

ASSOCIATION OF SENATES, SHOORA  
AND EQUIVALENT COUNCILS  
IN AFRICA AND THE ARAB WORLD



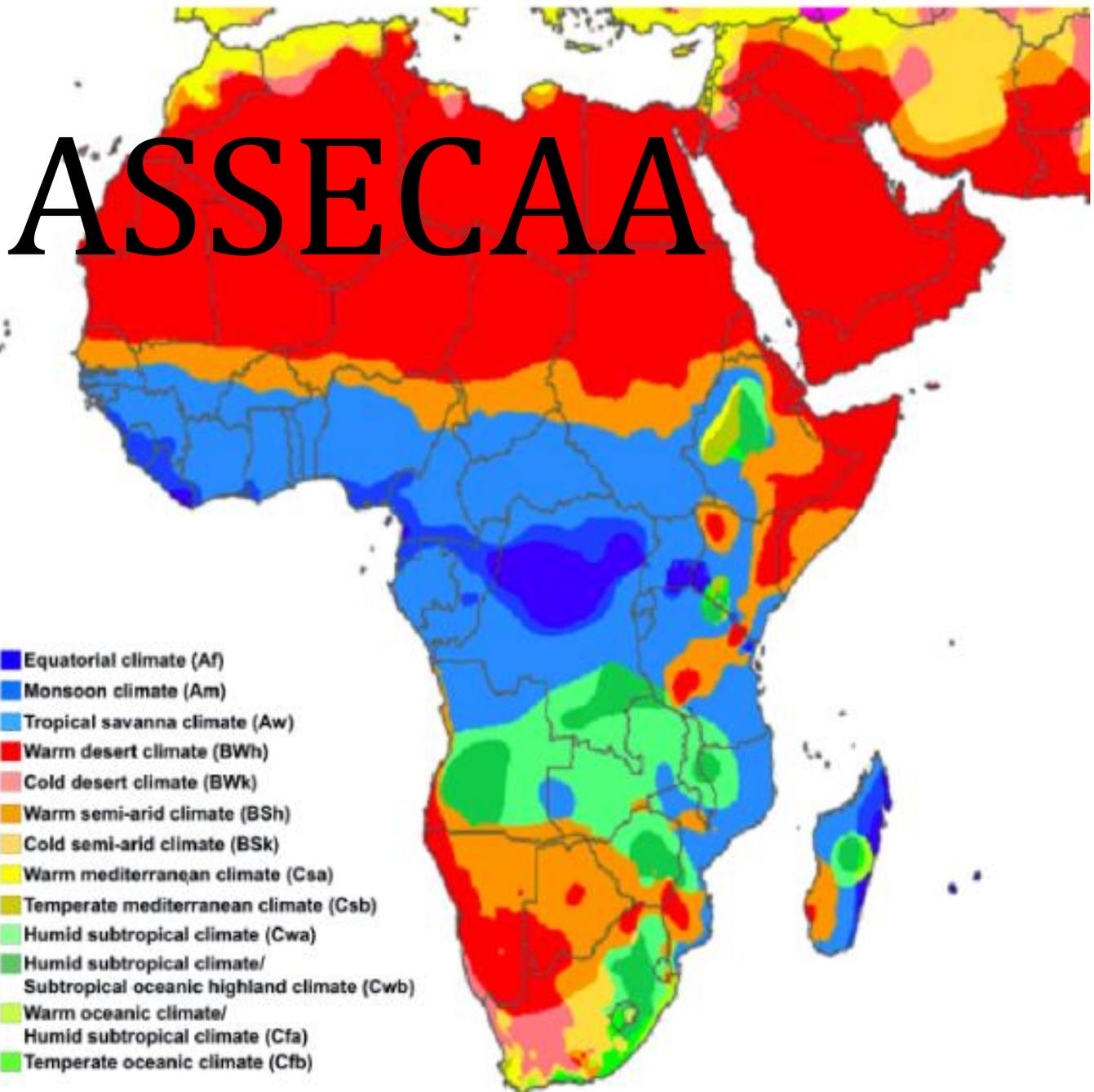
رابطة مجالس الشيوخ والشورى والمجالس  
المماثلة في أفريقيا والعالم العربي

ASSOCIATION DES SENATS, SHOORA ET CONSEILS  
EQUIVALENTS D'AFRIQUE ET DU MONDE ARABE

## Paper Three

# “ The Impact of Climate Change on Economic Development of Africa and the Arab World”

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# **The Impact of Climate Change on Economic Development of Africa and the Arab World**

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## 1. Introduction

The Association of Senates, Shura and Equivalent Councils of Africa and Arab World (ASSECAA) has sponsored the study and assessment of the impact of climate change on the economic development of Africa and the Arab world to serve as one of the major part of an urgent joint effort to effectively handle the now critical challenge of climate change, to coordinate the national, regional and international endeavors and commitments in this regard and particularly to effectively prepare for successful implementation of the future mitigation and adaptation plan of action.

