL TERRITORY
FLOODS	OFTEN	MAJOR	EXTREME	ALL TERRITORY

Table 2. High climate risks

HAZARDS	PROBABILITY	SEVERITY	LEVEL	RISK ZONES
VARIABLE RAIN	OFTEN	VERY IMPORTANT	HIGH	ALL TERRITORY
BUSH FIRES	OFTEN	VERY IMPORTANT	HIGH	ALL TERRITORY

While **agriculture** is the predominant sector of the national economy, it is subject to extreme climatic events such as floods, droughts, and heat waves. The impacts of climate change on agriculture are very significant and are characterized by:

- a degradation of natural resources,
- displacement of populations,
- disruption of economic activities, especially agricultural,

- increasingly heavy economic and social costs.

The dry season is the period at which the **bushfire** phenomenon reaches its peak.

Droughts and **heat waves** also have a direct impact on other sectors that are less representative for Méri, however still important to consider:

- **Water:** loss of surface water, intensification of water stress, disruption of water supply.
- **Health:** droughts may increase malaria transmission rates, mortality rate increases due to heat waves.
- **Livestock:** low pasture regeneration capacity, decrease the number of cattle, scarcity of grazing areas, impoverishment and reduction of pastures and decrease in animal production yield.
- **Fishing and aquaculture:** Decreased depth of ponds, overexploitation, eutrophication.

In reference to population, most **flood victims** are people living in unsanitary conditions, followed by the unemployed, the elderly and children, low-income households, the disabled and finally the women and girls. Regarding droughts, young people, children, the elderly and women are the most sensitive groups.

2.2 CAPACITY BUILDING

Entering dialogue with the local community can serve to analyse vulnerability at the local level and promote adaptive strategies in accordance with the social and biophysical situation in the region. Several **participatory process and capacity building activities** were carried out in previous phases of the project.

Firstly, after having identified the climate risks that affect the municipality and which are the most vulnerable sectors (section 2.1), a participatory phase was carried out to collect **local qualitative data** to complement and finalise the vulnerability assessment of the municipality. During this stage, the team of consultants met with representatives of the city of Méri including various authorities, particularly at the level of the sub-prefecture, the town hall, the delegations of the districts of agriculture, livestock and fishing, health services, the forest manager, etc. The meetings took place in two stages. Firstly, a presentation of the context of the mission and the results of the vulnerability matrix were presented, namely:

- General information on climate change in Cameroon, in the region and in the community.
- Results of the vulnerability matrix for Méri obtained in Output 2. Deliverable 2.1.
- Description of the pilot projects proposed in Méri (Deliverable 2.2).

Then, in a second stage, there was an information exchange with the participants in order to collect their concerns, inputs and ideas to help define the climate change adaptation measures needed to be implemented in the municipality. In total, 5 participants took part in this stage of the project. The people interviewed were representatives of the social, economic, and demographic context of Méri, from different backgrounds such as the following:

- Administrative and municipal authorities; made up of the sub-prefect of the district of Méri and the municipal executive of the locality.
- The administrative and technical staff of the municipality and the sectors of the district of Méri (officials of decentralized services, district delegates of agriculture, public health, etc.)

In addition, following the same structure of the previous phase, **workshops for the population** were also held in the municipality. The overall objective of the participation workshops was to carry out a participatory risk mapping in the most vulnerable or at-risk neighborhoods and villages of the municipality. Five workshops were carried out in the different villages/neighborhoods that compose the municipality of Méri. The specific objectives of each workshop were to:

- Identify relevant climatic hazards in the village/neighborhood.
- Evaluate risks and vulnerabilities in a participatory manner.
- Identify endogenous strategies and actions established in the municipality.

Several categories of stakeholders took part in these workshops, such as:

- The municipal executive of the municipality consisting of the mayor, the focal point and some municipal councilors.
- The technical services of the town hall: the head of the technical service, the municipal development framework.
- The sectors represented by the person in charge of civil protection of the sub-prefecture, the head of the forestry post, the Delegate of the District of Livestock, Fisheries and Animal Industries, the Delegate of the District of Agriculture and of Rural Development, the District Health Officer; District Delegate for Social Affairs, District Inspector for Basic Education and Secondary Education, Head of Agency ENEO.
- Traditional authorities made up of traditional leaders or their representatives.
- Climate relays: made up of young people who had been proposed by the town hall. The criteria for choosing these young people focused on their belonging to one of the vulnerable villages and respecting gender parity, 2 per village for a total of 20, who had already worked with the town hall, and had the ability to use an android phone which is a critical tool for data collection.
- I2D and Help Community team.

Moreover, a **community awareness campaign** was conducted in Méri within the participatory process. The awareness campaigns were carried out at two levels:

- At the municipal level: with the organization of workshops which brought together all the stakeholders and during the collection of field data.
- At the community level: sensitization began when data was collected on the risks and vulnerability to climate change in the villages concerned by the survey. Two approaches were used to reach the maximum number of target people: the organization of neighborhood or village forums with village chiefs and door to door to households. Whether at the municipal level or at the community level, this awareness focused on:
 - Popularization of information on the project.
 - Identification of climatic hazards.
 - The consequences linked to certain irresponsible behaviors in the face of the adversities of climate change; and
 - New behaviors to adopt in the event of observation of a hazard among citizens.

The results of the field surveys, workshops as well as the participatory mapping of risks and vulnerabilities made at the municipal level made it possible to design posters: a total of 150 posters were published for each major hazard identified within the municipality to aware the population.

These posters contained the following information: the risk on which we wanted to communicate, the images on the identified risks, the best practice methods to be adopted as well as the adaptation and prevention methods related to this risk.

Finally, to ensure an integrated consideration for youth and women, a specific study was carried out analysing **mechanisms and tools to reduce imbalances in decision-making on climate issues on vulnerable groups such as women and youth**. As part of the various workshops that were organised in the municipality of Mérij, one of the first exercises was to convene all the women who could contribute to the activities of the workshop. This process was carried out through women's associations, development committees, elected representatives and sectorial staff working in the localities. They were considered particularly relevant groups since they provide training and coordinate activities encouraging young girls and other women to realize their worth and to assume decision-making positions. Wherever possible, women's groups of six to ten people were formed at the forums stage in the municipalities. A facilitator was specifically responsible for raising awareness among these women.

3 ALIGNEMENT WITH NATIONAL INSTRUMENTS

This municipal climate action plan is aligned with **the NDC and with the National Plan for Adaptation to Climate Change in Cameroon** (PNACCC, 2015). In addition, this action plan supports the objectives of **Cameroon's National Development Strategy** (SND30, 2020), which is the second phase of the "Vision Plan for 2035 " issued by the Cameroonian government in 2009. The SND30 encompasses and designs the implementation of national sectoral policies and seeks to strengthen adaptation measures to manage the effects of climate change and environmental impacts to ensure sustainable and inclusive economic growth and social development, among other main objectives.

Since 2015, the Government of Cameroon has been implementing the Programme d'Aménagement du Territoire (PRODAT) drawn up by the Ministère de l'Economie, de la Planification et de l'Aménagement du Territoire (MINEPAT). The objective of this program is to promote the development of the local economy of the target municipalities through the construction and / or rehabilitation of socio-economic infrastructure and, to contribute to the integration of unemployed young people through the creation of sustainable jobs, in the northern part of Cameroon, marked by the severity of the climate and the insecurity generated by the terrorist attacks. To achieve this objective, the Programme National de Développement Participatif (PNDP) has developed, with the support of AFD, since November 2015, a Haute Intensité de Main d'Œuvre (HIMO) approach for the realization of the projects planned in the Plans Communaux de Développement (PCD) and registered in the PRODAT. In addition, there is public funding within the municipalities through the Public Investment Budget (BIP) which joins the PNDP and the Fonds Spécial d'Équipement et d'Intervention Intercommunale (FEICOM) projects and constitutes the Annual Investment Plan (PIA) implemented in the municipalities through the financing of short-term micro-projects.

