PRELIMINARY SECTOR STUDY OF ADAPTATION TO CLIMATE CHANGE IN AFRICA

TRANSPORTS

CLIMATE NEGOTIATIONS FOR ALL AFRICA SUCCESSFUL (NECTAR)

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PRELIMINARY SECTOR STUDY OF ADAPTATION TO CLIMATE CHANGE IN AFRICA

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PRODUCED BY:

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<tr>
<td>ACMAD</td>
<td>African Centre of Meteorological Applications for Development</td>
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<td>ADB</td>
<td>African Development Bank MDG</td>
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<td>AMCCEN</td>
<td>African Ministerial Conference on Environment</td>
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<td>AMCW</td>
<td>African Ministerial Conference on Water</td>
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<tr>
<td>AR4</td>
<td>IPCC Assessment Report 4/Quatrième rapport d'évaluation du GIEC</td>
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<td>AUC</td>
<td>African Union Commission</td>
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<td>AWG-KP</td>
<td>Special work group on the Protocol of Kyoto</td>
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<td>AWG-LCA</td>
<td>Special work group on the long-term Joint action</td>
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<tr>
<td>CC</td>
<td>Changement Climatique / Climate Change</td>
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<td>CCNUCC</td>
<td>Framework Conference of the United Nations on climate changes</td>
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<td>CDM</td>
<td>Clean Development Mechanism</td>
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<tr>
<td>ECA</td>
<td>Economic commission for Africa</td>
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<td>CILSS</td>
<td>Inter States Permanent Committee of Fight against Drought in the Sahel</td>
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<tr>
<td>CO</td>
<td>Carbon monoxide</td>
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<td>FPCF</td>
<td>Partnership Funds for Forest Carbon</td>
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<td>GHG</td>
<td>Greenhouse Gas</td>
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<tr>
<td>IPCC</td>
<td>Inter-governmental Group of Experts on Climate Evolution of Climate</td>
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<td>GIRE</td>
<td>Integrated Water Resource Management</td>
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<td>GtC</td>
<td>Carbon Gigatonne</td>
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<td>GWP</td>
<td>Global Water Partnership / Partenariat Mondial de l’Eau</td>
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<td>IEPF</td>
<td>Institute of Energy and Environment of the Francophonie</td>
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<td>IPCC</td>
<td>Inter Governmental Panel on Climate Change</td>
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<td>LULUCF</td>
<td>Land use, Land Use Change and Forestry</td>
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<td>NAMA</td>
<td>Nationally Appropriate Mitigation Actions</td>
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<td>NOx</td>
<td>Nitrogen oxides</td>
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<td>NWP</td>
<td>Nairobi Work Program</td>
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<td>OIF</td>
<td>International organization of the Francophonie</td>
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<td>PANA</td>
<td>Plans or national Action programs of adaptation</td>
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<td>PED</td>
<td>Developing country</td>
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<td>PNUD</td>
<td>United Nations Program for Development</td>
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<td>PST</td>
<td>Sectoral programs of Transport</td>
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<tr>
<td>REDD</td>
<td>Reduction of the Emissions caused by Deforestation and the Degradation of Forests</td>
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<td>SNT</td>
<td>National strategies of Transport</td>
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<td>Tc</td>
<td>ton of carbon</td>
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<td>UICN</td>
<td>International union for Nature</td>
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Introduction

1. According to the 4th report of the Intergovernmental Panel of experts on the Climate Change (IPCC) Africa is one of the regions most vulnerable vis-a-vis climate changes. One expects in particular the following consequences for the region:

- **75 to 250 million Africans will be exposed to the hydrous stress by 2020;**

- **50% of reduction of the yields of rain production are considered by 2020 with for consequence an aggravation of the food insecurity and malnutrition;**

- **5 to 10% of the GDP of the African countries are likely to be devoted to the rescue and the adaptation of the villages and the coastal cities due to rise of the sea level;**

- **The arid and semi-arid zones will undergo by 2080 an extension from 5 to 8%.**

2. This vulnerability is exacerbated by the problems of development such as endemic poverty, bad governance; limited access to the capital, including the markets, the inadequacy of infrastructures and technology; degradation of the ecosystems and complex disasters and conflicts. This situation is worsened by the interaction of many stresses at various levels on the one hand, and by the weakness of adaptation capacity to new climatic conditions, on the other. The stake is thus of size for Africa which must, consequently, be equipped with a policy and a strategy of management of the climate change.

