1. **Introduction (Anna Ndoye)**

Since the Industrial Revolution, the average temperature of the Earth has increased significantly, reaching an unprecedented level in human history. This phenomenon, known as global warming, threatens the ecological, economic and social balance of our planet.

Scientists from the IPCC (Intergovernmental Panel on Climate Change) have confirmed that human activities are the main cause of this warming, in particular the massive emission of greenhouse gases such as CO_2 and methane.

What are the natural and human factors behind this phenomenon? What are the consequences for our environment, our societies and our economy? Finally, what solutions can be implemented to limit the effects of global warming?

First, we will examine the natural and human causes of global warming. Then, we will analyze its consequences on the environment, human societies and the economy. Finally, we will explore individual, collective and technological solutions to combat this global challenge.

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2. Causes of global warming

2.1 Natural causes (Souleymane Koné)

Natural causes are phenomena that influence the climate without human intervention. They have always existed, but their impact is now amplified by human activities.

• Volcanic eruptions:

Major volcanic eruptions release enormous amounts of ash and gases, such as sulfur dioxide (SO_2), into the atmosphere. These particles can reflect sunlight, causing a temporary cooling of the planet (e.g. the eruption of Pinatubo in 1991 lowered the global temperature by 0.5°C for two years). However, they also release CO_2, which contributes to the greenhouse effect in the long term.

• Solar variations:

The sun's activity varies according to 11-year cycles, influencing the amount of energy received by the Earth. For example, during the "Maunder Minimum" (1645-1715), a period of low solar activity, Europe experienced a Little Ice Age.

• Natural climate cycles:

Milankovitch cycles, which describe variations in the Earth's orbit, rotational tilt, and precession, have caused ice ages and interglacial periods throughout Earth's history. However, these cycles span tens of thousands of years, unlike current warming, which is much faster.

2.2 Human causes (Coumba Fall)

Human activities are the main causes of the global warming observed since the 19th century. These causes are linked to industrialization, urbanization, and the intensive exploitation of natural resources.

• Greenhouse gas emissions:

Burning fossil fuels (coal, oil, natural gas) to produce energy, power transportation, and operate industries is the largest source of CO_2. For example, in 2021, global CO_2 emissions reached 36.3 billion tons, 40% of which came from the energy sector.

• Deforestation:

Destruction of tropical forests, such as the Amazon, reduces the planet's ability to absorb CO_2. Trees absorb CO_2 as they grow, but when they are cut down or burned, this carbon is released into the atmosphere. For example, between 2000 and 2020, the Amazon lost 10% of its surface area, contributing to increased CO_2 emissions.

• Intensive agriculture:

Raising livestock, especially cattle, produces methane (CH_4), a greenhouse gas 28 times more potent than CO_2. In addition, the use of nitrogen fertilizers releases nitrous oxide (N_2O), another greenhouse gas. For example, agriculture accounts for about 24% of global greenhouse gas emissions.

3. The consequences of global warming

3.1 On the environment (Mamadou Diallo)

Global warming has profound and often irreversible impacts on ecosystems.

• Melting ice and rising sea levels:

The melting of glaciers and polar ice caps, such as that of Greenland, contributes to rising sea levels. For example, sea levels have risen by 20 cm since 1900, threatening coastal areas (e.g. the Maldives could disappear by 2100).

• Disruption of ecosystems:

Animal and plant species must adapt, migrate or disappear. For example, polar bears are losing their habitat due to the melting of the Arctic ice pack.

• Extreme weather events:

Heat waves, droughts, floods and hurricanes are becoming more frequent and intense. For example, Hurricane Harvey (2017) caused an estimated $125 billion in damage in the United States.

3.2 On human societies (Pape Ousmane Mané)

People are directly affected by the effects of global warming.

• Population displacement:

Climate refugees flee areas that have become uninhabitable due to rising waters, droughts or storms. For example, in Bangladesh, millions of people are threatened by rising sea levels.

• Health problems:

Heat waves increase the risk of cardiovascular and respiratory diseases. In addition, mosquitoes that carry diseases such as malaria and dengue fever are expanding their habitat. For example, in Africa, the number of malaria cases could increase by 20% by 2050.

• Food insecurity:

Droughts and floods reduce agricultural yields, leading to food shortages. For example, in 2022, drought in Somalia caused a severe food crisis.

3.3 On the economy (Mourtada Diop)

Global warming has a considerable economic cost.

• Infrastructure destruction:

Natural disasters damage roads, bridges, buildings and power grids. For example, floods in Germany in 2021 caused damage estimated at €40 billion.

• Agricultural losses:

Poor harvests increase food prices, affecting local and global economies. For example, in 2022, drought in Europe led to higher wheat prices.

• Costs of inaction:

According to the IPCC, not acting on global warming could cost between 2% and 10% of global GDP by 2100.

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4. Solutions to combat global warming

4.1 Individual solutions (Pape Socé Ndiaye)

Everyone can contribute to reducing their carbon footprint.

• Reduce your energy consumption:

Use energy-efficient household appliances, turn off unnecessary lights, insulate your home.

• Change your transport habits:

Favour public transport, carpooling, cycling or electric vehicles. For example, in Norway, more than 50% of new cars sold are electric.

• Adopt a sustainable diet:

Reduce meat consumption, favour local and seasonal products, avoid food waste.

4.2 Collective solutions (Amadou Tidiane Kane)

Governments, businesses and international organisations have a key role to play.

• Public policies:

Implement carbon taxes, subsidise renewable energy, ban single-use plastics. For example, Sweden has reduced its CO_2 emissions by 25% since 1990 thanks to a carbon tax.

• International agreements:

Respect the commitments of the Paris Agreement, which aims to limit global warming to 1.5°C. For example, the European Union has committed to achieving carbon neutrality by 2050.

• Education and awareness-raising:

Informing the public about climate issues and promoting environmentally responsible behaviors. For example, school climate programs are growing in many countries.

4.3 Technological innovations (Babacar Mbaye Faye)

Technology offers promising solutions to reduce emissions and adapt to climate change.

• Renewable energy:

Developing wind, solar, hydro and geothermal energy. For example, Denmark produces more than 50% of its electricity from wind.

• Carbon capture and storage:

Technologies to capture CO_2 emitted by factories and store it underground. For example, the "Orca" project in Iceland captures 4,000 tons of CO_2 per year.

• Sustainable agriculture:

Using techniques such as agroecology, precision farming and drought-resistant crops. For example, in India, farmers are using drones to optimize irrigation.

5. Conclusion (Cheikh Ibrahima Ndiaye)

The conclusion should summarize the key points, address the issue and open up a broader discussion.

Global warming is a complex phenomenon, caused by natural and human factors, with serious consequences for the environment, societies and the economy. However, solutions exist on an individual, collective and technological scale.

By acting now, we can limit the effects of global warming and preserve our planet for future generations.

Faced with this global challenge, international cooperation and the commitment of each are essential. As the African proverb says: 'If you want to go fast, walk alone. If you want to go far, let's walk together.'