Today climate change is one of the most and urgent critical issues for the world in general and Afro-Arab countries in particular. Although for some time now many countries have been taking some measures to tackle the climate change challenges, it was done haphazardly, with varying speed, effort and outcomes. Now It becomes necessary and life and death issue to seriously review and reconsider the matters to establish clear policy and action plan and coordinated implementation of the plan for the following five interrelated reasons that are befitting to the current and future rapid and dynamic development needed and effectively handling the negative impact of climate change of the Africa and the Arab world.

- 1) The Recent 2016 unanimous accord of all countries of the world of Paris Agreement on Climate change to make significant commitments to address and reduce the problem of global emission that is driving climate change.
- 2) Unlike other international agreements the Paris Agreement requires specific action plan, report on greenhouse gases with stronger transparency and accountability and the rich countries to provide climate finance to help the most vulnerable to adapt to climate change and build carbon free economy.
- 3) The ever worsening increase in climate change impact every year and season since the Paris agreement.
- 4) The unjust and perverse nature of the situation in which the rich/developed countries generate the problem but the poor/developing countries absorb 80% of the poisonous burden but contributing less than 8% of the impact.

- 5) The People of Africa and Arab world where the most vulnerable for the negative impact of climate change as they are poor, live in low latitude, high temperature regions and negative impact is jointly consumed rather than individually impacted.
- 6) The unquestionable need for urgent collaborative and coordinated action of Afro-Arab countries in mitigation of and adaptation to climate change and firmly provide and protect their economic development of the region.
- 7) It is in line with the resolution of the Third Afro Arab Kuwait Declaration (2013) and earlier agreement on partnership strategy and action plan which could strongly encourage and facilitate investment in the region and synergetic results in joint effort to combat climate change.

## **2. The Objective and Scope of Work**

The objective of the work is to study and assess the impact of climate change on Economic growth of Africa and Arab world, to identify the mitigation and adaptation measures required and to recommend mechanism to jointly prepare action plan to be cooperatively implemented.

The Scope of the Work is very vast and complex covering the impact, mitigation and adaptation to climate change in the whole Africa and Arab world consisting of two regions and 77 nations. It calls for the review of both quantitative market factors and qualitative non-market components of the impact on economic growth and consists of, among others, the following five major tasks.

- 1) Reviewing the available general environmental and climate change documents
- 2) Assessing worldwide developments, agreements and experiences
- 3) Diagnostic study and review of existing situations, problems and conditions of Afro-Arab countries.
- 4) Identifying and Analyzing the key elements of the impact on economic growth of the Afro-Arab regions
- 5) Recommending appropriate intervention areas, cooperation mechanism and way forward.

## **3. Literature's Review of Climate Change Impact on Economy**

One of the major tasks of the study is literature search regarding the impact of climate change on development. Literature review consisted of extensive search and review of major available and relevant documents, books and website articles concerning the subject matter of climate change. The primary focus was on among hundreds of others references the following eight seminal sources which are considered to represent the main concept.

- 1) The Economics of Climate Change, (Stern, N.2006)
- 2) Climate Change Impact, Adaptation and Vulnerability, (Intergovernmental panel on climate change (IPCC) 2007a)
- 3) Climate Change and Economic Growth, (Robert Mendelsohn (2009))
- 4) Does Climate Change Affect Economic Growth, (Benjamin James et al 2009)
- 5) Climate change, Economic Growth and Poverty Reduction, (Africa Development Forum, Seventh African Development Forum, 2010)
- 6) Arab Environment Climate Change, Impact of Climate Change on Arab Countries, (Arab forum for Environment and Development (AFED), 2009)
- 7) Climate Vulnerability Monitor, (Climate Vulnerable Forum (CVF), 2012)
- 8) Related UN, WB, EU, AU, AL and etc Studies, Reports and Resolutions.