From the national meeting that took place in November 2020 at HELP Community conference room in Yaoundé, it was resolved that the **municipalities should develop micro-projects for local development and get closer to the PNDP and the FEICOM to benefit more from funding from FFU and HIMO**, which strongly participate in solving problems at the local level in the Sudano-Sahelian area. This action is **consistent with strategic axis 4 of the PNACCC**, which is to integrate adaptation to climate change into national sectoral strategies and policies.

4 CLIMATE ACTION PLAN

Méri's Climate Action Plan is the result of the work carried out in previous phases of the project. This includes the initial bibliographic study and consultation of relevant documents such as the PNACCC, the NDC of Cameroon and the Vision Plan for 2035, among others.

The Action Plan has also considered the results and conclusions of the several meetings, trainings and workshops carried out, as well as the gender dimension and youth, and other vulnerable groups.

Finally, several local stakeholders have been consulted, such as Help Community, I2D and ONACC, to get their validation and input on the goals, use and content of the Action Plan and specific actions. In this sense, actions were categorized in order of priority according to the local stakeholders.

Méri's Action Plan contains 14 actions, from several sector such as agriculture, water, health, transport, environment and biodiversity, livestock, energy, and buildings

4.1 ACTION SHEET TEMPLATE

The next figure shows a **template** of the action sheet used for the Action Plan. Each action included in the plan is described according to this template, which is explained below.

1. ACTION NAME IN ENGLISH

1. ACTION NAME IN FRENCH

Vulnerability / Climate impact	Climate change impact/s to which the adaptation action is associated, such as Heat waves (extreme heat); Extreme precipitation; Flood; Droughts and water shortages; Storms and winds; Landslides; Risk of fire...	
Sector	Vulnerable sector to which the action belongs to, such as water, buildings, energy, agriculture and forestry, livestock, environment and biodiversity, health, transport, education and tourism.	
Description	Describes the main goal of the action and the sub actions to be implemented in order to achieve it. This section will specify as much as possible the bodies involved in the implementation of the action and their role, as well as the expected results of the action.	
Results	Here the expected results and outcomes associated with the measure will be indicated	
Costs	Investment cost [USD]	Operational cost [USD]
	Possible financing sources: For some actions specific financing sources will be indicated here	
Calendar	Here it will be stated the time horizon (Short, medium, large term) for the implementation of the action	Responsible Here it will be stated which department, area or person in the city council will be responsible for carrying out and monitoring the progress of the action.
Monitoring indicators	All the actions are associated with one or more monitoring indicators, which will be quantifiable to be able to monitor the actions before, during and after their execution	

4.2 MÉRI'S CLIMATE ACTIONS SHEETS



1. Construction of boreholes / water supply with solar pumps and drinkers for animals

1. Construction de forages/adductions d'eaux avec pompes solaires et abreuvoirs pour bêtes

Vulnerability / Climate impact	Droughts and water scarcity	
Sector	Water	
Description	<p>The municipality of Méri, with a population of more than 170,000 people and 10 large cantons, faces a major problem of access to drinking water due to the morphology of the soil and its landscape, as it is an area dotted with stone hills. With this large population, drilling is no longer the right solution for access to drinking water. Therefore, it is essential to build drinking water supplies in the cantons in order to reduce the vulnerability of the city to droughts as well as to reduce the risk of diseases linked to the use of contaminated water.</p> <p>In this sense, this action will consist of constructing additional boreholes, and it is important that these are constructed in a sustainable way, with solar pumping, to supply the greatest number of people and at the same time avoid the emission of greenhouse gases into the atmosphere. Furthermore, this action will help reduce at the same time the problem of diseases caused by the ingestion of contaminated water.</p> <p>The beneficiary villages and specific location sites where to construct the boreholes and install the solar pumps and drinking troughs will be selected considering technical studies carried out previously and in collaboration with the local authorities. Different criteria will be considered when deciding the final location, including population density, the presence of breeders and the water table.</p> <p>To design and implement the installation of the water supply network associated with the construction of a solar power plant and drinking troughs, the local authorities will recruit local labor. In this sense, part of the local labor recruited will consist of vulnerable groups such as youth and women, which will receive formation regarding the technical aspects of construction and maintenance of the boreholes and solar pumps.</p>	
Results	<p>Construction and rehabilitation of functional boreholes with solar pumps and troughs for animals in villages and townships of the municipality.</p> <p>Implementation of a capacity building process for youth and women to learn about water management, solar energy, and the importance to maintain and keep water clean and free of contaminants in order to avoid diseases.</p>	
Costs	Investment cost	Operational cost
	3,000,000 USD	300,000 USD
	<p>Possible financing sources: BID, PNDP, FEICOM.</p> <p><i>See section 5. Financing opportunities for additional sources.</i></p>	
Calendar	Responsible	
2021 - 2023	Local government and Help Community	
Monitoring indicators	<ol style="list-style-type: none"> 1. Number of drinking water supply points / year 2. Percentage of the population with access to drinking water / year 3. Renewable energy produced by the solar pumps [kWh/year] 4. Number of declared cases of water-borne diseases / year 5. Number of women and youth employed as local labor 	



2. Implementation of a reforestation plan for vulnerable areas in the municipality of Méri

2. Mise en place d'un plan de reboisement des zones vulnérables dans la commune de Méri

Vulnerability / Climate impact	High winds and heat waves	
Sector	Environment and biodiversity	
Description	<p>Méri is a rocky municipality, and this leads to have a small amount of forest. Most people carry out illegal practices to make firewood but also to sell in the town of Maroua, which is located 15 km from the municipality. Therefore, it would be important to implement a reforestation plan with tree species adapted to the heat and the lack of water, providing plants to the population and also carrying out an awareness campaign for the population.</p> <p>The local government will design and implement a reforestation plan in Méri with external technical help as needed. The steps to implement this action are described below:</p> <ul style="list-style-type: none"> • Identify the sites to be reforested, according to several criteria such as population density, the existence of the banks of intermittent watercourses, number / presence of schools, etc. • Determine the specific dimension of areas to be reforested and the number of plants needed. • Select the most suitable species according to their resistance to drought and heat and search for seeds, that can either be purchased or collected in the wild. • Create a central nursery where to take care of young trees / seedlings. • Prepare the land during the first year: clearing, cleaning and hole digging. • Place the plants on the ground and surround the plants with protective screens during the second year. • Establish village and student reforestation committees and perform activities of sensitization. • Train the local population to ensure the maintenance and monitoring of plants. These trainings will also be focused on empowering the most vulnerable groups such as youth and women. Therefore, to train male and female promoters and leaders with a gender perspective with equal opportunities to participate in community forestry development and to raise awareness among women and men about the problems of deforestation and rational management of natural resources. • The reforestation plan will include a monitoring plan (with timelines, specific monitoring actions to carry out, etc.) in order to ensure the correct implementation, evolution and sustainability of the reforestation. Each monitoring activity will also be associated to a specific person which will be the responsible for this monitoring. 	
Results	<p>Reforestation plan for vulnerable areas of Méri including a monitoring plan.</p> <p>Training and sensitization activities for the community and empowerment of youth and women.</p>	
Costs	Investment cost	Operational cost
	350,000 USD	50,000 USD

Possible financing sources : Ministère des Forêts et de la Faune (Fonds spécial de développement des forêts), AFD, PNDP, FEICOM.

