

Summary of the costs assessment for mitigation and adaptation needs in the in the area of Climate Change in Mali « NEEDS »

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Ministry of 'Equipment and Transports

A. OVERVIEW

- **National development priorities and plans in the context of climate change.**

1- The Economy of Mali is essentially dependent on natural resources. The population growth and climate hazards which are mainly characterized by repeated droughts, have engendered an over exploitation and a deterioration of these resources. Climate change, which is a great challenge to the world in the beginning of this 21st century, is likely to worsen this deterioration. It means today that the preservation of the integrity of natural environment is eminently economical.

2- The impacts of climate change on the development being already visible require that the phenomenon be taken into account in the future planning for a sustainable development. To this end, the major challenges to overcome in Mali in the area of environment are:

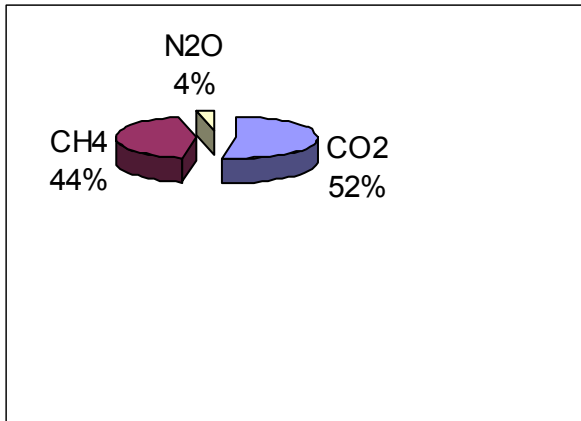
- The consideration of the environment namely climate change in all the sector-based policies and in the development planning process at all territorial levels (national, regional and local);
- The fight against desertification and the silting of the beds of rivers, including the Niger river ;
- The protection of the fauna and aquatic species.

3- The strategic framework for growth and poverty reduction (CSCR) supports the implementation of the objective of National Policy of Environmental Protection (PNPE) aiming at a sustainable economic and social development of the country through food security, fight against any form of pollution or disturbances and against the process of degradation of natural resources and desertification.

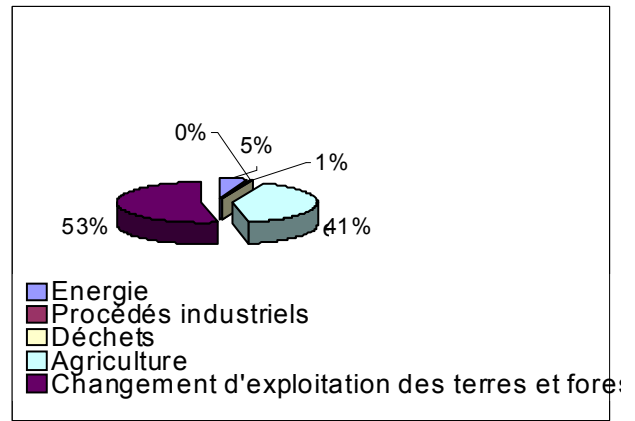
4- Mali, following the assumption to provide a sustainable development has identified and included adaptation measures in its national communication. Also, a National Action Programme for Adaptation (PANA) to climate change has made it possible to develop in 2007 nineteen project ideas, the overall objective of which is to contribute to the mitigation of negative and adverse effects of the climate variability and change on the most vulnerable populations. These measures developed are in compliance with the specifications of the Strategic Framework for Growth and Poverty Reduction (CSCR) and the Rural Development Strategy (SDR) in synergy with the provisions of post Rio conventions.

- **Status of greenhouse gas emissions, projections and mitigation scenarios**

5-The distribution of greenhouse gas emissions and absorptions per sector in Mali in 1995 is in the following table.