#### **4. The Major Findings of Literature Review**

##### **4.1. The Divergent views on Climate Change and its Impact**

Although most studies vary in approach, focus and detail as they are based on varying data, scope and coverage. The general finding of the preliminary assessment of the literature is overwhelmingly the same and could be summarized as follows.

There are three widespread view points or position regarding the level of impact: the unqualified, unprofessional and unrealistic group who literally deny the existence of human action that affect climate change. They consider it as only natural phenomena as it represents simply an age old manifestation of natural cycle and hence neglect any serious action.

The second groups (Stern, 2007) are considered alarmists who provide misleading view as though humanity will perish shortly and the whole world will collapse due to climate change unless drastic action with huge program to the tune of 29 trillion is implemented.

The third groups are have a more realistic and balanced view and are now globally accepted fact (Mendelssohn, UN, 2009) and consider that:

- 1) Since the industrial revolution human activities in particular fossil fuel usage has increased green house gas (GHG) most notably CO<sub>2</sub> concentration in the atmosphere causing temperature to rise to dangerous level.
- 2) High temperature has large, negative effect on economic growth, but only in poor countries that absorb up to 80% of the damage from climate change. The damage may be concentrated in low altitude, high temperature and poor countries whose contribution to damage is only 8%. It is interesting to note here that Ibn Khaldun's pioneering observation in his 14<sup>th</sup> century *mukedima*, has been proven that countries with excess of heat tend to be poor.
- 3) That the aggregate estimate of negative impact and their costs masks significant difference in quantitative and qualitative impact on various regions, countries & populations relative to their income, temperature and awareness; the impact is higher for poorer countries particularly Afro-Arab world.

#### 4.2. The Three Major Ways Temperature Could Affect Economic Activity.

One can distinguish three potential ways temperature could affect economic activity.

- 1) It reduces the level of output of all sectors such as agriculture, tourism and other outputs.
- 2) It undermines the ability of the economy to grow by discouraging investment
- 3) It restrains/restricts the economic development of only poor countries i.e. their growth rate which is expected to be lowered by 0.6% each year from now until 2099. It is estimated that 1°c increase in temperature in a given year reduces economic growth in that year by about 1.1%.

However economic research on impact could improve technology, help develop an effective mitigation and introduce other related policies which together reduce the magnitude of projected damage.

#### 4.3. The Global Paris Climate Change Agreement

After a quarter of a century studies, research, conferences with conflicting views and exhaustive and arduous negotiations, the global community has now reached a unanimous

agreement in the Paris Accord and ratified by all countries. The Paris Accord was reached based on the obligation under the United Nation Framework convention on Climate Change (UNFCCC) and subsequent agreements. The accord consists, among others, the following three pillars:

- 1) It requires all countries to make significant commitments to address climate change, and adhere to a concrete program of deeper reduction of emission.
- 2) It includes a strict transparency and accountability system requiring reporting on greenhouse gas and projects that are subject to a technical expert review and multilateral examination.
- 3) It obliges rich countries to provide climate finance initially to the tune of US 100 Billion per year by 2020 to help most vulnerable countries adapt to climate change, build low carbon economies and strengthen their technical capacities.

## 5. Identifying the Impact of Climate Change on Africa and the Arab World

### 5.1. Profile/ Similarities of the two Regions

In the first place the global share of the combined size of Africa and the Arab World is not small in many respects. As noted in the table below, there are 66 countries with an area of about 34Mn Km<sup>2</sup> and over 1.22Bn population.

Size of Africa and the Arab World

	Africa	Afro-Arab	Arab	Total
Countries (No.)	44	10	12	66
Area (Mn. Km <sup>2</sup> )	20.8	9.6	3.4	33.9
Population (Mn.)	871	229	121	1221

\*Excluding 9 territories and 2 de facto countries that are not recognized

Sources: Africa and Arab data

Second the two regions are not only contiguous but also considerably overlap as there are 10 countries that are both African and Arab countries as indicated in the table above.

The two regions are neighbors with intimate economic and social relations extending to over 12 centuries. They have common development goals which are now experiencing strong growth and close climatic condition facing more or less many similar economic challenges relating to climatic changes.

## 5.2. Analysis of Climate Change in the Two Regions

Various studies show that temperature is the most recognizable and major indicator of climate change. Climate change particularly increase of global average temperature is universally accepted fact and that the pace of this increase is accelerating beyond expectation to accumulate and emit enough atmospheric GHG that could cause untold calamities on earth unless the necessary remedial measures are taken on time.