See section 5. Financing opportunities for additional sources.

Calendar

2021 - 2022

Responsible

Local government

Monitoring indicators

1. Number of trees planted /month
 2. Area of reforested land (ha)
 3. Number of training / sensitization activities carried out / year
-



3. Development of municipal roads and tracks in Doulek, Kaliiao, Ouloum

3. Aménagement des routes et pistes communales à Doulek, Kaliiao, Ouloum

Vulnerability / Climate impact	Floods				
Sector	Transport				
Description	<p>The municipality of Méri is crossed by many streams, which are only visible during the rainy season, and these streams usually flood the villages and cut off the access to some villages or townships and destroy roads. Thus, there is a constant need of reshaping of the tracks and roads of the municipality in order to facilitate the mobility of people and food to the big cities. Therefore, flood events cause great damage to the population, who is mainly agricultural and pastoral, so the need to make drains and open new tracks to facilitate the operation and distribution of agricultural products becomes very high and important.</p> <p>In order to reduce the damage and negative impacts from flooding in Méri, it is necessary to identify the number of roads and tracks to be developed or improved, for example, the roads and communal tracks of Doulek, Kaliiao, Ouloum. In order to do this, it is firstly proposed to develop a flooding risk map of Méri, to identify the specific flood zones and areas that are at most risk and where action is most needed.</p> <p>Technical studies will be carried out to determine the number of bridges and culverts to be built along the routes, to determine the depth of valleys and ditches, and to assess the specific actions to implement. Dredging and cleaning the ditches to facilitate the circulation of water will also be carried out to help reduce the risk of flooding.</p> <p>In addition, the implementation of nature-based solutions for sustainable drainage will also be considered and assessed: Sustainable Urban Drainage Systems (SUDS) aim to maintain or replicate the predevelopment water cycle (before urbanization) and include a set of measures/components that use natural features and processes to slow down and reduce the volume of surface water runoff in order to manage downstream flood risk. SUDS can also enhance water availability by capturing and storing rainwater and it can also improve water quality as they can reduce sediment and contaminants from runoff by allowing them to settle or through biological breakdown of pollutants. SUDS can include pervious or permeable pavements and surfaces, infiltration basins and trenches, swales, detention basins, among others.</p> <p>The final investment cost of this action will depend on the total number of kilometers of municipal roads to be rehabilitated and / or developed as well as the level of degradation of the runways.</p>				
Results	Roads and communal tracks rehabilitated and developed in Doulek, Kaliiao, Ouloum				
Costs	<table border="1"> <thead> <tr> <th>Investment cost</th> <th>Operational cost</th> </tr> </thead> <tbody> <tr> <td>2,000,000 USD</td> <td>300,000 USD</td> </tr> </tbody> </table>	Investment cost	Operational cost	2,000,000 USD	300,000 USD
Investment cost	Operational cost				
2,000,000 USD	300,000 USD				
	<p>Possible financing sources: BID, BIP, PNDP, FEICOM.</p> <p><i>See section 5. Financing opportunities for additional sources.</i></p>				
Calendar	Responsible				
2022 - 2023	Local government				
Monitoring indicators	<ol style="list-style-type: none"> 1. Kilometers of roads constructed / year 2. Kilometers of rehabilitated roads / year 3. Kilometers of ditches constructed / year 				



4. Reinforcement of power lines through the introduction of metal or concrete poles

4. Renforcement des lignes électriques à travers l'introduction de poteaux métalliques ou en béton.

Vulnerability / Climate impact	High winds	
Sector	Energy	
Description	<p>Electricity is one of the main drivers that contribute to improve economic opportunities and, even a better quality of life. In Cameroon, the annual growth in electricity consumption (7 to 8 %) requires at least 100 MW of new electricity generating capacity. So far, the supply of electricity is lacking far behind. Access to electricity stands at 18.5 and 87.5 % for rural and urban populations, respectively. In the Northern Interconnected Grid (NIG) region, the above rates are estimated at 3 times lower than that of national averages. The need for electricity keeps rising as population continues steadily to grow. For more than 30 years, access to electricity in the NIG region has been achieved through grid extension only: a very high rate of grid losses (24 to 30 %) makes grid extension not a cost-effective option for the National Electricity Utility Company, ENEO. Furthermore, most households are dispersed so either have no access to electricity due to low incomes, coupled with high grid-connected cost, or have interruption of energy due to the power lines are vulnerable to high winds.</p> <p>Specifically, the municipality of Méri has an electricity coverage of less than 20% and the existing power supply in the municipality is not stable due to several factors such as the overturning of the electricity poles by the high winds and the weevils that also gnaw at many of them.</p> <p>Therefore, in order to guarantee access to energy for the entire population of Méri, it is necessary to reinforce power lines with materials sufficiently resistant to wind, such as concrete and metal. To carry this out, it is firstly needed to make an inventory and count the number of poles to be strengthened in the municipality. Secondly, it will be assessed what company to contact for the supply of concrete poles and electrical equipment. A responsible in the local government will be designated for the management of the execution of this action, including its monitoring.</p>	
Results	<p>Access to energy for a high percentage of population</p> <p>The municipality of Méri has electricity lines supported by concrete or metal poles</p>	
Costs	Investment cost	Operational cost
	1,000,000 USD	50,000 USD
	Possible financing sources: BIP, BID	
	<i>See section 5. Financing opportunities for additional sources.</i>	
Calendar	Responsible	
2022 - 2024	Local government, Local Energy Agency	
Monitoring indicators	<ol style="list-style-type: none"> 1. Number of poles constructed or rehabilitated / year 2. Population with access to energy (%) / year 	



5. Strengthening the energy mix through the construction of solar power plants

5. Renforcement du mix énergétique à travers la construction de centrales solaires.

Vulnerability / Climate impact	Droughts and heat waves	
Sector	Energy	
Description	<p>As mentioned in the previous action, electricity is one of the main drivers that contribute to improve economic opportunities and, even a better quality of life. In Cameroon, the annual growth in electricity consumption (7 to 8 %) requires at least 100 MW of new electricity generating capacity. So far, the supply of electricity is lacking far behind. Access to electricity stands at 18.5 and 87.5 % for rural and urban populations, respectively. In the Northern Interconnected Grid (NIG) region, the above rates are estimated at 3 times lower than that of national averages. The need for electricity keeps rising as population continues steadily to grow. For more than 30 years, access to electricity in the NIG region has been achieved through grid extension only: a very high rate of grid losses (24 to 30 %) makes grid extension not a cost-effective option for the National Electricity Utility Company, ENEO. Furthermore, most households are dispersed and have no access to electricity due to low incomes, coupled with high grid-connected cost.</p> <p>On the other hand, off-grid standalone solar or wind energy systems are considered the best alternatives in the NIG region to locally provide electricity. Therefore, it is necessary to implement this action to improve the access to energy of the population of Méri. In order to so, the following actions shall be carried out by the local government, together with the Local Energy Agency:</p> <ul style="list-style-type: none"> • Identification of potential sites for the construction of the solar power plants, considering population density, geography of the terrain (preferably flat terrain), the orientation towards the sun, etc. • Identification of the company responsible for implementing the project. • Design and implementation of the project. 	
Results	Access to energy for a high percentage of population and diversification of the energy mix	
Costs	Investment cost	Operational cost
	2,000,000 USD	300,000 USD
	Possible financing sources: BIP	
	<i>See section 5. Financing opportunities for additional sources.</i>	
Calendar	Responsible	
2022 - 2025	Local government, Local Energy Agency	
Monitoring indicators	<ol style="list-style-type: none"> 3. Number of solar power plants constructed 4. Solar electricity generated [MWh/year] 5. Population with access to energy (%) / year 6. Renewables on the mix energetic (%) / year 	



6. Awareness, grouping of breeders in a cooperative and support for the marketing of products at factory prices and the fight against contagious diseases and epizootics

6. Sensibilisation, regroupement des éleveurs en coopérative et accompagnement pour la commercialisation des produits aux prix d'usine et à la lutte contre les maladies contagieuses et épizooties.

