

THE EFFECTS OF CLIMATE CHANGE ON THE FARMING SEASONS IN LIBERIA

PRESENTED BY;

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OUTLINE

- OBJECTIVE
- OUTCOME
- RESULTS
- EVALUATION

OBJECTIVE

- To describe the effects of climate change in Liberia
- To analyze the factors that influence climate change
- To adopt mitigating measure to address climate change

- **OUTCOME** – At the end of the workshop, an early warning system will be put in place.
- **RESULT** – When all measures are put in place, we would like to see an adoptable mechanism employed in all of our communities.
- **EVALUATION** – Six months after the conduct of the workshop, regular follow-ups will be carried out in all of our communities to ensure compliance.
- **DURATION** – One day

WORKSHOP PRESENTATION

THE
EFFECT OF CLIMATE CHANGE
ON THE FARMING SEASONS IN
LIBERIA

OUTLINE

- Introduction

What is climate?

What is climate change?

What are the farming seasons in Liberia?

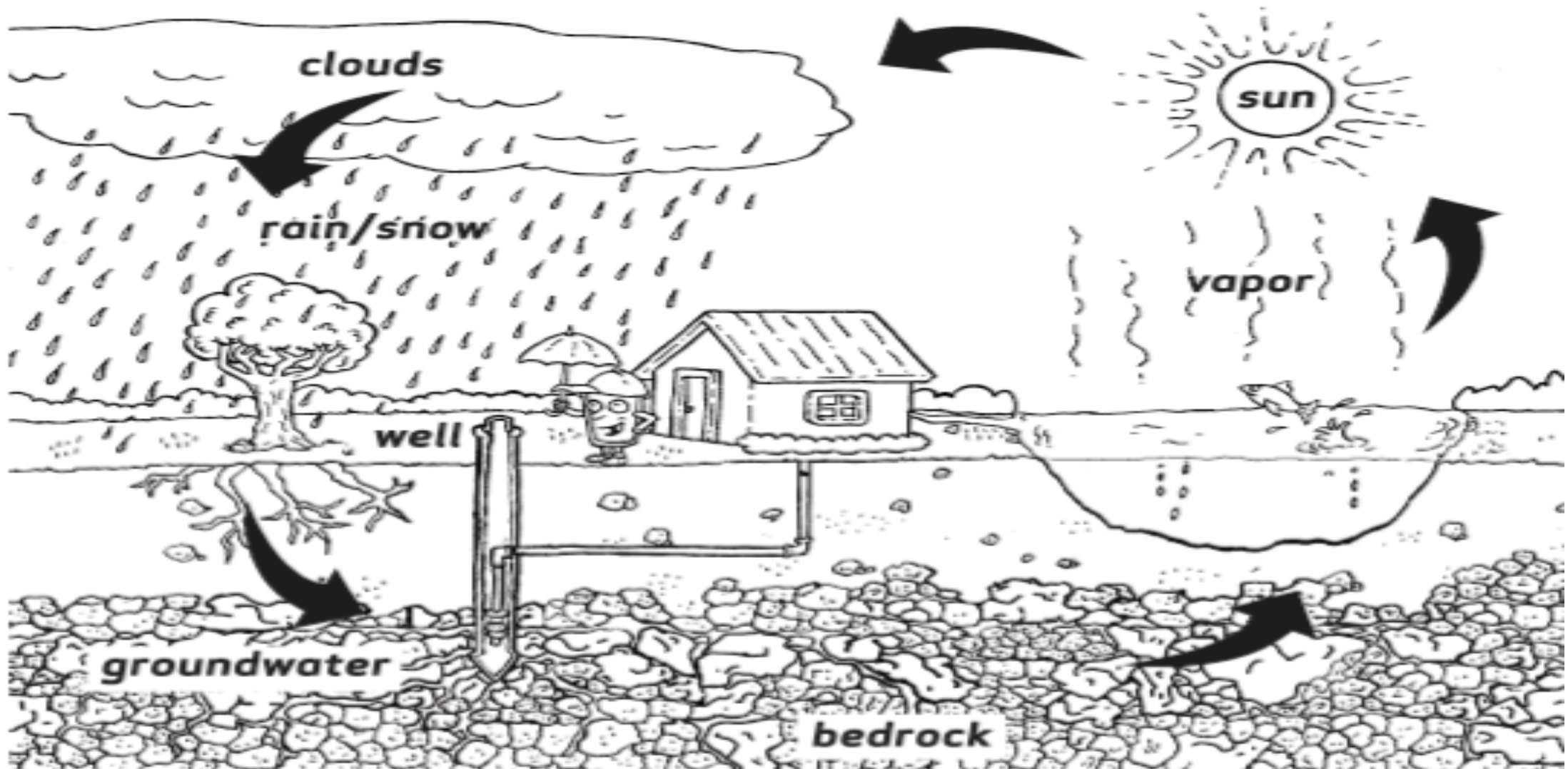
How has climate influenced the farming seasons in Liberia?

What mitigations and adaptations are necessary to address climate change?

