

Climatic hazards and touristic activities in Cameroon

ABOSSOLO Samuel Aimé⁽¹⁾, BATHA Romain Armand Soleil⁽²⁾, SOP SOP Maturin Désiré, NGOUFACK Carlos,

Department of Geography, Faculty of Arts, Letters and Human Sciences (FALSH), University of Yaoundé I

Abstract

In spite of the efforts up to now consented by the authorities to make Cameroon a privileged destination in Africa, tourism is still taking a long time to recover its nobility. If the future of tourism in Cameroon seems uncertain, the activity itself remains strongly conditioned by the climate, particularly in fragile areas of littoral and northern. The towns of Yaoundé, Douala, Kribi and Limbé which remain the destinations par excellence could be affected by the major impact of climate change induced phenomena. The reflation of touristic activities by new approaches should mainly consider the economic, social, environmental and political evolutions through the transformation of values linked to the new consumption tendencies.

INTRODUCTION

Climate changes observed in the beginning of this 21st century do not spare the touristic industry in all the countries worldwide. Through the induced natural disaster and technological risks observed these last decades, related activities such as transports, trade, catering, craft industry and hotels businesses feel seriously threatened. The increasing deforestation and the continuous biodiversity destruction contributed to increase the emission of greenhouse gas and modify the natural environment. The coastal areas of Cameroon in bygone time spared, are more and more threatened by climate changes and their consequences may be significant in the long term.

Towns of Yaoundé, Douala, Maroua, Kribi and Limbé, with the presence forest reserves, beaches, waterfalls, hills and mountains where major's touristic activities remain the principal destination for the majority of tourists. Tourism is a capricious activity that needs reliable weather prevision to expand normally. Could the touristic reflation in Cameroon drive by various stakeholders of the sector become effective with the noticed climate change waves?

TOURISTIC ACTIVITIES SITUATION IN CAMEROON

Tourism is an income generating activity and participates to the economic growth of many countries. Countries such as Egypt, Tunisia, Spain, and Italy recorded a contribution of more than 20% to the GDP (gross domestic product) from the touristic sector. Touristic activity in these countries relies mostly on climatic, ecological and environmental advantages, all the three being strongly vulnerable to climate change effects such as temperature rising, seasonal rainy modifications, rising of sea level, snowing, biodiversity disappearance.

Cameroon, country from central Africa, is situated at the bottom of the gulf of guinea, in a transitional positional between the western and the central Africa. The country stretches

over an area of 475 442 km², with 466 050 km² of continental area and 9 600 km² of maritime and coastal area and house a population of around 17 463 836 inhabitants (BUCREP, 2010). The Cameroon is considered as “whole Africa in one country” and has rich and varied touristic potentialities (picture 1). Despite of these assets, the country is not an important touristic destination due to the poor quality of touristic product offered, the insufficiency of touristic equipments and infrastructures, the weak promotion of tourism, the lack of professionalism in the activity, the high cost of the destination, and uncertain means of communication, etc...in spite of the weakness of its contribution to the GDP, the importance of tourism in the Cameroon’s economy is not more to be proven. It is an economic and social development driving force due to the associated activities (direct and indirect). Also, it contributes to the improvement of the touristic sites surrounding populations livelihood, and therefore to the fight against poverty.



Source: Vouffo, 2010

Picture 1: Algaïta dancing group in the far-north region of Cameroon

Cameroon is a significant country but, remains under the 500 000 visitors mark necessary to be eligible by the **World Tourism Organisation (UNWTO)**. Indeed the country possess exceptional resources such as: beaches, high plateau and mountains, dense forests, forest reserves in the South, East and Center, natural parks, artificial dam and picturesque landscape in the North (picture 2).

The country extension in latitude confer varied inter-tropical climates going from humid equatorial climate near Atlantic Ocean to tropical sahelian climate in the Lake Chad area (picture 1). This climatic diversity influence the population’s behaviors and customs and favor continue touristic activity all the year long. In this way, tourists from everywhere can discover at the same time highly preserved natural sites and populations with well preserved cultural traditions in spite of different foreign invasions (colonization, neocolonization, etc.).

Despite the potentialities are many and scattered in the whole country, there under exploited. Towns of Yaoundé and Douala are the well off in infrastructures (hotels, communication means...) and in commercial facilities (touristic agencies, guides, best travel agencies,...). The tourism sector future will be promising if the volume of activities could increase.

Tourism remains a matter reserved for a class of wealthy populations whose come for holidays or for business. To achieve its goals, Cameroon set up a sectoral strategy for the development of tourism. Among the objectives assigned for the reflation, there is the promotion and the organization of interior tourism, the increase of the occupation rate in accommodation establishment, the improvement in the quality of services provided to tourists, etc. but, the reinforcement and the improvement of accommodation and transports facilities that will accompany this development are conditioned by physical and climatic condition of the environment.