Vulnerability / Climate impact	Droughts	
Sector	Livestock	
Description	<p>Livestock is the first economic activity in parallel with agriculture in the municipality of Méri. The livestock sector in Méri is currently experiencing a lot of difficulties, due to poor local organization, and as a result of climate change. Temperature is the most important bioclimatic factor for livestock: low temperatures decrease food requirements, improve youth survival and reduce energy costs. Heat waves cause the death of many animals and heat stress takes its toll on milk production, meat quality and reproduction of dairy cows. According to the breeders, the increase in temperatures has the effect of reducing the appetite of livestock and, consequently, his weight gain. An increase in water deficits due to drought forces producers to decrease the number of cattle they graze to preserve their land. In consequence, lack of water and reduced weight of the herd causes low quality production and the diseases associated with the cattle processes appear more frequently.</p> <p>Therefore, raising awareness and creating cooperatives would be very important for local breeders in Méri, who are currently having serious problems in accessing products to treat livestock for disease control.</p> <p>In this sense, it is proposed to implement the following actions to help reduce the vulnerability of the sector, especially to cattle diseases:</p> <ul style="list-style-type: none"> • Identification of breeders in each township by the local authorities. • Sensitization of these breeders identified on the advantages of operating in a cooperative. • Support breeders in the process of creating cooperatives to benefit from technical and financial support. • Raise awareness and inform cooperatives on the variation in prices set by the competent administration (Ministry of Commerce) and that the DD / MINEPIA of Diamaré will support the cooperatives in respecting the prophylactic schedules (small and large cattle) to fight against diseases contagious and epizootics. 	
Results	The breeders are sensitized, grouped into cooperatives, and sell their products at factory price. Also, contagious diseases and epizootics are reduced.	
Costs	Investment cost	Operational cost
	500,000 USD	25,000 USD
	Possible financing sources: BID, PNDP, FEICOM.	
	<i>See section 5. Financing opportunities for additional sources.</i>	
Calendar	Responsible	
2021 - 2022	Local government	
Monitoring indicators	<ol style="list-style-type: none"> 1. Number of breeders sensitized / year 2. Number of cooperatives created 	



7. Construction of a drainage system in flood-prone areas

7. Construction d'un système de drainage et d'évacuation des eaux dans les zones à fort taux d'inondation

Vulnerability / Climate impact	Floods	
Sector	Water and transport	
Description	<p>Some villages in the municipality of Méri are inaccessible during the rainy season because of the floods, which are projected to increase in frequency and intensity due to climate change. To tackle this problem, it is very important to set up a drainage system in all the large villages and in the city center to canalize the water which causes the destruction of roads and agricultural tracks.</p> <p>Firstly, the local government will identify the areas with high flooding rates that require the construction of new dikes or the rehabilitation of existing ones, for example with more resistant materials. Furthermore, the dredging and cleaning of the ditches will be necessary to facilitate the circulation of water and avoid flooding episodes.</p> <p>Specifically, it has been identified in the village of Kaliao in the Douvangar canton the need to construct a water channel whose goal is to facilitate the circulation of water as this site is highly vulnerable to floods.</p> <p>In addition, the implementation of nature-based solutions for sustainable drainage will also be considered and assessed: Sustainable Urban Drainage Systems (SUDS) aim to maintain or replicate the predevelopment water cycle (before urbanization) and include a set of measures/components that use natural features and processes to slow down and reduce the volume of surface water runoff in order to manage downstream flood risk. SUDS can also enhance water availability by capturing and storing rainwater and it can also improve water quality as they can reduce sediment and contaminants from runoff by allowing them to settle or through biological breakdown of pollutants. SUDS can include pervious or permeable pavements and surfaces, infiltration basins and trenches, swales, detention basins, among others.</p>	
Results	<p>Drainage and evacuation system for precipitation water constructed and rehabilitated</p> <p>Reduced flood rate</p>	
Costs	<p>Investment cost</p> <p>1,500,000 USD (Drainage and evacuation system)</p> <p>1,000,000 USD (Kaliao's channels)</p>	<p>Operational cost</p> <p>200,000 USD (Drainage and evacuation system)</p> <p>250,000 USD (Kaliao's channels)</p>
	<p>Possible financing sources: BIP, FEICOM, PNDP</p> <p><i>See section 5. Financing opportunities for additional sources.</i></p>	
Calendar	Responsible	
2022 - 2024	Local government	
Monitoring indicators	<ol style="list-style-type: none"> 1. Decrease in flood rate depending on area (% per year) 2. Meters of channels created / year 3. Meters of rehabilitated dikes / year 	



8. Raising public awareness and training on use of improved stoves

8. Sensibilisation de la population et formation sur l'usage des foyers améliorés

Vulnerability / Climate impact	All the identified risks (transversal)
Sector	Environment and biodiversity
Description	<p>The relief of the municipality of Méri is very rugged due to the existence of many stone hills, and the existing forest is deforested by the people due to the untimely cutting of wood for heating and cooking. In this context, it is necessary to implement and introduce to the population the use of improved stoves, fireplaces, and eco-friendly charcoal as a more appropriate solution, as well as raise awareness to the population on the conservation of the ecosystem.</p> <p>Among the various technologies introduced in the realm of efficient household heating and cooking methods, stoves are the most popular and widespread in both urban and rural communities. Especially in the Far North region of Cameroon, stoves occupy a central place in the health, environmental, economic and social domains of life. By improving the efficiency of wood burning stoves, the amount of toxic smoke produced can be reduced and health risks to the family be minimized. In view of these and other concerns, a good cooking and heating stove is defined as one that meets technical, scientific and safety standards, and has high combustion quality, technical efficiency, minimal smoke emission, ergonomics, and structural stability. Most sources cite the fuel-efficiency of traditional stoves as five to ten percent.</p> <p>Only few people in the towns of the Far North region of Cameroon have access to more modern sources of energy such as kerosene, electricity or gas, since it is more costly and therefore difficult for many to purchase. The national government of Cameroon has started some major projects to improve environmental issues in the north which aim to reduce the pressure on the forests and increase the supply of firewood. Examples are:</p> <ul style="list-style-type: none"> • “Operation Sahel vert” of MINEPDED, which restores degraded land and is engaged in distributing improved cookstoves (ICS) to households • The tree planting project of MINFOF <p>In addition to government efforts, NGOs and CSOs are involved in producing and distributing improved cookstoves to the population, such as the Forestry and Environment Project -ProPFE- in the region, of which GIZ is also part of the efforts. In order to contribute towards combatting the alarming degradation of forest resources, this project has started building and distributing improved cookstoves to households on a large scale.</p> <p>In this sense, it is proposed that the local government Méri organizes a series of workshops and raises awareness to its population regarding the use of improved cookstoves and its advantages for the environment, their health and their economy: the use of these improved stoves reduces firewood consumption in the households, which reduces the pressure on forest resources and subsequently diminishes the effect of climate change and preserving biodiversity. Furthermore, using improved stoves reduces the costs for firewood as the quantity used for cooking is considerably less, so this represents economic savings for families, savings that can be used for improving their livelihood (improve family nutrition, education of children, buying of some basic household needs).</p> <p>From a gender perspective, the use of these improved stoves reduces the quantity of firewood used in preparing food, reducing the time spent by women and girls in rural areas for collecting wood. This would allow them to fetch wood once a week that will be enough for the entire week unlike fetching daily when using traditional cooking methods. Thus, this gives time for these women to carry out other activities like farming, taking care of the children, performing other household chores and even carrying out income generating activities.</p> <p>In this training workshops organized by the local government, the population will be trained on the manufacture of improved stoves based on local materials (clay, terracotta, scrap iron, metals, etc.) and the techniques of manufacturing improved stoves will be promoted by the already trained population in the different villages.</p>
Results	<p>Population sensitized and trained on the manufacture and use of improved stoves</p> <p>Massive use of improved stoves.</p>