INTRODUCTION

- **What is a climate?**
- A climate is the average change of the weather over a 30 years period in a specific region.
- Climate is measured by assessing the patterns of variation in temperature, humidity, atmospheric pressure, wind, precipitation, atmospheric particle count and other meteorological variables in a given region over long periods of time.
- **What is climate change?**
- 'Climate change' again as the name suggests, refers to the changes in the global climate which result from the increasing average global temperature. (e.g. changes in precipitation patterns, increased prevalence of droughts, heat waves, and other extreme weather) **IPCC, 2007** .

Description of Climate Change



INTRODUCTION

- In Liberia there are two seasons that affect the farming systems as well as one season that is not recorded but is recognized by farmers;

a. rainy season (wet)

b. dry season (sunny)

Known or recorded

c. hamitan(mixed)

INTRODUCTION

- **Rainy season (wet)**- the rainy season is the season in which the rainfall in Liberia is increased or on the high intensity. It begins from Mid April – Mid October.
- **Dry season(very sunny)**- this is a season in which the intensity of the sunshine is very high thus leaving most crops (especially pastures plant) losing their nutrients. It begins from mid October – mid April.
- **Hamitan**- this is a season in Liberia in which the northeast trade wind is experienced. During this season, very heavy dew falls can be experienced nationwide. This season normal begins from mid December - mid February

INTRODUCTION

- As the result of the factors that influence climate change, the entire pattern of the seasons in Liberia have been effected.
- Hamitan can sometimes be experienced without the northeast trade wind, that was normal prior the changes in the climatic.
- During the rainy season, the rainfall was not as heavy as can be seen nowadays.
- The intensity of the ray from the sunshine has also increased, giving high temperatures, thus effecting cropping activities (e.g. increase in the proliferation of insects)

HOW HAS CLIMATE INFLUENCED THE FARMING SEASON IN LIBERIA

- Farmers in Liberia are categorized as follow:
 - a. vegetable farmers
 - b. rice farmers (low and upland rice farmer)
 - c. cassava farmers
 - d. tree crop farmers (cocoa, coffee, rubber, palm, and citrus)
 - e. animal farmers

HOW HAS CLIMATE INFLUENCED THE FARMING SEASON IN LIBERIA

- Seasons in Liberia are classified as:

- a. vegetable farming (September – April)

- b. up land rice farming (November - August)

- c. low land rice farming (May – November)

- d. tree crop farming(October –August) this involves land preparation and transplanting

- c. animal farming (breed dependent)

WHAT FACTORS INFLUENCE FARMING SEASONS IN LIBERIA

- The farming seasons in Liberia are influenced by any of the following:
 - a. land
 - b. weather
 - c. rainfall
 - d. sun
 - e. wind
 - f. human activities
 - g. humidity
 - h. animals
 - i. rivers
 - j. tree (crops)

WHAT FACTORS INFLUENCE FARMING SEASONS IN LIBERIA

- **Land** – In agriculture, land including all arable land, land under permanent crops and land under permanent meadows and pastures.
- The land contains soil that are favorable for both crop and animal production.
- Due to climate change, the land can either suffer drought or get flooded.
- When these things happens, the soil loses its nutrients which prevent production

WHAT ARE THE FACTORS THAT INFLUENCE FARMING SEASONS IN LIBERIA

- Weather – is the day-to-day temperature or precipitation of an area over a short period of time
- weather often controls how and where we live, what we do, what we wear and what we eat.

WHAT ARE THE FACTORS THAT INFLUENCE FARMING SEASONS IN LIBERIA

- **Rainfall**- rainfall is a very common type of weather
- Rain starts above us when small droplets of water in the clouds join together until they get too big and heavy and fall from the clouds. However, different cloud types can produce different rainfall.
- Light rainfall called drizzle are important for crop production

WHAT FACTORS INFLUENCE FARMING SEASONS IN LIBERIA

- Sunshine – sunshine is the intensity of light or heat on the earth surface
- The amount of sunshine we have depends on latitude and how much cloud there is in the sky.
- There is usually more sunshine where atmospheric pressure is higher.
- While sunshine promote production, more sunshine prevents the uptake of water by plant, as well as create more stress on animals in fending food

WHAT FACTORS INFLUENCE FARMING SEASONS IN LIBERIA

- **human activities** – human activities are things that are done or cause by human beings to affect the earth.
- Human activities contribute to climate change by causing changes in Earth's atmosphere in the amounts of greenhouse gases, aerosols (small particles), and cloudiness.
- The largest known contribution in Liberia comes from the harvesting of the forest trees, and the large slash and burn practices by farmers which releases carbon dioxide gas to the atmosphere
- The use of generators by most of our companies and home, thus releasing more carbon monoxide gas to the atmosphere

WHAT FACTORS INFLUENCE FARMING SEASONS IN LIBERIA

- **Wind** – Wind is simply moving air
- Sometimes it moves slowly creating a gentle breeze. Other times it can move faster creating stronger, more powerful winds.
- Wind helps in the pollination of our crops
- The cause of wind is as the result of cutting down the forest which serve as blocker, and wind breaker.