3. The OIF-IEPF intervenes in accordance with its missions in the process of the negotiations for the development of the Mode post-2012. Activities of information and training of African developing countries on the possible stakes and priorities to be identified and integrated in the sectoral policies of sustainable development are undertaken for this purpose. They relate to the accompaniment of the negotiators in the various workshops and meetings organized in this process. They are mainly focused on the components of the Roadmap of Bali which are the concerted vision in the long run, adaptation, reduction, technological transfers and financial mechanisms.

4. Thus, within the framework of the implementation of this program of assistance and capacity building of the African negotiators, the IEPF undertakes a work of definition of political and strategic orientations in six sectors of sustainable development identified like priority in the developing countries: Building, Agriculture, Water and sanitation, Energy, Transport, Forest. These sectors were listed from the Plans or national Action programs of adaptation and are among other things regarded as potential sectors of activities with weak gas emissions with greenhouse effect and more performing in the energy plan.
5. It is within this framework that three studies concerning adaptation to climate changes in Africa, one in the sector of Water and sanitation, one in the sector of Forest and one in the sector of transport are carried out in Niamey. It is more particularly an issue of developing the following points:

A) As regards the concerned sector, to analyze the provisions of the Framework Convention of the United Nations on climate changes and the Protocol of Kyoto which are of particular interest in the context of the potential result of the services of the two special work groups (Protocol of Kyoto and Joint action long-term on behalf of the Convention);

B) To evaluate the various options concerning the targeted sector that the countries of Africa could consider viable or profitable with the view of possible or supposed legal mode post-Kyoto;

C) To develop key elements on the concerned sector enriching the basis of the negotiations positions of the African Group within the framework of the two special Work groups;

D) To identify major links between the concerned sector and other important sets of the climate changes file.

The feedback of this document is scheduled to take place in Nairobi at the end of July 2009, within the framework of a two day workshop gathering around twenty African participants.

I. Overall picture of the framework of studies

6. Today, the reality of climate change makes consensus within the international scientific community. The gas emissions with greenhouse effect (GHG), due mainly to the massive use of fossil energies and deforestation, are at the origin of the disturbances observed and to come from the climatic system. In 2007, the governments and the researchers who contributed to the preparation of the Fourth evaluation report (AR4) of the GIEC concluded that the planet global warming was unambiguous, already in progress and most probably caused by human activities.

7. The recent climatic profiles of the developing countries of the UNDP, developed by School of Geography and Environment of the University of Oxford (GB) related to 29 African countries out of the 52 investigated; These countries were distributed in order to cover the 5 sub regional agro-climatic areas of the continent and the Islands. A meticulous examination of the climate observed (1961-2000) and projected (2030, 2060 and 2090)
shows well unfortunately that the conclusions of AR4 had underestimated the extent of the danger rather than they had exaggerated it. It is thus probable that climate change makes more damage than one thought of it at the African continent level.

8. The 13th Conference of the Parties at the Framework Convention of the United Nations on Climate changes, held in Bali in December 2007 had led to a roadmap enabling to manage a new international agreement of fight against climate change at the expiry of current Protocol of Kyoto in 2012. Copenhagen 2009 should constitute the result of this process, materialized in practice by the activities of two work groups established for this purpose and in charge of thinking on the long-term co-operation and the Protocol of Kyoto, named respectively AWG-LCA and AWG-KP. To date, we have a negotiating text only for the first group.