Africa and the Arab world are in many ways among the most vulnerable in the world to high temperature with this regards due to mainly tropical geographic location, desertification and human settlement. The most significant consequence of climate change is its threat to economic growth which is the core to poverty reduction, development and the well being of the people. The major economic threat of climate change which causes excessive GHG emission in both regions is manifested in many ways.

- 1) The dearth of water supply due to low and erratic rainfall, increased human needs and poor management.
- 2) Scarcity of food supply due to shortage of water, aridity, drought and low agricultural yield.
- 3) Loss of coastal areas due to rise of sea level
- 4) Disruption of ecosystems due to land degradation, desertification and decimation of fauna and flora.
- 5) Loss of economic activities in various other sections, agriculture, industry, tourism and service sectors.

The negative economic impact is said to be “severe, pervasive and irreversible” and inducing “threat multipliers” that exacerbate other problem such as poverty, illness, security, migration, social tension and conflicts. The multi dimensional vulnerability of the countries of the two regions is indicated on the map next page.

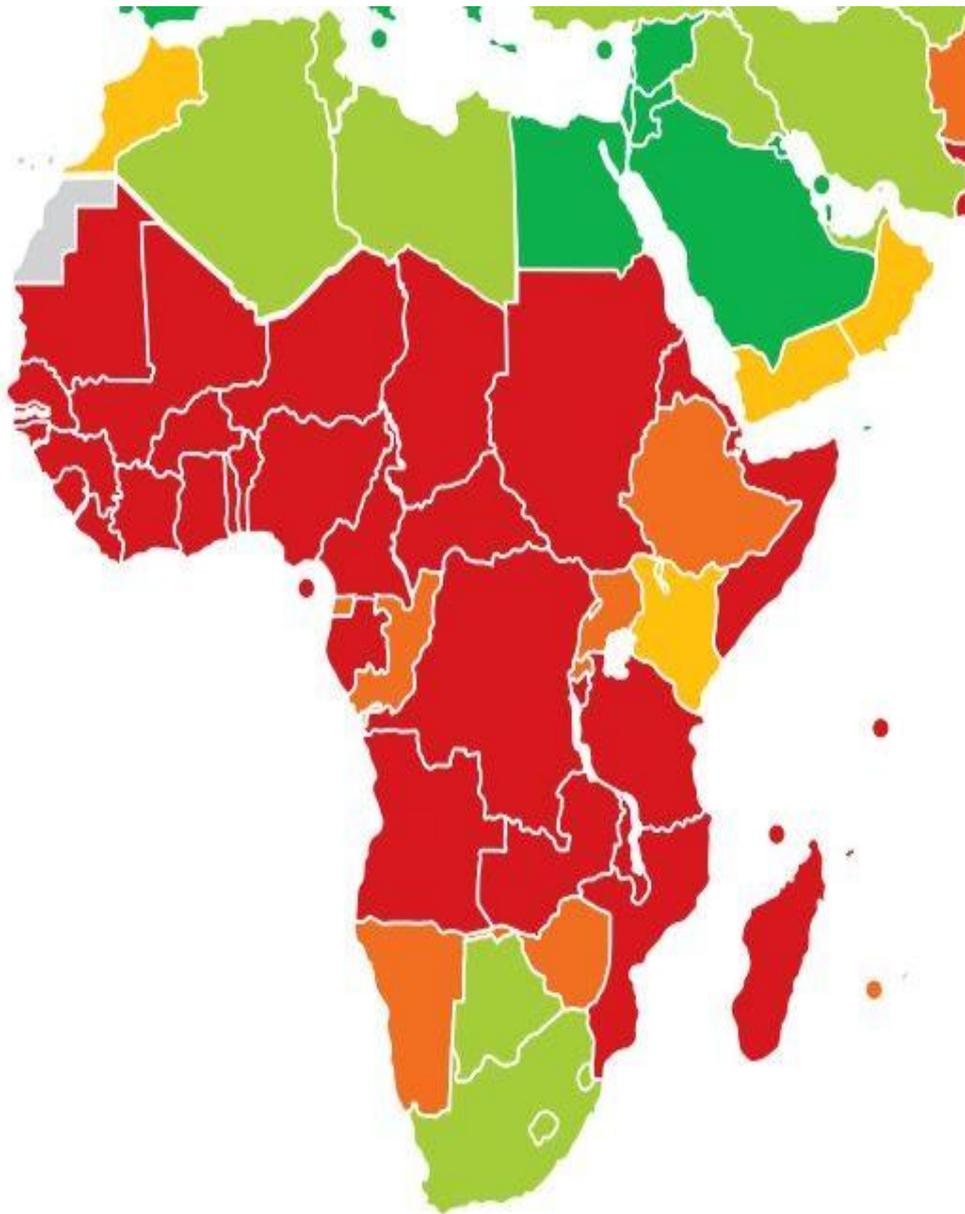
In general the differential economic impact of climate change in the two regions, sub regions and countries varies in terms of income, climate and capacities and are well

studied by Arab scholars, African experts, the UN bodies and consultants and therefore no need to further dwell on them.