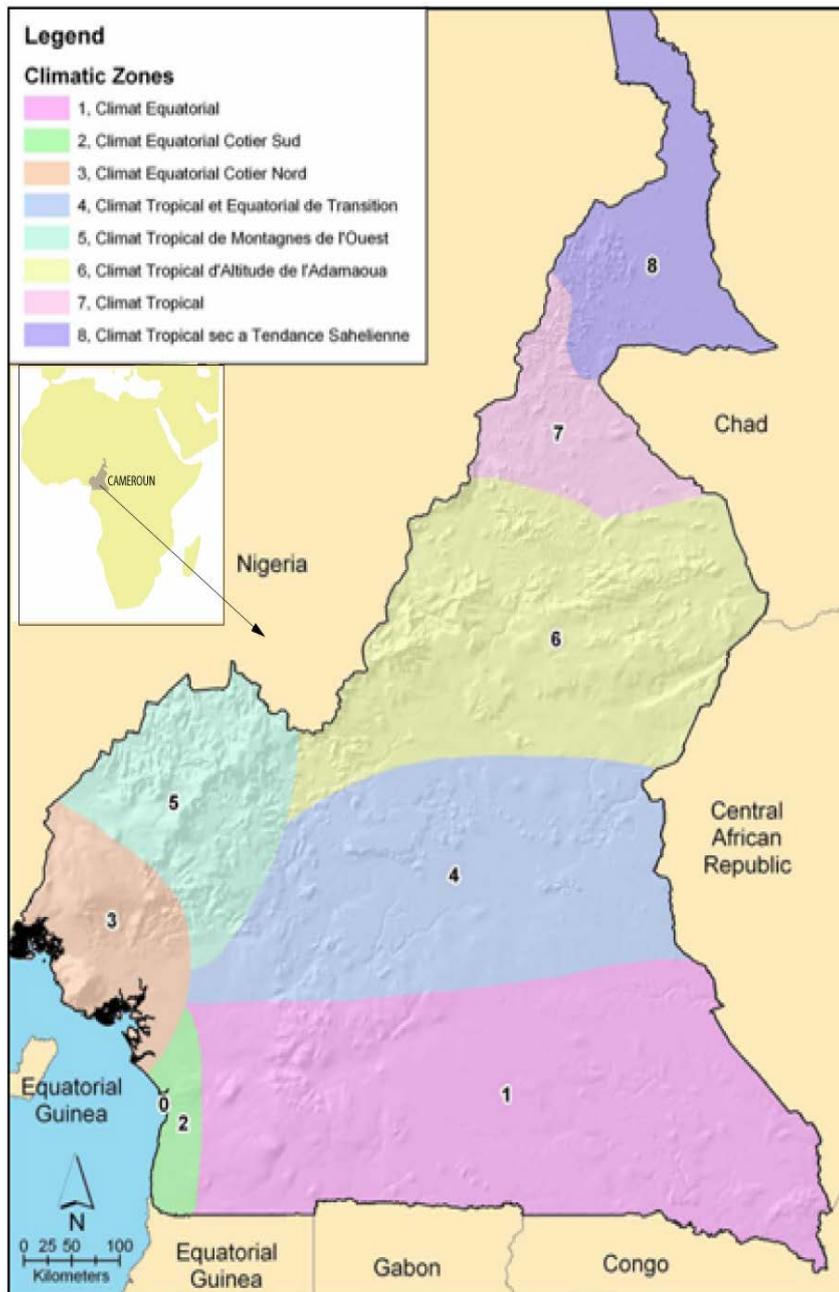


Figure 1 : main climatic units of Cameroon
 Source : Suchel (1987) cité par Njiemoun (2010)

GENERAL METHODOLOGY

To fulfill the goal assigned to this work, the data present in this research are from the results of statistical data collection from central, external and attached services of the ministry of tourism and cover the whole country. The other data collected for this reflection were obtained from various national and international sources (meteorological office, newspaper, other ministries, **Direction de la Solde**, National institute of Statistics...).

In this trend, this work will permit us not only to examine the performance of our touristic industry, but also to draw up a table of noted consequences from climatic impacts examining the weight of climatic changes on the development of tourism in Cameroon.

THE CHOICE OF STUDY AREA AND LOCALIZATION

I.1. the choice of study area

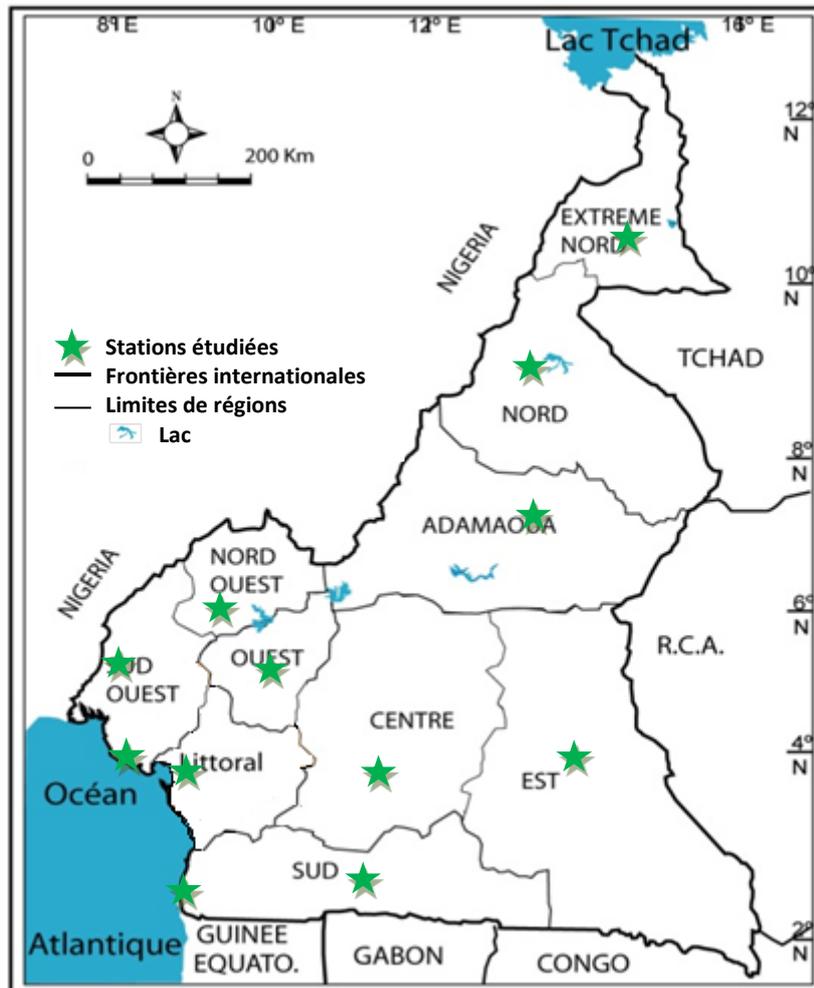
Our study area concern the twelves meteorological stations belonging each to one of the cameroon as indicated in table 1.