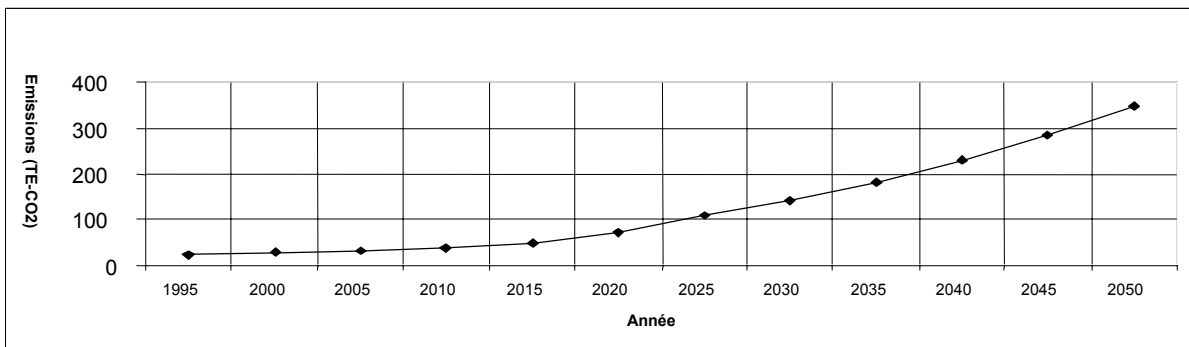
Part of GHG



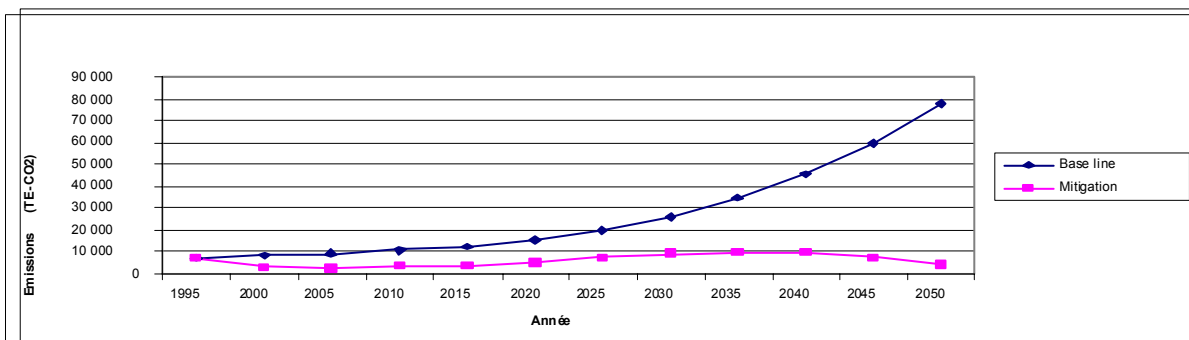
Part of Sector in emission

6- An assessment of the situation shows that Mali constitutes a major sink for CO₂ related to the abandonment of lands (- 13 643.66 Gg) and to forests and plantations (-24 602. 89 Gg).

7- The projection in Mali from 1995 to 2050 on the basic situation of emissions in the framework of energy is estimated in the table below.



8- Following the **main mitigation options formulated in national communication, the projection** of the reduction of greenhouse gas emissions in the **sector of energy** is presented in the table below **meaning more than 60% of reduction by 2020 and more than 90% by 2050.**



9- As for the **sector of agriculture**, the greenhouse gas emissions from 1995 to 2050 in the basic scenario, namely concerning the CH₄ in rice farming will go from 347 TE-CO₂ in 1995, to 1049 TE-CO₂ in 2020 and 1889 TE-CO₂ in 2050 .