However, overall the regions are more or less in similar situation. It is estimated that for every 1°C rise in average global temperature the Arab World economies growth rate will suffer a reduction of between 2-3% and between 20-30% of species will disappear; and that an increase in temperature of about 1.5°C could lead to an annual loss of 1.7% of African GDP; and that the economic damage is such that the countries in the region possess least capacity to cope up and adapt technically, financially and management wise.

It is to be underlined here efficient climate policy should be based on economic principles in which the ideal green house gas policy minimizes the sum of the present value of mitigation cost plus climate damage i.e. the marginal cost of mitigation should be equal to the present value of the marginal damage from climate change.

## Map 1: Multi Dimensional Impact Including Economic Vulnerability of Africa and The Arab World



\*Source: Climate Vulnerability Monitor, Climate Vulnerable Forum, DARA.

## 6. The key Economic Vulnerabilities of the Two Regions

As noted earlier Africa and the Arab World from suffer from unfair and unjust impact caused by GHG emission which is no fault of their own. Few rich and rapidly growing countries cause 80% of the emission of the gas while Africa and the Arab World contribute only 8% but suffer to the tune of 80% of the impact which is aggravated by their poverty, agriculture based economy and low latitude settlement.

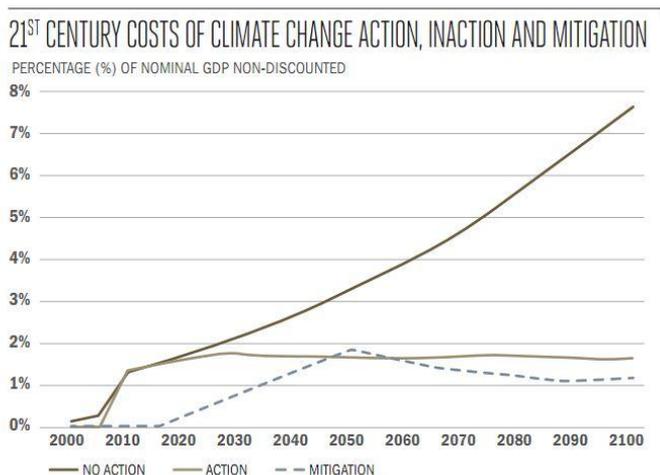
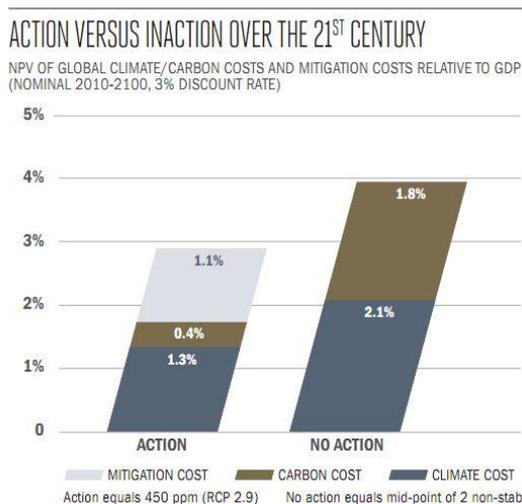
The negative impact of the damage associated with climate change is not distributed proportionally according to the emission while the burden is shared equally by least contributors. Moreover the damage passes to future generations which do not have a voice on the negotiation table.

The future economic impact of climate change on Africa and the Arab world can be summarized as follows.