Table 1: geographical situation of studied stations

Stations	Region	Stations geographic position	Stations altitude
Bafoussam	West	Latitude: 5° 28' N Longitude: 10° 25' E	1460m
Douala	Littoral	4° 01' N Longitude: 9° 44' E	5m
Garoua	North	Latitude: 9° 20' N Longitude: 13° 23' E	242m
Ngaoundere	Adamawa	Latitude: 7° 21' N Longitude: 13° 33' E	1113m
Maroua	Far-North	Latitude: 10° 27' N Longitude: 14° 15' E	423m
Yaoundé	Centre	Latitude: 3° 50' N Longitude: 11° 31' E	760m
Ebolowa	South	Latitude: 2° 55' N Longitude: 11° 9' E	1399m
Bertoua	East	Latitude: 4° 35' N Longitude: 13° 41' E	668m
Bamenda	North-west	Latitude : 5° 56' N Longitude : 10° 10' E	1350m
Mamfe	South-west	Latitude : 05° 42' N Longitude : 009° 17' E	126m
Kribi	South	Latitude : 02° 56' N Longitude : 009° 54' E	13m
Limbe	South-west	Latitude : 04°02' N Longitude : 009° 13' E	

I.2. localization of study areas

As indicated in the figure 2, the 12 stations used in this study belong all to the different administrative region of Cameroon.



Source: MINATD, 2007

Figure 2 : map of cameroon

RESULTS

I. Touristic offers and proportion of tourism in the national GDP

By its cultural and traditional diversity, Cameroon offers a range of touristic products that continue to attract local and foreigners and constitute to this end a potential important market for trade and exchange of touristic services. Among the cultural attraction we can mention:

- museums (national museum of Yaoundé, benedictins museum, bamoun arts and tradition museum...)
- folklore (*afritude dressing, enthronement in chieftdom, ...*)
- culinary arts with a large diversity of meals and dishes (mbongo'o, ndole, tegue, folong, sanga,...)
- traditional festival (Ngondo, ngouon, nyem-nyem festival, mabi festival...)
- traditional dances (magambeu, assiko, ndjengou, ivanga, cock dance, pygmy dance, *Algaïta dance...*)
- a particular architecture based on social groups (poto-poto hut, obus hut (picture 2)...).
- Arts objects (fresco, mask, figurine, statuette...).



Source : Vouffo, 201

Picture 1 : obus hut of Mousgoum (Waza park entrance)

Parks, reserves and others are not on the rest. They host an enormous richness in vegetal and animal species. The most popular are: Waza park, Korup park, Dja reserve, etc. the mount Cameroon remain one of the most attractive place due to its history, beauty and eruptive manifestations.

For about twenty years, the proportion of touristic activities has not exceeded 3% of the gross domestic product (table 2). These numbers that continuously vary from one year to another remain limited in consideration of potentialities hosted by the country. And climatic variation could negatively complicate this situation.

Table 2: proportion of tourism on the national GDP (in billion Fcfa)

Year	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
GDP	4004,80	4529,32	4883,83	5324,7	5797,9	6 170,6	6612,3	7061,4	7583,0	7 916,9
Proportion of tourism in the economy	2,49	2,68	2,66	2,44	2,53	2,38	2,16	2,46	2,31	2,43

Source : MINTOUR (2013)

II. Touristic activities in fragile areas of Cameroon

The diversity of Cameroon climate is explained by its complex geographic structure. Important relief and the proximity of the Atlantic Ocean introduce clear differences. The rains generally diminish from the coast to the north and to the inland of the country. High altitudes region receive more rainfall than those of lower altitude. With climate change noticed between 1928 and 2010, the city of Douala has lost more than one meter in rainfall level per year, Yaoundé and Ngaoundere more than 0,5 meter per year.

This pluviometry evolution noticed all over the country has created significant risky conditions (picture 3). Over the years, seasons move, accompany by a modification of seasonal rainfall regimes (figure 4). Seasons get shorter while others come longer, according to climatic zone. Monthly regimes too are disrupted (figure 5).

Temperature in general increase from South to the North and from coast to the inland, while the altitude contributes to reduce the temperature. The climatic changes consequences are perceptible at thinner level, maximal daily temperatures increase progressively all over the territorial limit and sometime reach 1 or 2° C. the city of Yaoundé, situated in the southern

Cameroon plateau, record maximal average temperatures of 32° C. reddish fog are observed during the dry season since 2010 in the North (Kousseri) and the southern Cameroon plateau, creating anxiety among the populations.