WHAT ARE THE FACTORS THAT INFLUENCE FARMING SEASONS IN LIBERIA

- **Humidity** – humidity is the amount of water vapors in the atmosphere.
- It takes place when the sun shines on the lakes, rivers or other water bodies, that allow the water to escape to the atmosphere in the form of steam.
- Humidity provides a favorable condition for our cropping activities, especially vegetable production.

FACTORS AFFECTING CLIMATE CHANGE

- Relative to the farming system in Liberia, it can be seen that some of the factors that influence production, is the same as that which promotes climate change.
- There are many different factors that affect climate around the world. It is the varying influence of these factors that lead to different parts of the Earth experiencing differing climates.
- The most important natural factors are:
 - a. Distance from the sea
 - b. Ocean current
 - c. The direction of prevailing wind
 - d. Shape of the land (Topography)
 - e. Distance from the equator

FACTORS AFFECTING CLIMATE CHANGE

Distance from the sea (Continentality)

- The sea affects the climate of a particular place where it can be seen. Because clouds form when warm air from inland areas meets cool air from the sea
- Coastal areas are cooler and wetter than inland areas.
- Due to the large water body of the sea, it poses a large range of temperatures especially during the sunny period the temperatures can be very hot and dry as moisture from the sea evaporates before it reaches the center of the land mass.

FACTORS AFFECTING CLIMATE CHANGE

- **Ocean currents**

Ocean currents can increase or reduce temperatures. The diagram below shows the ocean currents of the world. The main ocean current that affects Liberia is the Atlantic Ocean.



Due to climate change, the Atlantic ocean has reclaim the land mass of Liberia, thus leaving most of the communities along the coastal area venerable

FACTORS AFFECTING CLIMATE CHANGE

Direction of prevailing winds

- Winds that blow from the sea often bring rain to the coast and dry weather to inland areas.
- Winds that blow to Liberia from warm inland areas such as Southeast Africa will be warm and dry.
- Winds that blow to Liberia from inland areas such as Northern Africa will be cold and dry in Hamitan.
- Liberia prevailing (i.e. most frequently experienced) winds come from a Northeast direction over the Atlantic. These winds are cool in the summer, mild in the rainy season and tend to bring wet weather

FACTORS AFFECTING CLIMATE CHANGE

The shape of the land ('relief')

- Climate can be affected by mountains.
- The mountains receive more rainfall than low lying areas because as air is forced over the higher ground it cools, causing moist air to condense and fall out as rainfall.
- The higher the place is above sea level the colder it will be. This happens because as altitude increases, air becomes thinner and is less able to absorb and retain heat. That is why you may see snow on the top of mountains all year round

FACTORS AFFECTING CLIMATE CHANGE

- **Distance from the equator**

- The distance of a country from the equator affects the climate of that country.
- At the poles, energy from the sun reaches the Earth's surface at lower angles and passes through a thicker layer of atmosphere than at the equator.
- This means the climate is cooler further from the Equator.
- The poles also experience the greatest difference between summer and winter day lengths: in the summer there is a period when the sun does not set at the poles; conversely the poles also experience a period of total darkness during winter. In contrast, day-length varies little at the equator.

MITIGATIONS AND ADAPTATION

- **Mitigation:** The efforts undertaken to “reduce human activities (anthropogenic or greenhouse gas) emissions or to enhance natural sinks of heat” (IPCC, 2007b).
- Provide measure by which farmers will be inform on why they should conserve the forest(e.g. an early warning on shifting cultivation and the consequences).
- What are some of the consequences of shifting cultivation?
 - a. wind
 - b. erosion of the soil
 - c. drought
 - d. bushfire

MITIGATIONS AND ADAPTATION

- **Adaptation** - “In human systems, the process of adjustment to actual or expected climate and its effects, in order to moderate harm or exploit beneficial opportunities. In natural systems, the process of adjustment to actual climate and its effects...” (IPCC, 2012).
- Farmers need to diversify cropping to avoid shifting cultivation
- In order to know how much and to what extend farmers are complying to measure put in place? Constant follow-up should be carry out

REFERENCE/RESOURCE MATERIAL USED

- Adaptation under the New Normal of Climate Change: The Future of Agricultural Extension and Advisory Services; MEAS Brief # 3; By Brent Simpson and Gaye Burpee, 2014
- Climate Change Adaptation Options for Small-holder Farmers: A Trainer's Manual and Farmer Guide; Dr. Florence Birungi Kyazze; Makerere University; Department of Extension and Innovation Studies; MEAS UPDATE 11/20/2015
- ADAPTATION UNDER THE "NEW NORMAL" OF CLIMATE CHANGE: THE FUTURE OF AGRICULTURAL EXTENSION AND ADVISORY SERVICES; By Brent M. Simpson and C. Gaye Burpee, MEAS Discussion Paper 3 January, 2014
- MOA STAT, 2013
- Self inputs

THANK YOU FOR LISTENING