9. Africa as well prepares these negotiations at the levels of different sub regions as at the continent level. One will quote as example the ministerial conferences of Tunis (November 2007), Johannesburg (June 2008), Bangui (September 2008), Gaborone (September 2008), Cotonou (October 2008), Nairobi (November 2008), Algiers (November 2008), Nairobi (May 2009) and Sirte (July 2009). The common point with all these meetings was mainly to come up with, during the pivotal years and of transition for the world dialogue on climate 2007/2008, joint positions on all the points under discussion.

10. Transport constitutes in many cases one of the sources of GHG which progress most quickly, in particular in the big cities, where it causes a deterioration of the air quality, a sound pollution and congestions. The overconsumption of the transport sector is obvious in sub-Saharan Africa because of the growing aging character of the car fleet (15 years of age on average). Considering the direct consequences of this sub-sector for health and the wellbeing of man, the adoption of measurements aiming at reducing the emissions due to transport is often desirable to preserve environment; moreover, it results a reduction from it from the emissions of GES.

11. According to the IEA, the use of energy for transport still will increase by 50% by 2030, with a meaningful contribution of the developing countries. The fastest growth will arrive especially from air transport, goods transport by the road and the light commercial vehicles. The growth of the emissions is determined by two main factors: intensity of trips and change of the effectiveness of the mode of trip which only partially compensated for the growth of the trips these last years.

12. In conclusion, one thus has to date a set of elements of analysis translating overall the main stakes of climate changes for this sector in Africa, elements which will enable to come up with the main thrusts of a strategy of assistance and capacity building of African
negotiators by the IEPF, within the framework of the upcoming meetings of preparation of Copenhagen 2009.


13. Action 21, source of major conventions resulting from Rio Summit in 1992, had retained like action principle for the field of transport, the development and management of the systems of more effective traffic and transport, with like basic objective: to develop and promote, if need be, programs and strategies of a cost-effectiveness positive ratio aiming at limiting, reducing or at controlling, according to the case, the harmful emissions in the atmosphere and the other attacks to the environment due to the transport sector, taking into account the priorities of the development as well as local and national particular situations and related aspects to safety.

14. Under commitments of all the Parties to Convention appears specifically for the transport sector, that to develop, to apply and disseminate the practices and processes enabling to control, reduce or prevent the anthropic emissions of GHG, not regulated by the Protocol of Montreal. This commitment must hold account of the responsibilities common but differentiated and specificity of national and regional priorities of development, as well as objectives and situation of the country.

15. Under the Protocol of Kyoto, the Parties adhering to the instrument and aimed at Annex I, which have as an obligation to apply/develop policies and measures aiming at limiting or reducing the emissions of GHG not regulated by the Protocol of Montreal in the transport sector, these provisions also applying to the emissions coming from fuels of compartment used in air and sea transports. These Parties develop, apply, publish and regularly update national plans and, where it is necessary, regional, containing intended measures to alleviate climate changes and intended measures to facilitate an adaptation appropriate to these changes in the sector.

16. It emerges thus for the African countries, under this sector, within the Framework convention and of its Protocol of the obligations in matters specific of settling, of application and dissemination of practices and processes in order to control, reduce or
prevent the emissions of GHG, not regulated by the Protocol of Montreal, coming from the transport sector, characterize the provisions of the Convention and the Protocol of Kyoto for this sector. It thus concerns primarily the reduction in the process of the climate changes.

III. Viable or profitable options in the transport sector for African countries

17. The priorities of Africa are to implement the programs relating to the climate changes so as to set up a sustainable development, in particular to reduce, even to eliminate poverty and to achieve the Goals of Millennium for Development, by stressing the most vulnerable groups, such as women and children.

18. The African Ministerial Conference on Environment (Nairobi, 22 May 25th, 2009) led to the development of the conceptual draft of a comprehensive framework for the African programs relating to climate changes, to implement at all levels. It is admitted inter alia, for the adaptation, three great fields of activity were circumscribed: reduction of disasters and risk management, sectoral planning and implementation, and strengthening of economic and social resilience.