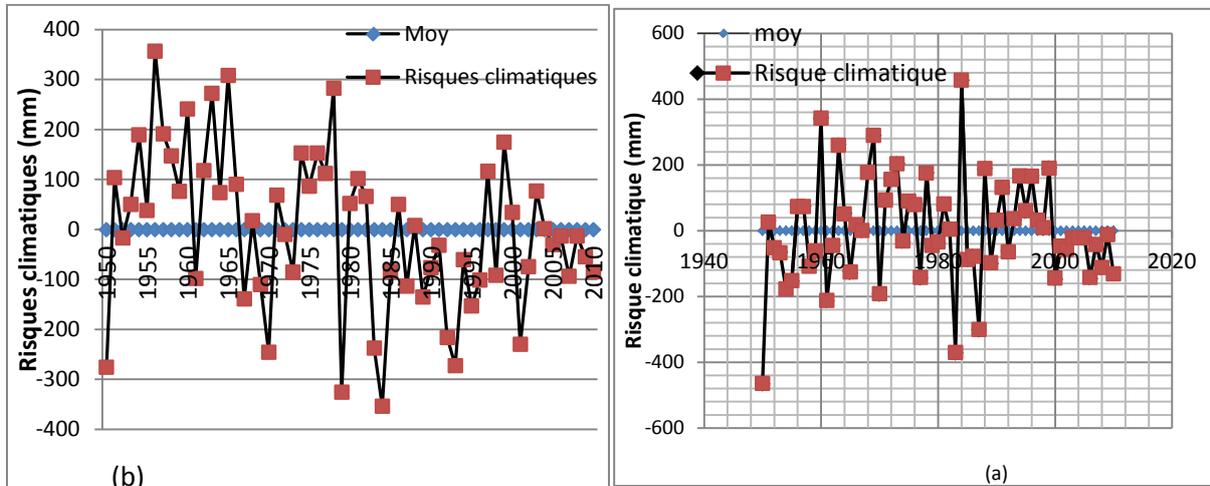
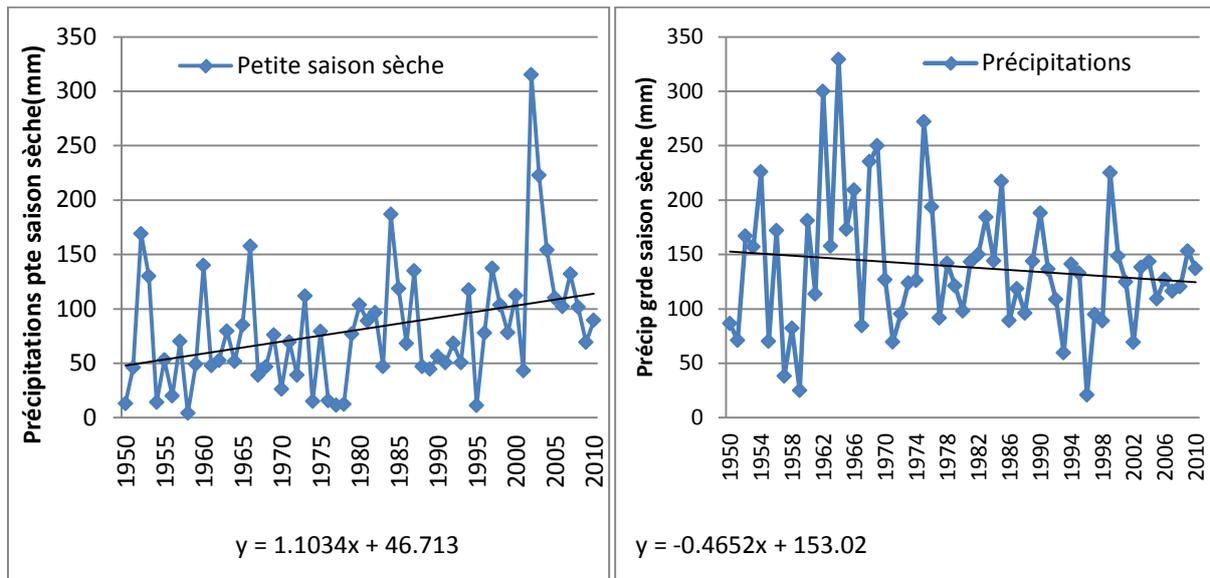


Figure 3 : evolution of rainfall in Ngaoundere (a) and Garoua (b) from 1950 to 2010



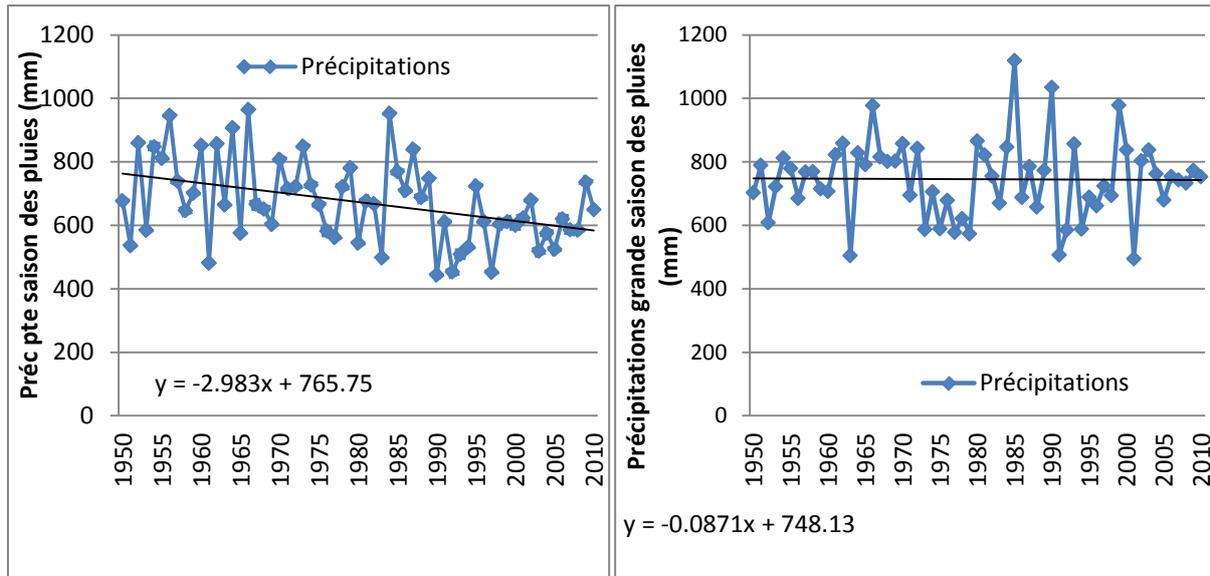
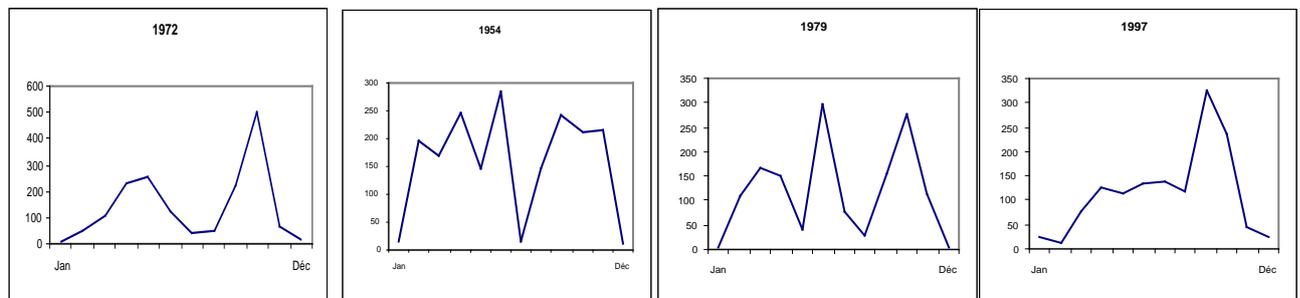


Figure 4: evolution of rainfall tendency in Yaoundé during the different seasons from 1950 to 2010



a-bimodal form with 64,7%

b-quarte modal form with 3,8%

c- monomodal form with 7,8%

b- trimodal form with 23,5%

Figure 5 : observed curves form in Yaoundé from 1950 to 2010

According to table 3, two types of rainfall regime are most commonly observed in Cameroon, it is the monomodal and bimodal. The monomodal regime is present in the West highlands, Littoral and the northern part, that is 07 regions on the 10 of Cameroon, in instance Bamenda in the North-West, Bafoussam in the West, Mamfé in the South-West, Douala in the Littoral, Maroua in the Far-North, Garoua in the North and N’Gaoundéré in the Adamawa.