Costs	Investment cost	Operational cost
	300,000 USD	50,000 USD
Possible financing sources:		
<i>See section 5. Financing opportunities for additional sources.</i>		
Calendar	Responsible	
2021 - 2022	Local government	
Monitoring indicators	<ol style="list-style-type: none"> 1. Number of improved stoves used by population / year 2. Number of people sensitized and trained / year 	



9. Awareness-raising, training and support for pastoralists and farmers in the promotion of agricultural products and fodder production

9. Sensibilisation, formation et appui des éleveurs et agriculteurs à la valorisation des produits agricoles et la production de fourrage

Vulnerability / Climate impact	Droughts						
Sector	Agriculture and livestock						
Description	<p>In general, the association between agriculture and livestock is not well developed (except in highly fertilized fields) and competition between the two activities is more apparent. This competition is the origin of many conflicts due to the spatial and/or temporal interpenetration between pastoral and agricultural areas, with a tendency to decrease the number of grazing areas. Therefore, this depletion and decline in grazing land provokes a decreasing in quality and quantity of pastoral products, the overshooting of carrying capacity, loss of extensive transhumance-based herding practices, expansion of the agricultural front, loss of livestock tracks, agricultural conflicts, and insufficient fodder crops. In addition, it is necessary to minimize the impact of floods and droughts delimitating safe areas for livestock as well as creating drinking wells for the animals in order to avoid conflicts with farmers.</p> <p>Furthermore, the mass of agricultural products produced in the municipality of Méri do not benefit the local population because they are sold raw without any processing. In order to enhance local production, it is important to raise awareness and train people in the processing of agricultural products and the production of quality fodder for livestock.</p> <p>In order to tackle these problems and to promote adaptation of these two sectors to the impacts of climate change, including drought and extreme heat, the local government will carry out the following actions:</p> <ul style="list-style-type: none"> • Identification of farmers, pastoralists, agricultural by-products, and forage production sites • Determination of the forage fields' area • Organization of awareness-raising and training workshops for pastoralists and farmers on methods of valorization of agricultural products and production of fodder • Provide technical and financial support for the creation of forage fields • Construct knots and ditches for agriculture and livestock. • Discuss with herders on the various conflicts in order to reach a consensus on the demarcation of pasture and construction of wells in Marzai and Gadah. • Definition of the number of pastoral wells to be built according to the carrying capacity of the pasture and definition of rules governing the use of pasture 						
Results	<p>Increased capacity and awareness of pastoralists and farmers on methods of valorization of agricultural products and production of fodder.</p> <p>Reduction of conflicts between pastoralists and farmers</p> <p>Delimited pastures and wells in each canton</p>						
Costs	<table border="0"> <thead> <tr> <th>Investment cost</th> <th>Operational cost</th> </tr> </thead> <tbody> <tr> <td>300,000 USD (Sensibilization and training)</td> <td>50,000 USD (Sensibilization and training)</td> </tr> <tr> <td>350,000 USD (Delimitation of pasture and construction of wells)</td> <td>75,000 USD (Delimitation of pasture and construction of wells)</td> </tr> </tbody> </table>	Investment cost	Operational cost	300,000 USD (Sensibilization and training)	50,000 USD (Sensibilization and training)	350,000 USD (Delimitation of pasture and construction of wells)	75,000 USD (Delimitation of pasture and construction of wells)
Investment cost	Operational cost						
300,000 USD (Sensibilization and training)	50,000 USD (Sensibilization and training)						
350,000 USD (Delimitation of pasture and construction of wells)	75,000 USD (Delimitation of pasture and construction of wells)						

Possible financing sources: FEICOM, BIP, PNDP

See section 5. Financing opportunities for additional sources.

Calendar	Responsible
2022 - 2023	Local government
Monitoring indicators	<ol style="list-style-type: none"> 1. Number of sensitized productors (pastoralists and farmers) 2. Total grazing area [ha / year] 3. Reduction of conflicts / year 4. Delimitated area for pasture (ha) 5. Number of wells per pasture created



10. Awareness, training and support of populations for the construction of ecological and sustainable houses adapted to extreme climatic conditions

10. Sensibilisation, formation et appui des populations pour la construction de maisons écologiques et durables adaptées aux conditions climatiques extrêmes

Vulnerability / Climate impact	All the identified risks (transversal)	
Sector	Buildings	
Description	<p>Climatic risks such as floods and high winds cause enormous damage to public buildings and especially to residential houses, which are built most of them with traditional materials such as mud, straw and wood. Nevertheless, traditional materials must always be considered as they represent a sustainable way of building adapted to the territory.</p> <p>In order to reduce the vulnerability of the buildings and the population in Méri to these risks, the local government will implement several awareness, training and other support activities, which are described below:</p> <ul style="list-style-type: none"> • Preparation of awareness posters on eco-citizen behavior to face extreme weather in schools, markets, health centers, places of worship, along the streets, etc. • Identify architects, preferably locals, who will support the population in the construction of the first ecological houses. If necessary, carry out trainings to these architects to ensure the correct use of ecological materials and design of eco-houses. These architects, together with the local government, will be responsible for the design and construction of the first 5 eco-houses in Méri, as a pilot test that will help extend the construction of these ecological house to the rest of the city. • Sensitization and training of local populations on the advantages and the need to build ecological houses, especially to women and youth. In this sense, it will be highlighted the importance of choosing an architect who will identify the right type of ecological house to be built from the local material and which best withstands the extreme precipitations identified in the area, etc. In addition, sensitization will also be focused on rehabilitation of existent houses, as much as possible, according to sustainable construction standards that will help increase the resilience of the house against climatic impacts. It is important to involve the population in this process so they can give their input and/or raise any concerns, to ensure the success of this action. 	
Results	<p>All the population sensitized regarding extreme weather events and ecological building</p> <p>20 architects and engineers trained on new construction methods adapted to the traditional and sustainable housing</p> <p>5 pilot eco-houses built in the municipality</p>	
Costs	Investment cost	Operational cost
	750,000 USD	100,000 USD
	<p>Possible financing sources: BIP, PNDP, FEICOM</p> <p><i>See section 5. Financing opportunities for additional sources.</i></p>	
Calendar	Responsible	
2022 - 2023	Local government	

**Monitoring
indicators**

1. Number of eco-houses built /year
 2. Number of homes rehabilitated according to sustainable construction standards / year
 3. Number of declared cases of dwellings affected by the effects of climate change / year
 4. Number of architects identified
 5. Number of awareness posters distributed / year
 6. Number of participants at the trainings / workshops carried out to population / year
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11. Sensitization of the population on respect for hygiene and sanitation rules and distribution of mosquito nets