19. The sectors considered by the IEPF having been listed from the Plans or national Action programs of adaptation (PANA) and considered among other things as being potential sectors of activities with weak gas emissions with greenhouse effect and more performing in the energy plan, within the framework of transport the reduction options were especially treated within the framework of national papers.

20. In a general way and as solution to stabilization of the gas emissions with greenhouse effect, AR4 had recommended a reduction of these emissions ranging between 25 and 40% from by 2020. To achieve this objective, the transmitting major countries must imperatively diversify their energy resources and come up with less carbonaceous economies. Thus one witnesses quantified announcements of reductions under consideration at the dawn of next Summit of Copenhagen.

21. The terrestrial ecosystems have a meaningful potential of reduction of the emissions: 100 GtC from by 2050, which accounts for 15 to 30% of the reductions of emissions necessary at the global level to limit the increase in temperature to 2 °C. This potential strongly depends on the availability of lands by 2050. According to the scenarios of evolution selected, the lands available for forestation could be only 142 million hectares.
in 2050. The stakes of conflict of land use between food and energy use are predicted as of today with the development of the biofuel in the world.

22. The Declaration of Nairobi on the African process of fight against climate changes urges as for it the developed countries to lay down ambitious objectives so as to reduce their emissions from at least 40% from by 2020, to bring them back below the levels of 1990, and 80 to 95% below these levels by 2050, in order to achieve the goal of 450 parts per million of equivalent of carbon dioxide in the atmosphere.

23. The oil consumption of world transport currently causes carbonic gas emissions of about 7,000 Mtonnes, 27% of all of the CO2 emissions of the world energy system, transport also contributing to the gas emissions with greenhouse effect in the form of emissions of methane and much more marginally of protoxide of nitrogen. Africa accounts for only 5% on behalf of the vehicle fleet of goods transport and public transport, and except for South Africa, current consumption of energy of ASS caused by urban mobility is at a relatively low level. If it is admitted that the use of oil will largely remain still dominating for this sector by 2030, the CO2 emissions which would result from it at this horizon would be about 10,700 Mtonnes [LEF 81,2008].

24. The African car fleet is generally rather old (average of more than 15 years) and is characterized by an important fuel consumption and consequently a strong gas emission precursors of gas with greenhouse effect. Public transport, by their great capacity, currently represents the mode more used in the world and enables to limit the multiplication of the number of vehicles to low capacity. That enables to reduce transported fuel consumption by person, to limit the emissions of gases with greenhouse effect, to ensure a greater regularity of the traffic, to decrease the delays and absences at work stations and to create jobs. Unfortunately this means of transport is developed very little in Africa.

25. The problems of the transport sector for Africa are articulated around the fact that the increase expected from the emissions of GHG of the transport sector is closely related to the 2 underlying factors which are the economic growth expected to reduce/eliminate demographic growth and poverty already real on the continent. Nowadays and, according to national papers of African countries, this sector contributes between 10 and 30% of the emissions of the energy sector.

26. One of the solutions under consideration at the global level to reduce gas emissions with greenhouse effect (GHG) generated by the transport sector and to make this one less depend on oil fuels is the use of the agrofuels/biofuels. If they remain marginal compared to the total intake of road transport, of which they represent less than 2%, they are drawn by ambitious development objectives laid down by the public authorities of the developed countries.
27. This sudden passion and this development with forced march are accompanied by increasing controversies, both about assessments of energy and gas with greenhouse effect of agrofuels as of their impact on the traditional ecosystems, agrarian systems or food production. For Sub-Sahara Africa one will retain mainly the following aspects:

- it would be even more advantageous on the plan of gases with greenhouse effect protecting and restoring the forests and meadows than to use the same surface to produce agrofuels, the replacement of the forests by crops intended to supply cars with motorization would release up to nine times more CO2 over this duration, according to certain studies;

- the expansion of agricultural surfaces to the detriment of large natural wells of carbon could moreover contribute to increase gas emissions with greenhouse effect, especially when one knows according to the national papers of the countries of ASS that, the principal sector of emission of GHG in this region is that of LULUCF;

- any transfer of land of food production towards the energy production of biomass will influence the rise of prices of foodstuffs.