- 1) By 2020 up to a quarter of African population and most Arab countries are projected to face draught and exposed to increased shortage of water supply due to climate change.
- 2) Agricultural production including access to food is projected to be seriously compromised by climate variability, exacerbated malnutrition and low productivity in the region.
- 3) In some African countries yield from rain fed agriculture could be reduced by up to 50% by 2020.
- 4) Projected sea level rise (SLR) towards the end of 21<sup>st</sup> century will affect low lying coastal areas with large population like Egypt where for SLR of one meter, more than 6% of its GDP and 12% of its best agricultural land is estimated to be at risk.
- 5) Transportation and other infrastructure will be generally vulnerable to projected increase in the intensity and frequency of hot days, storm activities and sea level rise
- 6) Biodiversity: a 2°C rise in temperature will cause the extinction of up to 40% of all species. Vulnerability of many plant & animal species which are already threatened for their survival will be exacerbated by the projected impact of climate change.
- 7) Tourism, an important sector of the economy, is highly vulnerable to climate change. An increase of between 1-4% in average temperature will cause a drastic decline in the index of tourism comfort all over the region.
- 8) Studies show that the cost of mitigation and adaptation is about only 1% of world GDP but the cost of any delay will increase the cost to 20% of the GDP.

Recent studies shows that significant warm trends and increase of summer days that leads to a maximum temperature reaching over 25°C by the end of the century throughout Africa and the Arab world. According to the CVF report climate change and carbon economy related losses could amount to over 1.2 trillion or 1.7% of global GDP in 2010. And this will lead to more than doubling in the cost by 2030 to an estimated 3.5% of the global GDP. The loss of income in the world poor countries that are most exposed is already extreme and endangers the achievement of poverty reduction, the millennium development goal (MDG).

The 21st century of climate change for action, inaction and mitigation vividly show the rise of 1.2%, 1.7%, and 7.5% of the GDP respectively, which is alarming as indicated in the chart below.



\*Source: Climate Vulnerability Monitor, Climate Vulnerable Forum, DARA.

On the other hand a number of initiatives and conferences have taken place in Africa and the Arab world to combat this trend through a number of approaches including adaptation and mitigation mechanisms which is presented in the following section.

## 7. Recommendation of Appropriate Adaptation and Mitigation Measures and the Required Cooperation Mechanism

Africa and the Arab world have indicated their willingness to participate in the global effort to mitigate and adapt to climate change. They have all signed the Paris accord, joined the United Nation Framework Convention on Climate Change (UNFCCC) and the Climate Vulnerable Forum (CVF) and established national entities and regional offices. There are also many success stories in the regions and the countries in adapting to climate change including Egypt, Morocco, Ethiopia, Tunisia and Yemen. The effort should stress the following:

- 1) Take various climate friendly policies and measures to reduce GHG emission as well as to enhance carbon sinks.
- 2) Develop clean energy technologies particularly in the light of the abundant renewable energy resources available in the region especially solar, wind, and hydropower.
- 3) Introduce smart agriculture such as changing cropping patterns, developing new variety of crops especially heat resisting and shorter term and high yielding crops, adopting water saving techniques and introducing integrated water resource management.
- 4) Integrating their strategy for climate resilient, green economy and investment in modern, clean and efficient technologies to help reduce the atmospheric concentration of green house gases.
- 5) To ensure that the climate fund raised to help mitigate climate change impact should be properly apportioned, effectively used and efficiently implemented. Moreover Afro-Arab countries do their best to integrate their effort, exchange experiences and improve their data collection and performance.

In 2009, the climate vulnerable forum (CVF) was established as a collaborative platform for some 50 vulnerable countries to address the foremost issues related to global climate change with the aim of among others, consensus building and position convergence, cooperative action, collective awareness and sharing of good practices and climate change policy.

The forum has drawn 2016-18 roadmap of the climate vulnerable forum to identify the objectives, outline planned activities and indicate the role of different cooperation and action channels to ensure timely and effective implementation of the Manila-Paris Declaration. It requires serious follow up mechanism for the action plan to succeed mitigation, adaptation, finance, capacity building, technology transfer and coordinated monitoring at national, regional and international levels should go hand in hand. It is necessary to ensure the minimum financial support of US 100Bn per year to be reached in 2020 at the latest. The forum has finally confirmed Ethiopia as the forums next chair for the 2016-2017.

The ASSECAA of the Afro Arab countries can have a great opportunity to have common stand, strategy and policy, undertake joint collaborative program of action and cooperative endeavors to achieve synergy in their performance. In this regard the office of ASSECAA should take the opportunity to establish a liaison office to harmonize, co-operate their goals and objectives, share experience and promote the achievement of synergetic result for mutual benefit with CVF program of action.

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- 8) Related UN, WB, EU, AU, AL and etc Reports and Resolutions.