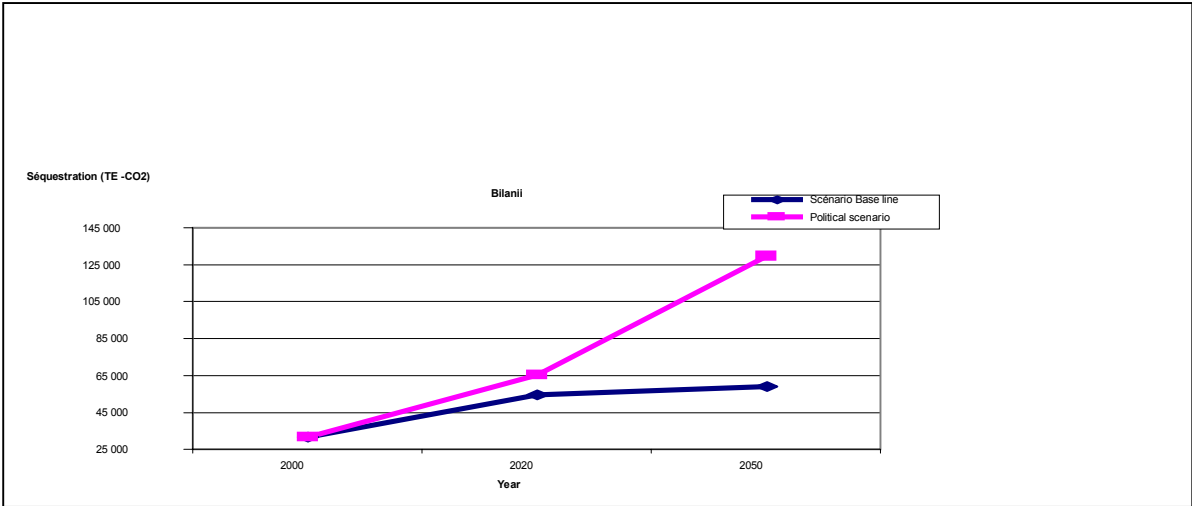
10-The evolution of greenhouse gas emissions in the area of Office du Niger from 1995 to 2025 in the case of **mitigation scenario for agriculture** will range from 105 TE-CO2 in 1995, to 400 TE-CO2 by 2020 and 713 TE-CO2 in 2050.

In this case we noted more than 60% of reduction from 1995 to 2050 regarding para_9 and table below.

Année	Total des émissions de GES (TE-CO2)	Total des émissions de GES scénario d'atténuation (TE-CO2)	% of reduction
1995	347,567	105.56	70
2000	487,205	157.07	68
2005	623,406	217.79	66
2010	767,528	278.52	64
2015	908,230	339.24	63
2020	1 049,317	399.99	62
2025	1 185,995	460.69	62
2050	1 889,56	713.87	63

11- In the context of **forestry** the figure below shows the changes in the evolutions of basic scenarios and mitigation.

Assessment of the scenario/ Basic scenario/ Political scenario



- **Assessment of vulnerability and adaptation scenarios**

12- In the **mitigation strategies for emissions of greenhouse gases, priority should be given to strengthening sequestration sinks in Mali, parallel with the implementation of mitigation strategies in other sectors including agriculture and livestock:**

- Improving Water management in irrigation ;

- The production and the massive adoption of alternative fertilizers to nitrogen fertilizer such as organic manure, the PNT and other biological fertilizers.
- Development of livestock stables associated with the production of biogas from digesters using cow dung: the benefits of this option are a decrease in CH₄ emissions due to manure management ;
- A better pasture management and use of biogas as an alternative to wood energy for the reduction of CO₂ emissions.

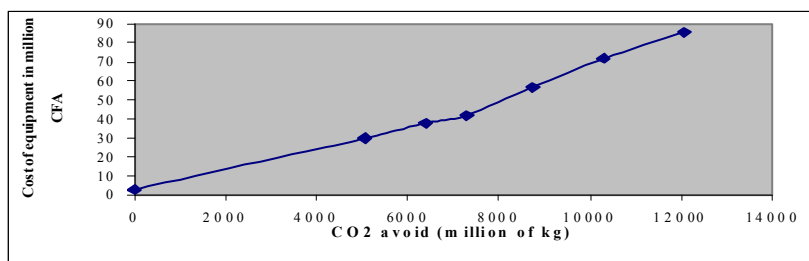
13- Adaptation options raised in the context of the national communication in relation to different socio-economic sectors (agriculture, water resources, energy, forestry, and livestock) were updated as part of PANA where 19 priority projects have been developed to enable the populations to adapt to climate change.