28. The MDP, mechanism proposed by the Protocol of Kyoto enabling the industrialized countries to reach their target of reduction of the GHG while investing in reduction projects in the developing countries, not obliged to reduce their own emissions, rests on an important condition which is to contribute to sustainable development of the host countries. It is noted to date that renewable projects of energy dominate the number of projects (63%) and the reductions of emissions estimated from by 2012 are about 35%. However, the transport projects account for only 0.2% of the full number of projects and 0.1% of the reductions of emission, which brings little to a solution of the problem of emissions of this sector.

29. In the context of sustainable development for this sector the challenge will be to minimize the important energy consumption of the sector, such as it appears in the various national papers of African countries, as well as environmental impacts and especially climatic very serious caused by this sector. We are thus in a situation where the total and local concerns with respect to the emissions of GES are confused. For this purpose, it will be advisable to note immediately that the construction of new roads of automobile to relieve traffic congestion would contribute more to complicate the situation by encouraging the use of motor vehicles in countries where the regulation enormously leaves something to be desired.

30. With the number of viable or profitable options for the transport sector one will retain the policies and instruments whose environmental effectiveness is proven like
already mentioned such as taxation of purchase, registration, use of vehicles and tariffing of fuels, roads and car parks, investment in attractive public means of transport and not motorized forms of transport, as well as standards and certification of equipment. The development of town public transport is particularly urgent to minimize health and environmental impacts, even if it means to resort to a system of taxation for that.

31. Under the viable options for each sector one will be able to retain that reduction options of the transport sector in Africa should not be dissociated from the strategic frameworks of poverty elimination. For this reason they could constitute the priority targets of NAMA to their implementation. It will take some time before the identified profitable technological options by AR4 can be actually implemented in Africa.

IV. Key elements to consider by the African Group in the negotiations

A. Elements to be considered in the Special Work group on the long-term Joint action (AWG-LCA) under strengthened Actions for the reduction

32. The African Ministerial Conference on Environment (Nairobi, 22 May 25th, 2009) led to the development of the conceptual draft of a comprehensive framework for the African programs relating to climate changes, to implement at all levels. One admits inter alia that, for the reduction it is paramount to establish a mechanism to alleviate overall the gas emissions with greenhouse effect in order to prevent their long-term impact on the climate of the African continent, and that an effective application of reduction measures will provide to Africa the opportunity of improving its economic competitiveness while remaining in the way of a sustainable development with weak carbon emissions.

33. The reduction of the risks of climate changes on sustainable development in Africa supplements the programs and existing actions of management of variability of climate thanks to the improvement of the risk management, a precondition essential to the adaptation to climate changes. This type of action supplements the measures to be taken in PANA and is included in ClimDev-Africa. It is an issue of carrying out the early evaluation of probable impacts of climate change in Africa of programs of adaptation and of minimizing the negative effects on the poorest populations for which it is much more difficult to face climate changes, because of their very limited resources and of their total dependence with regard to the seasonal weather conditions for their subsistence.
34. ClimDev-Africa, program of great scale under development by the joint Secretariat (AUC, ADB and the ECA) includes a process aiming at introducing the climatic risk management into decision making relevant at all levels and into all the sectors sensitive to the climate, for all the countries of Africa. Under ClimDev-Africa, one of the key issues is the development of the studies on the impacts of climate change by using the models of regional impacts. This program also includes a financing for the support of the observation on surface of climate and forecast, necessary to the monitoring of climate changes and the measure of their impacts.