Bimodal regime is visible in forest area, notably Ebolowa in the South, Yaoundé in the Center and Bertoua in the eastern region of Cameroon. The most perceptible disturbance of monomodal rainfall to the detriment of bimodal regime is clearly visible at Bafoussam which only conserve 64% of this regime, Douala (60%) and Garoua (65%). The bimodal regime is conserved in forest area at the exception of Bertoua which conserve only 62% of this regime in the advantage of monomodal regime that reach 20%. The trimodal regime was globally weak with the exception of Bertoua and Douala which respectively reach 18 and 13% of this regime.

Table 3 : comparison of the evolution of rainfall regime in Cameroon from 1950 to 2010

N°	Regions	Regimes	Monomoda 1	Bimodal	Trimoda 1	Total
1	Bamenda	Nber years	36	12	2	50
		%	72%	24%	4%	100%
2	Bafoussam	Nber years	32	12	6	50
		%	64%	24%	12%	100%
3	Buea	Nber years	40	07	03	50
		%	80%	14%	6%	100%
4	Douala	Nber years	29	13	06	50
		%	60%	27%	13%	100%
5	Maroua	Nber years	45	5	0	50
		%	90%	10%	0%	100%
6	Garoua	Nber years	31	07	06	50
		%	65%	31%	4%	100%
7	Ngaoundere	Nber years	38	10	2	50
		%	76%	20%	4%	100%
8	Ebolowa	Nber years	0	46	4	50
		%	0%	92%	8%	100%
9	Yaoundé	Nber years	05	41	06	50
		%	10%	82%	8 %	100%
10	Bertoua	Nber years	10	31	9	50
		%	20%	62%	18%	100%

These climate varied modifications affect seasonal touristic models which tours are always communicated in advance through touristic brochure and radio and television broadcasting. The tours are cancelled or modified making the sector fluctuating. Tourists are therefore frustrated by changes previously observed in initial tours.

That why it is important to carry out deep structural reforms of the sector introducing new seasonal activities that can attract a maximum of visitors to Cameroon. With a weak road network suffering among other of bad quality of roads, this situation of seasons climatic disorder amplify the state of roads, the diversion through others aerodrome due to new climatic conditions. With the complexity of road network constituted principally of earthenware roads (dust, slippery surface...) and the bad state of runway in certain aerodrome, a situation not easy for tourists movements.

The reduction of water resources and the net rate of flow reduction of rivers lead to the drop in the production of hydroelectric energy necessary for the energy supply of tourists' reception centers. We notice power cut throughout the country. This energy insufficiency creates a permanent state of anxiety to foreign tourists (table 4).

Table 4 : tourists attitude during a power cut

Questionnaire	Total of interviewed tourists	Foreign tourists			Local tourists		
		Foreigners total nber	State of anxiety	%	Local total nber	State of anxiety	%
Water shortage	58	30	25	83,3	28	18	64,2
Sudden power cut	58	30	28	93,3	28	20	71,4

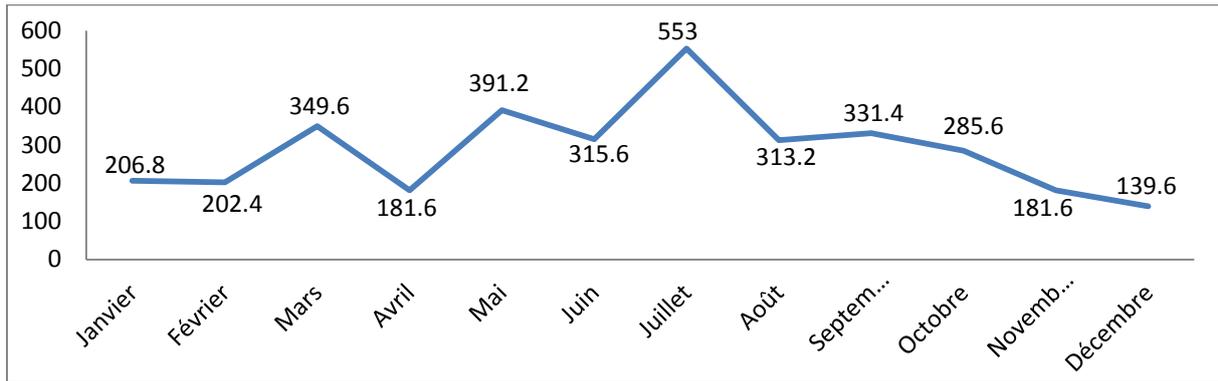
Source : field survey

These new coming climatic phenomena are accompanied by modification of tourists' influx toward Cameroon. Anxieties reported by tourists remain the fear of contracting a disease. They are mostly obliged to take vaccine or medicine when they came or when they go back from Cameroon.

Also, public authorities nonchalantly react facing some epidemic and pandemic (case of cholera in the north-Cameroon in 2010). However, it should be admitted that to face the threat of Ebola fever, sanitarian and administrative authorities have take protective measures to avoid the disease in the country.

Climate changes are very harmful to the environment, counter-seasonal rains are increasing and, inundations and landslide are also increasing (Kribi, Limbé). Surrounding temperature are more and more hotter and important and increase the dryness and improve the desertification process in Garoua, Mora, Kousseri and Maroua (figure 6).