11. Sensibilisation de la population sur le respect des règles d'hygiène et d'assainissement et distribution de moustiquaires

Vulnerability / Climate impact	Heat waves	
Sector	Health	
Description	<p>Méri is a mountainous municipality, and still landlocked, no system for managing wastewater, sewage sludge and waste has been put in place so far, this leads to an increase in disease rates due to the non-compliance of the hygiene rules in the villages. Furthermore, the lack of waste management leads to an increase in mosquito infestations, which is further exacerbated by climate change and, therefore, the risk that these insects act as a disease vector is increased. In order to reduce the vulnerability of Méri to this risk, several actions will be implemented in Méri, which are described below:</p> <ul style="list-style-type: none"> • Identification of diseases linked to non-compliance with recurrent hygiene rules in the town of Méri; • Identification of the people who will constitute the local awareness-raising committees that will work in collaboration with the DD / MINSANTE; • Organize a training workshop for the committees on sanitation methods and respect for hygiene rules by the population. • Organization of awareness-raising campaigns to raise awareness of diseases linked to non-compliance with the hygienic rules for the local population, by the committees in each township. These can be through distribution of posters and banners, through radio broadcasts, or public campaigns in markets, schools, places of worship, etc. The campaigns will be focused specially on most vulnerable groups such as women and youth. • In addition, the local government will identify and assess the size of households and organize campaigns to distribute impregnated mosquito nets and teach locals how to set them up and maintain. 	
Results	Population sensitized on respect for hygiene and sanitation rules; mosquito nets distributed, reduction in illnesses linked to non-compliance with hygiene standards	
Costs	Investment cost	Operational cost
	300,000 USD	50,000 USD
	Possible financing sources: FEICOM, BIP, PNDP, MINSANTE	
	<i>See section 5. Financing opportunities for additional sources.</i>	
Calendar	Responsible	
2022 - 2023	Local government	
Monitoring indicators	<ol style="list-style-type: none"> 1. Number of diseases related to hygiene 2. Number of awareness-raising and training actions for local populations / year 3. Number of distributed mosquito nets 	



12. Development of wells and permanent traditional water sources and creation of ponds (water reservoirs)

12. Aménagements des puits et sources d'eau traditionnelles permanentes et création de marres (retenues d'eaux)

Vulnerability / Climate impact	Droughts	
Sector	Water	
Description	<p>The municipality of Méri has a lot of herders and during the dry season these are forced to move to another town, which causes a great risk of theft and death of the cattle because all the torrents and oases dry up. In addition, it is difficult for most population to have adequate water facilities in their homes or villages, so sometimes the nearest safe water point is several kilometres away. This pushes them to drink unsafe water from unconditioned rivers and springs. In addition, due to climate change it is projected that droughts will increase in frequency and intensity, and therefore water availability and access is further compromised in Méri.</p> <p>Therefore, it is very important to improve the existing water sources to make them drinkable, but also to build additional water sources and rehabilitate boreholes. In this sense, the local government will first carry out an inventory of wells and permanent traditional water sources. This inventory will include the counting of the total number of sources and the assessment of the quality of the sources, where the quality of the water obtained will be analyzed and categorized as drinkable or not.</p> <p>Once this inventory and first assessment is done, the local government will design an action plan according to the needs identified and will start cleaning, rehabilitating, and disinfecting the identified wells as necessary. In addition, the local government will assess the creation of additional sources of water, not identified already in action number 1 of this action plan (creation of boreholes).</p> <p>As mentioned, it is also necessary to create and rehabilitate water reservoirs in the municipality area, also as a water source for agriculture. A water reservoir designates a body of water such as a lake, a pond or a reservoir of water created artificially by the construction of a dam, dike, valve, or other type of barrier. It is a body of water formed by accumulation, for example upstream of a dam. Usually, its water level fluctuates greatly, and the water turbidity is high. The water retention can be above ground (reservoir) or underground (cistern). This system can help to tackle the lack of water in the municipality.</p>	
Results	Artificial ponds created, wells and traditional springs developed for agriculture and human use. Living conditions of communities improved through greater access to drinking water and sanitation.	
Costs	Investment cost	Operational cost
	1,000,000 USD	250,000 USD
	Possible financing sources: FEICOM, BIP, PNDP	
	<i>See section 5. Financing opportunities for additional sources.</i>	
Calendar	Responsible	
2022 - 2024	Local government	
Monitoring indicators	<ol style="list-style-type: none"> 1. Number of improved water sources / year 2. Number of ponds created or rehabilitated / year 3. Percentage of population with access to sanitation services 4. Water-borne diseases cases / year 5. Cases of malaria reported / year 	



13. Design and implementation of a bushfire risk management plan in the municipality of Méri

13. Conception et mise en œuvre d'un plan de gestion du risque feux de brousse dans la commune de Méri

Vulnerability / Climate impact	Bushfires				
Sector	Environment and biodiversity				
Description	<p>During the collection of data in the field, individual interviews with local agents and the input from the participatory sessions carried out in Méri, it was noted that bush fires are one of the major risks in Méri. In times of severe drought, Méri experiences constant bush fires, which destroy fields and houses. These bush fires are mainly caused by farmers, who still practice slash-and-burn agriculture, and pastoralists who burn vegetation during the dry season to facilitate the regeneration of new grasses in the forest. The risk of bushfires is further increased by climate change and the increase in temperature and decrease of precipitation projected, which thus increases the vulnerability of Méri and its population to bushfires.</p> <p>In this sense, and to increase the adaptive capacity of Méri to bushfires and to considerably reduce fires in the municipality, the local government will design and implement a bushfire risk management plan, with external technical help as needed. The steps to implement this action are described below:</p> <ul style="list-style-type: none"> • Identification of areas sensitive to bushfires, especially considering those areas close to agricultural fields and considering the presence of herbaceous cover. A bushfire risk map will be created using this information as a useful tool to identify the areas most at risk and where management action is most needed. • Once these areas have been identified, local teams will be constituted to create discontinuities in the landscape and reduce the risk of bushfires. • In addition, landscape surveillance committees will be created and patrols in the landscape concerned will be organized to keep the areas at risk well under control and to be able to act faster in the case of a start of a bushfire. • Trainings will also be carried out to farmers and pastoralists in order to help them switch from the practices that increase the risk of bushfire to more sustainable and less risky agricultural and pastoralist practices. 				
Results	<p>Bush fire management plan designed and implemented (including bushfire risk map)</p> <p>Landscape surveillance committees and patrols put in place</p> <p>Trainings carried out to farmers and pastoralists</p> <p>Reduced damage caused by bush fires</p>				
Costs	<table border="1"> <thead> <tr> <th>Investment cost</th> <th>Operational cost</th> </tr> </thead> <tbody> <tr> <td>300,000 USD</td> <td>50,000 USD</td> </tr> </tbody> </table> <p>Possible financing sources: BID, PNDP, FEICOM.</p> <p><i>See section 5. Financing opportunities for additional sources.</i></p>	Investment cost	Operational cost	300,000 USD	50,000 USD
Investment cost	Operational cost				
300,000 USD	50,000 USD				
Calendar	Responsible				
2021 - 2022	Local government				

Monitoring indicators	<ol style="list-style-type: none">1. Bushfire management plan designed and implemented (including bushfire risk map)2. Percentage of bushfire risk area in regards total municipality area3. Percentage of area surveilled in regard to total bushfire risk area4. Number of farmers and pastoralists trained / year
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14. Establishment of a local weather warning bulletin and production of agricultural calendars