35. The African answers brought to climatic variability were essentially reactive and spontaneous, of various orders (structural and institutional, local, national and regional). The African Development Bank obtained a strategy as regards climatic adaptation and risk management to changes (CRMA). A Special program on water is sanitation is also implemented. At the continental level a program on adaptation called Africa Adaptation Programs, focused primarily on economic aspects of the adaptation, is under implementation. At the sub regional West Africa level, it is noted the multiplication of various initiatives such as regional dialogue water and climate change (animated by IUCN, CILSS and GWP) or initiative CILSS-ECA-ACMAD in progress aiming at the development of a Sub-Regional Action plan of Reduction of Vulnerability of West Africa to climate change, or the World Bank initiative - IUCN - CILSS - GWP of formulation of a regional strategy of adaptation to climate change in West Africa with a focus on the basins of Niger and Senegal rivers. At the national level, the States are engaged in processes of formulation of short-term adaptation measures (with National Action plans of Adaptation) and in the medium and long term (with National papers Climate change). The networking of all these initiatives should enable to capitalize them through in particular experience sharing.

36. However, the effective and sustainable realization of the majority of measures mentioned requires an inter-official form of collaboration and coordination at the level of the river basins or region. With regard to the regional processes, they are characterized by an absence of synergies between them but also an absence of continuity from one initiative to another.

37. Gas emissions with greenhouse effect and energetic sector are closely dependant. The energy production would contribute indeed to two thirds of the gas emissions with greenhouse effect. For this reason, the fight against climate change thus implies a necessary modification of the behaviors as regards energy. One of the major challenges of this century is thus of finally to solve what one can call “the equation of Johannesburg”: to produce more energy to contribute to the economic development of poorest while reducing the gas emissions with greenhouse effect.
38. Energy is thus in the heart of the human activities, and in particular those which contribute to economic and social development, just as it is in the heart of the problems of climate changes. The African countries will not be able to develop in a sustainable way without producing and using more energy and to use the energy sources being on their territories. Paradoxically, the debates in progress in high level on climate change in Africa have until now completely occulted this aspect, to focus itself on the needs for the adaptation. Actions of the African countries for the benefit of reduction must be understood in terms of reductions relating to the emissions, reductions conditioned by real technology transfers, of financing and capacity development.

39. The Declaration of Nairobi on the African process of fight against climate changes urges as for it the countries developed to lay down ambitious objectives so as to reduce their emissions from at least 40% by 2020, to bring them back below the levels of 1990, and 80 to 95% below these levels by 2050, in order to achieve the goal of 450 parts per million of equivalent of carbon dioxide in the atmosphere.

40. Sectoral strategic frameworks were adopted within the framework of the National strategies of Poverty Reduction in the form of National strategies of Transport (SNT) which aim at “Contributing to reduce poverty by the facilitation of access of most underprivileged to the services” through Sectoral Programs of Transport (PST) whose objective is “External opening of Countries without access to the sea by the interconnection of the existing railroads and/or the realization of railways between the existing networks”. Its realization will significantly contribute to reduce the emissions of the sector energy of which approximately 40% come from this sector in particular within the framework of goods transport towards some landlocked countries.

41. The implementation of the preceding option of opening-up, answers perfectly the provisions of article 4.8 of Convention, and the decision 5/CP7 relating to the implementation of article 4, paragraphs 8 and 9 of Convention.

42. The great majority of the motor vehicles circulating on the African continent being imported from developed countries, without in the majority of the case to have undergone modifications allowing to limit their emissions of GES, the recourse to the methods of improvement of technologies of these vehicles proves to be priority in terms of mitigation at the individual level. One will quote mainly maintenances appropriate to the ends of reduction of the energy intensity and thus the carbon emissions while realizing fuel savings generally estimated between 2 and 10% for this option.

43. In the number of reduction measures retained by the majority of the African countries in their initial national communication appears the regulation of the driving diagnosis of the fleet of vehicles, through in particular a regular inspection of the vehicles
and this, with an aim of improving the energetic efficiency of fuels. The recourse to the catalytic pots and the devices of electronic injection like means of reduction of the emissions of precursors of ozone because of incomplete combustion of HC, CO and Nox. The implementation of such measures can intervene within the framework of NAMA and must be accompanied by financial and technological means consequent, as well as capacity development to support the actions of this country in this field.