With global estimation of an increase of around 3 to 4° C in the next decades, on the coastal regions of Cameroon, it could contribute to sea level elevation. The possible rise in the sea level will amplify the coasts erosion and particularly the destruction of mangrove swamp linked to the disappearance of several species shelter by the populations. Human health is influenced in many ways by the ongoing weather and climate. So, tourists and populations working in the sector should adapt continually to new environmental modifications. The ongoing climate warming up impacts are perceptible in the energy, health sectors, the spread of water and great heat diseases such as malaria, cholera, typhoid, meningitis, diarrheas (figure 7). Indeed, human are rejoiced by a good weather favorable for their leisure and activities. They are more interested to be informed and understand the weather and climate of places they are to visit.



Source : PLNLP, Yaoundé, 2012.

Figure 7: monthly mean evolution of malaria ill from 2007 to 2011

In Cameroon, climate modification are followed by water shortages and conflicts for the use of the resources, particularly at the time of tourists abundance, that is during the petite rainy season or dry season (picture 3). In general, tourists' pressure is more important during the time water resources are scarce and solicited in northern and southern regions. Different existing water supply points are affected by an increasing mobilization for consumption, with pollution consequences that may result.



Source : Njiemoun , 2010

Picture 3 : population of yaoundé seeking water for domestic purposes

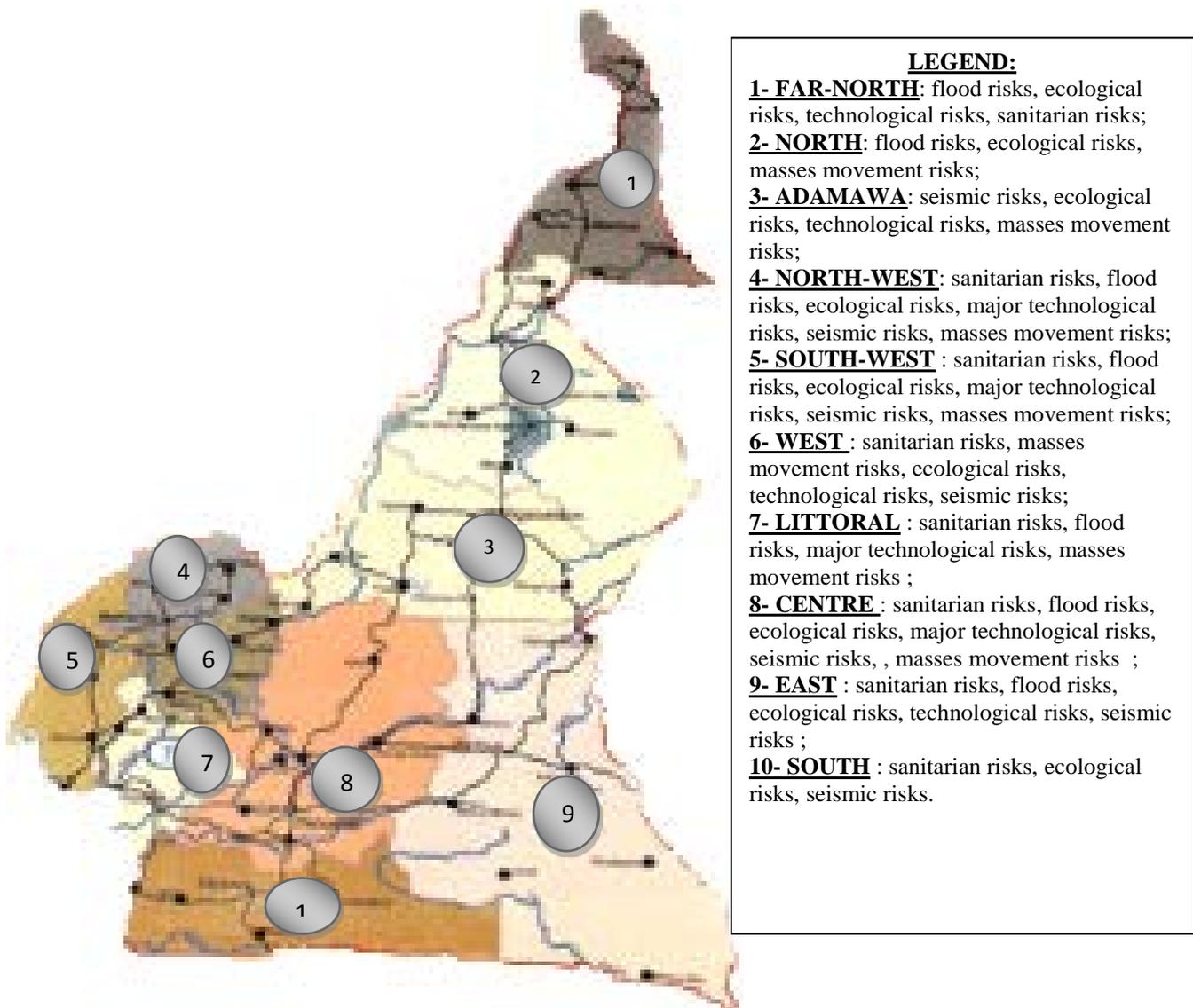


Figure 5 : fragiles regions of Cameroon

Source : Observatoire National des Risques

III. Costs and opportunities linked to adaptation and inactivity facing climate changes

Costs and opportunities of adaptation to climate changes is continuously rising in fragile region of Cameroon. In coastal zones, the costs of inactivity could represent a surplus from 25 to 30% of touristic activities by the year 2100. These lose revenues represent a serious threat for the touristic industry development. This will call the Cameroon destination into question by the world tourism organization (UNWTO) an uncertain destination with a number of visitors under the predicted norm.

In addition, the development in certain touristic sites of manufacturing industries fosters the pressure on these perpetual degraded spaces. The coastal regions of Cameroon also experienced a resurgence of development project; the same is true for the northern region with the discovery of numerous ore deposit. Exploitation of liquefied natural gas in Kribi, the building of deep sea port in the same city on a section of 70 km, the building of a deep sea port in Limbé, the development and expansion of Limbé shipyard may lead to the modification of landscape, etc., a situation that will complicate the rainfall seasons in these

regions. The temperature will without any doubt increase and will have appalling consequences on the visitors comfort.