14. Mise en place d'un bulletin d'alerte météorologique local et production de calendriers agricoles

Vulnerability / Climate impact	Floods and droughts	
Sector	Agriculture	
Description	<p>The municipality of Méri is experiencing many difficulties because of its very rugged relief, with many stone hills, which considerably reduces the cultivable areas. Furthermore, Méri is increasingly noting a considerable drop in agricultural yield which is caused by the variation of the seasons: this increased variation of periods of precipitation in the municipality of Méri caused by climate change has a great negative impact on agricultural production and thus on local farmers and breeders.</p> <p>To adapt to this hazard, it is highly important to draw up a weather warning bulletin and to produce an agricultural calendar that can be made available to the population to help them tackle in advance the more frequent and intense drought periods. To implement this action, the local government will carry out the following actions:</p> <ul style="list-style-type: none"> • Firstly, it will identify existing weather stations near the town of Méri that can be used for the weather warning bulletin. • As a link between the meteorological center, who will produce the warning bulletin and the agricultural calendar, and the farmers, the local government will create and establish a local meteorological warning committee. This committee will periodically provide farmers with climatic indicators and with information regarding its impacts on different crops, as well as on the management practices to be followed to prevent, mitigate and / or manage these climatic risks. • Reports and communications addressed to farmers will be produced monthly, or more periodically if needed. Sensitization of the local population, in addition to farmers, on how to use this agricultural calendar and the management actions to implement in drought periods and other climatic hazards. 	
Results	Meteorological warning bulletin set up and agricultural calendars produced; reduction of decreased yield risk as producers use agricultural calendar information	
Costs	Investment cost	Operational cost
	150,000 USD	25,000 USD
	<p>Possible financing sources: FEICOM, BIP, PNDP, MINEPDED</p> <p><i>See section 5. Financing opportunities for additional sources.</i></p>	
Calendar	Responsible	
2021 - 2023	Local government	
Monitoring indicators	<ol style="list-style-type: none"> 1. Commissioning of the climate observation, forecasting and warning system 2. Number of reports or communications on future climate events and possible damages produced / month 	

4.3 ACTION PLAN SUMMARY

The following table provides a **summary of Méri's action plan**, including the action title, climate change risk tackled, sector, time horizon and cost. The actions are shown in order of priority.

PRIORITY	ACTION TITLE	SECTOR	RISK	TIME HORIZON	COST (USD)
1	Construction of boreholes / water supply with solar pumps and drinkers for animals	Water	Droughts and water scarcity	2021-2023	3,900,000
2	Implementation of a reforestation plan for vulnerable areas in the municipality of Méri	Environment and biodiversity	High winds and heat waves	2021-2022	450,000
3	Development of municipal roads and tracks in Doulek, Kaliiao, Ouloum	Transport	Floods	2022-2023	2,600,000
4	Reinforcement of power lines through the introduction of metal or concrete poles	Energy	High winds	2022-2024	1,150,000
5	Strengthening the energy mix through the construction of solar power plants	Energy	Droughts and heat waves	2022-2025	3,200,000
6	Awareness, grouping of breeders in a cooperative and support for the marketing of products at factory prices and the fight against contagious diseases and epizootics	Livestock	Droughts	2021-2022	550,000

7	Construction of a drainage system in flood-prone areas	Water and transport	Floods	2022-2024	3,850,000
8	Raising public awareness and training on use of improved stoves	Environment and biodiversity	All the identified risks (transversal)	2021-2022	400,000
9	Awareness-raising, training and support for pastoralists and farmers in the promotion of agricultural products and fodder production	Agriculture and livestock	Droughts	2022-2023	900,000
10	Awareness, training and support of populations for the construction of ecological and sustainable houses adapted to extreme climatic conditions	Buildings	All the identified risks (transversal)	2022-2023	950,000
11	Sensitization of the population on respect for hygiene and sanitation rules and distribution of mosquito nets	Health	Heat waves	2022-2023	400,000
12	Development of wells and permanent traditional water sources and creation of ponds (water reservoirs)	Water	Droughts	2022-2024	1,750,000
13	Design and implementation of a bushfire risk management plan in the municipality of Méri	Environment and biodiversity	Bushfires	2021-2022	400,000

14	Establishment of a local weather warning bulletin and production of agricultural calendars	Agriculture	Floods and droughts	2021-2023	225,000
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5 FINANCING OPPORTUNITIES

This section intends to provide an overview of potential **financing approaches and sources** that can be used to implement the actions of Méri's Action Plan and it focusses on financing mechanisms from the perspective of city governments.

The municipality can finance these actions **directly** (e.g., the municipality pays for the intervention, either through funds it already has or by obtaining loans and revenues to finance the project) or **indirectly** (e.g., the municipality provide incentives to other stakeholders, or stimulate private finance by other means).

- **Direct** types of instruments include:
 - Innovative use of public budgets, such as pooling funding from different government departments or making use of previously untapped sources such as the public health budget.
 - Grant funding and donations, including funds; grants from regional and national public bodies; philanthropic contributions; and crowdfunding.
 - Instruments generating revenue (including value-capture mechanisms), such as: revenues from land sales or leases; taxes (aimed at cost-recovery); user fees; developer contributions or charges; betterment levies; voluntary contributions from beneficiaries; sale of development rights and leases; funds linked to offsetting or compensation requirements; and other voluntary schemes that generate revenues.
 - 'Green finance' (or debt-based instruments): loans from public or private financial institutions; green bonds; and the Natural Capital Financing Facility (NCF).
- **Indirect** types of instruments include:
 - Market-based instruments: user charges; taxes (as incentives rather than a cost-recovery mechanism); subsidies; tax rebates; credit-trading systems; offsets for residual impacts on biodiversity/GI; and payments for ecosystem services (PES).
 - Developing 'Business Improvement Districts' (BID)
 - Setting up endowments
 - Creating Public-Private Partnerships
 - Revolving funds
 - Community asset transfers
 - Regulation and planning standards
 - Leveraging existing regulatory obligations

From the discussions that took place during the National Meeting held within the current project in November 2020, **additional financing instruments were highlighted as relevant for the implementation of the Action Plan**. On the one hand, the various reactions of the mayors and the participants on the financing mechanisms made it possible to understand that in the three municipalities the Programme National de Développement Participatif (PNDP) and the Fonds Spécial d'Équipement et d'Intervention Intercommunale (FEICOM) intervene. In addition, there is state funding within the municipalities through the Public Investment Budget (BIP) which joins the PNDP and FEICOM projects and constitutes the Annual Investment Plan (PIA) implemented in the municipalities through the financing of short-term micro-projects.

In addition, a wide range of possible donors of climate finance has been listed, covering various windows of the global climate finance architecture. The first window includes multilateral institutions, i.e., UNFCCC-related financial institutions like the Green Climate Fund and non-UNFCCC-related funds, as for example those established by multilateral development banks or UN programs.

5.1 MULTILATERAL CLIMATE FUNDS

Regarding multilateral climate funds, these are funds that are provided by multilateral institutions such as multilateral development banks, United Nations (UN) agencies, and the financial institutions that have been created within the framework of the United Nations Framework Convention (UNFCCC) itself.

UNFCCC Climate Funds

UNFCCC climate funds are funds that have been established under a decision taken by the Conference of Parties (COP) to the UNFCCC. These funds are at the very center of the financial architecture of the Paris Agreement (PA). UNFCCC climate funds include the UN Adaptation Fund (AF), the Least Developed Country Fund (LDCF), the Special Climate Change Fund (SCCF), and the Green Climate Fund (GCF).