B. Elements to be considered in the Special Work group on the Protocol of Kyoto (AWG-KP)

44. The Protocol of Kyoto envisages a beginning of reduction of the emissions of GHG. The average rate of reduction to which the major industrialized countries engaged is of -5.2% of the emissions compared to their level of 1990, which, if one takes account of the increase observed since this date, should involve an effective reduction of almost 10% and, by 2010, of almost 30% compared to the trend growth of the emissions observed today. The developing countries up to now rejected any obligation of reduction for themselves, estimating that the responsibility for the current situation returns mainly to the industrialized countries and that it is advisable to arrive to equitable objectives of level of emissions in the future, taking into consideration in particular levels of population and needs for development of the countries of the South, in particular the energy needs.

45. The proposals appearing in the documents of negotiation while confirming the objectives assigned by Convention, introduce, and it is an innovation compared to the double system Convention+Protocol of Kyoto, a link between the actions recommended previously within the framework of the Protocol and the NAMA. It will act rather according to the African position of voluntary actions and firmly supported by the countries of Annex II, that obligations of reductions of the emissions to the developing countries in general, and to the African countries in particular. The absence of a draft legislation of negotiation for AWG-KP group makes however difficult the appreciation of the elements to be considered by the African Group of negotiation on this particular point.
V. Major links between the concerned sector and other important themes of climate changes file: Actions strengthened as regards financing, technology, synergy, and capacity development

46. As soon as we put ourselves in an option with a view to sustainable development, we can address the issue of the instruments of Convention Climate of interest for Africans only in relation with their concerns of development, and in particular of problems which they meet in their forest inheritance management. It is thus necessary to initially have a good diagnosis of these problems, in order to determine the instruments proposed up to which extent can help with the resolution of part of these problems and, otherwise, to accompany these instruments by rules of use which make them function adequately to the existing problems' nature.

47. Generally, there is no clear line of demarcation between the dangerous climate change and the acceptable change. However, AR4 retained that beyond threshold of 2 °C, the risks of retreat on a large scale of human development and irreversible ecological disasters will increase quickly through five key transmission systems. None of these five factors will appear alone. They will interact with social, economic and ecological processes broader which shape opportunities of human development. Even most draconian reduction measures of attenuation will not be enough to avoid a significant retreat of human development. It is thus certain that global warming will continue during some time because of the inertia of climatic systems and temporization between reduction and its results. For the first half of the 21st century, there is no alternative to the adaptation to climate change for Africa.

48. The adaptation, just like the reduction besides, having a cost material and financial, it will be appropriate to quantify them in standards, which will imply a large effort of capacity building at the level of African countries, to lead in the short term to the equivalent of the Stern Report for the continent. The adaptation will only be effective if integrated in the development program of African countries, mainly within the strategic frameworks of reduction of poverty and another economic and social development plans. It will thus be essential for this reason that the Work program of Nairobi (NWP) is actually implemented.

A. Financing

49. One of the most effective and profitable measures to save energy is the fall of fuel consumption of light commercial vehicles. With technologies available and adequate
policies, it is possible to reduce the consumption of these new vehicles of 30% in the 15 years which come. There are all over the world innumerable options to reduce emissions and to improve the effectiveness: the use of bio-fuels especially of sugar cane, improvements with the transmissions, aerodynamics, tires and the auxiliary equipment, hybrid engines, and light matters. Other technologies like combustible batteries, electricity storage systems (batteries, ultra-condensers and storage of H2) are not yet ready and their deployment with large scale is not planned for immediately. In Africa, the adequate instruments will be to define in the frameworks of sectoral strategies of transport at national level, and the sub regional program of transport at regional level.

B. Technology transfer

50. As regards the transport sector and in terms of technologies, one distinguishes according to AR4/WGIII, key and practical reduction technologies, available already on the market, and those projected to be marketed before 2030. Among the first, one counts the fuel saving vehicles, hybrid vehicles, the use of the biofuels, the modal change of road transport towards the railway one, the planning of the use of lands and transport. As regards the second they will be rather of biofuels of second generation, the more effective aircraft, and electric vehicles and hybrid advanced, with in particular more powerful batteries. At the African level, it will be rather about use of instruments whose environmental effectiveness is proven such as the taxation of purchase, registration, the use of vehicles and tariffing of fuels, roads and car parks, investment in attractive public means of transport.