In addition, the financing of adaptation process is often difficult for under developed countries, this because many country depend on assistance, borrowing and above all on industrial and agricultural production. Substantial actions that need to be realized on touristic sites rely principally on foreign financing. A situation complicating the capability to pay off the debt because there are conditioned by imposed strategies and, above all there do not take in consideration the realities of concerned countries and populations. Now, the fight against poverty is a priority for the government of under developed countries. Tourism will play a more important role in the fight against poverty if the government and enterprises exercising within the national territory really implement technologies and practices cleaner and more sustainable with the goal to limit the effects of climate changes in the more fragile environment, permitting the adoption of concrete, civic and clean actions and initiative by the populations.

The up to now implemented measures in Cameroon seems to exclude negative impacts of climate on touristic activity in Cameroon. However, tourism and related services could be the principal factor of Cameroon economy diversification through generated jobs and various services. In addition to risks linked to food poisoning, or to bad conservation due to variation in temperature, care should be taken about the recrudescence of water related illness such as cholera, malaria, etc. The department of civil protection of the ministry of territorial administration and decentralization permanently ensure the protection of Men, goods and environment against serious accident risks, calamity, disaster or sinister. In this way, Cameroon work on the management of great disaster, and this could influence the increase in the number of tourists.

IV. Tourism and climate change adaptation policies in Cameroon

Climate changes affect almost all the sectors of daily life. Tourism as a transversal activity is affected both by direct and indirect impact of climate changes. The challenge against climate is larger, due to the great dependence of many under developed economies vis-à-vis touristic influx generated by related industries (transport, manufacture) (Aisner P, 1983) [4]. Uncertainty concerning tourists' reactions to climatic parameters modifications is significant. The adaptation capacities of tourism actors and destinations are potentially variable.

In general, African countries record a weak production of greenhouse gas. Though, they remain the more vulnerable to climate changes effects. The different socioeconomic activities sectors remain affected by a strong variability of climate that risk to extend the attenuation efforts undertake up to now. These efforts may largely being facilitated by the transition to ecological tourism; situation that will permit reducing the upcoming climate changes effects. Truly, Cameroon could have a touristic agenda that will implicate probable climate changes. It could also have appropriate technologies to evolve toward a free carbon economy.

A program of conservation, management and sustainable exploitation framework for forest and faunal resources has created to answer to local needs and to international concern, among which ecological tourism, countryside tourism, green tourism (Kozak, M. (2002) [5]. It could attenuate the degradation of equipped forest reserves and protect the coastal banks. However, real difficulties still remain and a remarkable distance is observed between prescribed reformed framework and the continual natural resources degradation.

The institutional weakness and the laws non application concerning the ecosystem protection have encouraged the fast environmental depletion of certain environment. Poaching

and bushfire have provoked the disappearance of many species in the Waza Park, resulting to the reduction of tourists' frequentation in the North Cameroon. In coastal regions, mangrove swamp forests very presents are fragile, complex and rich ecosystems. There ensure in these regions the oceanic and fluvial shores protection, stability of coastal substratum, sludge retention, pollutants filtration, protection of the essential of organic nutriment, shelter for wildlife, etc.

The destruction of mangroves for firewood by local populations and the space planning for prospecting and exploitation of natural resources such as oil, natural gas by multinational have provoked an environmental disequilibrium creating the disappearance of some species such as: elephants, chimpanzees, crocodiles, etc. with the port construction in Kribi and Limbé, fragile areas will notice increasing and worrying disturbance of touristic activities.

The Douala, Edéa and Campo reserves are seriously threaten following the pressures exercise by local populations of Cameroon and even those of Equatorial Guinea. They will lead to the disappearance of giant turtles of Campo, the fresh water manatee at Mouanko. Many deficiencies should be noticed, notably: lack of coordination among major stakeholders particularly between donators, populations and financing institutions accentuating the financial shortage in needy environmental sectors. On other point, forest reserves contribute in a considerable way to the climatic equilibrium maintain, biodiversity conservation, carbon fixation and atmosphere purification through greenhouse gas reduction due to their position in the inter-tropical ring.

With the population growth combined to the absence of a real politic to secure forest reserve and woodlands, the phenomenon of illegal occupation of forests massifs expands. Populations are still claiming the restitution of their despoiled lands transformed into reserves or parks. Some equipped spaces are almost abandoned by the institutions leaving the populations in open access areas as it is the case of the Benoue reserve. The homologated and covered areas are regularly reducing and the eventual limits precisions are approximate.

The United Nations convention on desertification (UNCD) has as goal to prevent and reduce the degradation of arids, semi-arids, dry sub-humid areas and restore soils and degraded lands **Maddison, D. (2001) [6]**. The «Sahel vert» 2nd reforestation campaign was launched in 2008 in many departments of Cameroon northern regions (Mayo-Kani, Logone and Chari). These departments constitute human and natural unsustainable pressure areas. Many species were used during this reforestation project and was constituted of: 12 local species and 4 exotic species. Reforested sites are under protection with the collaboration of local populations permitting the plants to grow without being damaged by human or animals.

The waza-logone project initiated by a study of Leyden University (Netherlands) and financed by foreign and local donators permit the rehabilitation of areas including the Logone plain and Waza Kalamaloué national parks. Their actions target the long term conservation of biologic diversity and a co-management that will permit to improve a sustainable increase in local populations living style (picture 4).



Source : Ngoucheme , 2011

Picture 4 : co-management slogan poster

The Dutch organization for development (SNV) digester project in the northern regions permit to populations to product gas from biomass for their domestic utilization and it turns out that it could be an appropriate solution for the fight against desertification in this part of Cameroon.