The **Adaptation Fund (AF)** was established at the 7th Conference of the Parties (COP7) held in Marrakesh, Morocco in 2001 and was created as a financial instrument under the UNFCCC and the Kyoto Protocol (KP) in 2016, with the entry into force of the Paris Agreement (PA), negotiations started on how to embed the AF into the new financial architecture of the PA.

The **Least Developed Countries Fund (LDCF)** was established at the 7th Conference of the Parties (COP 7) held in Marrakesh, Morocco in 2001. It became operational in 2002. The LDCF was established to address the adaptation needs of the Least Developed Countries (LDCs) which are vulnerable to climate change. As a priority, the LDCF supports LDCs in identifying the urgent and immediate adaptation needs that have been compiled in National Adaptation Programs of Action (NAPAs) and its implementation.

The **Special Climate Change Fund (SCCF)** was established under the UNFCCC in 2001, to complement the LDCF. The World Bank Global Environment Facility (GEF) operates the SCCF. The SCCF is based on voluntary contributions from donor countries. As of 2017, the SCCF had a portfolio of almost USD 350 million, supporting 77 projects in 77 countries.

The mandate of the **Green Climate Fund (GCF)** reads as follows, “In the context of sustainable development, the Fund will promote the paradigm shift towards low-emission and climate-resilient development pathways by providing support to developing countries to limit or reduce their greenhouse gas emissions and to adapt to the impacts of climate change, taking into account the needs of those developing countries particularly vulnerable to the adverse effects of climate change.”

Non-UNFCCC Financial Institutions

The **United Nations Program on Reducing Emissions from Deforestation and Forest Degradation (UN REDD Program)** is a collaborative program of the Food and Agriculture Organization of the United Nations (FAO), the United Nations Development Program (UNDP) and the United Nations Environment Program (UNEP) created in response to the UNFCCC decision on the Bali Action Plan and REDD at COP13 in 2008. UN REDD aims to reduce emissions from deforestation and to enhance carbon sinks from forests while contributing to sustainable development at the national level. The UN REDD Program supports nationally led REDD+20 processes and promotes the informed and meaningful involvement of all stakeholders, including indigenous peoples and other communities who depend on the forest, in national and international REDD+ implementation.

The **Global Partnership for Social Accountability (GPSA)** was created in 2012 and aimed to support civil society participation, transparency and accountability in public policy making. The GPSA further seeks to create enabling environments for broad stakeholder participation and provides strategic and financial support to civil society organizations (CSOs) and to governments for social

accountability initiatives. The decision-making body of the GPSA is its Steering Group, consisting of ten members who represent the World Bank, recipient and donor countries, and CSOs.

The **Global Environment Facility (GEF)** was established at the 1992 Rio Earth Summit to tackle environmental problems. Today, 183 countries are GEF members (called partner countries). International institutions, civil society organizations, and the private sector partner with the GEF to address global environmental problems while supporting national sustainable development initiatives.

The **Climate Investment Funds (CIF)** is a multidonor fund, set up by the World Bank in 2008. The International Bank for Reconstruction and Development (IBRD) of the World Bank Group serves as the trustee of the CIF.

The **Climate Change Fund (CCF)** is a special fund established by the ADB in 2008. The CCF aims to support low-carbon and climate resilient development in ADB developing member countries. The CIF provides grants to investments, loans, and technical assistance. Funding decisions are made by a Climate Change Steering Committee.

The **African Development Bank (AfDB)** was established in 1964 as the Multilateral Development Bank for Africa. The AfDB aims to foster sustainable economic development and social progress. The AfDB has 81 shareholders, including 54 African regional and 27 non-regional member countries. The bank is headquartered in Abidjan, Ivory Coast and the Board of Governors is the highest decision-making body.

The **African Climate Change Fund (ACCF)** was set up as a multi-donor trust fund in 2014 to strengthen African countries to access climate finance, and to support innovative pilot projects on how to become more climate resilient, and on how to design and implement ambitious climate action plans, including Nationally Determined Contributions (NDCs).

The **Adaptation Benefit Mechanism (ABM)** is a new initiative of the AfDB. By March 2018, the ABM was still in a start-up phase. It is designed as a non-market mechanism, aimed at setting price signals that serve as incentives to drive equity and technology into projects that make households, communities and economies more climate resilient. Funding in this initial phase has been provided by the Climate Investment Fund (CIF).

The **African Water Facility (AWF)** was established in 2004, on the initiative of the African Ministers Council on Water (AMCOW), which aims to assist African countries to mobilise and apply resources for the water and sanitation sectors in order to implement the Africa Water Vision (2025). It is managed by the AfDB and has been resourced by the AfDB, Algeria, Australia, Austria, Canada, Denmark, European Union, France, Norway, Senegal, Spain, Sweden, the UK and the Bill and Melinda Gates Foundation. The Fund currently has approximately € 130 million. In March 2018, the fund was not receiving any new applications until further notice, due to the high volume of submissions.

The **Green Bond Program** is a relatively new program aimed at facilitating the achievement of the AfDB's green growth priority programs by financing eligible climate change projects.

The **Sustainable Energy Fund for Africa (SEFA)** is a multi-donor trust fund administered by the AfDB and resourced by Denmark and the US with a total pledge of USD 60 million. It aims to promote renewable energy and energy efficiency.

5.2 BILATERAL CLIMATE FINANCE

A second important funding window is bilateral climate finance with various budget lines from bilateral donors, mainly from developed countries including for instance the United Kingdom (UK), Germany and Japan.

GIZ - Deutsche Gesellschaft für Internationale Zusammenarbeit (German Corporation for International Cooperation), headquartered in Bonn and Eschborn, the GIZ mainly implements the technical cooperation projects of the Federal Ministry for Economic Cooperation and Development (BMZ), it is mainly a commissioning party, although it also works with the private sector and other organizations on a public benefit basis. GIZ aims to follow the paradigm of sustainable development and climate change is central to the work of GIZ.

Japan International Cooperation Agency (JICA) is a governmental agency that coordinates ODA for Japan. JICA is one of the largest bilateral development organizations, headquartered in Tokyo with 97 overseas offices and projects in more than 150 countries, and annual resources of approximately USD 8.5 billion. JICA provides ODA in the form of technical cooperation, concessional loans, grants, and contributions to multilateral organizations.

The **UK's International Climate Fund (ICF)** was set up to drive urgent action against climate change in developing countries. Originally, the government sourced the ICF with £ 3.87 billion for the years 2011 - 2016. In a replenishment round, the government pledged another £ 5.8 billion for the years 2016 - 2021. ICF is co-funded, co-managed and co-administered by three governmental departments, namely, Department for Business, Energy, and Industrial Strategy, Department for International Development, and Department for Environment, Food and Rural Affairs.

Canada Fund for African Climate Resilience targets climate change related projects in Africa. Primary focus is projects related to food security and climate-smart development.

While this is a non-exhaustive list of possible sources and opportunities for financing Mérid's climate actions, it is intended to **provide an overview of potential financing options for the municipality to materialize its climate action plan.**

6 LIST OF ACRONYMS / ABBREVIATIONS

AFD - Agence Française de Développement

BID - Biodiversity Information for Development

BIP – Budget d’investissement public

FEICOM - Fonds Spécial d'Equipement et d'Intervention Intercommunale

MINEE - Ministry of Water Resources and Energy

MINEPAT - Ministry of Economy, Planning and Regional Development

MINEPDED - Ministry of Environment, Nature Protection and Sustainable Development

MINSANTE - Ministère de la Santé Publique du Cameroun

PNDP - National Participatory Development Program

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