51. Critically, if we are to deliver significant reductions in CO2 emissions we need to ensure all of the technological potential is used to improve fuel economy, not to increase performance. In this situation, achieving 30% improvement in new cars within a decade is realistic.

C. Synergies and capacity development

52. The G8 Summit which has been just held in Aquila, in a declaration relating to the degradation of lands, expressed its concern with respect to desertification and land degradation in the arid regions as causes and consequences of climate change, and especially their impacts on food security, poverty, welfare of the populations and environment. This recognition of the importance of the fight against desertification is important for African countries, major countries affected by the phenomenon and should be able to contribute to establish a link between national action plans of fight against desertification and those of adaptation to climate changes. Therefore there is a need to
optimize synergies between climate changes and the efforts made in Africa to fight against land degradation, desertification and erosion of biodiversity.

53. As regards development of sectoral capacity development, the priority should go towards the overall objectives defined in the conceptual draft of a comprehensive framework for the African programs relating to climate changes which stresses inter alia: the development of human resources, improvement of the activities of observation and research as well as knowledge management, the sharing of experiences, information and best practices of African countries, as well as institutional capacity.
Conclusion

54. A number of concerns and questions should guide African positions for Copenhagen, among which those that follow

- it will be necessary for the concerned countries to use more energy to guarantee the right to sustainable development of poorest and to eliminate poverty, while participating in reductions of the gas emissions to greenhouse effect under NAMA;

- not to take up the historical responsibility for the countries of Annex I with respect to the emissions at the basis of current global warming and for the first half of the century, is equivalent confirming the real risk for the developing countries to retreat the development by the loss of the assets as well as unfulfilled minima objectives as fixed by the MDG;

- adaptation is not only one continuation of actions to be taken into account according to their seriousness but especially, a new mode of existence based partly on the integration of all that affects climate in the strategies, plans and development actions, in order to guarantee to a healthy and productive life of populations;

- any action of the African countries within the framework of the process of climate changes must be compulsory integrated within the strategic frameworks of development, among which current strategies of poverty reduction and the attainment of the MDG.

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55. Reduction of the emissions by the developed countries: reductions of the emissions in order to limit the rise of the average total temperature to 2°C must take into account regional projections of the temperatures which would rise from this objective in the effective process of these reductions.

56. NAMA: The NAMA should not in any case impede the attainment of the MDG, as well as the objectives aimed by national strategies of economic, social and industrial development of the African countries. These actions will have to aim at well defined sectors of emission.

57. Technology transfer: the TT towards the African countries for purposes of avoiding the ways of development leading to emissions by these countries of quantities of GHG which can involve an anthropic disturbance of the climatic system within the framework of
their development, must be made in order not to limit their access to energy necessary for their economic, social and industrial development.

58. Capacity development in Africa are actions which must aim in priority the national institutional capacity building, particularly in the fields of early warning systems, the systems of observation and monitoring, risk and disaster management, and economic evaluation tools of climate changes.

59. In the absence of a strong decision on adaptation, it will be advisable to keep in mind that for Africa, adaptation to climatic variability in the short term and to extreme events will be used as starting point to reduce vulnerability to longer-term climate change. The process for adaptation under the Convention includes the Work program of Nairobi (NWP) for the scientific and technical aspects, the implementation of the activities of adaptation and adaptation financing.

Special work group on the Protocol of Kyoto (AWG-KP)

60. The actions of synergy between UNFCCC and the Convention of the Fight against Desertification have the double characteristic to aim at reduction and adaptation. They are in particular the activities of agro forestry, of defense and restoration of lands, to only quote most current in Africa. The REDD and the programmatic CDM will relate to and affect directly the African countries, they thus constitute priority discussion topics, and will have to take account of specificities of the African forests of different agro-ecological zones of the continent.
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