V. Measures to reflate touristic activity in Cameroon

To permit the availability of faunal and floral resources in equipped sites for tourism, authorities (politic, administrative, traditional, etc.) should guarantee an improvement in the living style of populations by providing permanent opportunities of jobs and incomes. It becomes imperious to have a fresh look on touristic activities implementing actions leading to sustainable development with the goal of safeguard ecosystems by proposing participative approaches in this “miniature Africa”

Due to the diversity of its richness, Cameroon should notice an increase in the number of visitors if some actions are implemented. Strategies will vary from one touristic site from another. Pygmies are more affected than other peoples by the temperature rising because they traditionally live under trees shade, benefiting of soft microclimate. The development of skin cancer provoked by a long presence under ultraviolet rays modifies tourists’ expectations leading to a permanent fear. Cameroon tourism efficacy could be accompanied for its future development by, new offer, reinforcement of threat prevention, new technical measures of risks reduction and a well targeted marketing. These resources mobilization could be accompanied by the sensitization of tourists and concerned populations by the climatic purposes.

Climate changes linked to greenhouse effects could influence touristic destinations of Cameroon. Concrete measures could be the sensitization of local populations about the opportunities of conservation, the necessity of environment protection, notably the waste reduction in fragile sites (beaches), on the fight against poaching and the unsustainable fishing, etc. tourists for their satisfaction expect to benefit from numerous services that will spare them from natural disaster. Some sites will be forbidden during rainy seasons.

It will be the same thing during severe drought during which we are sometimes confronted to severe deterioration of vegetation with landscape discoloration. Then it is important to define sites were investments will bring satisfaction to all the stakeholders of

tourism sector particularly the agencies, the promoters, authorized employees, etc. a wrong appreciation of this process will further discourage major stakeholders knowing that tourists are demanding a lot about some services. A comfort drop starts when temperature is upper than 33° C. tourists accommodation should compensate problems from climate changes, constant power cut and frequent water shortage in cities to visit. Overcome all these obstacles could improve the services quality and reflate the activity. In a general point of view, in Cameroon, these parameters are not really reassuring during the dry season, driving tourists to other concurrent destinations. And above all, major climatopathologic risks (heart attack, cerebral vascular accident) for some visitors categories.

Particular investment effort should be oriented toward mass tourism (holidays and short stay in sites) which is more sensible to climate changes if the tendencies were confirmed. The touristic season should take in consideration the extension of rainy seasons while others are narrowing. Climate changes will more and more influenced construction and maintenance conditions of housing and touristic accommodation. In the cities of Limbé and Douala, hot and wet climate quickly degrade buildings. Furthermore, the use of air conditioning is foster by the heat, and will seriously affect the energetic balance. To remedy this situation, generator will be used, increasing greenhouse effect particularly with the presence of fuel oil power station in Douala. The rise in the sea level is really worrying for Cameroon coasts. Some buildings are threatened to collapse principally during high water (case of Manoka arrondissement in Douala). The northern regions are suffering from lack of water resources during the dry season and in a close future. And the phenomenon will increase.

VI. Discussion

Tourists prefer fine weather and the insurance that it will not change. Tourism is an essential component of the gross domestic product (GDP). For many countries, it constitutes an added value for the balance of trade (**Lohmann M. and al (1999) [7]**). Tourism has become an essential lever sustaining the social and economic development for developing countries. The tourism part in the GDP is function of export-import ratio. Beyond reasons linked to activity itself, tourism is more and more threaten. According to the world tourism organization, the icecap thawing, torrential rain, category 5 of tropical storms, floods, dryness and fire affect tourists' destinations and modify the decision of many travelers (**Mansfeld Y and al. 2004) [8]**). The relationship between climate changes and tourism are not from today. The activity was already threaten when the GIEC alerted humanity about an eventual global warming with human activities as origin with the emission of carbon dioxide resulting to the rise of atmospheric temperature from 1,8 to 4% by the end of the century. Direct consequences on socioeconomic activities are irrefutable (**Matzarakis A. and al. 2001) [9]**). According world tourism organization, for developing countries, tourism represent the principal source of income of 46 countries on 50, it is a potential source of employment and fight against poverty. This activity may be embroiled if serious measures are not take. The United Nations environment program (UNEP) estimated in 2005 that 5% carbon dioxide rejected in the atmosphere were produced by activities linked to tourism and related activities, notably the transport, accommodation that is a total of 1 307 million tons with 21% reserved to accommodation sector of tourism (unwto.org.) [10].

For many, even though direct impacts of climate over activity are generally significant, their importance varies from one region to another. The mountainous regions present realities that plain regions' do not know. The water shortage during summer or dry season in African tropical areas proves the high sensitivity of the activity which is a large consumer of the resource. Water, by its numerous use, such as swimming pools, golf, snow-blower, consumption, accommodation, etc. in a context sometimes marked by conflicts for the

resource use between farmers who need the water for irrigation during touristic seasons (**Morgan R and al. 2000**) [11]. Noël le Scouarnec mention a global threat for an activity which have increased from 25% in one decade and represent 10% of the global economic activity and is one of the more fertile employment provider sector. However, this activity presents a threat for the environment and local population welfare. That what drive to the adoption of new concept such as “ecologic tourism” or “sustainable development” to express the will to secure the activity with behavior that will not threaten neither the environment nor populations or their living environment (**Williams P and . 1997**) [12].

In addition, sanitarian risks will be more important, in a context were long-fly travelers are more and numerous, climate changes may facilitate transportation and mutation of viruses that will be carry during the return from visited areas. New diseases transmitted by mosquitoes and other pathogen agents and carry by animals such as dogs, chimpanzees, etc. will rise. Air pollution due heat excess in urban and peri-urban areas will have an impact on the ozone layer, will be the origin of some diseases recrudescence such as asthma, bronchitis, etc. all these factors are determinant for tourists’ choice. For Mbog D (2006), climatic factor intervene at the fourth position when tourists have resolved financial problems, landscape choice, new regions exploration.

Conclusion

Climate changes represent one of the most important challenges of our time. Today it is obvious that tourism needs a particular attention and that the climatic changes and their consequences affect the activity. That’s why Cameroon needs to redefine its touristic politic taking into consideration the seasonal modifications and natural disasters. Climate changes are likely to impact touristic destinations through its environmental impacts particularly desertification, species disappearances and social dynamic destabilization of societies, the lost revenue, etc. the technological, intellectual and scientific capacities reinforcement through the creation of an organization targeting the improvement of climate impact analysis in divers activities domain is more the necessary in Cameroon.

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