14- The climate change scenarios developed in Mali have allowed to carry out an effective and comprehensive assessment of impacts, at the level of different localities, in the sector of agriculture (millet, sorghum, maize, and cotton) and water resources. These impacts could be translated in terms of coverage of grain needs at the community level.

B. Implementation costs of priority measures of mitigation and adaptation

15- Cost analysis shows that by the year 2000 we would need 5.95 F CFA to avoid the emission of 1kg of CO₂, **13\$US per Ton of CO₂**, whereas in 2025, it should be 7.07 FCFA to avoid the same quantity, that is **16 \$Us per Ton of CO₂**. This explains the gradual replacement of a number of less expensive equipment by others that are not. In the present case the trend is the massive use of two types of stoves in relation to mud stoves and improved stoves to **reduce considerably the pressure on forest resources**.

Cost of Equipment millions of CFA



16- In the **sector of forestry**, the average cost of plantation per ha is 779 000 FCFA for planting trees at regular spacing from North to South of Mali with the use of mechanical fixing to the North, to secure the success of the plantations to fight against sand silting/bagging and plantation timber production in general. The enrichment of natural formations and agro forestry plantation can also be executed with the same amount (often with a lower cost). The costs will evolve towards the level of around 715 billion of F CFA in 2000 to 5508 billion of FCFA in 2020 and 16826 billion of FCFA in 2050.

17- In the sector of **Agriculture**, the costs of management of water will vary from 1. 3 billion of F CFA in 2000, against 3. 4 billion of F CFA in 2020 and 5. 2 billion of F CFA in 2050

18- The cost related to the replacement of a portion of chemical fertilizers by organic manure will vary from 1.2 billion CFA francs in 2020, against 3.0 billion F CFA in 2020 and 2050.

19- The **global costs of implementation of adaptation/mitigation measures** necessary (sought) in the framework of the Social and Economic Development Program (PDES) amounted to about 3.082 trillion CFA francs, that is, **7 billion dollars from 2008 to 2012.**

20- The global cost of implementation of all **priority measures of mitigation and adaptation** (PANA, PDES, others) in Mali is estimated at about 26102 billion of FCFA that is, around **60 billion of \$US for the period of 2008-2012 or 12 billion US\$ per year.**

21- The different financing mechanisms identified are distributed over the areas of state intervention, those of the Banking sector, of the micro finance, financial and technical partners -P.T.F (Bilateral and multilateral Cooperation), NGOs and local communities.

22- The identified funding sources are the National Bank of Agricultural Development of Mali (BNDA) which invests 45 billion of FCFA, that is 90% in the rural sector, BMS 1.8 billion F CFA (decentralized financial systems), the State (National Fund of Agricultural Development in the context of LOA (Agricultural Orientation Law) with at least 20 % of the state budget), ADB/BAD and IDA. And other funds in the framework of PTF.

23- The Strategic Framework for Growth and Poverty Reduction (SFGPR) supported by the Social and Economic Development Program (SEDP) and the Agricultural Orientation Law (LOA) constitute **the institutional potential for integrating climate change into national development priorities.** Also, actions for reaching the Millennium Development Goals (MDG) constitute **a priority of integration** of climate change in the National priorities of Development.

C. LESSONS LEARNED

24- The **implementation of PDES and the Agricultural Orientation Law (LOA) in Mali constitute opportunities to integrate climate change into national development priorities.** The challenges to achieve this target include the translation of these policy guidelines into action at local level and the implementation at community level programs that contribute to their adaptation to the adverse effects of climate change. This requires ownership of these programs by the same populations.

25- The **future establishment of the National Committee on Climate Change** should give impetus to the integration of CC into national development priorities.